BLAIR COUNTY AND CAMBRIA COUNTY, PENNSYLVANIA:
AN INVENTORY OF HISTORIC ENGINEERING AND INDUSTRIAL SITES

America’s Industrial Heritage Project
National Park Service
BLAIR COUNTY AND CAMBRIA COUNTY, PENNSYLVANIA

An Inventory of Historic Engineering and Industrial Sites

Gray Fitzsimons, Editor
with contributions by
Denise A. Bradley, Ken Heineman, Richard Henderson, Thomas Lindblom, Margaret M. Mulrooney, Charles Scott, Nancy Shedd, and Peter Stott

Historic American Buildings Survey/Historic American Engineering Record

America's Industrial Heritage Project

National Park Service
U.S. Department of the Interior
Washington, D.C.
1990
Library of Congress Cataloging-in-Publication Data

Blair County and Cambria County, Pennsylvania : an inventory of historic engineering and industrial sites / Gray Fitzsimons, editor ; with contributions by Denise A. Bradley ... [et al.].
p. cm.
Includes bibliographical references and index.
1. Industrial archaeology--Pennsylvania--Blair County.
2. Industrial archaeology--Pennsylvania--Cambria County.
I. Fitzsimons, Gray, 1955- II. Bradley, Denise Anne, 1957-
III. Historic American Buildings Survey/Historic American Engineering Record. IV. America's Industrial Heritage Project.
T22.P4B48 1990
609.748'75--dc20 90-27246
CIP

Other HABS/HAER publications produced for in conjunction with America's Industrial Heritage Project include:


Fayette County, Pennsylvania: An Inventory of Historic Engineering and Industrial Sites (1990).


ACKNOWLEDGMENTS

In February 1987, the Historic American Engineering Record (HAER) and the Historic American Buildings Survey (HABS), both of which form a division of the National Park Service, began a multi-year historical and architectural documentation project in southwestern Pennsylvania. Carried out in conjunction with America's Industrial Heritage Project, a Park Service initiative whose aim is to preserve and interpret the nationally significant historic industries of nine Pennsylvania counties, HAER undertook a comprehensive inventory of Blair and Cambria counties as the first step in identifying the region's surviving historic engineering works and industrial resources.

Prior to the inventory work in Blair and Cambria counties, Charles Scott, through a contract with HAER (PX-0001-7-0676), prepared an annotated bibliography of sources related to the area's industrial development. In June 1987, the HAER Inventory of the two counties was initiated, the team for which included Denise A. Bradley, Tom Lindblom, Margaret M. Mulrooney, Nancy S. Shedd, and Ken Heineman. Carried out under the direction of HAER staff member Gray Fitzsimons, the team inventoried some 175 sites in the two counties, completing the field work in September 1987. Concurrently, an industrial archaeologist, Peter Stott, through a contract with HAER (PX-0001-7-0676) conducted an inventory of the Pennsylvania Railroad Shops in Altoona, and Gray Fitzsimons completed an inventory of the original works of the Cambria Iron Company in Johnstown. In 1988, James Alexander, professor in the Political Science Department at the University of Pittsburgh, Johnstown, inventoried the works of the Johnson Steel Street Rail Company, through a contract with HAER (PX-0001-8-0769). All of this inventory work included the preparation of brief histories and descriptions for each site, the sum of which form the basis for this publication. Richard R. Henderson assisted in formatting the inventory materials for publication and conducted further historical research for the transportation section. Demian J. Hess provided additional research and writing for the Berwind-White coal properties. And Mr. Fitzsimons served as editor for the entire manuscript with assistance from Ms. Bradley.

A number of individuals aided the HAER Inventory project. The staff of America's Industrial Heritage Project (AIHP), including Historian Loretta Schmidt, Planner Keith Dunbar, Office Manager Dottie Zentack, and AIHP Executive Director Randall Cooley, provided HAER with logistical support and numerous local contacts. At the offices of the Bureau of Historic Preservation, Pennsylvania Historical and Museum Commission, in Harrisburg, Greg Ramsey shared the state's survey material from Cambria County. Also, Richard Burkert, Director of the Johnstown Flood Museum, granted HAER access to the museum's files on industry in the Johnstown area. In addition, Mr. Burkert generously shared his time with the HAER Inventory team, especially during the inventory of the Cambria Iron Works.

Dean Shaver, Supervisor and Property Engineer for the Bethlehem Steel Corporation in Johnstown, granted HAER access to the Bethlehem plant and permitted access to many of the company's drawings and maintenance records. Mr. Shaver's assistance throughout the inventory and documentation work of the former Cambria Works was invaluable. HAER also thanks Bethlehem employees William Maestra, John Blough, Ed Bender, Charles Kane, William Hoppel, and William Blum. And thanks to Bethlehem steelworkers Ralph Galasso and Tom Smith for the time they spent familiarizing the HAER team with the steel works. HAER would also like to acknowledge Conrail managers Frank Abate and Robert Ketteringham who granted HAER permission to inventory and photograph the former Pennsylvania Railroad Shops in Altoona.

Finally, HAER would like to thank several people who reviewed parts of the manuscript: Lou Leopold, Nancy S. Shedd, and Richard Burkert. The reviewers, all of whom have contributed to the growing knowledge of the region's local history, made a number of helpful comments and corrected a few discrepancies in dates and facts. Of course, HAER is responsible for any remaining errors in this publication.
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 helps State Historic Preservation Offices evaluate historic resources for preservation planning and for potential nomination to the National Register; and (3) it provides the National Park Service with a framework for evaluating nationally significant engineering and industrial resources, and assists the National Register of Historic Places in determining the eligibility of properties for listing in the National Register.

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 35mm 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 often required to cover the costs of printing. The published inventory, available to the general public, is used in 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 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 the region's three 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 establishment of the Southwestern Pennsylvania Heritage and Preservation Commission to further the goals of the project, was achieved in November 1988 when President Reagan signed a bill (H.R. 3313) creating the commission. The commission actively works with AIHP which has its offices in Hollidaysburg, Pennsylvania.
# CONTENTS

Acknowledgments ......................................................................................................................... iv
List of Illustrations .......................................................................................................................... viii - ix
Introduction ..................................................................................................................................... 1 - 3
Map of Blair County .......................................................................................................................... 4
Map of Cambria County .................................................................................................................... 5
Extractive Industries .......................................................................................................................... 6 - 55
Early Iron Works .............................................................................................................................. 57 - 81
Thermal Products ............................................................................................................................. 83 - 100
Transportation ................................................................................................................................. 101 - 162
Bulk Products .................................................................................................................................. 163 - 185
Manufacturing .................................................................................................................................. 187 - 200
Utilities ............................................................................................................................................. 201 - 215
Pennsylvania Railroad: Altoona Works ............................................................................................ 217 - 254
Primary Metals: Cambria Iron Works .............................................................................................. 255 - 315
Bibliography .................................................................................................................................... 317 - 337
Index .................................................................................................................................................. 339 - 355
LIST OF ILLUSTRATIONS

Photo - 1. Berwind-White Coal Mining Company: Maryland Shaft No. 2, Summerhill
Photo - 2. Ebensburg Coal Company: Hoist House (ca. 1916), Colver
Photo - 3. Ebensburg Coal Company: Coaling Station and Breaker, Colver
Photo - 4. Johnstown Coal & Coke Corporation: Coal Cleaning Plant, Beaverdale vicinity
Photo - 5. Monroe Coal Company: Revloc Mine: Car Shop, Revloc
Photo - 6. Monroe Coal Company: Company Store, Revloc
Photo - 7. United Mine Workers of America, Local 2246: Union Hall, Marstellar
Photo - 8. Allegheny Furnace, Altoona
Photo - 9. Elias Baker Mansion, Altoona
Photo - 10. Canoe Furnace, Yellow Springs
Photo - 11. Mount Etna Furnace: Workers' Tenant House, Yellow Springs
Photo - 12. Jacob Isett House, Yellow Springs
Photo - 13. Springfield Furnace
Photo - 14. Altoona Brick Company
Photo - 15. Pennsylvania Coal & Coke: Mine No. 9: Coke Ovens
Photo - 16. Allegheny Portage Railroad: Skew Arch Bridge
Photo - 17. Birmingham Bridge
Photo - 18. Pennsylvania Railroad: Alto Tower
Photo - 19. K4s Locomotive 1361 - the "Spirit of Altoona"
Photo - 20. Fiffickstown Bridge
Photo - 21. Allegheny Portage Railroad: Staple Bend Tunnel
Photo - 22. Johnstown Incline Plane Railway and Bridge
Photo - 23. Johnstown Passenger Railway Company: Car Barns
Photo - 24. Bender Slaughter House
Photo - 25. Sarah Furnace Grist Mill
Photo - 26. Johnson Steel Street Rail Company: Pattern Shop
Photo - 27. Johnson Steel Street Rail Company: Office and "Drawing Rooms"
Photo - 28. Bellwood Light & Power Company (1892)
Photo - 29. Logan Light, Heat & Power Company: Beaverdale Substation
Photo - 30. Pennsylvania Railroad: Tipton Reservoir
Photo - 31. PRR: Altoona Car Shops: Fire Engine House No. 8
Photo - 32. PRR: Altoona Car Shops: Erecting Shop No. 3
Photo - 33. PRR: Machine Shops: Master Mechanic's Office & Test Department
Photo - 34. PRR: Juniata Shops: Blacksmith Shop No. 1
Photo - 35. PRR: Juniata Shops: Erecting and Machine Shop
Photo - 36. PRR: Juniata Shops: Erecting and Machine Shop
Photo - 37. PRR: Juniata Shops: Electric Hydraulic Building and Powerhouse
Photo - 38. Cambria Iron Works: Merchant Mill
Photo - 40. Cambria Iron Works: Interior of Blacksmith Shop
Photo - 41. Cambria Iron Works: Iron Foundry and Foundry Wing
Photo - 42. Cambria Iron Works: Pattern Shop
Photo - 43. Cambria Iron Works: Rolling Mill Office
Photo - 44. Cambria Iron Works: Blast Furnace No. Five
Photo - 45. Cambria Steel Company: Machine Shop
Photo - 46. Bethlehem Steel Company: Gautier Complex
Photo - 47. Bethlehem Steel Company: Gautier Complex
Photo - 48. Cambria Steel Company: Franklin Mills Complex
Photo - 49. Cambria Steel Company: Wire Plant Complex
INTRODUCTION

The HAER Inventory of Blair and Cambria Counties

The HAER Inventory is an ongoing, comprehensive research project which identifies and analyzes through written documentation, oral history, and historic structures inventories, the nation’s significant engineering and industrial sites. Its purpose is to provide historians, engineers, planners, preservationists, and others interested in the fields of industrial archeology, and economic and technological history with information on these significant sites. The HAER Inventory is intended to be a guide to America’s historic industrial and engineering resources.

As past HAER Inventory projects have demonstrated, the final results of such work provide a thorough compilation of historic engineering and industrial structures each of which is described, referenced, and evaluated. Beginning in January 1987 HAER made major changes to its inventory procedure by introducing for the first time a computerized format for recording much of the data obtained from the field. This advance makes it possible to identify and analyze more rapidly historical information on the nation’s many engineering and industrial sites.

HAER recognizes no absolute cutoff dates in the history of engineering, industry, and technology, although most resources included in the HAER Inventory are generally 50 years of age or older. For the most part, the HAER Inventory records sites that have substantial above-ground remains: archeological sites are generally not included in the inventory work. However, a few representative archeological sites, including several containing the remains of stone-constructed blast furnaces, coke ovens, coal-mining structures, and lime kilns, were recorded in the HAER Inventory of Blair and Cambria counties to provide a better understanding of the broad range of industries in the region.

Given unlimited funds and endless amounts of time and personnel, an ideal HAER Inventory project would comprise detailed information on virtually all types of engineering and industrial resources. Such is not the case in the "real world," and therefore a well-defined methodology outlining the types of resources that are to be included in the documentation, as well as the amount of information compiled for each documented resource, is required.

Methodology

Much of the HAER Inventory of Blair and Cambria counties was conducted during the summer of 1987. During this time, five historians carried out the initial field work, and conducted the preliminary research and writing on the historic industrial and engineering resources in the two counties. The first half of the summer was devoted largely to field work and the last half to intensive research and writing. The drafts prepared by the HAER team formed the basis of the written material for this publication.

Additional inventory work was carried out during the summer and fall of 1988 by HAER staff in Washington, D.C., to verify previously collected information, and to gather information on several more important sites. During this time the draft manuscript was extensively edited and newly uncovered research materials were incorporated into the many short histories and overviews that constitute this publication.
Introduction

Preliminary Research

One of the major aspects of the preliminary work was a literature search at local libraries and institutions, conducted to identify useful primary and secondary sources. State industrial directories and mine reports were among the first primary sources consulted. In addition, such secondary sources as county histories and celebratory histories of several towns in the two counties were consulted. A great deal of preliminary research, however, involved working with maps. This helped identify the kinds of industries that were important in the region, as well as pinpoint the location of many late-nineteenth and early-twentieth century industrial companies. The most useful were the Sanborn insurance maps, county atlases and county maps, and early twentieth century United States Geologic Survey (USGS) maps. Contemporary USGS 7.5 Minute Series (Topographic) quadrangle maps were used to identify extant industrial and engineering structures. Much of this preliminary research was assembled into an annotated bibliography, reproduced at the end of this publication.

Site Selection

The HAER inventory team utilized the annotated bibliography, as well as the various county histories, articles from technical journals, and maps, to locate the region's important industrial sites. These sites were then recorded on USGS maps and investigated in the field. In addition to the larger industrial sites, HAER included a range of locally significant smaller industrial companies to provide a better context for understanding the region's industrial development. The initial site selection using written materials resulted in the identification of about three-fourths of the resources included in the inventory. The remaining one-quarter of sites recorded by HAER were identified through oral sources or simply by running into them during the field work.

Field Work

The field work was organized geographically by township. Each township received comprehensive coverage, with particular attention given to industrial areas in the towns and boroughs. Each site visited was recorded on a field form developed by HAER. The information on the field form included a description of the major extant structures, including data uncovered from drawings on site, builder's plates, and oral interviews. In addition, 35 mm black-and-white photographs were taken at each site showing general views, as well as select details of buildings and machinery.

Research and Writing

The field work mainly provided information about present site conditions. Research in local libraries, historical societies, and company offices, was also carried out with the aim of writing brief histories of the companies and sites. Various sources -- oral, written, and visual -- were consulted after the field work was completed. Often, oral sources provided reliable information about the history and development of a site that was not otherwise available. Whenever possible, the information obtained through oral sources was verified through written materials. Where available, historic photographs were used to trace changes to industrial sites.
Evaluation

This publication includes for each site: (1) database information, (2) a brief narrative history and description, and (3) a list of references. The information for each resource was evaluated, edited, and, when additional information was uncovered, rewritten. The descriptive and historical information, along with the photographs, provided the basis for evaluating the technological significance of each resource. The priority ratings were developed to reflect whether the historical and technological significance of the resource warrants additional documentation by HAER:

*Priority 1* resources are nationally significant. They may also be regionally or locally significant resources that retain much (or all) of their historic materials of construction or machinery. Priority 1 resources warrant further documentation in the form of measured drawings, in-depth histories, and large-format photography.

*Priority 2* resources are regionally or locally significant and retain some of their historic materials of construction or machinery, although some alterations may have taken place. They warrant in-depth histories and large-format photography.

*Priority 3* resources are locally significant and warrant large-format photography.

*Priority 4* rating is assigned to resources that do not warrant any documentation beyond that of the HAER Inventory.

Many factors entered into the determination of significance and the designation of ratings. One factor centered on the importance of the resource or its impact on the county's social, political, or economic history and development. Other questions that were considered included: is the resource endangered or threatened with demolition? is it one of the few remaining examples of a particular industry? or is this type of resource represented in the HAER collection?

As the inventory progressed and a more complete assessment of each county's resources became available, the priority rating of each structure was reviewed by the HAER staff in Washington, D.C.

Conclusions

The inventory of historic engineering and industrial resources in Blair and Cambria counties included about 250 industrial sites, twenty-five railroad bridges, twenty highway and pedestrian bridges, and six railroad tunnels. The HAER Inventory is intended to serve as a guide to the region's historic industrial and engineering resources, and to promote further research into its industrial past. The results of the Inventory will be used by HAER to plan further research and documentation projects in this region.
Map of Blair County (Based on the USGS Pittsburgh 1:250,000 Quadrangle).
Map of Cambria County (Based on the USGS Pittsburgh 1:250,000 Quadrangle).
EXTRACTIVE INDUSTRIES

COAL

Of the two counties, Cambria has by far the greatest coal resources. Situated almost completely within the Allegheny Mountains Area, Cambria County overlies several rock formations including chiefly the Allegheny and Conemaugh groups. The Allegheny group, extending as far east as the Cambria-Blair county line, comprises virtually all of the workable coal seams. This includes four principal beds, namely the Upper Freeport (E), also known as the "Lemon" bed, the Lower Freeport (D) or "Limestone" bed, the Upper Kittanning (C') or "Cement" bed, and the Lower Kittanning (B) or "Miller" bed. These coal seams vary from six feet in thickness to a mere trace, though much of the recoverable coal is found in seams between two and three feet thick. Of the four major seams, coal from the "Miller" seam was particularly important as its low moisture and high fixed-carbon content made it an outstanding coking coal as well as a highly valued steam coal. By the 1940s it was estimated that 865 million tons of coal were mined or lost through erosion and that nearly 2.7 billion tons remained to be recovered.1

Coal Mining in Blair County

Lying just east of the Allegheny Mountains Area, Blair County has never produced great quantities of coal compared to its western neighbors. Among the earliest of the county's coal mining concerns was the Blair County Iron & Coal Company, owner of an iron furnace and coal mines at Bennington, about one-half mile east of the Gallitzin Tunnels. Although the coke-fired iron furnace was in blast for only a short while, over the next century Allegheny Township, specifically in the Bennington area, remained the most active center for coal mining in Blair County. By 1878 the Cambria Iron Company operated 100 coke ovens at Bennington, using the coal mined from the "Miller" seam on the east slope of Allegheny Mountain. The beehive ovens used about 500 tons of coal each day and the coke was shipped to Johnstown for use in the company's blast furnaces.2

The most intensive mining activity in Blair County occurred during the first three decades of the twentieth century in the western sections of Allegheny and Logan Townships. During this time the largest of the county's mining concerns was the Glen White Coal & Lumber Company which operated mines in Allegheny Township and maintained its headquarters in Baltimore, Maryland. In addition, this company built the town of Glen White in Logan Township, a short distance from its mines. From the early 1900s through the 1940s Glen White Coal & Lumber employed between 100 and 140 men in its mines and coke plants. The next two largest companies, the Pennsylvania Coal & Coke Corporation, and the Bennington Coal Company, having acquired Cambria Iron's coal lands in Allegheny Township, each provided employment to about 70 persons. By 1907 eight mines were active in Allegheny Township and one was

---


operating in Logan Township near the Horseshoe Curve.\textsuperscript{3}

The high water mark for coal mining in Blair County was reached during the First World War through the early 1920s. As many as seven coal companies operated mines in Allegheny and Logan townships, all of which were served by the Pennsylvania Railroad. By 1940 only three mines were in operation, employing around 300 persons and producing over 116,000 tons of coal. The Argyle Coal Company, successors to the Bennington Coal Company, boasted the largest work force, employing nearly 160 men at the Bennington "B" mine.\textsuperscript{4} The 1950s witnessed the depletion of the easily mined coal and the decline of the county’s meager coal industry. Today the town of Bennington is virtually obliterated with only an overgrown cemetery marking its location.\textsuperscript{5} The former town of Glen White contains merely a few building foundations.

Coal Mining in Cambria County

As early as the 1760s white settlers in the Conemaugh Valley dug coal from the many outcroppings. Coal was used in the region’s first forges and blacksmith shops that began appearing in the primitive villages of the 1790s and early 1800s. The rise of the iron industry in the early nineteenth century and the advent of the Pennsylvania Canal and Allegheny Portage Railroad gradually accelerated the mining of coal. Commercially operated coal mines during the ante-bellum years include the Myers brothers mine near Summit (1845), Samuel Lemon’s mine near Summit (1845), Matthew Adams’ mine at the foot of Incline No. 5 (ca. 1840s), and the Dysart Shaft (ca. 1840s).\textsuperscript{6}

The first large-scale mining activity prior to the Civil War occurred in Johnstown when the newly formed Cambria Iron Company opened the Rolling Mill Mine in 1856. Extending into the Upper Kittanning (C’) seam, this mine proved to be one of the greatest coal producers in Cambria County. Mine cars laden with coal passed through the original drift portal, which was located above the Conemaugh River near the Inclined Plane, and delivered coal to the Cambria Iron Works via a company-built trestle. In addition to the Rolling Mill Mine, the Cambria Iron Company operated the Blast Furnace Mine at Prospect Hill above the iron works. In shallow pits along this hillside, Cambria Iron produced its first coke for use in its nearby blast furnaces. When the Rolling Mill Mine closed in 1931, it had yielded nearly 22.4 million tons of coal.\textsuperscript{7}
Extractive Industries

The completion of the Pennsylvania Railroad through the Alleghenies in 1850 accelerated the growth of Johnstown and other small towns in Cambria County. Local demand for coal in the region's iron works and industrial shops continued to rise throughout the 1850s and 1860s. Outside of Johnstown, the town of South Fork, situated at the junction of the Little Conemaugh River and the South Fork of the Little Conemaugh, was the location of the next important mining activity in the county. Around 1867 J.C. Stineman, George B. Stineman, Samuel Paul, and R.J. Hughes formed the South Fork Coal & Iron Company. As with many of the mining ventures in central Pennsylvania in the late nineteenth century, Stineman and his partners relied on Philadelphia capital to develop their colliery. Eventually, this enterprise was divided into two companies, the Stineman Coal & Coke Company, and the Stineman Coal Mining Company, both of which maintained headquarters in Philadelphia.⁸

Table 1: Companies Operating the Most Collieries in Cambria County, 1901
(Source: Halberstadt's General Map of the Bituminous Coal Fields of Pennsylvania, 1901)

<table>
<thead>
<tr>
<th>Company</th>
<th>Township</th>
<th>Main Office</th>
<th>Shipping Railroad</th>
<th>Number of Collieries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beech Creek Coal &amp; Coke</td>
<td>Carroll, Chest, Elder</td>
<td>New York City</td>
<td>NYCRR</td>
<td>8</td>
</tr>
<tr>
<td>Cambria Steel Co.</td>
<td>Conemaugh, East Taylor, Lower Taylor</td>
<td>Philadelphia</td>
<td>PRR</td>
<td>6</td>
</tr>
<tr>
<td>Barnes &amp; Tucker Co.</td>
<td>Susquehanna</td>
<td>Barnesboro</td>
<td>PRR</td>
<td>5</td>
</tr>
<tr>
<td>Webster Coal &amp; Coke Co.</td>
<td>Croyle, Gallitzin</td>
<td>Philadelphia</td>
<td>PRR</td>
<td>5</td>
</tr>
<tr>
<td>Frugality Coal &amp; Coke Co.</td>
<td>Reade</td>
<td>Philadelphia</td>
<td>PRR</td>
<td>5</td>
</tr>
<tr>
<td>Mitchell Coal &amp; Coke Co.</td>
<td>Gallitzin, Jackson, Portage</td>
<td>Philadelphia</td>
<td>PRR</td>
<td>4</td>
</tr>
<tr>
<td>Sterling Coal Co.</td>
<td>Carrol</td>
<td>Philadelphia</td>
<td>PRR</td>
<td>4</td>
</tr>
</tbody>
</table>

By 1885 nearly two-dozen mines were operating in Cambria County and produced in that year slightly over a million tons of coal. One-fourth of this total was mined by the Cambria Iron Company, which remained the county's leading coal producer throughout the late nineteenth century. Between 1880 and 1900 numerous coal companies sprang up throughout the county. Although many of these were small mining firms with only a few employees, a number of larger coal producers began operations in the 1880s and 1890s. Among these was the C.A. Hughes & Company, which opened a mine into the "Miller" seam between Lily and Cassandra in 1880, the Taylor & McCoy Coal & Coke Company, which sunk a shaft 240 feet deep in the Upper Freeport (E) seam and constructed 240 coke ovens at Gallitzin in 1881, and the Sonman Shaft Coal Company, which opened a drift mine into this same seam near Portage in 1883. In 1901 mining engineer and geologist Baird Halberstadt recorded 130 significant coal mines operating in Cambria County. Susquehanna Township in the northwestern corner of the county, claimed 18 mines, more than any other township in Cambria. A number of railroads, including the Pennsylvania, the New York Central, and the Baltimore & Ohio, served the county's mines either directly or through shortline subsidiaries. As shown in Table 1, the Beech Creek Coal & Coke Company, its main offices in New York City, and its local mines in the area between Patton and St. Bonifacius, operated eight mines, more than any other turn-of-the-century mining concern in the county.⁹

---

⁸Cooper, p. 320; the combined operations of Stineman Coal & Coke and Stineman Coal Mining made this one of the top ten mining and coking companies throughout the 1910s and 1920s. See Commonwealth of Pennsylvania, Third Industrial Directory of Pennsylvania, 1919; and Fifth Industrial Directory of Pennsylvania, 1925, p. 149.

⁹Cooper, p. 320; Centennial Celebration: 1873-1973, Gallitzin, Pennsylvania, p. 13; Halberstadt
The 1910s and 1920s were the most active decades for coal mining in Cambria County. Except for the year 1922, when miners in the bituminous fields carried out a widespread strike, from 1910 through 1929 Cambria produced over 16 million tons of coal each year. Many new shafts were sunk, and as many as 50 new company towns or company-built residential communities emerged. Although approximately half of the coal operators maintained small-scale mines, employing 100 or fewer persons, several large companies employed 500 or more workers and dominated the county’s coal industry (see Tables 2 and 3).

The largest of these firms throughout the 1910s and 1920s was the Pennsylvania Coal & Coke Company which employed around 3,000 workers each year. The company operated mines and beehive coke ovens throughout northern and central Cambria County, and built about ten residential communities near its works. When Pennsylvania Coal & Coke moved its regional offices to Cresson in the 1920s, it constructed the largest company office building of any coal operator in the county. 

Table 2: Coal Companies with the Largest Number of Employees in Cambria County, 1919
(Source: Third Industrial Directory of Pennsylvania, 1919)

<table>
<thead>
<tr>
<th>Company</th>
<th>Local Office</th>
<th>Main Office</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennsylvania Coal &amp; Coke Co.</td>
<td>Ebensburg</td>
<td>New York</td>
<td>3,068</td>
</tr>
<tr>
<td>Cambria Steel Co.</td>
<td>Johnstown</td>
<td>Philadelphia</td>
<td>1,222</td>
</tr>
<tr>
<td>Portage Coal Mining Co.</td>
<td>St. Benedict</td>
<td>(not recorded)</td>
<td>1,025</td>
</tr>
<tr>
<td>Ebensburg Coal Co.</td>
<td>Colver</td>
<td>Philadelphia</td>
<td>745</td>
</tr>
<tr>
<td>Vinton Colliery Co.</td>
<td>Vintondale</td>
<td>(n.r.)</td>
<td>550</td>
</tr>
<tr>
<td>Logan Coal Co.</td>
<td>Carrolltown</td>
<td>Philadelphia</td>
<td>581</td>
</tr>
<tr>
<td>Maryland Coal Co. of PA</td>
<td>St. Michael</td>
<td>(n.r.)</td>
<td>550</td>
</tr>
<tr>
<td>Barnes &amp; Tucker Co.</td>
<td>Barnesboro</td>
<td>(n.r.)</td>
<td>540</td>
</tr>
<tr>
<td>Sonman Shaft Coal Co.</td>
<td>Sonman</td>
<td>(n.r.)</td>
<td>522</td>
</tr>
<tr>
<td>Sterling Coal Co.</td>
<td>Bakerton</td>
<td>Philadelphia</td>
<td>452</td>
</tr>
</tbody>
</table>

Table 3: Coal Companies with the Largest Number of Employees in Cambria County, 1925
(Source: Fifth Industrial Directory of Pennsylvania, 1925)

<table>
<thead>
<tr>
<th>Company</th>
<th>Local Office</th>
<th>Main Office</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennsylvania Coal &amp; Coke Co.</td>
<td>Cresson</td>
<td>New York</td>
<td>2,723</td>
</tr>
<tr>
<td>Bethlehem Mines Corp. *</td>
<td>Johnstown</td>
<td>Philadelphia</td>
<td>1,515</td>
</tr>
<tr>
<td>Cambria Logan Coal Co.</td>
<td>(n.r.)</td>
<td>Philadelphia</td>
<td>1,004</td>
</tr>
<tr>
<td>Berwind-White Coal Mining Co.</td>
<td>Windber (Somerset Co.)</td>
<td>Philadelphia</td>
<td>925</td>
</tr>
<tr>
<td>Ebensburg Coal Co.</td>
<td>Colver</td>
<td>Philadelphia</td>
<td>700</td>
</tr>
<tr>
<td>Barnes &amp; Tucker Co.</td>
<td>Barnesboro</td>
<td>Philadelphia</td>
<td>654</td>
</tr>
<tr>
<td>Sonman Shaft Coal Co.</td>
<td>Sonman</td>
<td>Minersville, Pennsylvania</td>
<td>597</td>
</tr>
<tr>
<td>Heisley Coal Co.</td>
<td>Nanty Glo</td>
<td>Philadelphia</td>
<td>564</td>
</tr>
<tr>
<td>Vinton Colliery Co.</td>
<td>Vintondale</td>
<td>New York</td>
<td>466</td>
</tr>
<tr>
<td>Maryland Coal Co. of PA</td>
<td>St. Michael</td>
<td>Philadelphia</td>
<td>458</td>
</tr>
</tbody>
</table>

* formerly Cambria Steel Co.

---

10 As a result of the strike in 1922, mining operators in Cambria County produced only 12.9 million tons of coal that year, the lowest level since 1906. See Pennsylvania's Mineral Heritage, pp. 19-24.

11 In relation to the other counties in Pennsylvania, between 1910 and 1929 Cambria generally ranked third or fourth in annual tonnage of coal output. Westmoreland and Fayette counties were the top producers, followed by...
The Depression years of the 1930s witnessed a dramatic decline in bituminous coal production in Pennsylvania. The worst year, 1932, saw a total of only 74.8 million tons of bituminous coal produced in the Commonwealth, the lowest figure since 1899. The economic crisis hit hard all of the major mining companies in Cambria and other coal-rich counties, and drove numerous smaller coal operators out of business. As the nation's economic health slowly improved in the late 1930s, coal production gradually rose; however, one of the lasting effects of the Great Depression in Cambria County's coal industry was the consolidation of smaller companies by a handful of larger mining concerns. Unlike the first three decades of the twentieth century when, in any given year, coal and industrial directories routinely recorded the operation of as many as 150 or so collieries in the county, by 1941 only about half that number was listed. Just as there were fewer small coal operators in business by 1940, as Table 4 shows, there was a greater number of large mining companies that employed 600 or more persons.13

Table 4: Coal Companies with the Largest Number of Employees in Cambria County, 1941
(Source: Tenth Industrial Directory of Pennsylvania, 1941)

<table>
<thead>
<tr>
<th>Company</th>
<th>Local Office</th>
<th>Main Office</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berwind–White Coal Mining Co.</td>
<td>Windber (Somerset Co.)</td>
<td>Philadelphia</td>
<td>2,922</td>
</tr>
<tr>
<td>Pennsylvania Coal &amp; Coke Co.</td>
<td>Cresson</td>
<td>New York</td>
<td>2,130</td>
</tr>
<tr>
<td>Bethlehem Mines Corp. *</td>
<td>Johnstown</td>
<td>Bethlehem</td>
<td>1,043</td>
</tr>
<tr>
<td>Ebensburg Coal Co.</td>
<td>Colver</td>
<td>Philadelphia</td>
<td>1,166</td>
</tr>
<tr>
<td>Monroe Coal Mining Co.</td>
<td>Revloc</td>
<td>Philadelphia</td>
<td>1,142</td>
</tr>
<tr>
<td>Heisley Coal Co.</td>
<td>Nanty Glo</td>
<td>Philadelphia</td>
<td>1,130</td>
</tr>
<tr>
<td>Koppers Coal Co. **</td>
<td>Sonman</td>
<td>Pittsburgh</td>
<td>1,120</td>
</tr>
<tr>
<td>Johnstown Coal &amp; Coke Co.</td>
<td>Johnstown</td>
<td>Johnstown</td>
<td>1,072</td>
</tr>
<tr>
<td>C.A. Hughes &amp; Co.</td>
<td>Portage</td>
<td>Cresson</td>
<td>900</td>
</tr>
<tr>
<td>Barnes &amp; Tucker Co.</td>
<td>Barnesboro</td>
<td>Philadelphia</td>
<td>676</td>
</tr>
</tbody>
</table>

* formerly Cambria Steel Co.
** acquired Sonman Shaft Coal Co.

The county's mining industry remained an important part of the local economy throughout the 1940s and 1950s. After the Second World War open-pit mining, begun on a large scale in Cambria in the 1930s, was the preferred method of obtaining coal. Nonetheless, several large

---

12 The Pennsylvania Coal & Coke operated several mines and batteries of coke ovens in the Moss Creek district and at Cresson. The company also acquired and expanded the mine at Ehrenfeld, near South Fork. The Moss Creek district included the company-built town of Marstellar, and near the Ehrenfeld mine Pennsylvania Coal & Coke constructed dozens of wood-frame houses. Its holdings diminished in Cambria County after the Second World War and the company abandoned its offices in Cresson. The two-story office building of brick construction with neo-Classical ornamentation still stands.

companies including Berwind-White, Bethlehem Mines, Barnes & Tucker, Johnstown Coal & Coke, and Pennsylvania Coal & Coke, continued to operate drift or deep-shaft mines. The energy crisis of the early 1970s resulted in a brief resurgence in mining activity through the latter part of the decade. A number of small firms leased the holdings of such companies as Berwind-White. By the 1980s, however, coal was produced by only a handful of small mining concerns and the industry ceased to be one of the county's major employers. The one exception to this was the reorganized BethEnergy Mines Corporation, a subsidiary of Bethlehem Steel, the largest producer in the county, operating mines in St. Michael, Mineral Point, Nanty Glo, Colver, Revloc, and the Ebensburg area. Of these mines, the modern colliery and by-product plant near Ebensburg, with its large steel-frame and reinforced concrete structures, contrasts sharply with the few surviving pre-1940s mining complexes that retain buildings of stone and brick.

MAJOR COAL COMPANIES IN CAMBRIA COUNTY

The current depressed state of Cambria's coal industry, coupled with the several decades-long decline of the county's numerous coal towns, stands in marked contrast to the tremendous mining activity of the early twentieth century. A handful of companies in the county, most of which are no longer in the mining business, came to dominate the local coal industry. Those listed below were among the most important during the heyday of Cambria's coal production.

Barnes & Tucker Company

The founder of the Barnes & Tucker Company, Thomas Barnes, was born in Lancashire County, England, in 1843. At the age of 21 he immigrated to the United States, where he found work as a miner near Philipsburg, Pennsylvania. Barnes and his brother, John, opened their own mine in Clearfield County before purchasing coal lands in northwestern Cambria County in the early 1890s. Operating under the direction of the Anneston Coal Company, which also controlled Alfred Tucker & Company of Philadelphia, in 1893 the firm opened the Lancashire No. 3 and No. 4 in Susquehanna Township. In 1896 one of the partners of the Anneston Coal Company was bought out, resulting in the establishment of the Barnes & Tucker Company. Barnes & Tucker eventually operated eleven mines in the vicinity of Barnesboro, its headquarters and largest company town. In 1923 the Lancashire mines produced over one million tons of coal, a quantity not surpassed until 1957. Barnes & Tucker was one of the county's more enduring bituminous coal producers, mining the Lancashire No. 24, B and D seams, until about 1985. Although Barnes & Tucker still maintains offices in Ebensburg, the company is not operating any mines.14

Berwind-White Coal Mining Company

The Berwind-White Coal Mining Company is representative of the outside companies that operated in Cambria County in the early twentieth century. Organized in Philadelphia by two brothers, Charles F. and Edward J. Berwind, and Judge Allison White, the firm opened its first mine, Eureka No. 1, in Clearfield County. By 1892 the company's annual output exceeded 3 million tons. As the easily recoverable coal in the Berwind-White mines of Clearfield County was being increasingly depleted in the 1890s, the company purchased coal fields in nearby Cambria, Somerset, and Westmoreland Counties. Its first mine in Cambria County was the

---

Eureka No. 30, the Yellow Run Shaft, at Dunlo. The company's largest producing mines, Eureka No. 35, No. 36, No. 37, No. 40, and No. 42, were opened into the Lower Kittanning and Upper Kittanning seams between 1897 and 1906. All were drift mines located within the Paint Creek Valley, south of Johnstown. Berwind-White platted the town of Windber just over the Cambria County line in Somerset County, and around 1898 constructed its regional company offices and bank in the newly established company town. In addition Berwind-White constructed substantial frame and brick houses for its management, and modest frame dwellings for its miners and their families.  

The company operated several of the Eureka mines into the 1950s. In 1962 Berwind-White was re-incorporated as the Berwind Company, a Philadelphia-based firm that managed the vast real estate holdings of the former mining concern. Although no longer engaged in mining, the company still retains extensive surface and mineral rights in Cambria and Somerset counties.

Bethlehem Mines Corporation

The coal lands now owned by the BethEnergy Mines Corporation were previously the property of the Cambria Steel Company, the Monroe Coal Mining Company, and the Heisley Coal Company, the latter three of which were controlled by John H. Weaver. In 1923 the Bethlehem Mines Corporation, a subsidiary of Bethlehem Steel, acquired all of the mines of the Cambria Steel interests. This included the Rolling Mill No. 71 (closed in September 1931), the Rosedale No. 72 (closed November 1960), and the Franklin No. 73 and No. 74 (closed in October 1962), No. 75 (closed in June 1928), and No. 76 (closed in June 1928), all of which were operated by the Johnstown Division of the Bethlehem Mines Corporation. In 1948 Bethlehem Mines Corporation acquired the Weaver coal properties and, in addition, leased another 24,000 acres of land in Cambria Township from the Clearfield Bituminous Coal Corporation. As part of this leasing arrangement, Bethlehem Mines gained control of the Cambria and Indiana Railroad. Subsequently, the Cambria Division of Bethlehem Mines Corporation was formed. By 1966 the Cambria and Johnstown divisions were merged into the Cambria Division, and about ten years later this reorganized division was operating nine mines (No. 31B in Nanty Glo, No. 32B in Revloc, No. 33B and No. 33C south of Ebensburg, No. 38D in Ehrenfeld, No. 38E in Summerhill, No. 73C, near Elton, No. 77B near Mineral Point, No. 78C in Windber). In addition, the Cambria Division ran two preparation plants, the Brookdale Plant near Mineral Point and the Cambria Slope Plant near Ebensburg. The downturn in the steel industry in the early 1980s along with the increased cost of operating some of the older mines forced the shutdown of several of the Cambria Division's operations. This included mines 73B, 38D, 38E, 31, 32, and the Brookdale Preparation Plant and Mine 77B. In 1985 the Cambria Division was merged with the Ellsworth Division to form the Pennsylvania Division of the BethEnergy Mines Corporation. Currently, BethEnergy Mines is mining two

---

18 BethEnergy Mines Corporation, "History of Cambria Division."
seams at No. 33 and operating the nearby Cambria Slope Preparation Plant. It is the largest active mine in Cambria County.¹⁹

**Cambria Iron Company**

Within the Conemaugh Valley, the Cambria Iron Company and its successors, chiefly Bethlehem Steel, operated the most productive mines. Beginning with the Rolling Mill Mine, which opened into the "C" seam in 1856, the company mined coal in the Johnstown area for over one hundred years. Mines No. 72, No. 73, and No. 74 at Franklin were open from the turn of the century until the early 1980s. The mining activity is exhibited in the many adits that may be found along the escarpment below Westmont, on Prospect Hill, and along the hillside above Franklin and East Conemaugh.²⁰

**Coleman & Weaver Company**

A partnership formed by John Heisley Weaver and B. Dawson Coleman in 1909 resulted in another of the largest coal companies in Cambria County. While operating several mines in Indiana County, the two men acquired the Nanty-Glo Coal Mining Company. The two partners continued to operate Nanty-Glo No. 1 and No. 2, while they purchased other coal lands in Cambria Township. In 1910 the Ebensburg Coal Company, a subsidiary of Coleman and Weaver, opened the Colvier Mine. One year later the partners began operating the Cambria & Indiana Railroad, a shortline coal carrier that originally had been developed as a logging railroad, called the Blacklick & Yellow Creek. The C&I ran south from Colvier to the Pennsylvania Railroad, and was subsequently extended to Nanty Glo and north to the company's mines in Indiana County. In 1915 the Heisley Coal Company was formed to operate another mine, Nanty-Glo No. 3, as well as superintend the existing No. 1 and No. 2 mines. The following year Coleman & Weaver established yet another subsidiary, the Monroe Coal Mining Company, to direct the newly opened the Revloc mine. The collieries at Colvier, Revloc, and Nanty Glo were among the most productive in Cambria County and remained in operation for over fifty years.²¹

After Coleman and Weaver dissolved their partnership in 1922, John H. Weaver gained control of both the Heisley Coal Company with interests in Nanty Glo, and the Monroe Coal Mining Company with mines in Revloc. In addition, Weaver retained a controlling interest in the Cambria & Indiana Railroad. His partner, B. Dawson Coleman, remained as president of the Ebensburg Coal Company, a position he held until his death in 1933.²²

In 1948 the Bethlehem Mines Corporation acquired John Weaver's holdings in Nanty Glo and Revloc, and continued mining coal, primarily for use in Bethlehem Steel's Johnstown plants. The Eastern Associated Coal Corporation purchased the Colver property from the heirs of

---


²⁰ Cooper, pp. 319, 324.


Extractive Industries

Dawson Coleman. As late as the 1970s mines were operated in Colver and Revloc; however, the collieries in these two areas, as well as those in Nanty Glo, are now closed.23

Johnstown Coal & Coke Corporation

In 1912 Harry A. Crichton, an engineering graduate of Lehigh University, and his brother Andrew, organized the Johnstown Coal & Coke Company, purchasing coal properties in southern Cambria and northern Somerset counties. For the next several years the company leased properties to a number of coal operators, of which the Beachley Coal Company was one of the largest. In 1916 under a lease arrangement with Beachley Coal, a colliery was opened on Martin Branch near Portage. The following year Johnstown Coal & Coke established a sales company in New York City, and began acquiring additional coal properties in West Virginia and Maryland.24

By the 1940s the company had acquired the Logan Coal Company, which had extensive properties at Beaverdale, and was mining coal and producing coke under its own name. Johnstown Coal & Coke continued to expand in southern Cambria County, purchasing the Beaver Run Mine from the Corrington Company in 1951. As the market for coal and coke waned in the late 1950s, Johnstown Coal & Coke shed its Pennsylvania operations. By 1959 the company had pulled out of Portage and Beaverdale, producing metallurgical and steam coal exclusively at its West Virginia mines.25

Pennsylvania Coal & Coke Corporation

In 1902 the Pennsylvania Coal & Coke Company was formed with Webster Coal & Coke controlling a 50 percent interest, and Mitchell & Associates and Berwind-White Coal Mining Company each controlling a 25 per cent interest. The Beech Creek Coal & Coke Company then leased the mining properties held by Pennsylvania Coal & Coke. Beginning in 1906 a reorganized Pennsylvania Beech Creek and Eastern Coal Company assumed the lease of the coal fields; however, the economic Panic of 1907 forced Pennsylvania Coal & Coke into receivership. Although coal production in Cambria County, as well as in Pennsylvania, suffered a decline in 1908 and 1909, Pennsylvania Coal & Coke, under the receivership of T.H. Watkins, gradually recovered. By 1911 the company was incorporated with Watkins as its president. In 1912 the first full year of operation under the reorganized Pennsylvania Coal & Coke Corporation, the mining and coke-making concern produced almost three and a half million tons of coal from 30 mines, operated nearly 1,000 beehive coke ovens, and employed around 3,000 persons, more than twice the number of the county's next largest coal and coke company. About 1920 Pennsylvania Coal & Coke moved its regional headquarters from Ebensburg to Cresson, erecting an imposing Neoclassical brick and terra-cotta building in the center of town. Although coal production dropped precipitously in the early 1920s, by the middle of the decade Pennsylvania Coal & Coke was operating the largest number of mines in the county and was, once again, the single largest employer in the coal and coke industry. Most of the corporation's work force was employed in Ehrenfeld, Patton, Gallitzin, Marsteller, or Barnesboro.26

23White and Law; Fifth Industrial Directory of Pennsylvania, 1925, pp. 146-47.
26The short-lived economic depression of 1920-21, coupled with a widespread strike in the bituminous coal fields in 1922, led to a dramatic, albeit brief, decline in Pennsylvania's mining and coking industry. From a high of 3,088 persons employed in Pennsylvania Coal & Coke Corporation's mines and coke plants in Cambria County in 1919, just three years later this corporation recorded only 299 men and women in its employ. However, by 1925, this number climbed back to 2,723. See Third Industrial Directory of Pennsylvania, 1919; Fourth Industrial Directory of Pennsylvania, 1922, p. 754; and
The company continued to mine until the 1950s when demand for Pennsylvania coal had dropped sharply. In the late 1950s Clearfield Bituminous Coal Corporation acquired the assets of Pennsylvania Coal & Coke. Today, only the office in Cresson and a few mining structures at Ehrenfeld and Marsteller remain from one of the largest early-twentieth-century coal companies in Cambria County.  

The legacy of coal mining in Blair and Cambria counties:

Of the many collieries included in the HAER Survey of 1987, only one, Berwind-White’s Eureka No. 40, had a large number of intact historic structures (see entry of Berwind-White Coal Mining Company: Eureka No. 40). Many of the collieries that closed in the 1930s or earlier had few or no standing structures. The few structures that survived from these early mining operations consisted largely of abandoned blacksmith or carpenter shops, power plants, or electrical substations. One of the most impressive historic mining structures found in Cambria County was a steel headframe erected in 1945 by the Maryland Coal Company of Pennsylvania for its Maryland Shaft No. 2.

IRON

The mining of iron ore began in Blair County in the early 1800s. Brown iron ores associated with the Cambro-Ordovician limestones were extensively mined in the eastern and southern parts of the county. Bloomfield (on the Blair-Bedford county line), Springfield (near Williamsburg), Henrietta and Rebecca (in North Woodbury Township), and Soister (in Taylor Township) were among the most productive mines in the region. Generally, one ton of iron was recovered from two-and-one-half tons of ore. While locally prominent ironmasters Henry S. Spang and John Royer had mined hematite ores for use in their charcoal furnaces as early as the 1820s, the first large-scale mining activity was carried out by the Cambria Iron Company in southeastern Blair County in the 1860s and 1870s.

Cambria Iron operated mines in Taylor, North Woodbury, and Huston townships, and built tenement housing for its workers. Formerly known as Leathercracker, Henrietta was one of Cambria Iron’s larger company-built iron-ore mining towns in the region. By 1880 it contained 14 tenement houses for workers and their families, two homes for company managers, and a hotel. Served by a spur of the Pennsylvania Railroad, the open-pit mining operation comprised an engine house, blacksmith and carpenter shops, and various barns and stables. Iron ore from this period was dug from shallow pits, then washed to remove clay and other surface impurities, sorted for shipping, and, finally, hauled by rail to the blast furnace stock-bins where iron ore, limestone, and coke were deposited prior to use in the furnace. Iron mining in Blair County dwindled dramatically by the turn of the century as ores from the Great Lakes region superseded those from central and western Pennsylvania.

(Continued)

Footnotes:


28 The only one of its kind within the two counties, this headframe served the deepest shaft in Pennsylvania. Sadly, it was demolished in April 1988.

Cambria County produced considerably less iron ore than its neighbors to the east. One bed of hematite ore, 50 feet below the Upper Freeport coal seam and ranging in thickness from one to three feet, was originally mined in the 1840s for two small furnaces in Johnstown. Although the mines were by no means major iron producers, they were an important factor in the establishment of the nationally prominent Cambria Iron Company. Soon after Cambria Iron was formed in 1852, additional pit mines were opened on Prospect Hill above the iron works. The ore was found to be self-fluxing after calcining; however, as the deposits were depleted by the 1870s, the iron company acquired mines in Michigan, and Great Lakes ores soon replaced those that were obtained locally.\

LEAD

Among the early extractive industries in the region was mining of lead in Sinking Valley, Blair County. Two principal ores, sphalerite and galena, were found in dolomitic limestone deposits, chiefly in area west of Birmingham. The earliest mining activity occurred in the 1760s and 1770s. In addition to the lead ores, zinc was also mined in Sinking Valley. By the early 1800s, however, much of the easily recoverable lead and zinc ores were depleted and mining for these minerals virtually ceased. No standing structures remain from this early mining activity.

CLAY

The mining of clay was another relatively important industry in both counties. The towns of Patton and Blandburg in northern Cambria County were important local producers of brick and clay products. Much of the clay in this area was extracted from the spoil of the local coal mines and shipped by rail to the large brickworks.

In addition to clay, rich deposits of ganister in Blair County were quarried for the production of firebricks which were used in the steel industry. In Cambria County the four major clay products companies were Hiram Swank's Sons, A.J. Haws and Sons, Ltd., Patton Clay Manufacturing Company, and Harbison-Walker Refractories. Each of these companies operated a coal mine. Although the shafts of these coal mines may be found in Cambria County (as well as some of the bony piles associated with the mining), no structures associated with the mining of clay were found.

One of the important clay producers in Blair County was the Woodbury Land Company of Hollidaysburg, which operated several clay pits in the vicinity of Oreminea beginning in the early 1900s. Most of the clay obtained at Oreminea was shipped to refractories in nearby Claysburg, Sproul, Clearfield, and Mt. Union. A number of workers' houses dating from the early twentieth century still stand at Oreminea, where as many as 40 workers were employed in the local clay pits. Although numerous clay pits may still be seen in Huston and North Woodbury townships, no production structures were found that were associated with the mining of clay in the region. (For more information on the clay-products companies in Blair and Cambria counties see Thermal Products: Refractories.)

---


-16-
QUARRIES

Rich deposits of sandstone and limestone are found in both Cambria and Blair counties. In Cambria County limestones occur below the Upper Kittanning and Lower Freeport coal seams, with the massive Loyalhanna limestone exposed in cuts across the anticlines. The Potts ville group in the eastern, northwestern, and southwestern parts of the county, contains large amounts of sandstone, clay, and shale. In Blair County, where much of the commercial quarrying activity has occurred, limestone and dolomite outcrop along a northeast to southwest axis. Within the basal Coal Measures limestone, sandstone, and shale are found. Whereas much of the limestone and dolomite has been exploited for use in the steel industry, and in agriculture, as well as for road building and aggregate in concrete, sandstone has been widely quarried for use as a construction material in buildings and bridges.33

The remnants of several limestone quarrying and processing operations established in conjunction with the steel industry are located in eastern Blair County. This includes the Juniata Limestone Company which began in the late 1880s and was acquired by the Cambria Steel Company in 1912. Located near Williamsburg, in Catherine Township, this company operated a processing plant at Carlim along the Frankstown Branch of the Juniata River until 1935. A large quarry in Ganister, operated by the Pittsburgh Limestone Company, a subsidiary of Carnegie Steel, commenced operations in 1895, shipping its limestone by rail to the Pittsburgh steel mills.34 One other Pittsburgh-based steel company, Jones & Laughlin, operated several lime kilns in Turkey Valley beginning in the early 1900s.35

Also in conjunction with the steel industry, ganister, a form of quartzite, has been quarried on a large scale in Blair County at Dunning Mountain, beginning in the early 1900s. Much of the ganister from the Dunning Mountain quarries was transported to the nearby refractories in Claysburg and Sproul, where the General Refractories Company manufactured firebrick. Although the Claysburg refractory was recently closed ganister is still quarried and shipped to such refractory companies as A.J. Haws and Harbison-Walker.36

33Phalen, p. 68; Pennsylvania’s Mineral Heritage, 1944), pp. 135, 139.
34Interestingly, this company also recruited immigrant laborers. Brought to the region on the Pennsylvania Railroad from the coastal cities, they were mostly Slavs, Carpathians, and other Eastern Europeans.
36Joseph Skvir, Owner of property around former Pittsburgh Limestone Quarry, Ganister, Pennsylvania, Interviewed on 7 July 1987; Wolf, pp. 21, 343; and Williamsburg Heritage and Historical Society.
About 1898 the Juniata Limestone Company, Ltd., established a limestone quarry and crushing plant two miles south of Mt. Etna, along the Frankstown Branch of the Juniata River. The quarry extended for about one and one-half miles along an escarpment on the west side of the valley. In the spring of 1898 the Williamsburg Branch of the PRR, later known as the Petersburg Branch, was extended to Carlim, two and six-tenths miles northeast of Williamsburg, and the first carload of stone was shipped in mid-October. A three-track railroad spur off the branch line served the processing plant. The plant featured two stone-crushing towers, a storehouse, a railroad station, a laboratory, an office, and many smaller structures, such as scale houses, engine houses, shanties, sheds, and a company store. Only parts of the crushing towers and the storehouse still stand.

J. King McLanahan of Hollidaysburg supervised the installation of several of the structures and equipment. Juniata Limestone shipped processed limestone to steel mills in Johnstown and Pittsburgh. About 1912 the company sold its quarries to the Cambria Steel Company, and by 1919 the processing plant shipped as many as sixty car loads per day, employing eighty-seven men. By 1919 the Blair Silica Brick Company, a division of General Refractories Company, was operating a plant at Carlim. It produced pottery, terra cotta, and other fire-clay products, and employed 256 men. In addition, the Standard Refractories Company, a major competitor of General Refractories, opened a plant at Carlim, also producing pottery, terra cotta, and fire-clay brick. Standard Refractories employed some 350-400 workers in the 1910s.

With the growth of the limestone quarry and several refractories, Carlim was a booming, albeit small community in the 1910s through the early 1920s. The town's industry declined rapidly in the 1930s when much of the quality limestone had been quarried and western Pennsylvania steel companies obtained limestone elsewhere in the state. In 1936 a devastating flood washed away all but two of the houses in the company-built town.

Last used by a hunting club, the site is abandoned. There are many remnants of the quarry operation, including wooden barrels, iron pipes, concrete piers for the crusher ramps, and parts of deteriorated brick walls. The concrete walls of the storehouse remain, and the iron hinge plates of its main door are still embedded in the walls. However, the structure has no roof and the door has been removed.

Sources:
Cambria Steel Company. "Juniata Limestone Company Quarries at Carlim, Blair County, Pennsylvania.: (Note Book - 123 PA. 47-75, References 81-26) Johnstown, Pennsylvania.: 17 December 1914 (from Johnstown Flood Museum Collection)


Collins, C.P. Map Showing Property of the Juniata Limestone Company in Catherine Township, Blair County, Pennsylvania. August 1898. (from Johnstown Flood Museum Collection)


New Enterprise Stone & Lime Company  (1860s)
Current Name: New Enterprise Stone & Lime Co. Rating: 4
E of PA 164 and PA 36, Roaring Spring vicinity, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000) UTM: 17 E.720760 N.4469240
Historic Use: EXTRAC: MNRL: Quarry and Crushed Stone Processing Plant
Present Use: EXTRAC: MNRL: Quarry and Crushed Stone Processing Plant

Limestone was an essential product to the nineteenth-century charcoal-iron industry in Blair County. It was used as a flux in the iron smelting process. Around 1862, Dr. Peter Shoenerger moved his Bloomfield Furnace operation to McKee's Gap just north of Roaring Spring. The iron for the Rodman Cannon, a renowned class of Civil War artillery, was produced here. The furnace was blown out in 1885.

Around 1922, M. A. Showalter opened a stone quarry at this site, which was purchased in 1930 by the New Enterprise Stone & Lime Company. Several old photographs, available at the company's weigh station, document the early quarry operation. However, no structures from this period remain. Presently, New Enterprise produces crushed-stone aggregate for concrete. It is one of the largest active quarries in Blair County.

Sources:
Adams, David M. Historical Summary of Southern Morrison's Cove Towns. 1948.

Pittsburgh Limestone Company: Quarry (1895)
Current Name: Ganister Blue Hole Rating: 3
1.75 miles E of US 22 S of PA 866, Ganister, Blair County, Pennsylvania
USGS Quad: Williamsburg, Pennsylvania (1:24000) UTM: 17 E.733280 N.4483300
Builder/Architect/Engineer: Joseph Holmsen (B)
Historic Use: Quarry and Limestone Processing Plant
Present Use: Abandoned

In 1895 the Pittsburgh Limestone Company of Pittsburgh, Pennsylvania, began mining limestone in eastern Blair County. The company opened the Blue Hole Quarry in the vicinity of Ganister, west of Williamsburg, employing nearly 400 quarry workers. Served by the Springfield Branch of the Pennsylvania Railroad Company, Blue Hole Quarry produced approximately 150 rail-car loads per day. The limestone was used principally as a flux in the smelting of iron and steel. Pittsburgh Limestone became a subsidiary of U.S. Steel soon after the giant steel trust was formed in 1901. Blue Hole Quarry continued to produce limestone for a number of years in the twentieth century; however, it has been abandoned for many years.

The town of Ganister, so-named for the abundant deposits of the silica-rich sedimentary rock found in the area, grew with the late-nineteenth-century influx of quarry workers. By the turn of the century, the town's population was composed of several eastern European ethnic groups
including Slovaks, Carpathians, and Ruthenians. A number of frame houses, as well as a few residences built with local stone, survive from this period. Quite a few second and third generation immigrants still live in this part of Blair County.

Sources:
Skvir, Joseph. Farmer and owner of property around Blue Hole Quarry, Ganister, Pennsylvania. Interview, 7 July 1987.

Woodbury Clay Company: Company-built Housing (1890s)
Current Name: Woodbury Clay Co.: Rental Houses Rating: 3
5 miles SW of Williamsburg, E of PA 866, Williamsburg vicinity, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania (1:24000) UTM: 17 E.732940 N.4475675
Historic Use: Company-owned Workers' Housing
Present Use: Private Residences

As early as 1820 the area around Oremina, in northern Huston Township, was the site of iron ore mining for Springfield Furnace. During the last quarter of the nineteenth century, Cambria Iron Company worked the same area, naming it the Springfield Mine. The deposits of iron ore were layered or mixed with clay, which was put aside or washed out of the ore. While prospecting in this area for other iron-ore deposits in the late-nineteenth century, a large deposit of kaolin was found. Soon after iron-ore mines were closed and numerous clay pits were opened. The Woodbury Land Company of Hollidaysburg acquired property in and around Oremina. The company shipped clay via the Pennsylvania Railroad to refractories at Claysburg, Sproul, Clearfield, and Mount Union.

Although many workers of the Woodbury Land Company lived as far away as Altoona, a number of employees lived in company-built houses in Oremina. Around the turn of the century the Woodbury Land Company erected a dozen or so houses, many of which remain standing and are still owned by the Woodbury Clay Company. The typical company-built residence in Oremina is a two-story wood-frame double house, measuring 30' x 20', and containing a gable roof and a rear ell of one or two stories. The residences have weathered board-and-batten siding, and rest on rubble foundations. The facades along the street contain four-six-over-six-light, double-hung, sash windows. The main entrances, however, are located at the gable ends. Two small arched windows are located in each attic gable. The buildings are still recognizable as company-built houses even though a variety of porches and external chimney flues have been added by the tenants in recent years.

Sources:
Allport Coal Mining Company: Car Shop  (1910s)
Current Name: Unknown  Rating: 3
PA 4027 1.15 miles E of US 219, S of Allport School, Allport, Cambria County, Pennsylvania
USGS Quad: Barnesboro, Pennsylvania (1:24000) UTM: 17 E.689440 N.4503200
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

By 1900 the Allport Coal Mining Company, with main offices in Philadelphia, was operating one mine in Susquehanna Township and another in Carroll Township. The No. 1 mine, on Walnut Run, is near about twenty houses that were probably built by the company. By 1907 this company was operating a single mine at Allport and had an office in nearby Barnesboro. Not long after 1907 the Rich Hill Coal Company, which operated mines east of Barnesboro, acquired Allport Coal. Rich Hill Coal probably operated the No. 1 mine at Allport through the 1920s.

The mine has been abandoned for many years and retains only one early 1900s structure, a tall one-story stone building that probably served as a mine-car repair shop. It was probably erected by the Allport Coal Mining Company and is currently abandoned. In addition to the repair shop, a number of early 1900s company-built residences are extant in Allport. They consist largely of two-story wood-frame double houses and are now owned by private individuals.

Sources:
Commonwealth of Pennsylvania, Department of Internal Affairs, Tenth Industrial Directory of Pennsylvania, 1941 (Harrisburg: Bureau of Statistics and Information, 1941).

Anderson Coal Mining Company: Substation  (1915)
Current Name: Unknown  Rating: 4
.25 miles NW of PA 53 on PA 253, Van Ormer, Cambria County, Pennsylvania
USGS Quad: Blandburg, Pennsylvania (1:24000) UTM: 17 E.712200 N.4505980
Historic Use: Bituminous Coal Mine, Electrical Substation
Present Use: Abandoned

During the early twentieth century, the Anderson Coal Mining Company, based in Boston, Massachusetts, worked the bituminous coal fields of western Pennsylvania. By 1901 they controlled four mines in the adjacent townships of Reade and White. One of the four mines was the Peerless No. 4 in Reade Township. An electrical substation, erected about 1915, is all that remains of this mine. The substation was built to run ventilating fans in the mines and is located on PA 253 south of Van Ormer.

The structural system for the substation consists of masonry bearing walls and timber trusses and rafters. Interestingly, the building contains a monitor roof with multi-light windows, the only roof of this kind for an electrical substation in Cambria County. The building's window and door openings are spanned by brick segmental arches. Many of the original wood-sash windows are still in place, although some are covered on the outside with plywood. The building is in a poor state of repair; the mortar on the east wall is decaying and a portion of the
roof on the south side has collapsed. The former substation now serves as a storage facility for farm equipment owned by some nearby residents.

Sources:

Barnes & Tucker Company: Lancashire No. 15 (1917)
Current Name: Hugill Sanitation
Rating: 3
1.7 miles E of PA 553 & PA 271, near the Barr Township line, Bakerton vicinity, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.689280 N.4498130
Historic Use: Bituminous Coal Mine
Present Use: Waste Dump

In 1914 the Pennsylvania Coal & Coke Company opened the No. 18 mine near Bakerton on the South Branch of the Susquehanna River. Six years later the Barnes & Tucker Company opened the nearby Lancashire No. 15. In 1926 Barnes & Tucker acquired No. 18 mine from Pennsylvania Coal & Coke and operated it in conjunction with Lancashire No. 15. The oldest structure of these two mining operations is a one-story, stone building probably built by Pennsylvania Coal & Coke. Under half-circle windows at each end of this building a date-stone bears the inscription "1917." Barnes & Tucker used this building as an electrical repair shop. It contains stone block-in-course bearing walls and has stone segmental arches above the window openings. The roof is supported by steel Fink trusses and steel-channel purlins. The wooden window frames and doors appear to be original and only a few of the glass panes are broken.

The other extant structures at this site were built by Barnes & Tucker. Two brick buildings standing to the east of the electrical repair shop probably date from the 1920s. One of them served as a supply house and the other was a wash house. Both are one-story brick structures with steel roof trusses. The other adjacent buildings were erected after the Second World War and may have served as a blacksmith or machine shop. Lancashire No. 15 last operated in the early 1980s.

Sources:
Falger, Frank. Manager, Inland Steel Company. Interview, 3 June 1987
Current Name: Rebekah Manor  Rating: 3

SW corner of Chestnut Avenue and 20th Street, Barnesboro, Cambria County, Pennsylvania
USGS Quad: Barnesboro, Pennsylvania (1:24000)  UTM: 17 E.686920 N.4509190
Builder/Architect/Engineer: Charles Britton (E)
Historic Use: Bituminous Coal Mine, Office
Present Use: Health Care Office

The original 50' x 30' building was designed and built, to serve as the company office, by the Barnes & Tucker Company, Engineering Division, at 20th Street and Shepherd Avenue (now Chestnut Avenue) in Barnesboro. The Chief Engineer for Barnes & Tucker, Charles Britton, initialed the three original drawings, which are still held by the company, on 23 March 1923. These drawings depict: (1) the front and side elevations; (2) the rear elevation, a basement floor plan, and a section showing one of the three fireproof vaults in the building; and (3) detail plans of the first and second floor, and an insert showing the floor joist framing. The office was enlarged by a 36' x 33' addition to the rear facade in 1964. Edwin Pawloski, of Johnstown, was the architect for this addition. A third enlargement to the building was made in 1981. At this time the offices were connected to an adjoining house on Chestnut Avenue. The design work for this project was performed by the Barnes & Tucker Engineering Division.

In 1970 the company was acquired by ALCO Standard, Corporation of Valley Forge, Pennsylvania. In 1986 ALCO Standard got out of the coal business and sold Barnes & Tucker to private investors. The restructured coal company soon halted its mining operations and many of the workers were laid off. As late as 1981 Barnes & Tucker employed 1,600 workers. Its employees currently number nineteen. The office building in Barnesboro was sold in 1987 and the company relocated to Ebensburg. Although Barnes & Tucker no longer actively mines coal, the firm still holds, manages, and leases vast coal reserves. Currently, the old Barnesboro office building is used by Rebekah Manor, a senior citizens home.

Sources:
Barnes & Tucker Engineering Division. Original Drawings. (Barnesboro: 23 March 1923)

Barnes & Tucker Company: Powerhouse  (ca. 1910)
Current Name: Thomas Elias Junkyard  Rating: 3  Survey No.: 021.003

W side of Porter Run (PA 4027), 1 mile from US 219, Barnesboro vicinity, Cambria County, Pennsylvania
USGS Quad: Barnesboro, Pennsylvania (1:24000)  UTM: 17 E.688410 N.4505130
Historic Use: Bituminous Coal Mine, Powerhouse
Present Use: Scrap Yard

Having acquired the coal property on Porter Run, northeast of Barnesboro in 1893, the Barnes & Tucker Company opened the Lancashire No. 12 mine in 1910. The only remains from this mine include a powerhouse and a small overgrown reservoir, both of which date from the early 1910s. The old reservoir features two concrete retaining walls that form a shallow "V" with a buttress at the center. The reservoir stored water that was used in the boilers of the nearby powerhouse. Only half of the original powerhouse still stands. It contains stone walls, steel columns and roof trusses, and a gable roof. The original multi-light windows have been covered with corrugated fiberglass. The building is owned by Thomas Elias who uses the space for storage in conjunction with his junkyard just west of the powerhouse. The eastern wing has been demolished; only the foundation and floor over the basement remain.
Extractive Industries: Cambria County

Sources:

**Berwind-White Coal Mining Company: Berkey Shaft (ca. 1910)**

Current Name: Ark Painting, Inc.  
Rating: 2

.475 miles NW Elton on Jim's Run, Ebensburg vicinity, Cambria County, Pennsylvania  
USGS Quad: Geistown, Pennsylvania (1:24000) UTM: 17 E.686090 N.4461310  
Historic Use: Bituminous Coal Mine, Ventilation  
Present Use: Paint Shop

About five miles north of Berwind-White's Eureka No. 40 mine is the Berkey Shaft that includes a fan house and bath house, both of which were erected about 1910. The shaft and fan house provided access and ventilation to the No. 40 mine, as did the nearby Yoder Shaft (see entry of Berwind-White Coal Mining Company: Yoder Shaft). The fan house and shaft building contain brick walls and pilasters, a stone foundation, and riveted-steel, compound-Fan roof trusses. To the rear of the structure, stands a curved masonry fan-drift that connects the main block of the building to the ventilation shaft. The last segment of the fan-drift is made of bolted steel plates and extends over the shaft opening which is still visible. The original hoist and frame stand at the end of the fan drift. The hoist carried men and equipment into the mine, which is now sealed, several feet below the shaft opening. Directly south of the shaft house stands an old bath house, a small one-story concrete-block building. Currently, the property is owned and occupied by Ark Painting, Inc., which acquired them from the Berwind Corporation. The Berkey Shaft and the nearby Yoder Shaft retain many original (1910s) structures.

Sources:  

**Berwind-White Coal Mining Company: Car Shop (1908)**

Current Name: Dunlo Fire Station No. 82  
Rating: 4

.15 miles NW of PA 160 and Conrail Tracks, Dunlo, Cambria County, Pennsylvania  
USGS Quad: Beaverdale, Pennsylvania (1:24000) UTM: 17 E.693340 N.4462920  
Historic Use: Bituminous Coal Mine, Car Repair Shop  
Present Use: Abandoned

Established about 1890, Dunlo is a small community in Adams Township. The collapse of the earthen dam at South Fork in 1889 enabled the Pennsylvania Railroad to lay its tracks through the breach, and extend its line to Lovett and into Dunlo, an area rich with timber and coal. The Berwind-White Coal Mining Company was one of the first to exploit these natural resources. Its Yellow Run Shaft was opened in 1892 and produced 2.4 million tons of coal until it was closed in 1908. The Mountain Coal Company, a large surface and mineral rights holder, then acquired the Yellow Run Shaft property. Mountain Coal leased the land to Kuhns & Goodwin, a lumber company established in Dunlo in 1892. For a short while, the presence of railroads, lumber companies, and coal mines created a thriving community; however, these industries fell upon hard times beginning in the 1930s, and the town of Dunlo experienced a rapid decline. Many of the town's industrial buildings were subsequently torn down.
The only extant mine-related building is a machine shop erected about 1908 by the Mountain Coal Company. This building was also, at various times, the fire hall for Dunlo's fire company and a community hall. It is currently vacant. The machine shop has brick walls and pilasters, and a timber-truss roof. It measures approximately 80' x 20' and is divided into ten symmetrical bays. The pilasters and gable ends contain fairly elaborate corbeling, and a bull's-eye window is located in the front (southeast) gable wall. The enlarged door was probably constructed when the former shop was used a fire station.

Sources:

Berwind-White Coal Mining Company: Eureka No. 37  (1897)
Current Name: Unknown  Rating: 4
1.25 miles NW of Scalp Level W of PA 56, Scalp Level vicinity, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania  (1:24000) UTM: 17 E.681655 N.4457760
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

The Eureka No. 37 mine operated from 1899 to 1962 and was one of the longest continually operating mines of the Berwind-White Coal Mining Company. During this period the drift mine was responsible for over one-third of the total coal produced by the company's Eureka mines. The only mine-related structure still standing is a stone building erected about 1900 and containing random-range sandstone walls, and steel, compound-Fink roof trusses. The building has little ornamental detailing; its exterior features concrete lintels over the window openings and a bull's-eye window along the north facade. A concrete-block addition wraps around the east facade. Although the building originally may have served as a machine shop, by 1924 Berwind-White used it as a wash house and forge. (The southern one-third of the building contained a forge.) It is currently abandoned.

In addition to the mine structures, Berwind-White erected over 80 wood-frame duplexes near No. 37 to house the miners and their families. Called Number 37, the town also contained two brick school buildings, and a company store, also of brick. Forty houses and the company store survive, although many of the buildings have been substantially altered.

Sources:
Berwind-White began work on Eureka No. 40 in 1902, opening the drift mine into the Lower Kittanning seam in 1905. The mine had two main entries and was worked on a full retreat ing, room-and-pillar system. It was force-ventilated through a system of air splits and overcasts. By the 1910s No. 40 was one of the largest and best equipped mines in the Windber area, boasting of a large powerhouse (see entry of Berwind-White Coal Mining Company: Eureka No. 40, Powerhouse). In 1914, apparently its peak year, it reached an annual output of 579,153 tons of coal. Berwind-White continued to improve the mining complex in the 1920s, constructing a modern cleaning plant. By 1949, Eureka Nos. 35, 36, and 37, all of which were connected to the workings of No. 40, were loading their coal through No. 40 for processing at the cleaning plant. Eureka No. 40 was one of only five Berwind-White drift mines in the Windber area to operate through the 1950s and was the last to close in 1962. (The other long-lived Eureka mines were Nos. 35, 36, 37, and 42.) The mine sat idle after closing until it was leased to the Jandy Coal Company in the 1970s. Jandy operated the mine as late as 1980 and as a result Eureka No. 40 is still fairly intact. The complex features: (1) the tipple and cleaning plant, (2) the motor barn, (3) the fan house, (4) the railroad car repair shop, and (5) the wash house.

Tipple and Cleaning Plant

In 1928 the Roberts & Schaefer Company of Chicago, designed and built this three-story reinforced-concrete tipple and cleaning plant at a cost of about one-half million dollars. It was here that coal was dumped from the mine cars, conveyed to the initial sorting area, sorted by size, then cleaned, and finally loaded into rail cars for shipping. (Also, it was through this process that the refuse was separated and conveyed to the nearby slate pile.)

The tipple included the car dump (manufactured by the Heyl & Patterson Company of Pittsburgh), scales, a run-of-mine conveyor, and a main screening house. The initial sorting was carried out on the third floor where the incoming coal was deposited on screening tables that sorted the coal by size. The sorted coal was then conveyed to concentrator tables on the second floor where through a combination of mechanical shaking and the blowing of compressed air, the lighter coal was separated from the heavier refuse. As with all dry-cleaning plants, dust posed a tremendous hazard. The Eureka No. 40 plant, although largely modelled upon the existing facility at Eureka No. 37, contained a more efficient system of dust collectors manufactured by the Pangborn Company of Hagerstown, Maryland.

Over the next decade, coal companies increasingly used wet-cleaning for coal instead of dry cleaning. Following suit with other bituminous coal producers, in 1941 Berwind-White installed a separate wet-cleaning plant at Eureka No. 40. To remove excess water from its product, in 1955 the company also constructed a drying plant just north of the tipple, and later installed a mechanical drier. With such extensive cleaning facilities, Eureka No. 40 became one of the company’s most important collieries. In 1948 Berwind-White began to haul coal from many of its other Eureka mines to the tipple and cleaning plant at No. 40 for processing. When the company ceased operations in 1962, the surface works of most of its mines were dismantled. At Eureka No. 40, however, the cleaning plant was such a valuable asset that Berwind-White was able to lease the mine to another coal operator in the 1970s. The mine and cleaning facilities
Extractive Industries: Cambria County

operated until about 1980 when they were closed for the last time.

Motor Barn

Erected about 1905, the motor barn is located at the end of the mine rail-line leading to the drift. It served as a garage and repair shop for the mine cars used at Eureka No. 40. Originally L shaped, the building contains random-range sandstone walls, with concrete lintels spanning the window and door openings. Some time after 1934 concrete-block additions were built, giving the building a roughly rectangular plan. The building was used as a motor barn as late as 1980.

Fan House

Prior to the construction of the extant fan house, Eureka No. 40, when it began operation in 1905, was force-ventilated by a 7' Stine fan driven by compressed air. This was a temporary installation, however, and was replaced the next year by an electrically operated 20' Capell fan. Both of these early fans were probably situated near the drift mouth. The second fan was replaced about 1910 when Berwind-White erected the fan house that still stands on site. This one-story brick building measures 56' x 43' and contains a 16' double inlet Capell fan which was rope driven by a 200 HP, 50 volt DC motor. It force-ventilated the workings of Eureka No. 40 through a 10' x 10' airshaft which reached a depth of 45'.

At most of the mines in the region, the air flow was directed through the headings by airtight doors. This system usually operated poorly because the doors either leaked or were accidentally left open. At the Windber mines, however, the Berwind-White Company employed a recently developed system which dispensed with doors entirely. The air current from the fan circulated through two airways lying on either side of the main heading. Side airways split off at each cross heading and ventilated the rooms where the coal was worked. Once carried passed the working face, the air returned to the drift mouth by following the cross and then the main headings. The main airways were able to bridge each cross heading by means of wooden or brick and concrete overcasts. This system allowed each section of the mine to be vented independently and automatically, and the Berwind-White Company was widely praised for its installation.

Even with this improved system, however, the company faced difficulty ventilating its mines. Most of its workings were in thin coal seams, reducing the height of the airways and requiring more extensive underground works to recover a profitable amount of coal. Air could not circulate efficiently through such long and narrow spaces, and as the headings were driven deeper, the air quality dropped precipitously. In 1909, only four years after Eureka No. 40 had opened, the bituminous coal inspector reported that all of the company's mines were inadequately supplied with fresh air. To correct this condition at Eureka No. 40, the company replaced the 20' Capell fan with the 16' Capell fan. In addition, Berwind-White enlarged the airways and replaced leaking overcasts. These efforts were never fully successful and in 1914 the company began to sink new airshafts at many of its mines. Eureka No. 40 was connected to a new shaft, named the Yoder Shaft, in 1916. Located over three miles from the drift mouth, the Yoder Shaft was fitted with its own fan and served as both an air inlet and exhaust. In addition, it was equipped with an electric substation to boost the power underground and air compressors for pickhammer mining operations. The fan house at Eureka No. 40 was apparently operated in conjunction with the Yoder Shaft until the mine was closed in 1962.
Railroad Car Repair Shop

Erected as early as the 1910s this wood-frame structure with a gable roof served as a repair shop for railroad cars. A concrete pad on the east side of the building was probably used as a repair floor. In the 1960s Berwind-White sold its fleet of cars and closed its mines. The shop at Eureka No. 40 was probably closed at this time.

Wash House

This tall one-story brick building containing a gable roof was probably erected in the early 1920s and served as a wash house and change room for the miners. In 1923 the Berwind-White Company proposed to build basement stairs along the west side of the building and convert the lower space to a laundry. In the 1930s the company refurbished the basement to serve as a lamp house, where the miners’ lights were recharged. In 1957 concrete block offices for the mine foreman and motor foreman were added to the main (north) facade of the building. The wash house has been abandoned since about 1980.

Sources:

Berwind-White Coal Mining Company: Eureka No. 40, Powerhouse (1905)

Current Name: American Steel Service Co. Rating: 2

W side of PA 160, 1.5 miles SW of Elton, Scalp Level vicinity, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania (1:24000) UTM: 17 E.683620 N.4457800
Historic Use: Bituminous Coal Mine, Powerhouse
Present Use: Metal Stamping Industry

Berwind-White began work on a powerhouse at its Eureka No. 40 mine in 1905 and completed it the following year. The plant generated DC power for No. 40 as well as for Eureka Mine Nos. 30, 31, 32, 35, and 37. The building is divided into two sections each of which contains a gable roof and monitor. Half of the plant housed the boilers, and the other half contained the steam engines and generators. A crusher and a fan setting were attached to the south side of the building.

The crusher supplied broken coal to the boiler house for fuel. Built of brick, the crusher building measured 32' x 18'. Mine cars conveyed run-of-mine coal to the crusher over tracks leading from the tipple. An automatic hopper-fed Heyl & Patterson toothed-roll crusher, driven by a 10 HP Westinghouse motor, broke the delivered coal. A chain-and-bucket elevator raised the fuel to an 18" belt conveyor which carried it into the boiler house.

The boiler room measures 150' x 45' and was designed to accommodate four batteries of two 300-horsepower Stirling water-tube boilers. A double-grated furnace, equipped with a Roney stoker fired each boiler. When the plant began operation in 1906, only three batteries of boilers
were installed. The belt conveyor from the crusher carried coal to a steel trough which passed over the top of each furnace. Twelve-inch diameter feed tubes directed coal from the trough to the furnace grates. The boilers drew water from a single Cochran water heater and purifier. Ashes from the boilers fell into pits beneath the boiler-house floor, and were then loaded into mine cars. The ashes were used for track ballast in the mines.

The engine room measures 150' x 55' and was equipped with two 550-volt DC, General Electric dynamos direct connected to Cooper-Corliss cross-condensing engines and a 500-kilowatt, 550-volt, 910-amp, Westinghouse dynamo driven by a 1000-horsepower Cooper-Corliss engine. To operate puncher machines and pumps in the mine, Berwind-White installed two Ingersoll-Sergeant compressors driven by the Cooper-Corliss engines.

The Eureka No. 40 powerhouse was the first major direct-current generating plant built by Berwind-White. The company's other stations, the Engineering and Mining Journal observed in 1904, were wooden "frame structures," having a "temporary look". Berwind-White probably modeled the new plant upon another large powerhouse of brick construction it had erected at Eureka No. 38 around 1904. This plant produced AC power, which was typical of most large power stations because direct current could not be economically transmitted more than two miles due to power loss. However, the new plant at No. 40 stood within one-and-a-half miles of the other mines, making it practical to produce direct current. This was an advantage because the company only used DC power for its underground operations and thus saved the expense of converting from alternating current.

By 1916, however, many of the company's mines extended more than three miles underground and it was becoming increasingly impractical to transmit DC power. As a result Berwind-White modified the plant at No. 40, producing three-phase AC power. Just two years later the company began constructing a large central power plant near Windber. Operated by the Windber Electric Company, a subsidiary of Berwind-White, the plant opened in 1920. It supplied AC power to the town and surrounding company mines. The individual power plants at the mines, including the one at Eureka No. 40, were probably closed at this time.

Sometime after 1927 a fan house was built on the south side of the old boiler room. The plant was not producing power at this time and it is not known what function the fan served. In 1929 the company subdivided the plant for use as a supply house and subsequently removed the building's clerestories. Currently the powerhouse is occupied by a small manufacturing concern.

Sources:
The Berwind-White Coal Mining Company opened the Eureka No. 42 mine in 1907 and operated it until 1951. During this time No. 42 produced 9 million tons of coal. Only one structure associated with this mine remains standing, a one-story stone building that originally served as a car barn. Located near the drift opening, it was erected around 1907. The car barn contained two sets of tracks and was used to repair mine cars. Unfortunately, none of the repair equipment survives and the building is currently used as a community club for the nearby town of Mine 42.

About three years after the mine was opened, Berwind-White began constructing the town of Number 42. As was typical of company towns, Number 42 included a company store, a school, and workers' housing. The housing at Number 42 consists of approximately forty two-story semi-detached frame buildings most of which are situated along one main road. They are no longer company-owned. Also remaining are three brick buildings — the former company store, an old stable, and an abandoned slaughterhouse. The two-story company store was built about 1907 and contains brick walls and brick pilasters. It rests on a stone foundation and features decorative brick corbelling and brick segmental arches spanning the windows. Its north (main) facade retains its original wooden cornice, however, the original large store windows have been infilled with brick.

West of the company store stands the abandoned one-story slaughterhouse. It measures 24' x 14' and has a smokehouse addition to its south facade. South of the store is a combination stable and warehouse. The stable consists of a two-story building with a one-story lean-to on its north and south facades.

Across the street from the store are two smaller structures, one of which served as a first-aid station. The first-aid station is an unornamented frame building with clapboard siding and a stone foundation. The other building served as the mine foreman's office and, though much smaller than the company store, contains similar brick detailing. The one-story building is in good condition.

Sources:
Berwind-White Coal Mining Company: Maryland No. 2  (1945, 1961)
Current Name: Bethlehem Steel Co.: Summerhill Mine  Rating: 3
1 mile S of Wilmore, E of PA 160, Wilmore vicinity, Cambria County, Pennsylvania
USGS Quad: Beaverdale, Pennsylvania  (1:24000)  UTM: 17 E.693750 N.4471580
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

In 1945 the Wilmore Coal Company, a subdivision of Berwind-White, opened the Maryland Shaft No. 2 near the town of Wilmore. Established specifically to produce coal during World War II, it was the deepest bituminous coal shaft in Pennsylvania, extending nearly 850' below the surface. Interestingly, the nearby Maryland No. 1 mine at St. Michael was the deepest
Extractive Industries: Cambria County

bituminous coal shaft in Pennsylvania prior to the opening of Shaft No. 2 (see entry of Maryland Coal Company of Pennsylvania: Maryland Shaft No. 1). In addition to the mine, the colliery contained a tipple, a carpenter and blacksmith shop, a wash house, and a power plant, all of brick and steel construction. The colliery was served by a spur of the Pennsylvania Railroad. Berwind-White operated the Maryland Shaft No. 2 until 1961 when the Bethlehem Mines Corporation, a subsidiary of Bethlehem Steel, leased the property. The mine was closed permanently in the 1970s and the shaft was sealed.

Until April 1988, Maryland No. 2 featured a steel headframe, the only one of its kind in Cambria County. Demolished by its owners, the Berwind Corporation, the headframe was originally fabricated by the Connellsville Manufacturing & Mine Supply Company of Connellsville, Pennsylvania. Although the headframe and tipple, as well as the tall brick stack of the power plant, have been razed, the carpenter shop, blacksmith and machine shop, wash house, and power plant still stand. The interiors of these buildings, however, are believed to be largely gutted. The exteriors of these red-brick buildings are lightly ornamented with corbeled brick pilasters. The windows and doors, which have concrete lintels, have been covered with sheet metal.

Sources:
"Hoist-Rope Change Time Cut by Power-Driven Reel Shaft," Coal Age, 56 (May 1951), 116.
"Maryland Shaft No. 2," Coal Age, 48 (July 1943), 124.
"Shaft Safety Increased by Three Shop-Made Cage Attachments," Coal Age, 56 (April 1951), 108.

Berwind-White Coal Mining Company: Shank Shaft (ca. 1900)
Current Name: Richland Township: Road Maintenance Vehicles Storage Rating: 3 Survey No.: 021.120
E of Levetry Road, .425 miles NE of Bethany Church, Richland, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania (1:24000) UTM: 17 E.682500 N.4462570
Historic Use: Bituminous Coal Mine, Ventilation
Present Use: Auto Maintenance Garage

The Berwind-White Coal Mining Company sank the Shank Shaft and erected this fan house about 1910 to provide ventilation for Eureka No. 37 near Scalp Level. The fan house is one of the few Berwind-White buildings of stone construction. Its roof consists of riveted-steel, compound-Fan trusses. The original overhead crane, with block-and-tackle, remains in place. A coursed-stone fan drift extends from the middle of the south wall to the opening of the ventilation shaft. Steel plates now cover the mouth of the shaft. The structure is currently owned by Richland Township and is used for storage of road maintenance vehicles.

Sources:
Berwind–White Coal Mining Company: Substation  
(1905)

Current Name: Unknown  
Rating: 2

1.35 miles S of Elton on PA 160, Elton vicinity, Cambria County, Pennsylvania  
USGS Quad: Geistown, Pennsylvania (1:24000)  
UTM: 17 E.685480 N.4459220  
Historic Use: Bituminous Coal Mine, Electrical Substation  
Present Use: Abandoned

Soon after Berwind–White opened its Eureka No. 40 mine in 1905 it began construction of a new powerhouse and a number of electrical substations. One of these substations is situated on PA 160, near Elton. Located approximately 1.5 miles north of Eureka No. 40, this building housed transformers, water-pumps, and hoisting equipment. It has brick walls and pilasters, a stone foundation, and a full basement. The roof system is composed of steel trusses with a wood-frame monitor. It is the only mine–related substation surveyed in Cambria County to have dressed stone keystones above the windows and doors. The building has suffered one major alteration -- a large doorway was installed on the north side. The current use of the building is not known.

Sources:

Berwind–White Coal Mining Company: Yoder Shaft  
(ca. 1900)

Current Name: Unknown  
Rating: 3

Between Twp Roads No. 737 and No. 302, Richland, Cambria County, Pennsylvania  
USGS Quad: Geistown, Pennsylvania (1:24000)  
UTM: 17 E.684420 N.4461965  
Historic Use: Bituminous Coal Mine, Ventilation  
Present Use: Abandoned

In 1916 the Berwind–White Coal Mining Company opened the Yoder Shaft, west of the town of Elton, to provide additional access to, and improve the ventilation of its Eureka No. 40 mine. Two concrete-lined shafts, one of which served as an air inlet, and the other as an air exhaust, were constructed. Lines for compressed air and electricity also entered the mine through the shaft. A low headframe straddled the top of the airway and could lower a single cage into the mine, either for maintenance or to remove men in the event of an accident. Unlike the headframe at Berwind–White's Eureka No. 35 mine, which was constructed of steel, the one at the Yoder Shaft was built of wood. The cage was hoisted by a 75-horsepower, 50-volt DC Vulcan motor which wound a one-inch cable onto a seven-foot drum. In 1939 the company installed a new cage manufactured by the Connellsville Manufacturing and Mine Supply Company, of Connellsville, Pennsylvania.

Next to the shaft stands the fan house and an electrical substation, housed in a one-story brick and steel-frame building. Inside the building, Berwind–White installed a nine-foot Jeffrey fan driven by a 450 horsepower, 660-volt DC Allis-Chalmers motor. In an unusual arrangement, a rope drive connected the fan to the motor. The company preferred rope drives over belts, due to their low cost and simple operation. To maintain proper tension, the company designed a spring-controlled travelling sheave which automatically adjusted the slack in the rope. Berwind–White also installed a 400-kilowatt Westinghouse rotary convertor, and a battery of three transformers. Initially the substation probably drew its current from the generating plant.
at Eureka No. 40. However, in 1920 the company connected the substation to a newly built central power plant at Windber. Berwind-White continued operating the Yoder Shaft until 1962.

In the 1970s, the Berwind Corporation leased the Yoder Shaft to the Jandy Coal Company. Jandy removed the headframe, which had deteriorated, and replaced it with a pivoting steel post containing a projecting arm. The arm supported a one-man cage which could be swung over the shaft and lowered for repairs or to remove miners. The shaft was sealed at some point after the mine was permanently closed in the late 1970s. All of the original equipment in the fan house and electrical substation remains in place.

Sources:
Baker, Donald J. "Ventilating an Extensive Thin-Coal Mine," Coal Age V.18 N.9 (15 July 1920), 103-105.
Berwind-White Coal Mining Company, "Eureka Number 40: Concrete lined ventilation shafts at 35, 36 [and 40]." (original drawing dated 22 August 1914--DRG. NO. A4-1122--in possession of Berwind Corporation, Windber, Pennsylvania).
Berwind-White Coal Mining Company, "Eureka Number 40: Pipe clamp for compressed air in ventilation shaft at Number 40 and Number 36," (original drawing dated 26 July 1930--DRG. NO. A3-3946--in possession of Berwind Corporation, Windber, Pennsylvania).
Berwind-White Coal Mining Company, "Eureka Number 40. Plan and section showing location of concrete pier and...elbow at bottom of Yoder shaft for compressed airline for Berwind-White pickhammer mining," (original drawing dated 27 August 1930--DRG. NO. B1-3956--in possession of Berwind Corporation, Windber, Pennsylvania).
Berwind-White Coal Mining Company, "Eureka Number 40: Foundation plan for American 5 x 6 pump and motor...." (original drawing, no date--DRG. NO. B1-3958--in possession of Berwind Corporation, Windber, Pennsylvania).
"Berwind-White Gears Up, Hits Production Peaks," Coal Age, 66 (December 1960), 80-82.

Bethlehem Mines Corporation: No. 77B Mine (1962)
Current Name: BethEnergy Mines Corp.: No. 77B
Rating: 4
PA 3050 .7 miles SE of PA 271, Mineral Point vicinity, Cambria County, Pennsylvania
USGS Quad: Nanty Glo, Pennsylvania (1:24000) UTM: 17 E.682300 N.4472110
Historic Use: Bituminous Coal Mine and Processing Plant
Present Use: Abandoned

In 1962 the Bethlehem Mines Corporation, a subsidiary of Bethlehem Steel, opened the Brookdale Mine 77B and Preparation Plant. This drift mine was an extension into the Lower Kittanning seam previously reached from Mine 72, a shallow shaft-mine in Johnstown. This mine had become too costly to operate from the Johnstown opening and was closed in 1959. Mine 77B was set up for all-belt haulage to the preparation plant. In addition to coal mined from 77B, coal produced at other mines was shipped by truck to the plant for cleaning and sorting. Trucks then hauled the coal primarily to Bethlehem Steel's Johnstown plants. As a result of the slump in the steel industry in the late 1970s, Bethlehem Mines closed the Brookdale Mine and Preparation Plant in 1980.

There are four mine-related structures on site. The coal came directly from the mine into the four-story, cleaning plant where rock and sulfur were removed. This structure has a concrete foundation and sheet-metal siding. From the cleaning plant, the coal traveled by conveyor to a six-story storage silo of reinforced concrete construction. Coal was then loaded from the silo into trucks for shipment. Also on site is a one-story building serving as a change house and office. None of these structures are currently in use, however, an acid-mine-drainage treatment
plant is still operating. The water from the mine is pumped into concrete holding tanks and is treated to reduce the acidity before it is released into the nearby stream.

Sources:

Cherrytree Coal Company: Substation (ca. 1900)
Current Name: Shazen Substation

Twp No. 576 .25 miles NW of PA 4025, Shazen vicinity, Cambria County, Pennsylvania
USGS Quad: Barnesboro, Pennsylvania (1:24000) UTM: 17 E.689180 N.4508160
Historic Use: Bituminous Coal Mine, Electrical Substation
Present Use: Electrical Substation

In 1906 the Cherrytree Coal Company opened a mine two miles north of Barnesboro on Emeigh Run. The parent company, Peale, Peacock & Kerr, Inc., headed by Rembrandt Peale (undoubtedly a relation of the American artist Charles Wilson Peale), began acquiring coal fields in northern Cambria County at the turn of the century. By 1907 Rembrandt Peale's mining concerns operated two mines at Emeigh Run and had collieries near Carrolltown, Nanty Glo, and Spangler. The company offices were located in St. Benedict.

The only standing structure associated with the Emeigh Run mine is this electrical substation, located one mile northeast of the drift portal, near the town of Shazen. All of the structures and machinery at the mine itself have been torn down, although several building foundations and numerous bony piles may be found in the vicinity of the mine. The one-story electrical substation built by the Cherrytree Coal Company is currently used as a substation by Penelec, a private utility, and serves the town of Shazen. The building contains brick bearing-walls with brick segmental arches spanning the door and window openings. The roof is supported by timber rafters. An entry on the west side was enlarged many years ago perhaps to allow for vehicular access. The structure remains in good condition, except for the decaying wood of the windows and doors.

Sources:
Extractive Industries: Cambria County

Ebensburg Coal Company: Hoist House  (ca. 1916)
Current Name: Cambria Township Utility Building  Rating: 3
Reese between Third and Second Streets, Colver, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000)  UTM: 17 E.687030 N.4490020
Historic Use: Bituminous Coal Mine
Present Use: Warehouse

Originally built by the Ebensburg Coal Company in 1910, the hoist house of the Colver mine is located on Reese Street in the town of Colver. The starkly designed brick structure housed machinery for hoisting men and equipment into the mine. A ventilator used for dispersing noxious mine gases was located on the roof of the shaft house, however, the fan as well as the hoist have been scrapped out.

Sources:
  Hamley, David H. "This is a Shortline?," Trains (March 1971): 38-39.

Ebensburg Coal Company: Office  (1912)
Current Name: Post Office and shops  Rating: 3
Reese Street between Third and Fourth Streets, Colver, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000)  UTM: 17 E.657120 N.4490110
Historic Use: Bituminous Coal Mine, Office
Present Use: Retail Store and Health Care Office

By the time the Colver mine had begun operations in 1910, the Ebensburg Coal Company was in the midst of building workers’ housing and developing the planned community of Colver. Originally called Colver Heights, the town’s streets were laid out in a standard grid plan. In addition to erecting company offices, a store, and housing, Ebensburg Coal built several commercial buildings including a laundry and theater. Most of these structures were completed between 1911 and 1921. A number of the historic coal-company buildings survive including the Ebensburg Coal office building, most of the company houses, the hotel, the theater, the jail, and the company store.

One of the more imposing buildings is the three-story office of the Ebensburg Coal Company, completed in 1912. (Prior to its completion, the company had set up temporary offices in one of the larger, company-built houses.) Located on Reese Street between the old movie house and the fire station, the building currently houses the Colver post office, a restaurant, and an office. It is constructed of brick on a stone-rubble foundation. Its facade of random-range masonry, is identical to the facades of the Colver Hotel and company store. The office is adjoined by a one-story ell, of post-and-beam construction, with brick nogging.

The company store, of post-and-beam and stone-bearing wall construction, was erected in the winter of 1911-12. The building contains a rubble stone foundation and originally featured large multi-light windows. Although the window openings are covered with aluminum siding, the interior of the building contains its original pressed-metal ceiling. A small retail business, now occupies the building.

The building on the corner of Reese and Third streets, next to the hoist house, was built about

-37-
Extractive Industries: Cambria County

1911 by the Ebensburg Coal Company to serve as a combination office building, wash house, and laundry for the miners. This structure is all that remains of the formerly large mining complex. A powder house and shaft house once stood near the mine office. The old office building contains brick walls and pilasters, and steel roof trusses. Currently, it is owned by Cambria Township and houses road maintenance equipment.

A small two-story brick building located behind the Colver fire station, was listed on a 1930 insurance map as a jail. That it served as a jail is apparent from the several tiny windows positioned high above the ground. It was probably built around 1912, and is currently used for storage.

Located on Reese Street between the old company store and the office building, Ebensburg Coal erected a movie theater in 1912. The first movie played here in January 1913. Constructed of brick and resting on a rubble-stone foundation, the building is lightly ornamented with a corbelled brick cornice, round-arched window arches, and sills of yellow brick. The yellow brick also forms a band between the foundation and the red brick walls above. For a number of years the second floor of the theater served as offices for the Cambria and Indiana Railroad. The building presently houses a barber shop and a restaurant. It has been altered with the installation of aluminum siding on the exterior of the first floor.

Sources:
Hamley, David H. "This is a Shortline?," Trains (March 1971): 38-39.

Ebensburg Coal Company: Processing Plant (1921)

Current Name: Unknown Rating: 2

.6 miles SE of Presser Crossing, NW of Colver, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.685880 N.4490700
Historic Use: Bituminous Coal Processing Plant
Present Use: Abandoned

In 1910 the Coleman & Weaver Company opened the Colver mine into the Lower Kittanning seam. The name of the mine was derived from the first and last three letters of the owners' names. It was operated as the Ebensburg Coal Company and laid out by C. E. Sharpless as a drift mine. The first load of coal was shipped via the captive Cambria & Indiana Railroad in October 1911, and by 1914 the Colver mine was producing an average of 3,400 tons of coal per day. A large colliery located west of the Colver, near the repair shops of the C&I, contained the processing plant, tipple, pumphouse, and powerhouse. In 1931 the company replaced the old processing plant and tipple with a larger five-story, tipple and cleaning plant. As was common practice at the time, bituminous coal was pneumatically dry-cleaned and sorted in the separator facility prior to shipping. Dust collectors were used to remove the tremendous amounts of coal dust generated by this process. The dust collectors at the Colver tipple and separator were installed on top of the facility.
About 1956 the Eastern Associated Coal Corporation assumed operations at the Colver mine, running it until 1978. The mine has been closed ever since. Several historic structures are extant including the original powerhouse. Erected in 1911-12 the powerhouse is divided into two sections, each containing a gable roof and monitor. Half of the plant housed the boilers, and the other half contained the steam engines and generators. The tall one-story building contains brick bearing-walls resting on a stone foundation, and features lightly corbeled pilasters, and brick segmental arches spanning the window openings. Next to the power plant, the tipple and separator facility still stands. Its steel frame rests on concrete foundations, and its conveyors and dust collectors are extant. A reinforced concrete silo stands at the opposite end of the powerhouse. It was probably erected in the 1950s. Importantly, these structures
Extractive Industries: Cambria County

served one of the largest and most productive mines in Cambria County. Between 1911 and 1954 the Colver mine produced over 40 million tons of coal.

Sources:

Ebensburg Coal Company: Substation (1911)
Current Name: Unknown Rating: 4
1561 20 Row, NW end of row, Colver, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.688650 N.4489640
Historic Use: Bituminous Coal Mine, Electrical Substation
Present Use: Abandoned

In 1911 the Ebensburg Coal Company built this electrical substation for its Colver mine and ventilation fan. Located on the outskirts of town, the substation was part of the power system that included the company's powerhouse, erected near the mine, also in 1911. The powerhouse produced electricity for the colliery as well as the company houses, store, office, and other commercial buildings in Colver. By 1916 the powerhouse and electrical substation also served Cambria and Indiana Railroad's two passenger trolleys.

The one-story substation is built of brick and has little ornamentation except for its round-arched windows. The roof system consists of timber Howe trusses with iron tension rods. A concrete-block shed addition is attached to the west side of the building. The substation is now owned by the C&I Railroad, a division of Bethlehem Steel Corporation, and is presently vacant.

Sources:
Hamley, David H. "This is a Shortline?", Trains (March 1971): 38-39.

Ebensburg Coal Company: Wash House and Office (ca. 1916)
Current Name: Cambria Township Utility Building Rating: 3
Reese and Third Streets, Colver, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.6887070 N.4490060
Historic Use: Bituminous Coal Mine, Office
Present Use: Auto Garage

The Ebensburg Coal Company erected this building on the corner of Reese and Third streets in Colver to serve as a wash house, change house, and laundry for miners from the adjacent hoist house. It was constructed with brick walls and pilasters and contains riveted-steel roof trusses. Currently, it is owned by Cambria Township and houses road maintenance equipment.

Sources:

-40-
Heisley Coal Company: No. 3  (ca. 1915)

Current Name: Bethlehem Mines: No. 31  
Rating: 3

.35 miles SE of PA 271 and Blacklick Creek; South Branch, Nanty Glo vicinity, Cambria County, Pennsylvania
USGS Quad: Nanty Glo, Pennsylvania (1:24000)  UTM: 17 E.683600 N.4481605
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

Established in 1888 as a logging town, Nanty Glo, located southwest of Ebensburg, was originally spelled Nant-y-Glo, a Welsh term meaning coal brook. In the 1890s, the Nant-y-Glo Coal Mining Company opened its No. 1 mine near the South Branch of Blacklick Creek. By 1907 the company was operating a second colliery, No. 2 mine in Carroll Township, and maintained offices in Philadelphia. Two years later John Heisley Weaver and B. Dawson Coleman acquired the Nant-y-Glo Coal Mining Company. The two partners owned the Ebensburg Coal Company, which continued operations at the Nanty-Glo No. 1 and No. 2 mines. About the same time they gained control of the Nanty-Glo mines, Weaver and Coleman began purchasing additional coal lands in Cambria Township. In 1915, No. 3 mine in Nanty-Glo was opened under the auspices of the Heisley Coal Company. This mining concern, also controlled by the Coleman & Weaver interests, subsequently managed all three mines in Nanty-Glo. After the Coleman & Weaver partnership was dissolved in 1922, John H. Weaver gained control of Heisley Coal. This arrangement continued until 1948 when the heirs of John Weaver sold the Nanty-Glo properties to the Bethlehem Mines Corporation.

Of the three mines in Nanty-Glo, only one, the No. 3 mine, has an extant building that was erected prior to 1948. It is a tall one-story brick building containing a hip roof. Although little is known about this building, it was probably constructed by the Heisley Coal Company in the 1910s or 1920s, and stood near the shaft of the No. 3 mine. The building is currently vacant as Bethlehem Mines ceased operations at the No. 3 mine in the early 1980s.

Sources:

Johnstown Coal & Coke Corporation: Allendale Preparation Plant  (1950s)

Current Name: Unknown  
Rating: 3

S of PA 869 1.5 miles W of Beaverdale, Cambria County, Pennsylvania
USGS Quad: Beaverdale, Pennsylvania (1:24000)  UTM: 17 E.693555 N.4465360
Historic Use: Bituminous Coal Mine and Processing Plant
Present Use: Abandoned

In 1940 the Johnstown Coal & Coke Company purchased the coal properties of the Logan Coal Company, of Philadelphia. The most significant of these mines were located in Adams and Summer Hill townships. The Johnstown Coal & Coke constructed this tipple and preparation plant at Allendale in the early 1950s; it replaced an earlier tipple and processing plant erected by the Logan Coal Company. The four-story, steel-frame plant dry-cleaned and sorted coal, and Pangborn dust collectors helped remove some of the coal dust that filled the air during the cleaning and sorting process. Virtually all of the conveyors and equipment remain in place.
The construction of the Allendale preparation plant and tipple marked one of the last efforts by Johnstown Coal & Coke to make its Pennsylvania mines competitive in the metallurgical coal markets. All of the coal from the Johnstown Coal & Coke mines in Cambria County in the 1950s was cleaned at the Allendale plant. In 1959 the company decided to close all of its operations in Pennsylvania, and the Allendale plant was closed down. A number of other mining concerns leased the property from Johnstown Coal & Coke, however, the tipple and cleaning plant have been abandoned for several years.

Sources:
Harrisburg: 1915-1918.
Johnstown Coal & Coke Corporation: No. 4 Mine  (1920, 1930s)

Current Name: Unknown

Rating: 4

.5 miles SE of Portage on PA 164, Portage vicinity, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.698010 N.4472260

Historic Use: Bituminous Coal Mine
Present Use: Abandoned

Around 1930, the Johnstown Coal & Coke Company purchased the mine and associated buildings of the Miller Coal Company’s Miller Shaft. Located southeast of Portage on Trout Run, Miller Shaft had been operated by Miller Coal since about 1910. The mine continued to operate until 1955, when Johnstown Coal & Coke began to shut down all of its Pennsylvania mines.

Three buildings remain at the site -- a mule barn, a blacksmith and carpenter shop, and an office. The mule barn was erected about 1920 and has yellow-brick walls, brick pilasters, a gable roof, and a stone foundation. The nearby blacksmith and carpenter shop may have been built in the 1910s. According to a Sanborn Insurance map of 1927, the building contained stone masonry walls, however, they are now largely infilled with concrete block. North of these two structures stands the office building, the second one built near the Miller Shaft. Johnstown Coal & Coke apparently tore down the original office in the 1930s when the company built a new larger building. Now abandoned, this second office building is a one-story, yellow-brick structure with a gable roof, and three gable-roof dormers. All of the windows have been infilled with block or covered with plywood. A concrete-block garage addition was erected on the east end of the building in the 1960s. Although the office building is abandoned, the former mule barn is occupied by an auto repair shop, and the blacksmith and carpenter shop is used by a sanitation company.

Sources:

Maryland Coal Company: Wash House  (1910s)

Current Name: Samco, Inc.
Rating: 4

SW of PA 869, .95 miles SE of US 219 (E of tracks), St. Michael, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania (1:24000) UTM: 17 E.689600 N.4467010

Historic Use: Bituminous Coal Mine, Wash House
Present Use: Unknown

The Maryland Coal Company of Pennsylvania sank the Maryland Shaft No. 1 near the site of the long-abandoned South Fork Hunting and Fishing Club in 1908. When it opened that year, the shaft extended 670' below the surface, the deepest of all bituminous mines in Pennsylvania. In addition to the shaft and colliery, the Maryland Coal Company built a store, bank, and a number of wood-frame houses, all of which evolved into the town of St. Michael.

In 1932 the Berwind-White Coal Mining Company acquired the holdings of the Maryland Coal Company of Pennsylvania. Berwind-White continued to operate the mine under the name of Maryland Coal. The company also purchased the infamous South Fork Dam, the remains of
which impounded water for use at the Maryland Shaft No. 1. Berwind-White closed the Maryland Shaft No. 1 in 1958. Ten years later the company donated 37 acres of land, including the dam site, to the Cambria County Historical Society. The land was then given to the National Park Service and designated a National Historic Site as a memorial to the 1889 Johnstown Flood.

The wash house, company store (a two-story brick building), and several company houses are the only surviving structures in St. Michael that were built by Maryland Coal. The wash house contains yellow-brick walls with brick pilasters, and riveted-steel Pratt roof-trusses. Decorative details include corbelled brick work along the gable ends, and a bull’s-eye window. After Berwind-White closed the mine, the wash house was sold to Samco, Inc., its current occupants.

Sources:

Monroe Coal Mining Company: Boiler House (ca. 1916)
Current Name: Bethlehem Energy Corporation
Rating: 4
W of Wash House and Hoist House N of C&I RR, Revloc, Cambria County, Pennsylvania
USGS Quad: Nanty Glo, Pennsylvania (1:24000) UTM: 17 E.689465 N.4484050
Historic Use: Bituminous Coal Mine
Present Use: Storage Building

Around 1918 the Monroe Coal Mining Company erected this one-story stone building to serve as a boiler house near its Revloc mine. Although the boilers have been removed, they were probably the water-tube type and supplied the shops with steam for power as well as heat. The building contains random-range stone walls, and utilizes old rails for its roof system. A small concrete-block shed, used for storing dynamite, was added to the east facade of the boiler house. The Bethlehem Mines Corporation acquired the Revloc mine in 1948 and subsequently renamed it the No. 32 mine. Currently, all of the mine buildings are owned by BethEnergy, a subsidiary of Bethlehem Steel. The mine has been closed for several years and the former boiler house is used for storage.

Sources:
Monroe Coal Mining Company: Car Shop  (ca. 1916)
Current Name: Bethlehem Energy Corporation  Rating: 4
SE of Revloc between Cambria & Indiana spur & mainline, Revloc vicinity, Cambria County, Pennsylvania
USGS Quad: Nanty Glo, Pennsylvania (1:24000)  UTM: 17 E.689840 N.4484100
Historic Use: Bituminous Coal Mine, Car Repair Shop
Present Use: Abandoned

The Monroe Coal Mining Company, a subsidiary of the Coleman & Weaver Company, opened its Revloc mine in 1916, just southeast of the present town of Revloc. One of the earliest remaining buildings is this one-story brick building. Although its original use is not known, by the 1940s it served as a mine car repair shop. The building appears to have had an addition constructed to it a few years after its original construction. Also of stretcher-bond brick, with

brick pilasters and timber Howe roof trusses, this addition doubled the size of the original building. BethEnergy Corporation, a division of Bethlehem Steel Corporation, presently owns the property, and the former repair shop is vacant.

Sources:

Monroe Coal Mining Company: Payroll Office (ca. 1916)
Current Name: Unknown
Rating: 4
SE corner of Fifth and Harding, Revloc Cambria County, Pennsylvania
USGS Quad: Nanty Glo, Pennsylvania (1:24000) UTM: 17 E.689510 N.4484260
Historic Use: Bituminous Coal Mine, Office
Present Use: Residence

This impressive stone building located at the corner of Fifth and Harding Streets in the town of Revloc, was built about 1920 by the Monroe Coal Mining Company, and served as its payroll office. It is one-and-one-half stories tall with random-range masonry bearing walls and a hip roof. A thick stone belt-course extends around the exterior. The former payroll office is now privately owned and has been converted into a residence.

Sources:

Monroe Coal Mining Company: Store (1916)
Current Name: Barnes Variety Store
Rating: 3
SW corner of Fifth and Cambria Streets, Revloc, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.689490 N.4484480
Historic Use: Bituminous Coal Mine, Company Store
Present Use: Abandoned

The Monroe Coal Mining Company, a subsidiary of the Coleman & Weaver Company, platted and built the town of Revloc in the mid-1910s. This imposing stone structure, erected in 1916 and originally serving as a company store, is located on a steeply sloping hillside, west of a grassy oval in the middle of town. The store also housed the Revloc post office, but it has since been moved into an adjoining one-story building. The company closed the store in the 1950s, and it is currently vacant.

The one-story building contains a basement and is constructed of rough-cut, random-range sandstone. Three large windows along the main (north) facade have been infilled with brick. Interestingly, this building is almost identical in appearance to the company stores built by two other coal-mining subsidiaries of the Coleman & Weaver Company, one located in Nanty Glo and the other in Colver. In addition to the Monroe Coal Mining company store, the mining concern erected nearly 200 brick and frame houses in Revloc, virtually all of which survive. The houses command an impressive view of the mine and the refuse pile that extends along the South Branch of Blacklick Creek. The town also contains a company-built school and three churches.
Sources:

Peale, Peacock, & Kerr Coal Company: Store  (ca. 1914)
Current Name: Unknown  Rating: 3
W of PA 4009; .25 miles N of Sacred Heart Roman Catholic Church, Bakerton, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000)  UTM: 17 E.689320 N.4497800
Historic Use: Bituminous Coal Mine, Company Store
Present Use: Abandoned

Located north of Sacred Heart Roman Catholic Church in the Barnes section of Bakerton this sandstone building was constructed between 1914 and 1916 by the Peale, Peacock & Kerr Coal Company to serve as the company store. The building site was on a tract of land owned by the Benedictine Society of Westmoreland County, Pennsylvania, and leased to Peale, Peacock & Kerr. Sandstone for the building was quarried nearby at Brawley’s No. 1 Mine. Local masons erected the structure. By 1919 the store had been transferred from Peale, Peacock & Kerr to the Blubaker Coal Company. Three years later the Barnes & Tucker Company acquired the building, when its Barnes Store was chartered. Barnes & Tucker kept the store until it was transferred to the Barnes Department Stores, Inc. in November 1983.

The two-story building measures approximately 90’ x 30’, has a wood-frame roof. Originally constructed in two sections (sales building and storehouse) with a connecting roof over a delivery breeze-way, the breeze-way has been infilled with concrete block. The store contains a freight elevator utilizing the "pull rope to start--pull rope to stop" control mechanism, which was built by the A. C. Welchans Company of Lancaster, Pennsylvania. The elevator machinery is still in place in the building’s attic. Compressors used to cool a walk-in cold storage facility remain in the basement.

Sources:
Map of Bakerton, Cambria County, Pennsylvania, 19 February 1916 (belonging to Mary F. Inzana, Elmora (Bakerton), Pennsylvania).

Pennsylvania Coal & Coke Company: Ehrenfeld Mine  (1920s)
Current Name: Unknown  Rating: 4
N side of Little Conemaugh River .375 miles W of US 219 and PA 53, Ehrenfeld, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania (1:24000)  UTM: 17 E.688320 N.4471020
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

Between 1900 and 1905 the Pennsylvania Coal & Coke Company opened four mines in Ehrenfeld which, in 1910, produced over 200,000 tons of coal. By 1927 the company had created a complex system of electric tramways, trestles, conveyors, and stone retaining walls just west of town at the mouth of one of the mines. The oldest surviving building, probably built in the early 1910s, is the motor house. It contains stone walls and riveted–steel roof trusses. Located about 100’ east of the motor house, the mine portal is highlighted by a decorative masonry arch. The portal is blocked by a chain-link fence. A stone retaining wall, 15’ in height, extends from the portal, east for 25’ and terminates behind a former Pennsylvania Coal & Coke office. The office, a one-story brick building, was probably built in the early 1920s. It has a stone foundation with a gable roof supported by timber trusses and rafters. Sometime
after 1927 a concrete-block addition was constructed along the south facade of the office, apparently to provide a sheltered entrance in place of an exposed porch. Both the entrances to the motor house and office have been nailed closed with boards.

Sources:

Pennsylvania Coal & Coke Company: Office (1919)  
Current Name: Calandra Building  
Rating: 3

115 Ashcroft (Second and Ashcroft), Cresson, Cambria County, Pennsylvania  
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.704390 N.4481780  
Historic Use: Bituminous Coal Mine, Office  
Present Use: Office Building

About 1920 the Pennsylvania Coal & Coke Corporation moved its regional headquarters from Ebensburg to Cresson, erecting this two-story brick building at the northwest corner of Ashcroft Street and Second Avenue. The fire-proof construction consists of a reinforced-concrete frame and concrete-slab floors with a brick and marble veneer. The office building befits the company's prominence in Cambria County; its most striking feature is the main entrance, a classical portico with Doric columns and pilasters and a raked cornice, all made of marble. The building is also highlighted by a marble veneer which is used for classical details above each of the windows, and for an incised corporate plaque above the portico. A marble veneer also extends around the base of the building, as well as along its cornice. Currently, the structure is called the Calandra Building and is used as a multi-purpose office complex. A one-story company garage, also built about 1920, is located just north of the office. It has the same method of construction although without the classical detailing. The garage is now owned by the city and used for vehicle storage.

Sources:  

Pennsylvania Coal & Coke Company: Substation (ca. 1902)  
Current Name: Marsteller Water Company Pumphouse  
Rating: 4

Across from post office, Marsteller, Cambria County, Pennsylvania  
USGS Quad: Barnesboro, Pennsylvania (1:24000) UTM: 17 E.684990 N.4502015  
Historic Use: Bituminous Coal Mine, Electrical Substation  
Present Use: Water Utility Pump House

Marsteller, or Moss Creek, as the local residents have always called the town is located one-and-a-half miles southwest of Barnesboro. The town started out as a logging community in the late nineteenth century. Its first coal mine, No. 20, was opened into the Lower Freeport "D" seam in 1902 by the Pennsylvania Coal & Coke Company. By 1925 the mines around Marsteller were producing 100,000 tons of coal each year. The company created a self-sufficient community around the seven Marsteller mines. At one time the town's amenities included a fishing reservoir, a car dealership, a company store, and housing for 750 miners and their families.
Extractive Industries: Cambria County

The last mine closed in Marsteller in 1959 after fifty-seven years of operation. Since then the mine buildings have been almost completely covered up or torn down. The most striking evidence of Marsteller's once vigorous mining operations is a row of company-built housing that extends from "Boss's Row", southeast to the closely spaced miners' houses. Many of the remaining houses are owned by former Marsteller miners.

One of the oldest surviving mine buildings is a former electrical substation, erected by Pennsylvania Coal & Coke in 1902. (A keystone over the main entry has the date "1902" inscribed.) This one-story building contains random-range sandstone walls and a shingled half-story attic. All the door and window openings are spanned by stone-arch lintels. The roof is supported by timber King post trusses. By 1925 the company had installed automatic control and metering equipment for its motor-generator sets in its substations, although none of this equipment is extant. The town of Marsteller now owns the substation and uses it to house a water pump that draws potable water from Mine No. 21.

An addition to the substation was made in the 1910s or 1920s and served as a wash and change house for the miners. It is also of random-range sandstone bearing-wall construction with stone-arch lintels over its windows and doors. The attic story and attached shed are faced with brick. A large metal ventilator stands on top of the roof, which is composed of wood rafters.

Sources:

Rich Hill Coal Company: Slickport Mine (ca. 1900)

Current Name: Unknown
Rating: 3

.375 miles W of St. Bernard Cemetery, Slickport vicinity, Cambria County, Pennsylvania
USGS Quad: Hastings, Pennsylvania (1:24000) UTM: 17 E.693275 N.4504680
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

By 1900 two mines were operating near Hastings under the auspices of the Shiffler & Smith Company. Located on the southern edge of town, these mines were subsequently acquired by the Rich Hill Coal Company, headed by James Dawson and a Mr. Samuels. As early as 1910 Rich Hill Coal opened a new mine on the northwestern outskirts of Hastings. In addition, the mining concern appears to have platted and laid out the town of Slickport, constructing as many as sixty houses in the shadow of this new colliery. According to a Sanborn Insurance Map of 1915, the Pennsylvania Coal & Coke Company had also opened a mining operation adjacent to the Rich Hill Coal Company site. The Pennsylvania Coal & Coke mine included an office, a supply house, a wood-frame blacksmith shop, a carpenter shop, an oil house, an engine house with two air compressors, a boiler house with three iron chimneys 50' high, a stationary-engine house, and a coal tipple.

By 1919 Rich Hill Coal, with over 300 employees, was the largest of seven coal companies operating in the Hastings area. During its peak in the 1910s and 1920s, the mine at Slickport produced an average of 1,800 tons of coal per day, and the company maintained a sales office.
in Philadelphia. A 1927 Sanborn Map does not show any of the Pennsylvania Coal & Coke Company's structures remaining. It does indicate, however, that the Rich Hill Coal Company's structures on the other side of the railroad were formerly owned by Pennsylvania Coal & Coke. By 1940 Rich Hill Coal moved its local office from Hastings to Barnesboro and employed about 200 men. In 1945 the company was reorganized as the Rich Hill Coal Corporation, and the mine at Slickport continued to operate into the 1950s or 1960s. It has been abandoned for a number of years.

Three historic buildings survive at the Rich Hill Coal Company's colliery at Slickport. This includes an electrical substation, a storage house, and a motor barn. All three of these structures were built in the early 1910s and are of random-range masonry construction. Each building is one-story in height and contains pin-connected, steel roof-trusses. Circular arches span the door and window openings. The doors of the storage house and motor barn appear to be original. All of the buildings are now vacant. Importantly, the Rich Hill Coal Company mining complex contains the most complete collection of stone buildings associated with a colliery in Cambria County.

Sources:

Valley Stone and Coal Company: Hoist House (ca. 1910)
Current Name: Island Creek Coal Co.; No. 3
Rating: 3
.1 miles SE of Main St. between B&O and Johnstown & Stony Creek RR, Riverside, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677090 N.4460800
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

In the early 1900s the Valley Coal & Stone Company opened a colliery in Stony Creek Township along the Stony Creek River. The colliery was served by the Baltimore & Ohio Railroad and the town of Riverside grew up in its shadow. In 1911 J. Blair Kennerly acquired Valley Stone & Coal, changing its name to the Valley Smokeless Coal Company. In the 1920s the United States Steel Company purchased the colliery, shipping much of the coal to its Lorain Plant in Johnstown. By the 1930s the Stineman Coal & Coke Company of Philadelphia, with coal properties in South Fork, had acquired the mine from U.S. Steel. The colliery changed hands yet again when in the late 1940s the Bird Coal Company gained control of the property. Bird Coal closed the original shaft mine in 1958 and opened a new drift to the south. The company also constructed a new processing plant, tipple, and offices, all of which were in the vicinity of the original colliery. In the 1960s Bird Coal was absorbed by a subsidiary of the Armand-Hammer Company, however, the mine remained shut down. It is still closed.

Only one early-1900s mining structure still stands at the site of Valley Coal & Stone Company colliery. It is a one-story hoist house that handled mine cars hauling rock and coal. A full car was lifted out while an empty one was lowered into the mine. Judging from the existing
machinery, the hoist house probably stopped serving the mine in the 1930s. The foundation, bearing walls, and the shallow arches over doors and windows are all constructed of stone rubble. A steel fan-truss with steel purlins (composed of channel sections) support the roof. Most of the multi-light wood-sash windows are very deteriorated.

Inside the hoist house, at the east end, the hoisting motor and drum remain in place. This machinery was manufactured by Ottumwa Iron Works of Iowa. Three General Electric transformers (ca. 1907) sit on one side of the motor, and a bank of relays and switches are located against the wall on the other side. Numerous small electric motors, switches, and insulators are piled inside the hoist house, which may have been used as a small substation as well. Measuring 40' x 20', the stone hoist-house is one of the few of its kind in Cambria County with its machinery still intact.

Adjacent to the hoist house are a number of coal processing structures erected by the Bird Coal Company in the 1950s. These structures include a reinforced concrete silo used for wet-processing of bituminous coal, a steel-frame tipple, and numerous conveyors.

Sources:

Vinton Colliery Company: Vintondale Mines and Coke Works (1894-1910)
Current Name: Unknown Rating: 4
.25 miles N of Main Street, on N side South Branch Blacklick Creek, Vintondale, Cambria County, Pennsylvania
USGS Quad: Vintondale, Pennsylvania (1:24000) UTM: 17 E.676900 N.4483000
Historic Use: Bituminous Coal Mine
Present Use: Abandoned

Originally platted as Barker City in 1892, Vintondale grew over the next three decades as several coal mines in the Blacklick Creek area were opened. The founders of Vintondale included Judge Augustine Vinton Barker of Ebensburg, Warren Delano of New York (and the uncle of Franklin Delano Roosevelt), and Theodore Bechtel and John Krause of Philadelphia, all of whom were investors in the Blacklick Land Improvement Company which laid out the town, leased coal lands to the Vinton Colliery Company in 1894. That year, the company’s principal investors, Delano and Clarence Claghorn, who was also the company’s first superintendent, opened Mine No. 1, a drift operation. By the late 1890s Delano leased the No. 1 Mine to the Lackawanna Iron and Steel Company of Scranton, Pennsylvania. Lackawanna soon expanded its operations in the Blacklick Creek area constructing the mines and town of Wehrum in Indiana County, and erecting eight beehive coke ovens in Vintondale along the east side of South Branch, Blacklick Creek. The steel company soon ended coking operation, however, and the ovens were left to decay.

In addition to abandoning the coke plant in Vintondale, Lackawanna pulled out of Mine No. 1. (Instead, the company increased its mining activity around Wehrum, the town named for Henry Wehrum, the original superintendent of Lackawanna when the steel company moved from Scranton to Buffalo, New York, in 1902.) Warren Delano reassumed control of the No. 1 Mine, and he opened the No. 3 Mine. With the arrival of the Ebensburg and Blacklick Railroad, a subsidiary of the Pennsylvania Railroads, in 1903, production at Vintondale’s mines increased. By 1907 Vinton Colliery was operating six mines and 152 beehive coke ovens. The
coke works was located along the PRR spur line north of Vintondale’s Main Street, on the north side of South Branch, Blacklick Creek. During the First World War the Vinton Colliery Company was the fifth largest coal company in Cambria County, employing as many as 590 workers. In addition to a company store and office, Vinton Colliery, through its subsidiary the Vinton Land Company, constructed about thirty-five single-family dwellings on Chickaree Hill, the southernmost part of Vintondale.

Today virtually nothing survives of the mines and coke plants at Vintondale. The No. 1 Mine closed in the late 1940s, and the No. 6 Mine, Vintondale’s last operating coal producer, was retired in 1968. Although the company store and office building burned in 1943, a number of the company-built houses still stand. These surviving houses include the two-story five-room single-family dwellings on Chickaree Hill, as well as a row of two-story gable-roof double houses on Sixth Street. Remains of Lackawanna Steel’s eight experimental coke ovens may be seen along South Branch, Blacklick Creek, in the northernmost limits of Vintondale.

Sources:

United Mine Workers of America: Local 860, Union Hall (1934)
Current Name: Girolami’s House of Furniture Rating: 4
N of PA 4002 .35 miles SE of Colver access road, Tripoli, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.688320 N.4490360
Historic Use: Union Hall
Present Use: Grocery Store

This union hall of the United Mine Workers of America (UMWA) Local 860 in Tripoli served the miners at Colver. The Ebensburg Coal Company built the company town of Colver in 1916, but apparently no space was provided for miners to congregate. This led to the construction in 1934 of the union hall in Tripoli, a town one-half mile east of Colver. Before that time, the union probably held meetings in one of several churches in Colver, a familiar practice in many coal towns in Cambria County.

The two-story brick building has an arrangement common to many union halls; a first story for offices and socializing around a bar and a second story for larger meetings and recreational activities. The entrance is the most striking feature of this structure. It consists of a flat masonry arch and a cut stone, recessed entryway. Currently, Girolami’s House of Furniture owns the building, and uses it for sales and distribution. The gable-roof structure is in good condition.

Sources:
In 1920 the United Mine Workers of America (UMWA) Local 1386 acquired a building for use as a union hall in Nanty Glo on the northeast corner of Roberts and Lloyd streets, across the street from the Nanty Glo Journal Building. Prior to the establishment of this union hall, UMWA members in Nanty Glo met in the nearby First Baptist Church. The building purchased by the UMWA had served as a residence and store, and was substantially enlarged by the miners’ union in 1920. A second story was added, offices were installed on the first floor, and an auditorium was built on the second floor. Currently, a pizza parlor operates on part of the first floor, while the remainder of the building stands vacant. The building contains a wood frame, and its main facade is brick with a pedimented gable. The first-floor windows have been covered with boards and the second-floor windows have been infilled with glass-block masonry. Stone markers in the pedimented gable proclaim "U.M.W. of A., LU 1386" and "1920."

Importantly, Nanty Glo was the home of John Brophy, who, as a young boy worked in the local mines, and went on to become president of the UMWA’s second district, which represented all of the miners in Cambria County, in 1917. Brophy’s socialist views often put him in conflict with the powerful and enigmatic John L. Lewis, president of the national UMWA, who eventually expelled Brophy from the union in 1928.

Sources:

This two-story stone and brick building was built in Marsteller in 1936 to serve as a union hall of the United Mine Workers of American Local 2246. For a number of years a wood-frame building, located one-half block to the east, had served as a union hall, however, it was no longer large enough to accommodate offices of Local 2246. (Upon completion of the new union hall, the older building was sold for one dollar at an auction and subsequently served as a residence. Although this building is still standing, it has been greatly altered.)

The new building featured a corbelled brick cornice extending along three sides of the facades. A stone panel below the parapet contains the inscription "UMW of A Local 2246." The union hall remains virtually unaltered; its first floor contains a bar and large open hall with an entrance onto the street. Three sets of stairs provide access to the second-floor auditorium. Although now privately owned, the union hall contains the records of UMWA Local 2246.
Sources:

The earliest iron furnaces and forges in the Juniata Valley were established in the late eighteenth century in Bedford, Centre, and Huntingdon counties. This region possessed vast quantities of the natural resources required to produce iron: high-quality hematite ore was readily mined, limestone was quarried to serve as a flux for removing impurities from the molten ore, timberland was exploited for charcoal production (the fuel used in the early blast furnaces), and a number of streams were harnessed for powering blast furnace and forging machinery. The first several decades of the region's iron industry was marked by the development of numerous iron plantations, consisting typically of the furnace and ancillary buildings, workers' housing, an ironmaster's house, managerial housing, a company store, and agricultural structures such as barns and grist mills. In addition to the furnaces, many iron plantations possessed forges that hammered iron produced in the furnaces into blooms, bars, and other shapes. These self-contained industrial estates produced pig iron, blooms, and bar iron, much of which was shipped to foundries and iron works in or near the cities of Pittsburgh, Philadelphia, and Baltimore.

From the early 1800s through the 1850s the Juniata Valley's ironmasters produced largely charcoal iron. In Blair County, eight of the thirteen blast furnaces operating in 1856 produced charcoal iron. By this time, however, charcoal iron production was on the decline and a number of ironmasters were importing anthracite coal or using coke. To the west, in the rugged Alleghenies of Cambria County, where the iron industry was not developed until the 1840s, most of the ante-bellum blast furnaces were fueled using locally mined bituminous coal and coke, instead of charcoal. In fact, by the mid 1850s, of the seven blast furnaces operating in the county, only one produced charcoal iron.

Whether using charcoal, coal, or coke, all of the furnaces established in Blair and Cambria counties prior to the 1870s appear to have been of stone construction. By the time the more modern iron-clad furnaces were built in the 1870s, the area's charcoal-iron production was well

<table>
<thead>
<tr>
<th></th>
<th>Blair County</th>
<th>Cambria County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charcoal Iron (tons)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1854</td>
<td>11,184.5</td>
<td>750.0</td>
</tr>
<tr>
<td>1855</td>
<td>9,194.5</td>
<td>8,950.0</td>
</tr>
<tr>
<td>1856</td>
<td>8,950.0</td>
<td>750.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coke Iron (tons)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1854</td>
<td>2,870.0</td>
<td>5,004.0</td>
</tr>
<tr>
<td>1855</td>
<td>1,785.0</td>
<td>11,348.0</td>
</tr>
<tr>
<td>1856</td>
<td>4,209.5</td>
<td>23,000.5</td>
</tr>
</tbody>
</table>
the pig-iron market through the 1920s, Blair County's last charcoal iron was produced in 1880. Several families in the Juniata Valley contributed to the development of the region's iron industry. The Shoenbersgers and the Spangs operated iron works east of the Alleghenies, and built rolling mills in Pittsburgh. In the early 1800s the Bell family established furnaces and forges along the Little Juniata River as did the Royer family along the Frankstown Branch of the Juniata. Two families, the Shyrocks and the Kings, were responsible for a number of furnaces and forges in the Conemaugh Valley. Among them, George S. King gained renown for his involvement in the founding of the Cambria Iron Company in Johnstown, the first large-scale iron works and rail mill in western Pennsylvania, outside of Pittsburgh.

Even during the decades of its greatest production, the Juniata Valley's iron industry was highly susceptible to market fluctuations, chiefly as a result of foreign imports. Typically, a furnace passed through several hands during its lifetime and was commonly placed in and out of blast, depending on the demand for iron. The decline of the independent iron producers in the Juniata Valley coincided with growing centralization of iron and steel production in the United States in the mid-nineteenth century. A lack of capital required to modernize their blast furnace operations placed the small charcoal-iron and coke-iron producers at a great disadvantage in the face of rising competition from other iron-producing regions. Exacerbating this difficulty in remaining competitive was a decline in the quality of locally obtained ore. Moreover, in the late nineteenth century most of the larger iron and steel companies were actively acquiring smaller concerns both to reduce competition and enhance their holdings of the raw materials required to make iron and steel. (Iron ore, coal, and limestone were shipped with increasing ease to the nation's late nineteenth century iron and steel works.) As a result of these factors, from the 1850s through the 1870s, almost all of region's stone-constructed furnaces were taken out of blast and abandoned. The wood-frame structures associated with the furnaces soon decayed and, as a result, the most prominent technological remnants of the early pig-iron industry are the stone furnace stacks.

Blair County

During the first three decades of the nineteenth century, when Blair County was part of Huntingdon County, iron works were developed along two branches of the Juniata, the Little Juniata River and the Frankstown Branch of the Juniata, as well as tributaries to these streams. The earliest iron works in what became Blair County was the Lower Tyrone Forge, established about 1805 on the Little Juniata River, near Tyrone. This forge used pig iron produced at Huntingdon Furnace, some fifteen miles to the east. About two years later John Royer built a second works, named Cove Forge. Located at the confluence of the Little Juniata and the Frankstown Branch of the Juniata, Cove Forge handled pig iron produced at nearby Etna.

---

3Two fine studies concerning the longevity of and changes within the charcoal-iron industry were carried out in the 1970s. See Richard H. Schallenberg, "Evolution, Adaptation and Survival: The Very Slow Death of the American Charcoal Iron Industry," Annals of Science, v. 32 (1975), 341-58; and Richard H. Schallenberger and David A Ault, "Raw Materials Supply and Technological Change in the American Charcoal Iron Industry," Technology and Culture, v. 18 (July 1977), 436-66.

4Much of this information on the Juniata Valley iron industry was obtained from James M. Swank, Introduction to a History of Ironmaking and Coal Mining in Pennsylvania Contributed to the Final Report of the Pennsylvania Board of Centennial Managers. (Philadelphia, James M. Swank, 1878), pp. 37-46.

Early Iron Works

Furnace, the county's first blast furnace. Etna Furnace was subsequently expanded by the Spang family; its owners constructed a blacksmith shop, an ironmaster's house, a company store, a barn, and a grist mill, all of stone. Much of the iron produced at Etna Furnace was shipped to Pittsburgh, where in 1828 Henry Spang established a rolling mill, north of the city.6

The Spangs were not the only prominent iron-producing family in the region. The Schoenberger family, originally of Peters burg, in Huntingdon County, also grew in stature as Dr. Peter Shoenberger expanded his father's holdings in the Juniata Valley after 1815. In addition to establishing several furnaces, forges, and mines east of the Alleghenies, Dr. Shoenberger built a rolling mill in Pittsburgh in the mid 1820s. The family's holdings in the region remained considerable through at least the 1850s. The culmination of Dr. Shoenberger's involvement in the iron business occurred in 1852 when he served as one of the founders of Cambria Iron Company in Johnstown. Although by the late 1850s the Cambria rail mill was one of the largest in the nation, Shoenberger failed to reap any of its riches as he withdrew from the enterprise after it went into the hands of a receiver in 1854.7

Despite failure in the Cambria Iron venture, the Shoenberger name remains associated with a number of successful iron works in the Juniata Valley. In 1832, Dr. Shoenberger established Sarah Furnace in Greenfield Township, the southernmost limit of Blair County. Ore for the furnace was brought from the nearby Bloomfield mines, also controlled by the Shoenbergers. A water-powered bellows originally furnished the cold blast and was maintained until 1847 when two iron tubs were installed. At this time the charcoal iron produced at Sarah Furnace was shipped to the three Maria Forges, one of which was another Shoenberger enterprise and stood near Hollidaysburg. In addition to Sarah Furnace, George Schoenberger's heirs owned one other iron works in Blair County. This was Martha Furnace, also known as Gap Furnace, located near McKee in Freedom Township.8

In many ways Martha Furnace typifies the region's once ubiquitous stone-constructed furnaces. (Refer to Table 1 for a listing of Blair County's furnaces in the 1850s.) Put into blast in 1838, Martha Furnace used red fossil ores extracted nearby and brown hematite mined at Bloomfield. The furnace was leased from the Shoenbergers and enlarged in 1843. By the 1850s its capacity to produce charcoal iron was listed at forty tons per week, and the furnace measured 32' in height with a bosh width of 9-1/2'. Originally containing a water-powered bellows, the cold blast system was rebuilt using steam-powered iron tubs. Musselman and Barnitz, lessees of Martha Furnace, hired Edward S. Hughes to manage the iron works and probably employed between forty and sixty men and boys at the furnace and mines. Pig iron was likely sold to local forges but was also shipped to Pittsburgh and Philadelphia. As with most of the other blast furnaces in the region, Martha Furnace initially used only charcoal. However, by the 1850s this fuel was becoming increasingly scarce and the lessees of Martha Furnace imported anthracite coal. When placed for sale in 1857 its owner boasted that using coke or anthracite the furnace had a capacity to produce seventy tons of iron each week. Martha Furnace

---


7One of the few sources available on the Shoenberger family is Calvin W. Hetrick's The Iron King: The Story of Dr. Peter Shoenberger, Early Ironmaster of Central Pennsylvania--His Industrial Empire, His Family, His Times (Martinsburg, Pennsylvania: Morrisons Cove Herald, 1961).

8Despite the pronouncement of Sharp and Thomas (pp. 22-23) that Sarah Furnace was a failure and "shut down after two or three years of operation," J. P. Lesley's American Iron Association Bulletin, 1856 (p. 87) indicates that the furnace was one of the county's leading producers of pig iron between 1849 and 1856. At this time Sarah Furnace was leased by David C. McCormick of Hollidaysburg.
Early Iron Works

apparently never reopened after 1854 and, in 1905, the stones from the stack were removed for use in the foundation of a nearby barn.

Table 1: Furnaces in Blair County, 1856-57
(Source: J. P. Lesley, American Iron Association Bulletin, 1856)

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Owner</th>
<th>Date of Erection</th>
<th>Type of Fuel Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allegheny</td>
<td>PRR, 7 mi. W of Hollidaysburg</td>
<td>Watson, White &amp; Co.</td>
<td>1811</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Bald Eagle</td>
<td>5 mi. NE of Tyrone City on PRR</td>
<td>Lyon, Shorb &amp; Co.</td>
<td>1824</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Bennington</td>
<td>Plank Rd., 1-1/2 mi. S of Altoona</td>
<td>Elias Baker</td>
<td>1853</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Blair</td>
<td>PRR, 2 mi. NE of Altoona</td>
<td>H. N. Burroughs</td>
<td>1846</td>
<td>Coke</td>
</tr>
<tr>
<td>Canoe*#</td>
<td>5 mi. SSW of Hollidaysburg</td>
<td>Isett, Keller &amp; Co.</td>
<td>1837</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Chimney Rock</td>
<td>Hollidaysburg near PRR depot</td>
<td>Gardner, Osterloh &amp; Co.</td>
<td>1855</td>
<td>Coke</td>
</tr>
<tr>
<td>Elizabeth</td>
<td>Logan's Valley, 5 mi. E of Altoona</td>
<td>Martin Bell</td>
<td>1832</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Frankstown</td>
<td>2 mi. E of Frankstown</td>
<td>Crawford &amp; Higgins</td>
<td>1836, 1854</td>
<td>Coke</td>
</tr>
<tr>
<td>Gaysport</td>
<td>Opposite Hollidaysburg on Penn. Canal</td>
<td>Blair Co. Iron &amp; Coal Co.</td>
<td>1856</td>
<td>Coke</td>
</tr>
<tr>
<td>Juniata*</td>
<td>In the town of Williamsburg</td>
<td>Neff, Dean &amp; Co.</td>
<td>1847</td>
<td>Anthracite</td>
</tr>
<tr>
<td>Martha (Gap)</td>
<td>McKee's Gap, 6 mi. SW of Hollidaysburg</td>
<td>Shoenberger’s heirs</td>
<td>1846</td>
<td>Coke</td>
</tr>
<tr>
<td>Rebecca</td>
<td>12 mi. SE of Hollidaysburg</td>
<td>Edward H. Lytle</td>
<td>1819</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Sarah</td>
<td>13 mi. SW of Hollidaysburg</td>
<td>Shoenberger’s heirs</td>
<td>1831, 1847</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Springfield</td>
<td>5 mi. NW of Williamsburg</td>
<td>D. Good &amp; Co.</td>
<td>1815</td>
<td>Charcoal</td>
</tr>
</tbody>
</table>

# Abandoned ca. 1847

Unlike the Spangs and the Shoenbergers, whose reputation in the iron business extended outside the Juniata Valley, most of the region's successful ironmasters were well-known only within their communities. The capital they amassed was invested in a number of areas including additional land acquisition for industrial as well as agricultural use, improvements to their furnaces and forges, and the construction of homes for their families and relatives. Some, like Samuel Duncan, who built a forge in Duncansville, helped establish towns in the county. Others, including Samuel Isett, Daniel Royer, and Elias Baker built stores and residences that housed some of the county's earliest post offices and schools.

The wealth of one Juniata ironmaster, Elias Baker, was conspicuously exhibited in his spacious ante-bellum mansion. Designed in the Greek-revival style by Baltimore architect Robert Carey Long, the two-story stone residence was built in 1846-48 on a hill overlooking Baker's Allegheny Furnace and the Logan Valley. Fluted cast-iron columns with massive iron Ionic capitals, and a pedimented gable-end dominate the building's south facade. Elias Baker was

---

9 J. P. Lesley, American Iron Association Bulletin, 1856, pp. 87, 89; Sharp and Thomas, pp. 20-21.
active in the iron business from the 1830s until his death in 1864. In addition to Allegheny Furnace, Baker owned iron mines in Antis Township and two other furnaces in Indiana County. His son S. C. Baker succeeded him in the business, operating Allegheny Furnace until 1884 when it was abandoned.11

The monumentality of the Baker Mansion contrasts dramatically with the residences of other early 1800s ironmasters in Blair County. The Royer House, constructed about three decades before Baker's residence, is a two-and-one-half-story building with random-coursed stone walls. A smaller one-and-one-half-story wood-frame structure adjoins the stone house and contains a gable roof. It may have served as the original Royer residence. As with many other ironmasters' houses built in the early nineteenth century, the owners erected a number of additions to the original stone building. A two-story rear addition, also of stone construction, contains a two-story wooden porch extending along its south facade. The original main entrance appears to have been off center, its present symmetry was not achieved until two bays were added to the north. A second chimney, built near the gable end opposite the original chimney, served to heat this addition and aided the appearance of the building's uniformity. The stone house is not without ornament; its entrance features a few classical elements including two short wooden columns and recessed paneled sidelights flanking a multi-paneled wooden door.12

While a number of Juniata ironmasters were successful in the iron business, few advanced the technology of iron making. One exception to this was Martin Bell, the son of Edward Bell, an early settler and iron maker in Antis Township. Edward established Mary Ann Forge in 1830, followed two years later by the construction of Elizabeth Furnace. Shortly after Edward's death in 1836, Martin Bell assumed management of the furnace and developed an innovative hot-blast system. This system, for which Bell received a patent in 1840, redirected the hot gases escaping the stack, providing heat for the boiler whose steam was used to power the blast and preheat the air blown into the furnace. Martin Bell managed Elizabeth Furnace through the 1850s employing about fifty men. At this time, the furnace was operated using two cast-iron tubs and produced foundry, car-wheel, and forge iron. Closed in 1884, only the stone furnace stack survives.13

The 1850s witnessed the establishment of the last independent iron furnaces in Blair County. Three furnaces were constructed during this decade, all of which were located along the Frankstown Branch of the Juniata River and the Pennsylvania Canal. Gaysport No. 1 Furnace was built on the south side of the Frankstown Branch, opposite Hollidaysburg, by Watson, Denniston & Company in 1856. The furnace was a hot-blast type and produced iron at the rate of 10 to 12 tons per day until 1885. Also in 1856, Gardner, Osterloh & Company built Chimney Rock No. 2 on the Hollidaysburg side of the river, directly across from the Gaysport Furnace No. 1. Chimney Rock No. 2 produced between 60 to 70 tons of foundry metal per


12Near the Royer house, the family operated the cold-blast Springfield Furnace on Piney Creek, constructed by Daniel and John Royer in 1815. The Royers also established Cove Forge and Franklin Forge, and obtained hematite ore from the Springfield mine. According to a local account, the Royer family produced iron stoves. See McGraw and Adams, p. 390.

week in its first year; it closed in 1885. The county’s last stone-constructed furnace, the Juniata Furnace, was completed in Williamsburg in 1857. Neff, Dean, & Company owned the furnace, imported anthracite coal as a fuel, and smelted ore from the nearby Patterson Mine, extracted by the Williamsburg Manufacturing Company. This furnace produced 50 tons of pig iron per week, much of which was used in the Pennsylvania Railroad’s Altoona foundry.14

Along with the Cambria Iron Company, which was controlled by Philadelphia capital, within the iron industry, business links between Pittsburgh and the Conemaugh and Juniata valleys grew throughout the nineteenth century. These connections were greatly strengthened in the late nineteenth century when the larger steel companies began acquiring smaller iron concerns throughout the region. Many of these acquisitions were aimed at eliminating competition, stabilizing the volatile iron market, and securing control of the raw materials needed to keep a large modern steel works operating efficiently and inexpensively. Faced with a decline in quality iron ores in the Juniata Valley—far superior ores from the Great Lakes region were increasingly used beginning in the 1850s—local iron production declined dramatically in the late nineteenth century. The tightening grip Pittsburgh steel makers and Cambria Iron exerted over others in the region accelerated the demise of the once-numerous independent iron companies.

Among the most active Pittsburgh steel companies that purchased iron properties in the Juniata Valley were Carnegie Steel, U.S. Steel’s American Wire and Steel Company, and Jones & Laughlin. The latter firm gained control of limestone quarries and kilns in the Turkey Valley area in the 1890s. American Wire and Steel acquired the rolling mill and wire nail works of William Wheatly and A. R. Whitney, located in Duncansville. Originally built as a forge by Samuel Duncan in the 1830s and soon after converted into a rolling mill, this works was refurbished by Wheatly and Whitney in the 1880s. The company produced metal ties for the cotton industry and hoop iron for barrels used at oil refineries. It expanded the works in the 1898, opening a wire nail mill. Following on the heels of this expansion, American Wire and Steel purchased the entire plant, operated the nail mill briefly, then removed the machinery and demolished the buildings. The rolling mill was turned over to U.S. Steel’s largest steel-making subsidiary, the Carnegie Steel Company, which reopened it after the mill had been idle for a few years. However, Duncansville’s largest employer remained in business for only a year when Carnegie Steel closed the mill in 1904, moved some of the machinery to its Greenville (Pennsylvania) plant, and demolished the remaining buildings.15

Of the large late-nineteenth century steel companies in Pennsylvania, the Cambria Iron Company maintained the largest holdings in Blair County’s Juniata Valley. In the 1870s Cambria Iron acquired Bennington Furnace, located near the Pennsylvania Railroad’s Main Line west of Altoona, and produced pigs for its iron works in Johnstown. Originally built about 1849 and refurbished in 1853, Cambria Iron soon abandoned the furnace, concentrating its development on the nearby coal mines. The company’s mining engineer, John Fulton, designed 100 beehive coke ovens near furnace stack. Having closed Bennington Furnace, Cambria Iron subsequently built another blast furnace near Hollidaysburg. This iron-constructed furnace used hematite ore mined by the company in Taylor and North Woodbury townships. In addition to

15According to one account, some displaced mill workers in Duncansville sought jobs in Altoona and Hollidaysburg, others moved on, finding employment in the steel works of Pittsburgh and Youngstown, Ohio. The site of the mill in Duncansville was sold to the local borough council, which established a recreation field on this land. See Robinson, 45-47.
the coking and blast furnace operation, in 1912 Cambria Iron acquired the Juniata Limestone Company, which owned quarries and several kilns in the vicinity of Williamsburg.\textsuperscript{16}

Although pig-iron production in the Juniata Valley fell dramatically in the late nineteenth century, a handful of independent iron companies remained in operation through the early twentieth century. However, none of these companies which were in business in the early 1900s operated blast furnaces. Instead, they ran rolling mills and foundries, relying on outside producers to provide the necessary iron and steel ingots. Two of the county's iron companies, the Hollidaysburg Iron & Nail Company, which established the "Little Mill," in 1860, and the Eleanor Iron Company, which opened the "Big Mill," in Hollidaysburg about 1869, produced nails, spikes, and wire until closing in 1905 to make way for the Pennsylvania Railroad yards. Another iron-making concern, the Altoona Iron Company, occupied the area between Sixth and Ninth streets and 29th and 30th avenues in that city, opened in 1871. It made refined bar iron, receiving its pig iron from the Allegheny Furnace and other suppliers. Prior to its closing in 1929, Altoona Iron employed as many as 300 men and produced 30,000 tons of bar iron per annum during its best years. One long-lived iron company, the McClanahan and Stone Corporation, was established in Hollidaysburg in the late 1840s; its foundry is still in business.\textsuperscript{17}

Regardless of technological improvements, and the changeover in fuel from charcoal to anthracite or coke, few of Blair County's furnaces operated in the twentieth century. By the nineteenth century the widespread use of coked coal and the railroad-based transportation network had spelled the demise of the county's rurally isolated charcoal furnaces, while promising economic growth for centralized iron and steel making centers.\textsuperscript{18} Cambria County's fortunes thus rose during the second half of the century as its vast coal deposits were tapped for the production of coke, and then shipped to the furnaces and mills in the Johnstown area, spurring the development of Johnstown as the predominant iron and steel producer of the region.

Cambria County

The first iron businesses in Cambria County consisted of small forges and blacksmith shops that worked pig iron produced in furnaces from other counties. The Buckwalter Forge, originally located along the Stony Creek River in Johnstown, opened in 1809. John Buckwalter sold the forge to Peter Levergood before it closed in 1825. The Pierson Iron Company, located north of Johnstown near what is now Franklin Borough, operated between 1813 and 1818.\textsuperscript{19}

\textsuperscript{16}A drawing of the blast furnace near Hollidaysburg is available at the Bethlehem Steel Company's General Office in Johnstown. See Bethlehem Steel Company, Cambria Plant, "Blast Furnaces: Lower Works," Drawing No. L-1602, 8 September 1927. No longer extant, this furnace measured 59' in height, its bosh was 13'-8" wide, and its overall capacity was 5,540 cubic feet. Some information on the Juniata Limestone Company is available at the Johnstown Flood Museum, including a drawing, "Map Showing Property of the Juniata Limestone Company in Catherine Township," August 1898, drawn by C. F. Collins; and Cambria Steel Company, "Juniata Limestone Company Quarries at Carlim, Blair County, Pennsylvania," notebook 423 P.A. 47-75, References 81-28.

\textsuperscript{17}McGraw and Adams, pp. 385-87; the Historic American Engineering Record classifies such enterprises as rolling mills or foundries, which involves the refining or finishing of metal ingots, under the heading of Manufacturing. Included within the Primary Metals category are those firms that smelt iron ore and produce iron ingots. For more information on McClanahan and Stone see Chapter ??

\textsuperscript{18}Although the charcoal iron industry in Blair County was virtually non-existent by the 1880s, the industry elsewhere in the United States continued to grow until the 1890s. Although demand dropped during the 1890s, the nation's charcoal iron production remained between about one and two per-cent of the total iron produced in the United States through the first World War. See Schollenberger and Ault, 461-63; and "Statistics of the American Iron and Steel Industry," in The ABC of Iron and Steel, (Cleveland: The Fenton Publishing Compay, 1919), p. 291.

Early Iron Works

It was not until 1841 when Cambria Furnace, the county’s first blast furnace, was blown in. Constructed by George S. King, David Stewart, John K. and William L. Shyrock, the coal-fired furnace was located on Laurel Run, near the Pennsylvania Canal, north of Johnstown. In 1843, the partners of Cambria Furnace interested ironmaster Dr. Peter Shoenberger in the venture. Over the next decade the activities of King and Shoenberger in the Conemaugh Valley’s iron business grew. In 1846, George S. King & Company established Ben’s Creek Furnace, for the production of charcoal iron. These earlier ventures, however, were soon overshadowed when the King and Shoenberger partnership established the Cambria Iron Company in 1852.

Under the supervision of George King, the Cambria Iron partners began constructing a large iron works in Johnstown; its rolling mill was to produce iron rail, provided with pig iron from four coke-fired blast furnaces, erected near the mill. Unfortunately for King and Shoenberger, the enterprise collapsed in 1854 with only one furnace constructed and the rolling mill only partially built. The floundering iron works was revived by the late 1850s thanks to the capital of Wood, Morrell & Company, a Philadelphia firm which had invested in Cambria Iron. By the early 1870s Cambria was the nation’s leading rail producer and the county’s largest employer.

Unlike the charcoal iron industry in the Juniata Valley, charcoal iron production in the Conemaugh Valley was largely inconsequential. The two charcoal iron works in Cambria County, Ashland Furnace and Eliza Furnace, were established in the 1840s and were operated only for two or three years. All of the other furnaces in the county used coal or coke as a fuel.

Table 2: Furnaces in Cambria County, 1857
(Source: J. P. Lesley, American Iron Association Bulletin, 1856)

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Owner</th>
<th>Date of Erection</th>
<th>Type of Fuel Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashland#</td>
<td>6 mi. N of Gallitzin PRR station</td>
<td>Hugh McNeil</td>
<td>1847</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Ben’s Creek</td>
<td>3 mi. S of Johnstown PRR station</td>
<td>Wood, Morrell &amp; Co.</td>
<td>1846</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Cambria No. 1</td>
<td>1/4 mi. N of Johnstown PRR station</td>
<td>Wood, Morrell &amp; Co.</td>
<td>1854</td>
<td>Coke</td>
</tr>
<tr>
<td>Cambria No. 2</td>
<td>1/4 mi. N of Johnstown PRR station</td>
<td>Wood, Morrell &amp; Co.</td>
<td>1855</td>
<td>Coke</td>
</tr>
<tr>
<td>Cambria No. 3</td>
<td>1/4 mi. N of Johnstown PRR station</td>
<td>Wood, Morrell &amp; Co.</td>
<td>1856</td>
<td>Coke</td>
</tr>
<tr>
<td>Cambria No. 4</td>
<td>1/4 mi. N of Johnstown PRR station</td>
<td>Wood, Morrell &amp; Co.</td>
<td>1857</td>
<td>Coke</td>
</tr>
<tr>
<td>Eliza#</td>
<td>About 12 mi. west of Ebensburg</td>
<td>Alter and others</td>
<td>1846</td>
<td>Charcoal</td>
</tr>
<tr>
<td>Johnstown</td>
<td>1/8 mi. NE of Johnstown PRR station</td>
<td>Rhey, Matthews &amp; Co.</td>
<td>1846</td>
<td>Coke</td>
</tr>
<tr>
<td>Mill Creek</td>
<td>3-1/2 mi. NE of Johnstown PRR station</td>
<td>Wood, Morrell &amp; Co.</td>
<td>1845, 1856</td>
<td>Coke</td>
</tr>
<tr>
<td>Old Cambria</td>
<td>3 mi. N of Johnstown PRR station</td>
<td>Wood, Morrell &amp; Co.</td>
<td>1842, 1854</td>
<td>Coke</td>
</tr>
</tbody>
</table>

# Abandoned ca. 1849

One other notable iron company emerged in the 1840s, and later posed a threat, albeit a brief one, to Cambria Iron’s interests. Incorporated about 1851 as the Johnstown Iron Company, the partners of this rival concern, including George S. Rhey, Levi Matthews, and William Ebbs,
hailed from Pittsburgh. The company operated Johnstown Furnace, located in Johnstown, and owned the rich iron ore and coal lands at the foot of Prospect Hill. Reorganized as Rhey, Matthews & Company, Johnstown Iron also controlled the Conemaugh hot-blast coke furnace near New Florence Station. Much of the pig iron produced by these furnaces was sold to Cambria Iron. By the early 1860s Cambria Iron acquired all of the Johnstown Iron Company's holdings in the valley and was well established as the region's premier iron producer.\textsuperscript{21} (Because of its significance and size, the history and inventory of sites of Cambria Iron is treated separately, in the "Primary Metals" chapter of the volume.)

\textsuperscript{21}Shappee, 60-71
Allegheny Furnace  (ca. 1811)  
Current Name: Allegheny Furnace  
Rating: 1

Union Avenue and Crescent Road, Altoona, Blair County, Pennsylvania  
USGS Quad: Hollidaysburg, Pennsylvania (1:24000) UTM: 17 E.719740 N.4485420  
Historic Use: Blast Furnace and Ironmaster's House  
Present Use: County Historic Site

In 1811 Allegheny Furnace was erected at what is now Union Avenue and Crescent Road in Altoona. Its promoters, Robert Allison and Andrew Henderson of Huntingdon, were entrepreneurs whose primary interests were not iron-making. Probably as a result of the depressed economy following the War of 1812, the furnace went out of blast after operating only seven years. Many Juniata Valley furnaces were similarly distressed during this period. The furnace remained idle until 1835, when Elias Baker and Roland Diller of Lancaster County
purchased it. To supervise the iron making operation Baker relocated to the Allegheny Furnace. The newly completed Pennsylvania Canal provided vastly improved transportation and increased manufacturing opportunities. Despite economic difficulties following the Panic of 1837, Baker's iron furnace operation grew in the 1840s. In 1842 Baker owned the Indiana Furnace five-miles east of New Florence in Indiana County in addition to his Blair County operation.
Further evidence of his highly successful iron business was the construction in 1846 and completed in 1848, of the Baker House. Begun in 1846 and completed in 1848, the Baker House was designed in the Greek Revival style by architect Robert Cary Long, Jr. The two-story stone residence is situated on a hill overlooking the furnace. Its south facade features a two-story portico, with fluted cast-iron columns and large Ionic columns.

After Elias Baker's death in 1854, his son, Sylvester C. Baker, assumed charge of the iron furnace. Sylvester converted the former charcoal-fired furnace to coke in 1867. The furnace was producing 50 to 80 tons of pig iron per week just before its final blow in the 1870s. Although the furnace was abandoned well before the turn of the century, the Baker family continued to live in the large house until 1914. Eight years later the Baker Mansion was acquired by the Blair County Historical Society, which houses its museum and a small archives there.

When the furnace was restored in 1939 the stones of the deteriorated stack were mortared in place, the working arches were closed with stone, and a railing was placed around the stack's top. Stone steps were built up the south side of the stack to give access to a platform built on top. The furnace is maintained by the Women's Club of Altoona, which uses the complex's stone storeroom and office as its headquarters.

The stone furnace stack measures approximately 30' x 30' at its base and is about 15' high, with work arches on the north, south and east sides. The embankment on the west side served as the loading ramp to reach the top of the stack into which the charcoal, ore, and limestone were dumped. The two-story coursed stone storeroom and office building measures 35' x 25', has a gable roof, and small central cupola. Its stonework features quoins and keystones above its window and door openings.

Sources:
Early Iron Works: Blair County

Located on Township Run south of Spang's ore mines on Short Mountain, Canoe Furnace operated only about ten years. The Canoe Furnace works included a head race extending from a dam above the furnace on Township Run powered the furnace's overshot wheel. Above the furnace, where the Point View Cottages are now located, stood a carriage house and stable, a large charcoal house, a blacksmith shop, and a storeroom and office. Across Township Run from the furnace, near a spring, Spang constructed a stone manager's house on the hillside. Associated structures including a milk house, workers' housing and a schoolhouse/Sunday school were situated along Township Run. Canoe Furnace went out of blast in 1847. By 1857 it was owned by Nett, Keller & Company but was going to ruin. The cold-blast machinery had been removed though the stack still remained. Although abandoned and partially collapsed, the furnace is still in fair condition. Canoe Furnace was one of only several conically shaped furnaces in Pennsylvania.

Sources:

Cove Forge: Worker's Housing (1830s)

Current Name: New Beginnings at Cove Forge
Rating: 2

2 miles NE of Williamsburg on Little Juniata River, Williamsburg vicinity, Blair County, Pennsylvania
USGS Quad: Williamsburg, Pennsylvania (1:24000) UTM: 17 E.739500 N.4484220
Historic Use: Workers' Housing
Present Use: Health Care Facility

The locally prominent Royer family was deeply involved in the manufacturing of iron throughout the nineteenth century. In 1808 John Royer built Cove Forge on the east bank of the Juniata River two miles northeast of present-day Williamsburg; Daniel Royer built the Springfield Furnace in 1815, and Samuel Royer built the Franklin Forge in 1830. The Springfield Furnace supplied both forges with pig iron. During the Civil War, Cove Forge produced 400 tons of blooms annually from charcoal iron. By 1880, when Cove Forge ceased production due to obsolescence, it was the last forge in operation in Blair County. The site was later used as a church camp. New Beginnings, a private alcohol and drug rehabilitation facility, acquired the lease a few years ago, and uses the log cabins as classrooms.

The iron forge and blacksmith shop were torn down long ago. The most impressive remains at Cove Forge appear to pre-date 1860 and include: the two-and-a-half-story stone ironmaster's house; a large frame barn with louvered windows; a log summer kitchen; a small stone cottage; a two-and-a-half-story frame dwelling; and three log cabins, formerly Cove Forge iron workers' houses. The cabins measure 24' x 15', are one-and-a-half-stories tall, and rest on stone rubble foundations.

Sources:
Huntingdon County Deed Books (C-202, E-354 and M-112). Available at county courthouse in Huntingdon.
Around 1800 Edward Bell moved from Fort Lowry in Canoe Valley and settled near the Logan Spring in Logan Valley. By 1810 this section of Logan Valley formed the heart of Antis Township and several grist and saw mills and large farms were located here. Edward Bell became one of the township's prominent landholders, whose properties included saw and grist mills, and a distillery. The town of Bellwood, situated on the Little Juniata River and originally called Bell's Mills, was named for him. In 1825 Bell's daughter, Mary Ann, married John S. Isett, whose family was involved in the iron business in Huntingdon County and later owned the Mt. Etna Iron Works at Yellow Spring. It is likely that as a result of this marriage, Edward Bell developed an interest in the iron industry for in 1829, he and one of his sons, John, built a forge, which they named Mary Ann. Located in Antis Township along the Little Juniata River, this forge cost $13,000 to build, employed twenty-five men, and operated with three heating furnaces. When the forge first opened, it used pig iron produced by iron furnaces in the region and shipped its blooms and bars as far as Ohio and Kentucky.

In 1832 Edward Bell and his son, Martin, expanded the family's iron business, by constructing the Elizabeth Furnace south of Bellwood along Beaver Dam Run in the presently unincorporated town of Pinecroft. Following the death of his father, Martin took control of the furnace and forge. In 1836 he greatly modified the furnace, replacing the water-powered bellows with a steam boiler arrangement and converting it from a cold-blast to a hot-blast operation. To create the steam, Bell used hot gas from the furnace. He applied for a patent for this process in 1836, and the U.S. Patent Office issued him Patent No. 1630 on 10 June 1840. When a renewal for the patent was sought later, it was discovered that the process had been claimed and patented by another iron master in 1838. However, during the course of a subsequent trial it was determined that the 1838 claimant had, in fact, stolen the process from Bell's Elizabeth Furnace, and Bell's patent was reaffirmed. In 1848 Bell instituted the practice of a six day work week at Elizabeth Furnace, by shutting the furnace down on the Sabbath. One of the results of this practice was the naming of the newly established local post office "Sabbath Rest." By 1849, through the efforts of fifty employees, the furnace produced over 500 tons of pig iron, while the twenty men employed at the forge produced 400 tons of iron blooms. J.P. Lesley, the Secretary of the American Iron Association, noted in the late 1850s that the Elizabeth Furnace was "9' across the bosh by 32' high, and made in twenty-six weeks of 1857 962 tons of foundry, car-wheel and forge metal out of brown hematite ore from a bank in a cove of Trenton limestone[,] distant one mile south." (The Mary Ann Forges, No. 1 and No. 2, together consisting of "five forge fires, one run-out fire, and two hammers driven by water, and made in 1856 about 400 tons of blooms and 12 of bars.")

According to an early 1870s atlas of Blair and Huntingdon counties, Elizabeth Furnace was a thriving settlement with a sawmill, the "Sabbath Rest" post office, a school, a dozen or so workers' cottages, and a number of houses occupied by descendants of Edward and Martin Bell. By 1872 the Elizabeth Furnace had been converted from charcoal to coke, however, that same year, the Mary Ann Forges were closed. The Elizabeth Furnace remained in operation until 1884 when it was taken out of blast.
Located west of US 220 in the unincorporated town of Pinecroft, the stack of the Elizabeth Furnace is still standing. To the east, just off US 220, stands the Bell residence, probably erected in the 1830s. It is a two-and-one-half-story building with Flemish-bond brick walls, gable-end chimneys, three-gable roof dormers, and an off-center entrance. With the exception of the unusual off-center entrance, the house was built largely in the Federal style. It is the only surviving brick residence of an ironmaster in Blair, Huntingdon, and Cambria Counties. Unfortunately, nothing remains of the Mary Ann Forges, the site of which contains a sewage disposal facility.

Sources:


Etna Iron Works (1807-09)
Current Name: Etna Furnace
Rating: 1

Along Roaring Run 1.25 miles E of US 22, Yellow Spring vicinity, Blair County, Pennsylvania
USGS Quad: Spruce Creek, Pennsylvania (1:24000) UTM: 17 E.738900 N.4489420
Historic Use: Iron Plantation
Present Use: Farm/Residence

Built in 1808 at Yellow Spring, near the Frankstown Branch of the Juniata River, Etna Furnace was among the earliest iron furnaces in the region. The original owners, David Stewart, John Canan and William Moore, formed a partnership in 1806, and operated under the name of David Stewart and Company. The furnace was constructed in a steep-sided valley, at the mouth of Roaring Run, upstream from a grist and saw mill complex owned by Stewart. The furnace bellows, or perhaps "blowing tubs," were powered by a large water wheel. The partnership also constructed a charcoal forge, a stone blacksmith's shop, a small stone ironmaster's house, tenants houses, stables, and other structures.

Henry S. Spang purchased the Etna Furnace in 1823. Beginning in 1827 he made great improvements at the Mt. Etna Iron Works, including a new stone iron master's mansion, a new warehouse, a stone company store, a bank barn, and tenant houses. By 1831 Spang employed more than 150 workers, and owned at least forty tenant houses. Spang also initiated a new saw mill operation in his Canoe Mountain tracts, to supplement the mill at the confluence of Roaring Run and the Frankstown Branch of the Juniata River. To facilitate the transfer of the pigs at Etna, he also constructed a tram-railway between the furnace and the forge. After Henry S. Spang died in 1846, his son Henry A. Spang acquired the Mt. Etna works, and formed a partnership with Samuel Isett and John Harnish in 1849. By 1859 Samuel Isett had complete financial control of the furnace. The furnace was blown out in 1877 and remained abandoned until the Blair County Historical Society acquired the remains ca. 1959, and attempted to stabilize the furnace stack.
The iron furnace is made of stone, and is 20' x 20' at its base. Although it was originally taller, it currently stands about 20' high. The blacksmith's shop, located west of the furnace, was built of coursed stone. Its walls measure approximately 25' x 14', but the roof has collapsed. A large Germanic stone bank barn with heavy timber framing is located west of the blacksmith shop ruins.

Several other structures, dating from the early days of the furnace's operation also survive. Further west of the blacksmith's shop is a tenant house. This structure is two stories high, has a coursed stone foundation and exterior, and a timber post-and-beam structural system. It measures approximately 70' x 18' and is currently a private residence. Across Roaring Run from the tenant house are two, two-story high stone buildings. One has a gable roof, and the other a hip roof. The hip-roofed building housed the clerk's office and company store. Situated along the Juniata River are three log cabins which served as workers' housing. These one-story log cabins have stone rubble foundations and measure 24' x 20'. Southeast of, and
adjacent to, the log cabins are two other nineteenth-century buildings associated with Etna
Furnace including a wood-framed residence, and a two-story, frame structure with a gable roof,
which may have served as a boarding house. The iron masters’s house, located further south
along the river, is a two-and-a-half story, five-bay, stone residence. The stone ell has a later
frame addition and a new front porch has been added to the facade.

Sources:
Huntingdon County Deed Book C-202, E-354, and M-112 at County Courthouse, Huntingdon, Pennsylvania.

Hileman House    (1795)
Current Name: Residence                   Rating: 2
At intersection of PA 1009 and US 22, Frankstown, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania   (1:24000) UTM: 17 E.724450 N.4480260
Historic Use: Ironmaster’s House
Present Use: Residence

Hileman House is a four-bay cut-stone residence located in the village of Frankstown, on a
high bench above the Juniata River and the old Pennsylvania Canal at the intersection of PA
1009 and US 22. Constructed in 1795 by the Hileman family, the house served as the
ironmaster’s residence for David Hileman who, according to an early Pittsburgh city directory,
owned the Frankstown Furnace in 1837. The furnace produced 450 tons of iron in that year.
The residence has a gable roof with stone gable chimneys. A transom with a stone lintel is
above the off-center front door. An ell addition and side porch appear to have been recently
constructed. The building still serves as a residence and is in good condition.

Hileman’s Frankstown Furnace was situated northwest of the ironmaster’s house, and was
originally constructed as a cold-blast charcoal operation. In 1854 Crawford and Higgens
converted the furnace to a hot-blast coke works. Unfortunately, the furnace and associated
structures are no longer extant.

Sources:
Lesley, J.P. The Iron Manufacturer’s Guide to the Furnaces, Forges and Rolling Mills of the United States. New York:
    John Wiley, 1859.

Isett, Jacob, House    (1805)
Current Name: Residence                   Rating: 1
On E side of PA 1013, 3 mile SW of PA 1008, Arch Spring, Blair County, Pennsylvania
USGS Quad: Spruce Creek, Pennsylvania   (1:24000) UTM: 17 E.736700 N.4498680
Historic Use: Ironmaster’s House
Present Use: Residence

The Jacob Isett family was one of the founding lineages of early Juniata industry and
commerce. In 1788 Jacob Isett established a grist mill in Sinking Valley, near the future site of
his Arch Spring mansion, and later became involved in the iron business through his sons,
Early Iron Works: Blair County

Samuel and John. Samuel Isett, who eventually became the owner and ironmaster of Mt. Etna Iron Works, acquired his family homestead and mills in 1837.

This distinguished Georgian stone mansion was constructed in 1805 by Jacob Isett, who had arrived in Blair County ca. 1785. Located near Arch Spring in Tyrone Township, this two-story, five-bay residence is constructed of stone and measures 50' x 25'. Its one-story front porch spans the three central bays. In the southern gable is an oval signature stone painted "Jacob-Elenor Isett 1805." A summer kitchen with a massive chimney forms an ell on the rear of the house by an attached roof. The structure is in excellent condition, continues to be used as a residence and, with the exception of the replaced front porch, has experienced few alterations.

Sources:
- Huntingdon County Deed Book E:213.
Rebecca Furnace  (1817)
Current Name: Rebecca Furnace Site Rating: 3
.25 miles E of PA 2011 on Twp. 342, 1.5 miles N of Clover Creek, Clover Creek vicinity, Blair County, Pennsylvania
USGS Quad: Martinsburg, Pennsylvania  (1:24000) UTM: 17 E.732120 N.4466880
Builder/Architect/Engineer:  Dr. Peter Shoenberger (E)
Historic Use: Blast Furnace
Present Use: Abandoned

Dr. Peter Shoenberger built Rebecca Furnace, Blair County's third, in 1817. He also owned ironworks in Allegheny, Bedford, Cambria, Indiana, Lancaster, Mercer, and Westmoreland Counties, and in Wheeling, West Virginia. This furnace used brown hematite ore (taken almost exclusively from the Rebecca and Millerstown, also known as the Page, mines), burned charcoal, and utilized a cold blast. From 1864 to 1870 Essington Hammond operated the furnace, and from 1870 to 1873 it was operated by B. M. Johnson and Company. It was out of blast between 1873 and January of 1881. Dr. S. M. Royer operated it briefly from 1881 to 1882.

In its early years of operation the furnace was managed by Edward Lytle, Sr., Shoenberger’s son-in-law, who lived on the opposite side of Clover Creek. The house, known as Oak Manor, was still occupied in 1966, when this furnace was surveyed by Sharp and Thomas. The furnace stood 32' high, and had a bosh 9' in wide. Due to its unstable condition, however, it was knocked down ca. 1960. The stones were still in place, and slag piles could still be seen in the nearby field in 1966. Other structures relating to the operation of the furnace, which were in ruins by that year, were a dam in the creek, a mill race, and the ruins of the foreman's house. A red brick store and hotel building were found nearby during the 1966 survey. A small stone workman's house and Lytle's house still stand on the opposite hillside.

Sources:

Springfield Furnace  (1815, 1855)
Current Name: Springfield Furnace Site Rating: 3
On Piney Creek, 30' from Twp 392 E of Royer, 5 mi S of Williamsburg, Royer vicinity, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania (1:24000) UTM: 17 E.731300 N.4477880
Historic Use: Blast Furnace
Present Use: Abandoned

In 1815, seven years after they erected Cove Forge on the Juniata River, John Royer and his brother, Daniel, constructed the Springfield Furnace five miles south of Williamsburg on Piney Creek. Pig iron produced at Springfield Furnace was fabricated into blooms at Cove Forge. By 1855 Springfield had been converted to a hot-blast furnace measuring 30' in height with an 8-1/2' bosh. Ore from the Springfield Mine and limestone from a local quarry were used at this furnace. The furnace had an output capacity of 35 tons per week. The Royer family retained ownership of the furnace until it was blown out ca. 1880. Springfield was one of the last charcoal iron furnaces to remain in blast in Blair County.
The remains of the tub bellows and the axle of the water wheel used to drive the bellows were still extant in the 1930s. Since that time, a portion of the front wall of the furnace has collapsed, and only a portion of the water wheel axle is in evidence. However, three of the furnace walls are in good condition, and the area around the furnace has not been greatly disturbed.

Sources:

Ashland Furnace  (1847)
Current Name: Ashland Furnace Site  Rating: 3

On W bank of Clearfield Creek, 100 yds S of PA 36, Ashville vicinity, Cambria County, Pennsylvania
USGS Quad: Ashville, Pennsylvania  (1:24000)  UTM: 17 E.707080 N.4492500
Builder/Architect/Engineer: Joseph A. Conrad, Hugh McNeal (B)
Historic Use: Blast Furnace
Present Use: Abandoned

Joseph A. Conrad and Hugh McNeal built the Ashland Furnace in 1847 on Clearfield Creek, just west of the town of Ashland. The furnace stood 33' high and the bosh measured 8' in diameter. During its four years of operation, until McNeal and Conrad's business ceased in 1851, the furnace is believed to have produced 6,300 tons of iron. The iron was shipped by wagon to the head of Incline No. 6 on the Allegheny Portage Railroad, and then by train to Pittsburgh and other markets. An attempt to use cord wood and raw "stone" coal was made by George Crane in 1851; however, it was unsuccessful. Although the furnace stack is no longer standing, the site may have archeological significance, since a piece of the hearth was still located at the site in 1966, when it was visited by Sharp and Thomas.

Sources:

Ben's Creek Furnace  (1846)
Current Name: Ben's Creek Furnace Site  Rating: 3

W side of PA 403 on N bank of Ben's Creek, Ben's Creek, Somerset County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E.675920 N.4461200
Historic Use: Blast Furnace
Present Use: Abandoned

George S. King and Company built a hot-blast charcoal furnace called the Ben's Creek Furnace, in 1846. Later, it, along with the Mill Creek Furnace, was associated with the Cambria Iron Company. The stack was 39' high, and had a bosh 9' in diameter. In 1856 the furnace produced 509 tons of iron in thirty-nine weeks. This site was not visited during the HAER survey, however it may have archeological significance.

Sources:
Early Iron Works: Cambria County

Cambria Furnace (Old)  (1841, 1854)
Current Name: Unknown  Rating: 1
60' W of PA 3041, .9 miles N of PA 403, Coopersdale vicinity, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.679820 N.4471100
Historic Use: Blast Furnace
Present Use: Abandoned

The (Old) Cambria Furnace was originally built by George S. King, David Stewart, and John K. and William L. Shyrock, in 1841; it was rebuilt in 1854. The stack stood 38' high, and had a bosh 9.5' in diameter. In 1856 the furnace made 2,225 tons of iron from carbonate and fossil ores. The furnace used coke, and the blast was of the steam hot blast type. William Kelly's process for making wrought iron, was tried at this furnace. By 1966 the furnace was in ruins, although slag was still in evidence at the site.

Sources:

Conemaugh Furnace  (1857, 1873)
Current Name: Unknown  Rating: 1
S end of Chestnut Street at creek, East Conemaugh, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.679180 N.4467250
Historic Use: Blast Furnace
Present Use: Abandoned

The Conemaugh Furnace was built in 1857 for G.W. Hodges of New York. In 1869 he sold it to the Cambria Iron Company. Cambria rebuilt it in 1873, and it operated until 1889, when it was probably a victim of the Johnstown Flood. The furnace used local and Blair County ores and was a steam powered hot-blast furnace. All that remained in 1966 was the charging bench.

Sources:

Eliza Furnace  (1846)
Current Name: Eliza Furnace  Rating: 1
N side PA 3045 .75 mile NW of PA 3047, Vintondale vicinity, Cambria County, Pennsylvania
USGS Quad: Vintondale, Pennsylvania (1:24000) UTM: 17 E.676110 N.4483360
Builder/Architect/Engineer: Thomas Devereux (B)
Historic Use: Blast Furnace
Present Use: Historic Site

The Eliza Furnace at Vintondale on Twp. 3045 was built by Thomas Devereux in 1846 under the direction of its owner, the Ritter and Irwin Company. Typical of regional furnaces, Eliza is constructed of stone upon a stone foundation; no mortar was used to construct this pyramidally shaped structure. The Eliza Furnace only operated until 1848, but it remains in excellent condition. In 1907 its owner was the Vinton Colliery Company, but the furnace was soon bought by Western Warehouse Company, a subsidiary of the Pennsylvania Railroad. In 1963 it was acquired by the Cambria County Historical Society which maintains it for public viewing.
The Eliza Furnace is one of the best preserved remnants of the early iron industry in the region. The original cast-iron heat exchanger remains on top of the furnace. This device permitted the preheating of the air that was blown into the furnace. In addition, Eliza Furnace retains its corbelled stone work-arch.

Sources:

Mill Creek Furnace (1845)
Current Name: Mill Creek Furnace Site Rating: 3
2 miles SE of PA 271 on blacktop road W of Mill Creek, Westmont vicinity, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E 671310 N 4463620
Builder/Architect/Engineer: John Bell and Company (B)
Historic Use: Blast Furnace
Present Use: Abandoned

John Bell and Company built the Mill Creek Furnace, as a cold blast charcoal furnace, in 1845. It was rebuilt and converted to steam power, with a hot blast in 1856. The bosh measured 12' in diameter, and the stack stood 409' high. The furnace was owned by Cambria Iron Company, and leased to Wood, Morrell & Company of Johnstown. It went into blast in April 1856 and, using carbonate ore, produced 2,720 tons of iron for that year.

Sources:
Exploiting such indigenous resources as clay, ganister rock, bituminous coal, and limestone, the major thermal products industries in Blair and Cambria counties produced refractory materials, coke, and lime. The development of these industries accelerated dramatically in the late nineteenth and early twentieth centuries, primarily in response to the demands of the region's steel industry. By the early 1900s, United States Steel, Jones & Laughlin, and Cambria Steel, and others required enormous quantities of firebrick and silica brick, coke, and limestone. While most of the steel companies controlled subsidiary firms that produced these basic resources, a number of independent refractory businesses operated in the two counties as did numerous coal and coke companies. In addition, many lime kilns were constructed in Blair County that either served the steel industry or provided lime for agricultural use.

REFRACTORIES:

The earliest large-scale development of the refractory industry occurred in the mid and late nineteenth century in Johnstown. Among the region's most prominent producers of refractory materials was the A.J. Haws Company, founded in Johnstown in 1856. Located near the confluence of the Stony Creek and the Little Conemaugh rivers, directly across from the Cambria Iron Works, the original Haws plant produced both refractory brick for the iron works and clay brick for the building industry. Its most outstanding achievement occurred in 1884 when the company manufactured America's first silica brick. Produced from finely ground quartzite stone bonded with hydraulic lime, silica brick proved far more durable than fire-clay brick and soon dominated the industry. A.J. Haws Company remained prosperous through the 1950s, constructing additional plants in Coopersdale Borough, north of Johnstown, as well as in Lewistown, Pennsylvania. Unfortunately, the original Haws refractory was demolished, and Pennsylvania Route 56 now runs through the site.¹

At about the same time A.J. Haws was established, another fire-clay brick manufacturer, Hiram Swank's Sons, was founded in the Borough of Woodvale, along the Little Conemaugh River. Hiram Swank opened a pottery works in Davidsville, in Somerset County, and expanded his operation to include the production of refractory materials for the growing Cambria Iron Company.² By the early twentieth century Hiram Swank's Sons had several plants, including one in Pittsburgh, that manufactured stoneware pottery, terra cotta, and fire-clay products. The Johnstown operation specialized in refractory sleeves and nozzles used in the steel industry. Hiram Swank's Sons remained in business until going bankrupt in the mid-1970s. Subsequently, International Refractories, Inc. acquired the plant and resumed the production of refractory materials for the region's steel companies, as well as businesses around the world. The kilns, offices, and warehouses date from the 1920s through the 1950s.³

In southern Blair County, two large refractories were established in the early 1910s. The Philadelphia-based General Refractories Company, constructed a plant at Sproul in 1911. Using ganister rock from a quarry at nearby Dunnings Mountain, the company produced silica brick

---

²Although it purchased a great deal of refractory materials from A.J. Haws and Hiram Swank's Sons, the Cambria Iron Company operated a small refractory brick works at the corner of Broad and Tenth streets in Cambria City in the 1890s and early 1900s. Nothing remains of this operation. See Cambria Iron Company "Cambria Iron and Steel Works, Coopersdale Section, 1897," drawing no. 3721 in possession of Bethlehem Steel Corporation, Johnstown, Pennsylvania.  
³"100 Years of Service to the Steel Industry," (n.p., 1956); a company brochure available in the Johnstown office of the International Refractories, Inc.
Thermal Products Industries:

for the burgeoning steel industry. During World War II, the refractory employed over 300 persons and produced 30,000 silica bricks per day. Most of these bricks were shipped on the Pennsylvania Railroad to steel mills in Pittsburgh. In 1960 General Refractories ceased making silica brick at Sproul, turning instead to such specialty products as plastic firebrick and mortars. These products enabled the company to expand its markets thus becoming less dependent on the steel industry, and for two decades the refractory prospered. However, greater automation reduced the number of refractory employees from as many as 350 in the 1950s to just thirty-five in 1987. The plant contains several historic structures including three kilns, and a machine and carpenter shop, all built in 1911.4

About two miles north of Sproul, the town of Claysburg is the site of the former Standard Refractories plant, constructed in 1912 and sold a decade later to the General Refractories Company. This plant also produced silica brick using ganister from the quarries at Dunnings Mountain. Interestingly, labor shortages during World War I prompted Standard Refractories to bring blacks from the cotton fields around Little Rock, Arkansas, into the Claysburg plant. Until the 1930s, half of the Claysburg refractory workers were black, but most had left the area by the 1950s.5

At its peak of production in the early 1960s, the Claysburg refractory employed 325 people. In July 1987 General Refractories closed its Claysburg plant, citing changing market conditions and environmental problems in the work place. A number of historic structures still stand at the site, including nineteen kilns, ten chimney stacks, the company office, and the moulding buildings, all built in 1912, and a kindergarten for the workers' children, built in 1914. In addition, numerous company-built houses stand at Claysburg and Sproul.6

In contrast to the refractories at Sproul and Claysburg, the Altoona Brick Company, did not initially produce brick for the steel industry. From its inception in 1911, the Altoona Brick Company manufactured paving brick and drainage tile, as well as flue liners produced from fireclay. During World War II, the Altoona Brick Company produced 13.5 million bricks annually and employed sixty-five to seventy men. Faced with the declining demand for paving bricks after World War II, Altoona Brick began producing refractory materials for the steel industry, and prospered during the 1950s and 1960s. However, with the downturn of the nation's steel industry in the late 1970s the refractory began to decline. In 1987 the Altoona

---


5 The story of the development of the refractory towns of Sproul and Claysburg is rich in both social and labor history. In 1936 John L. Lewis decided to organize coal and steel-related industries including those around Sproul and Claysburg. The refractory companies, decidedly anti-union, opposed organized labor and as a result Lewis' goal was not realized until after World War II. Paul O. McDonald organized the first union at the Sproul refractory in 1947 and served as president of District 59, United Mine Workers, from 1947 to 1953. McDonald, who retired after more than forty years of service at the General Refractories, Sproul plant, was born in 1917 in one of the company-built houses. Constructed between 1912 and 1918, about 65 of these two-story, wood-frame houses still stand, all of which are now privately owned. Much useful information on the unionization of the area's refractory workers may be obtained from Paul O. McDonald, who still resides in Sproul. In addition, see Justin McCarthy, editor, "A Brief History of the United Mine Workers," United Mine Workers Journal (Washington, DC: United Mine Workers, n.d.). As Sproul and Claysburg both have many long-term residents still living in the former company houses there is great potential for an oral history program relating to life in a company town, and work in the refractories.

6 For more information on the refractory industry in Claysburg see: Corinne Krause, Refractories: The Hidden Industry, (Columbus, OH: American Ceramics Society, 1988); Claysburg 175th Anniversary, 1804-1979. (n.p., 1979); and Altoona Mirror, 7 June 1987, p. A14; Paul O. McDonald, who worked in the refractory at Sproul, indicated that one of the major health hazards at the Claysburg refractory was the dust from the silica rock. Silicosis, or white lung disease, has long posed a tremendous threat to refractory workers.

-84-
plant closed for several months, but reopened in June as Blair Clay Products, Inc., a division of the Crescent Brick Company, with a greatly diminished work force.\textsuperscript{7}

**LIME KILNS:**

Another industry whose fortunes were largely determined by those of steel manufacturing was limestone quarrying and processing. Although there are some remnants of the production of agricultural lime, notably the Brua Lime Kiln, the predominant use of limestone quarried in Blair County was as flux in smelting iron ores. The Cambria Iron Company and the Jones & Laughlin Steel Company, either directly, or through subsidiaries, constructed large brick-lined, concrete kilns to process Blair County limestone into fluxing material, which was then shipped via the Pennsylvania Railroad to Johnstown and Pittsburgh. Small lime producers were in decline by the 1920s, primarily as a result of the centralization of production by the nation's large integrated steel companies.

Three significant sites for the production of lime may be found in Blair County, namely the American Lime & Stone Company near Ironville, and the Blair Limestone Company's kilns near Canoe Creek and in Turkey Valley. Of these three, the American Lime & Stone kilns, constructed of limestone, are the oldest.

The American Lime & Stone Company operated a quarry and lime kilns west of Ironville in the early 1900s. The quarry was carved out of Brush Mountain, along Elk Run near its junction with the Little Juniata River. Nearby stood five kilns and an earth embankment and incline for charging the kilns. Several wood-frame sheds were erected for cooling the calcined lime and storing the slaked lime prior to shipping. A short spur of the Pennsylvania Railroad extended to Elk Run and served the lime producer. Presumably most of the processed limestone was shipped to the region's steel mills. At its peak in the 1910s the quarry and plant employed nearly 100 persons. By the late 1920s the kilns were abandoned, however, the quarry may have remained in operation as late as the 1940s. Presently, the stone kilns are quite deteriorated and the quarry is filled with water. None of the wooden sheds survive.\textsuperscript{8}

In 1890 the Blair Limestone Company, a subsidiary of Jones & Laughlin, built six large kilns near Canoe Creek, in Frankstown Township, all of which still stand. Each kiln measures 23-feet square and 30 feet in height. Closed by 1916, the Blair Limestone Company's Canoe Creek operation employed chiefly immigrant Hungarian and Italian laborers, some of whose descendants still live in this area. Presently, the kilns belong to the Canoe Creek State Park and are used to interpret the area's lime-producing industry.\textsuperscript{9}

In addition to the Canoe Creek kilns, the Blair Limestone Company also processed limestone in nearby Turkey Valley. Eight limestone, draw-kilns constructed of cast-concrete nearly identical to those at Canoe Creek survive on the Bennett Farm. New technologies developed for the

\textsuperscript{7}Donald Hazenstab, Plant Superintendent, Crescent Brick Company, Inc., Altoona, Pennsylvania, Interview, 23 July 1987; In 1988, Blair Clay Products, Inc. operated this plant.


\textsuperscript{9}Canoe Creek State Park Vertical File Material on lime kilns, Hollidaysburg, Pennsylvania; and Terry Wentz, Park Superintendent, Canoe Creek State Park, Interview 6 July 1987.
Thermal Products Industries:

processing of limestone into fluxing material made such kilns increasingly obsolete by 1920, while rising freight rates drove many smaller limestone processors out of business.\textsuperscript{10}

**COKE:**

In addition to limestone processing and brick manufacturing, the production of coke from local coal was an essential ingredient in the growth of western Pennsylvania's iron and steel industry. The dominant type of coal in Blair and Cambria counties is bituminous, or soft coal, which was easily coked in beehive ovens.

As early as 1825, western Pennsylvania produced pig iron using coke. However, it was not until the 1850s, with the expansion of the railroads and the subsequent increased demand for steel rails, that coke was widely adopted as a source of fuel in the making of steel. In the 1870s, forty-five percent of all bituminous coal mined in the United States came from western Pennsylvania, and by 1900, sixty percent of all American coal miners were Pennsylvanians. In 1880, three million tons of coke, 84 percent of the national output, were produced by 7,808 ovens (of which 7,524 were of the beehive type) west of the Allegheny mountains. Pennsylvania coke accounted for more than one-third of American pig iron production, in that year, and by 1900, over three-quarters.\textsuperscript{11}

By 1880 Blair County boasted of four coke-making establishments, 190 ovens, and 107 employees, while Cambria County claimed three coke plants, 119 ovens, and 45 employees. Cambria and Blair produced, respectively, 51,950 and 98,154 tons of coke in 1880. Although the Cambria Iron Company had determined by 1880 that the best coke in southwestern Pennsylvania came from the coal mines at Bennington, in Blair county, it proceeded, during the rest of the decade to acquire coal fields in the Connellsville and Allegheny Mountain districts for its coking operations. Although during the late nineteenth and early twentieth centuries, the most important coking district in western Pennsylvania was the Connellsville district, the Allegheny Mountain district, which included Blair and Cambria Counties, was the second most important.\textsuperscript{12}

In the 1870s, Cambria Iron acquired the holdings of the Blair Iron and Coal Company and its works at Bennington, where a coke-fired iron furnace had been in blast as early as 1846. Over the next decade Cambria Iron operated 100 coke ovens, employed 300 men, and built 95 houses in Bennington, north of the Pennsylvania Railroad's Main Line. All of the tenement houses have disappeared, and part of the area is now used as a dump.\textsuperscript{13}

Another coking operation in the Bennington area was operated by the Pennsylvania Coal & Coke Company. Probably constructed in the early 1900s, the beehive coke ovens are located about one-quarter mile east of the eastern portals of the Pennsylvania Railroad's Gallitzen

\textsuperscript{10}Eugene Bennett, property owner of former Laughlin Lime Kilns, Hollidaysburg, Pennsylvania, Interview, 6 July 1987; and Canoe Creek State Park Vertical File Material on lime kilns.


\textsuperscript{12}Weeks, *Report on the Manufacture of Coke*.


-86-
Tunnels, on the south side of the Main Line. Pennsylvania Coal & Coke operated two batteries of around 200 beehive ovens, most of which still stand.14

The Glen White Coal & Lumber Company operated bituminous mines and beehive coke ovens along Glen White Run, about one-quarter mile west of the Horseshoe Curve. The operation appears to have begun about 1901, with one drift mine located at the head of the stream. Based in Baltimore, Maryland, by 1919, Glen White employed 138 men as well as twenty-five boys under the age of 16. The company also constructed housing near its mine and established the town of Glen White. At its peak in the 1920s the town had a population of nearly 200. Although the beehive coke ovens were abandoned by the 1930s, the Glen White mine continued in operation through the early 1940s. Virtually nothing remains of the town of Glen White, the center of operations of the busiest coal and coke company in Blair County during the early twentieth century.

The coking industry in Cambria County grew rapidly in the late nineteenth century and comprised numerous batteries of beehive ovens in its eastern and northern townships. Some of the larger operations were located in the Cresson area, along Clearfield Creek, and in the vicinity of Barnesboro and Hastings. By the early 1900s the Pennsylvania Coal & Coke Company dominated the county's beehive coke industry. Surviving batteries of beehive ovens may be seen near Cresson along the former Pennsylvania Railroad's Main Line, as well as in Sankertown, Frugality, and Kinport. After the World War I production of coke in beehive ovens experienced a rapid decline as the modern by-product ovens reigned supreme. The beehive ovens, the overwhelming majority of which were constructed of brick, were abandoned to the elements.15

One of the early coking facilities in Cambria County was developed in Johnstown by the Cambria Iron Company. Beginning in the 1850s Cambria Iron produced coke in shallow pits on a hillside overlooking its four blast furnaces. Throughout much of the late-nineteenth century, however, the iron company produced much of its coke at Bennington in Blair County, and at Connellsville in Fayette County. This arrangement changed dramatically in 1895 when Cambria Iron constructed four batteries of Otto-Hoffman by-product coke ovens at Franklin Borough, northeast of Johnstown. Reportedly the first by-product ovens operated in conjunction with a blast furnace, the coke plant consisted of gas coolers, ammonia washers, ammonia stills, and ammonium vats. Both concentrated ammonia liquor and sulfate were recovered from the coke-oven gas.

This system was used until 1918 when the Midvale Steel & Ordnance Company, having acquired Cambria two years earlier, refurbished the coking operation and had the Semet-Solvay Company install a modern by-product recovery system. In addition, Midvale undertook the construction of a by-product coke plant at Rosedale, north of the original Cambria Iron Works, along Hinckston Run. Subsequent expansion occurred in the 1920s soon after Bethlehem Steel purchased Cambria. In fact, the growth of the by-product facilities at Johnstown and at other large steel works in western Pennsylvania spelled the end for the region's once prolific beehive oven industry.16

14Nichols, Atlas of Blair and Huntingdon Counties; and Weeks, Report on the Manufacture of Coke

-87-
By the 1950s Bethlehem Steel operated three batteries at Franklin, each containing 77 ovens. Although Rosedale operated only periodically between 1929 and the early 1950s, by 1952 the two coke plants had a capacity of 2.3 million net tons of coke per year. In addition, such by-products as benzol, toluol, xylol, and solvent naptha, were produced at Franklin. Both the Rosedale and Franklin coke plants remained in use until 1977 when a devastating flood in Johnstown damaged both facilities. Bethlehem Steel decided to close the Rosedale plant and proceeded to upgrade Battery No. 18 at Franklin, installing an enclosed quencher car for the control of emissions. Despite this nearly $6 million improvement Bethlehem Steel shut down Johnstown's last operating coke battery in 1983, and subsequently demolished most of the plant. The coke industry in Cambria County thus came to an end.17

Altoona Brick Company (1911)
Current Name: Crescent Brick Company, Inc.

South Tenth and Thirty-Fourth streets, Altoona, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000) UTM: 17 E.717980 N.4485960
Historic Use: Brick and Structural Clay Products
Present Use: Brick and Structural Products

In 1911 the Altoona Brick Company built its kilns and plant at South Tenth Avenue and Thirty-Fourth Street along the Pennsylvania Railroad tracks in Altoona. The refractory produced a line of fire-clay products, supplying Altoona and other American cities with building and paving bricks, flue liners, and drain tile. At its peak during World War II, the Altoona Brick Company employed about 70 men and produced 13.5 million bricks annually.

Photo - 13. Altoona Brick Company (1911), Altoona: Brick Molding Press dating from the 1940s. Photo by Nancy Shedd for HAER.
Thermal Products: Blair County

Thirteen kilns still stand, several of which are original to the site. Each kiln measures approximately 30' in diameter and 20' in height with a brick exterior and fire brick interior. The gas-fired kilns reach temperatures of 1,910 to 1,980 degrees Fahrenheit. Three brick chimneys, each 40' tall and 8' square, are connected to the kilns via large tunnels, and exhaust waste gases produced in the kilns. The structures housing the dryers and crushers have been covered with modern building materials in recent years.

Altoona Brick continued to operate the refractory until 1987. After it was closed for several months, the plant reopened under the name Crescent Brick Company, Inc., and now employs only twelve men. The refractory makes ladle brick for steel mills, including Bethlehem Steel’s Johnstown Plant. The bricks are made of clay with little silicon content and are shipped to customers by trucks; the railroad spur into the brick works is no longer used. Some early 1900s machinery survives, including a ca. 1910 flywheel that powered the dryers and rock crusher. Discarded molding presses, dating perhaps from the 1910s, are located next to a set of hydraulic presses (ca. 1948).

Sources:

American Lime & Stone Company: Frankstown Kiln (ca. 1900)

Current Name: Unknown
Rating: 4

.2 mile N of Frankstown Township School on PA 2007, Frankstown vicinity, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania (1:24000) UTM: 17 E.723900 N.4478180
Historic Use: Lime Kilns
Present Use: Abandoned

This single lime kiln of stone construction stands near a sand pit, about 1,000' north of the unincorporated community of Loop, one mile south of Frankstown. It was probably built in the early 1900s and may have been operated in the early 1920s by the American Lime & Stone Company which ran quarries and kilns near Frankstown and at Tyrone Forge (see American Lime & Stone Company: Tyrone Forge Kiln). By 1922 American Lime & Stone employed forty-three workers at its Frankstown quarry and plant. Although the kiln has been abandoned for many years, it retains its charging platform, of timber-crib construction. The kiln rests on a concrete base.

Sources:
American Lime & Stone Company: Tyrone Forge Kiln  (ca. 1900)  
Current Name: Unknown  
Rating: 3

W side of PA 1015, .25 miles S of PA 453 overpass, Tyrone Forge vicinity, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania  (1:24000)  UTM: 17 E.350000 N.4504400
Historic Use: Quarry and Lime Kilns
Present Use: Abandoned

As early as 1910 American Lime & Stone Company operated a quarry at Brush Mountain and lime kilns near the town of Tyrone Forge. The quarry, now filled with water, is located along Elk Run near its junction with the Little Juniata. According to a 1911 insurance map, the property of American Lime & Stone included five kilns constructed of stone, an earth embankment and incline for charging the kilns, a one-story kiln-shed of wood construction (which provided shelter for the removal of the calcined lime from the kilns), a one-story slaking shed, also of wood construction, where the calcined lime was permitted to cool, and a series of conveyors and storage sheds for handling and storing the chunks of slaked lime. A short spur of the Pennsylvania Railroad, which extended to Elk Run, served the lime producer. Presumably most of the processed limestone was shipped to the region’s steel mills.

By 1919 American Lime & Stone employed eighty workers at its Tyrone Forge quarry and plant; however, three years later this number had declined to twenty-six. An insurance map from 1929 notes that this property was owned by the J. C. Stine Company, but the kilns were not in operation. By the 1940s the quarry and plant had been acquired by the Tyrone Lime & Stone Company, the second largest quarry operator in Blair County. Although Tyrone Lime & Stone may have operated the quarry along Elk Run, the kilns were probably not used.

Presently, the kilns are the most outstanding remnant of this operation, and, in fact, are the best-preserved stone-constructed lime kilns in the region. Two of these kilns are in deteriorated but stable condition, whereas the other three contain only part of the original stone work. Concrete foundations are all that survive of an adjacent storage facility once stood.

Sources:

Bennington Coke Ovens  (ca. 1878)  
Current Name: Unknown  
Rating: 3

.5 mile E of Gallitain (near E Portal of Summit Tunnel, Gallitain vicinity, Blair County, Pennsylvania
USGS Quad: Cresson, Pennsylvania  (1:24000)  UTM: 17 E.700020 N.4483660
Builder/Architect/Engineer: John Fulton (E)
Historic Use: Coke Ovens
Present Use: Abandoned

According to J. P. Lesley, Secretary of the American Iron Association in the 1850s, the Bennington Steam Hot-blast Coke Furnace was built about 1849 and stood two miles east of the Pennsylvania Railroad tunnel, seven miles west of Hollidaysburg. It apparently was active for
just a short while, for Lesley notes it was "restored" in 1853. By 1856 the Blair County Iron & Coal Company owned the furnace, leasing it to Robert M. Lemon and managed by L. Lowry Moore. The furnace measured nearly 10' across the bosh, stood 39-1/2' in height, and produced 56 tons of pig iron per week using Frankstown red fossil ore mixed with bog ore found near the blast furnace.

By 1878 the Cambria Iron Company operated 100 beehive coke ovens at Bennington, designed by the company's mining engineer, John Fulton. The company extracted coking coal from the nearby Miller Seam, which outcropped on the east slope of the Allegheny Mountain Coal District. This coal made an excellent hard coke, second in quality only to that from the Connellsville Coal District. The Bennington coke ovens consumed about 500 tons of coal each day and employed about 300 men.

Bennington, once the site of a small town with active coal mines and coke plants, is now marked only by a cemetery. Nothing remains of the iron furnace. However, east of the Gallitzin Tunnels, a battery of deteriorated beehive coke ovens stands along the south side of the Conrail tracks. These beehive ovens were probably operated by the Pennsylvania Coal & Coke Company, which had mines and shops in nearby Gallitzin. Constructed of brick, the ovens are approximately 12' in diameter and 6' in height. As many as 300 ovens operated at this coke works which was served by a spur line of the Pennsylvania Railroad.

Farther east and on the north side of the tracks another battery of beehive ovens remains; these were probably operated as late as the 1920s by the Bennington Coal Company. One other deteriorated battery of coke ovens survives in Blair County. This battery is located near the Horseshoe Curve and was operated by the Glen White Coal & Lumber Company, possibly as late as the 1930s.

Sources:

Blair Limestone Company: Lime Kilns (ca. 1900)
Current Name: Bennett farm
Rating: 3
2 miles W of Canoe Creek State Park, Canoe Creek, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania (1:24000) UTM: 17 E.727680 N.4483660
Historic Use: BULK: THERM: Lime Kilns
Present Use: ADAPT: ENT: Other

On the Bennett Farm in Turkey Valley, Frankstown Township, a bank of eight, cast-concrete, limestone draw-kilns survive providing evidence of a high-production, lime-burning operation similar to that at Canoe Creek (see entry of Canoe Creek Stone Company: Lime Kilns). The Blair Limestone Company, a subsidiary of the Jones & Laughlin Steel Company, operated the kilns by the early 1900s. Blair Limestone may have purchased these kilns for an 1895 newspaper article refers to two high-production kilns operated by J. King McLanahan in this
Thermal Products Industries: Blair County

location. The article described them as the "largest in the country" with a capacity of 700 bushels per day. Apparently, this extensive operation was short lived.

The long-abandoned kilns were erected in two equal sections, each with four work arches. Each section measures approximately 80' long x 25' deep x 15' high. A ten-foot wide passage separates the two sections. Similar passages were built each end, between the end walls of the kilns, and high concrete retaining walls extending along the sloping hillside. The kilns run parallel to a raised terrace containing a stone-faced retaining wall. A rail spur probably ran parallel to the retaining wall. On the hillside behind the kilns are a series of cast concrete trestles for the dinky rail line which must have transported limestone to the kilns. The discrepancy in height between the trestles and the top of the kilns suggests that each kiln must have had a brick superstructure, which raised the tops of the kilns to the level of the dinky line.

Sources:
Hollidaysburg Register, 16 October 1895, Special Industrial Issue.

Brua Lime Kiln (1890s)
Current Name: Unknown Rating: 3
.5 mile SW of Frankstown, near elementary school, Frankstown vicinity, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania (1:24000) UTM: 17 E.723900 N.4478200
Historic Use: Lime Kilns
Present Use: Abandoned

Not only was Blair County limestone used in the iron and steel industry, but it also was employed for agricultural and domestic purposes. The county's farmers used lime in a variety of ways -- as a sweetener for soil, for making whitewash, and for disinfecting outhouses. Kilns for making this lime were commonly built and operated by farmers. The kilns were used only sporadically when the need for lime arose, and hence farmers referred to them as batch kilns. A charge of limestone and kindling, usually soaked with coal oil, was tossed into the kiln and left to burn for ten days or more. Farmers removed all of the lime after the burning was complete.

A good example of an agricultural lime kiln is found on a farm one-mile south of Frankstown. Owned in the late-nineteenth century by Daniel Brua, the kiln is a coursed-stone structure, with a round-arched brick-lined chamber, and was built against a hillside which permitted charging at the top of the kiln. Several additions were made to the kiln over time; the base has been reinforced with a poured concrete foundation, and a log and plank crib has been added to the top to extend its height and, presumably, to increase its capacity. The logs appear to be salvaged utility poles and were added fairly recently. The charge chamber could not be examined, but typically the cylindrical or egg-shaped section was made of hard-burned brick or refractory stone or brick, depending upon the period of construction and availability of materials. The space between the stone outer walls and the inner chamber was filled with clay for insulation. The kiln, which is still owned by the Brua family, no longer used.

Sources:
Canoe Creek Stone Company: Lime Kilns (ca. 1899)

Canoe Creek State Park

Rating: 2

.5 mile N of US 22 at Canoe Creek, Hollidaysburg vicinity, Blair County, Pennsylvania

USGS Quad: Frankstown, Pennsylvania (1:24000) UTM: 17 E.730740 N.4485380

Historic Use: Lime Kilns
Present Use: Abandoned

When a rail line was extended through southern Blair County around the turn of the century, the extensive limestone deposits which underlie a large portion of the region were of considerable interest to Johnstown and Pittsburgh steel companies. Spur lines were built to serve both the ganister rock and limestone quarries, and a number of steel companies, as well as local entrepreneurs, developed large-scale quarrying enterprises. Scores of eastern and central European immigrants found employment in the quarries and at the lime kilns where the stone was processed for shipment to the steel mills.

One of the most outstanding examples of the region's lime kiln operations may be seen at Canoe Creek State Park in Frankstown Township, where a bank of six cast-concrete kilns, built about 1899, still stands. The Jones & Laughlin Steel Company operated the quarry to obtain limestone for flux. By 1925 the Canoe Creek quarry was operated by the Canoe Creek Stone Company. Although this firm quarried high-grade stone for flux or burning for chemical lime during the 1920s, by 1934 it only quarried low grade stone, which was crushed for use as ballast or as aggregate for concrete. The kilns were served by three spur lines extending from Flowing Spring to Turkey Valley and Scotch Valley. Operated twenty-four hours a day, the kilns were charged with limestone, coal, and coal oil, and the burnt lime drawn out continuously.

The Canoe Creek Kilns are arranged in a row on a raised terrace backed by a stone retaining wall. The kilns are of cast concrete (the imprint of the wooden forms is clearly visible). Each measuring approximately 23' x 23', with slightly tapered walls. The kilns are topped by ten or more courses of red brick which outline flue and draft openings, and the circular tops of the charging chambers. Arched hearth openings, approximately 10' high, face the raised terrace. This arrangement allowed the lime to be withdrawn from the kilns and loaded into railroad cars waiting on the spur line, which paralleled the terrace. The raised charging area was served by a rail line, called a dinky, which ran from the quarries. Pockets in the brick work at the kiln tops, of a size to accept the ends of the rail, suggest that the dinky track spanned the narrow space between the raised work area and the kiln tops. This would have allowed the dinky hoppers to be tipped directly into the kilns. (A dinky car is displayed at the site.) The lime kilns operated for about fifteen years, closing about the time of the First World War. Currently, the kilns are part of an interpretation program in the park.

Sources:
Wents, Terry. Park Superintendent, Canoe Creek State Park, Hollidaysburg, PA. Interview, 6 July 1987.
Chimney Rocks Limestone Company (ca. 1910)  
Current Name: Unknown  
Rating: 3

.5 mile E of PA 36 and Chimney Rocks, Hollidaysburg, Blair County, Pennsylvania  
USGS Quad: Hollidaysburg, Pennsylvania (1:24000)  
UTM: 17 E.721640 N.4477320

Historic Use: Lime Kilns  
Present Use: Abandoned

In 1910, Hollidaysburg resident Hank Manning established the Chimney Rocks Limestone Company. The company's quarry and plant, located one-half mile east of the intersection of PA 36 and Chimney Rocks Road, produced limestone for cement companies. In 1952 Manning sold his quarry to Harvey McIntire. McIntire replaced all of the original equipment, as well as the tipple, and continued to quarry limestone for companies making ready-mix cement. All operations ceased in the early 1980s.

The only original structure surviving at this site is a limestone kiln, erected in 1910, which continued producing lime as late as the 1960s. Built along a steep hill, the kiln measures approximately 25' in length, 25' in width, and 30' in height, and is constructed of stone. It has been abandoned for many years.

Sources:

General Refractories Company: Sproul Plant (1911)  
Current Name: GREFCO Sproul Plant  
Rating: 2

On PA 3006 .275 mile west of US 220, Sproul, Blair County, Pennsylvania  
USGS Quad: Roaring Spring, Pennsylvania (1:24000)  
UTM: 17 E.715740 N.4460700

Builder/Architect/Engineer: Henry J. Luden (B)  
Historic Use: Refractory Clay Products  
Present Use: Refractory Clay

In 1911 the General Refractories Company (Grefco), headquartered in Philadelphia, built the Sproul brick refractory. The Sproul refractory manufactured silica brick, a product made from ganister rock, which was taken from quarries on nearby Dunning's Mountain. Grefco built a dinky track from its Sproul refractory to the ganister quarries to transport the rock. At its peak of production during World War II, the plant contained twenty-one kilns, and produced 30,000 silica bricks a day. Most of the refractory brick was shipped by the Pennsylvania Railroad to Pittsburgh for use in the steel industry. Grefco's refractory employed over 300 people during World War II. In 1960 the company ceased making silica brick, switching instead to specialty products including plastic firebrick and mortars. Raw materials were increasingly shipped from South America. In the 1970s the Sproul refractory produced 40,000 tons of hydraulic setting castables, plastic firebrick and mortars, and employed between forty and sixty workers. Most of these products were shipped by truck, rather than by rail.

Presently, only three of the original twenty-one kilns exist at the site. Each kiln is constructed of bricks, lined on the inside with firebrick, and is 36' in circumference and approximately 20' high at the peak of the dome. A number of other structures erected in 1911 still stand, including the Machine and Carpenter's Shop. This building is L-shaped, two stories high, and made of brick with a concrete foundation. It contains a corrugated metal roof and measures...
Thermal Products: Blair County

45' x 100'. Grefco continued the manufacture of specialty refractory products at Sproul until late 1987 when the company closed the plant, and laid off the remaining work force.

Sources:
McDonald, Paul O. Former President of District 50, United Mine Workers, Sproul, Pennsylvania. Interview, 9 July 1987.

General Refractories Company: Workers' Housing (1912-18)
Current Name: Private Residences
Rating: 2
On US 220 at PA 3006, Sproul, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000) UTM: 17 E.715740 N.4460700
Historic Use: Workers' Housing
Present Use: Private Residences

In 1911 the General Refractories Company (Grefco), headquartered in Philadelphia, built the Sproul brick refractory. From about 1912 to 1918, General Refractories built sixty-eight houses (of which sixty-five survive and are now privately owned) for its workers. Located along Reed and Frances streets in Sproul, these homes are single-family, wood-frame dwellings, two-stories tall, with coursed rubbled foundations. Each residence measures approximately 30' x 20'. Many of the residents living in the former company housing once worked at the Sproul refractory.

Sources:
McDonald, Paul O. Former President of District 50, United Mine Workers, Sproul, Pennsylvania. Interview, 9 July 1987.

Standard Refractories Company Claysburg Plant (1913)
Current Name: GREFCO Claysburg Plant
Rating: 2
E side of Bedford Street at Packard Street, Claysburg, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000) UTM: 17 E.716920 N.4463600
Historic Use: Refractory Clay Products
Present Use: Abandoned

In 1912, T. N. Kurtz began construction of the Standard Refractories on Bedford Street in Claysburg; construction was completed in 1913. The refractory produced silica brick primarily for the steel industry. Ganister, used in the manufacture of silica brick, came from quarries on nearby Dunnings Mountain. During World War I, the Standard Refractories Company recruited Afro-American workers from the vicinity of Little Rock, Arkansas, and brought them by train to Claysburg. They constituted approximately half of the workforce until the 1930s, although most of them left the area by the 1950s. In 1922 the General Refractories Company, operating a large refractory in nearby Sproul, acquired the Standard Refractories plant in Claysburg. At its peak of production during World War II, the Claysburg plant employed 325 people. The plant was closed in July 1987.

Many historic structures survive at the refractory in Claysburg, including nineteen of the original twenty kilns, which were used to heat and harden the silica bricks. Each kiln is constructed of bricks, lined on the inside with firebrick, and is 36' in circumference and approximately 20' high at the peak of the dome. Between every two kilns there stands a brick chimney stack which measures 12' x 9' and is 30' in height. Drawing exhaust gases from the
kilns, the chimneys are connected to the kilns via underground tunnels. Tracks between the
driers and the kilns enabled loaded carts to move brick from the driers to the kilns and then to
storage. These hand-operated carts were replaced by forklifts. Also standing near the kilns is a
1910s track turntable for moving bricks around the refractory.

One other important historic, the Moulding Building, still stands. It was here that ganister was
crushed, dried, and shaped into bricks. After removal from the moulds, bricks were carted to
the kilns for heating. The one-story Moulding building varies in height and measures
approximately 285' x 35'. Its wood frame walls are covered with metal siding.

One other historic structure stands near the refractory. Built in 1914 by the Standard
Refractories Company, this one-story brick building served as a kindergarten. Recently used as
a conference room, the building is L-shaped, measures 40' x 30', and has a concrete foundation.
General Refractories closed its Claysburg refractory in July 1987, and has no plans to reopen
the plant.

Sources:
McDonald, Paul O. Former President of District 50, United Mine Workers, 1947-1953, Sproul, Pennsylvania. Interview,

Cresson and Clearfield Coal and Coke Company  (ca. 1885)
Current Name: Unknown Rating: 3
W side of PA 53, .3 miles S of Frugality, Frugality vicinity, Cambria County, Pennsylvania
USGS Quad: Blandburg, Pennsylvania (1:24000) UTM: 17 E.712340 N.4502600
Historic Use: Coke Ovens Present Use: Abandoned

The Cresson and Clearfield Coal and Coke Company opened its mines in Frugality in
September, 1887. There were two drift openings into the Upper Kittanning and Upper
Freeport (E) coal seams. Coal from the E seam was used for coke that was produced in the
ninety or so brick beehive ovens located on nearby Clearfield Creek. At present, about half of
these coke ovens survive. Situated on the west side of PA 53, the ovens are easily reached on
foot by following the former Pennsylvania Railroad tracks south from Frugality.

Sources:
Publishing Company, 1890.

Hastings Coal & Coke Company: Kinport Coke Works  (ca. 1919)
Current Name: Unknown Rating: 4
S of PA 240 at PRR Susquehanna Branch, Kinport, Cambria County, Pennsylvania
USGS Quad: Barneysboro, Pennsylvania (1:24000) UTM: 17 E.685500 N.4508320
Historic Use: Coke Works Present Use: Abandoned

About 1909, the Hastings Coal & Coke Company's Kinport No. 1 mine began working the
Lower Freeport coal seam. Some ten years later the company built several batteries of beehive
coke ovens using coal from the Kinport mine. The No. 1 mine produced as much as 100 tons
of coal a year. By 1919 Hastings Coal & Coke employed 165 men, along with five boys and ten girls under the age of sixteen. The Fourth Industrial Census for Pennsylvania reports that of the total population of 280 in Kinport, ninety-five men worked for Hastings Coal & Coke. By 1925 the total number of employees had climbed to 102. Served by the Pennsylvania Railroad, the coke works may have operated as late as the 1940s. Presently, only about thirty beehive ovens remain and they are in a moderately deteriorated condition. Brick for the ovens was manufactured by the Crown Brick Company.

Sources:

**Hiram Swank's Sons: Johnstown Works (ca. 1900)**

**Current Name:** International Refractories, Inc.  
**Rating:** 4

Clinton Street (PA 271) N of Little Conemaugh River, Johnstown, Cambria County, Pennsylvania  
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.67740 N.4466350  
Historic Use: Refractory Clay Products  
Present Use: Refractory Clay Products

Located on Clinton Street, northeast of the Bethlehem Steel's Gautier Division, on the north bank of the Little Conemaugh River, Hiram Swank's Sons Refractory was founded in 1856 in Johnstown by Hiram Swank, a native of Somerset County. Shortly before the Civil War, the Cambria Iron Company approached Swank about the potential for casting pouring sleeves, which were used for pouring molten metal. Until that time, the two-section sleeves had been imported from Germany. Swank agreed to produce the sleeves in Johnstown, and reduced the cost of production by casting a one-piece sleeve. The business continued to grow along with Cambria Iron throughout the nineteenth century with an ever increasing portion of the refractory's work being related to the steel industry. (The Johnstown refractory was eventually one of four Pennsylvania refractories operated by Hiram Swank's Sons.) In 1956 over 90 percent of the production was for the domestic steel industry. Swank's sons followed their father into the business, and it remained under the control of the Swank family until the early 1970s.

In the 1970s Swank's family filed for bankruptcy and its refractories were bought by the Winston Corporation in 1981. That year the Winston Corporation established International Refractories, Inc. Former Swank Company management and plant personnel were recruited by International Refractories, and the first products were shipped in March 1981. At present, the firm employs fifty people. It continues to produce castings for the steel industry as well as for the chemical, petroleum, aluminum, and powdered metals industries. The company also continues to utilize local clays in its operations. Few historic structures remain at Swank's refractory. Eleven of the fifteen gas-fired (originally coal-fired) kilns remain, along with the No. 1 and No. 2 Shop-Drying-Floor buildings. These structures were built around 1900 and are the oldest structures on site. An early 1900s circle kiln, also called a continuous rotary kiln, was demolished in the 1970s. The Swank Company's nineteenth-century office building, located south of the present shop drying-floor buildings along the river, was destroyed in the 1977 flood.
Sources:
"100 Years of Service to the Steel Industry," Hiram Swank's Sons Publication, Johnstown, 1956.

Patton Clay Manufacturing Company: Housing (ca. 1900)
Current Name: Private Residences
Rating: 3
Terra-Cotta Avenue, SE of old plant, Patton, Cambria County, Pennsylvania
USGS Quad: Hastings, Pennsylvania (1:24000) UTM: 17 E.6988575 N.4600940
Historic Use: Workers' Housing
Present Use: Private Residences

Two years after the town of Patton was founded in 1893 the Patton Clay Manufacturing Company constructed a large fire-clay works. The company produced terra cotta sewer pipe, and paving and building brick, and employed 100 men. By 1930, the plant covered approximately eight acres and included two large factory buildings, thirty-seven kilns, several small out buildings, and a row of nine duplexes for worker housing located on Terra Cotta Avenue. The Patton Clay Manufacturing Company maintained this plant until the mid 1950s. It was demolished over the past two decades. Some of the company-built housing survives along Terra Cotta Avenue. Four of the original duplexes, on the south side of Terra Cotta Avenue, are two-story, brick-veneer buildings with front porches sheltered by shed roofs. The buildings are uniform in appearance and feature a lightly ornamented brick cornice. The buildings are still used as dwellings and, although many repairs and minor alterations have occurred over time, the workers' houses retain much of their historic appearance.

Sources:

Pennsylvania Coal & Coke Company: Mine No. 9, Coke Works (ca. 1903)
Current Name: Unknown
Rating: 3
.5 mile N of, Cresson, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.704810 N.4482820
Historic Use: Coke Ovens
Present Use: Abandoned

Two batteries of double-block beehive coke ovens, each block numbering about fifty ovens, stand one-half mile north of Cresson, adjacent to Sankertown. The Webster Coal & Coke Company opened its Mine No. 9 at the site in 1901 or 1902. The Pennsylvania Coal & Coke Corporation absorbed Webster Coal in 1902 and built the ovens between 1903 and 1904. The company produced coke at the site until 1915 at which time the ovens were permanently shut down. Of brick construction, this double battery of beehive ovens extends over 500' in length. Originally the ovens were about 10' in diameter and 6' tall. A rail spur located near the Pennsylvania Main Line between Cresson and Sankertown served the coking facility. All of the
Photo - 14. Pennsylvania Coal & Coke: Mine No. 9, Beehive Coke Oven (ca. 1903), Cresson. Photo by Tom Lindblom for HAER.

beehive ovens have greatly deteriorated and none of them remain intact. The once thriving coke industry in Cambria County is evidenced by only a handful of sites.

Sources:
Many of the early-nineteenth-century settlers in southwestern Pennsylvania realized their prosperity depended upon the reliable and inexpensive transportation of their goods to distant markets. Efficient and affordable transportation did not exist in western Pennsylvania, however, due to the rugged topography and primitive roads. In 1800 for instance, transporting a ton of goods from Philadelphia to Pittsburgh by horse or mule cost between $120 to $220. These exorbitant shipping costs hindered economic development and proved increasingly intolerable, especially after the opening of New York's Erie Canal; Philadelphia merchants and southwestern Pennsylvania iron masters faced ruin at the hands of East Coast competitors. Consequently, these entrepreneurs exerted enormous pressure on the Pennsylvania legislature, which resulted in the passage of three laws that would open up this interior. The first act, passed in March 1824, directed Governor J. Andrew Shulze to appoint three canal commissioners to examine a route for a canal between Philadelphia and Pittsburgh. The second, dated 11 April 1825, increased the number of canal commissioners to five, and directed them to establish "navigable communication" between the Delaware and Ohio rivers and Lake Erie. The third act, of 25 February 1826, authorized construction on three separate canal projects: along the Susquehanna between the Juniata River and Swartara Creek; along the Allegheny River from Pittsburgh to the Kiskiminetas River; and a feeder canal to connect French Creek with Conneaut Lake. On 4 July 1826 Governor John Andrew Shulze and other dignitaries broke ground on the Susquehanna River portion of the Main Line Canal, at Harrisburg. The 395-mile Pennsylvania Main Line Canal eventually linked Philadelphia to Pittsburgh.¹

Pennsylvania Canal and Allegheny Portage Railroad:

The Main Line Canal, also known as the Public Works, was arranged into sections in Blair and Cambria counties: the Juniata Division (from Hollidaysburg to Duncan's Island, Perry County), the Allegheny Portage Railroad (Hollidaysburg to Johnstown), and the Western Division (Johnstown to Pittsburgh). A fourth section, known as the Eastern Division, connected the Juniata Division to Columbia, Pennsylvania. A short line railroad connected Columbia to Philadelphia. The Western Division opened first, in 1830; the final portion, the Huntingdon-to-Hollidaysburg link of the Juniata (Division) Canal opened two years later. Completed, the canal boasted sixty-four locks, sixteen aqueducts, sixty-four culverts, and 152 bridges. Unfortunately, few of these resources have survived, although some remnants of the Juniata Division can still be found along the Juniata River in Blair County. These two canal divisions were separated by Allegheny Mountain. The third and final section of the Main Line to be completed was the Allegheny Portage Railroad, a 36-mile system of inclined planes and levels that opened on 18 March 1834. This apparatus pulled trains of canal-boat sections by stationary engine at the planes, and by locomotive on the levels. It was the technological marvel of its day. By 1835 the cost of shipping one ton of goods via the canal and Portage Railroad from Philadelphia to Pittsburgh dropped dramatically to about $20.

Several remnants of the original Portage Railroad are found at the Allegheny Portage Railroad National Historic Site. The Lemon House, on old US 22 east of Cresson, contains the park headquarters and an interpretive center. Stone sleepers, a quarry, and a portion of the plane No. 6 are located adjacent to the Lemon House. A stone skew-arch bridge, which spanned this plane, is east of the house. The Staple Bend Tunnel, the first major railroad tunnel in the

United States, and a portion of the Portage Railroad's trace at the eastern portal, are located near Johnstown. The tunnel was constructed between 1828 and 1834 under the direction of chief engineer Sylvester Welch. It stands between incline plane nos. 1 and 2 on the "Long Level," and measures 901 feet in length. The first 150 feet at each end was lined with cut stone, while the middle 600 feet were left with exposed rock.

While the Allegheny Portage Railroad was a tremendous engineering feat, after a few years it could not meet the demand of increasing traffic. The use of the inclined planes, though necessary in 1834, caused major traffic backups. On 4 May 1852 the state legislature mandated that a new route be surveyed for the Allegheny Portage Railroad that would avoid the use of inclined planes. The survey team found a route free of inclined planes that extended from inclined plane No. 4; inclined planes Nos. 1 - 3 had already been circumvented by a new route to Hollidaysburg. This new path roughly paralleled the Pennsylvania Railroad's (PRR) route to what became the town of Cresson. The two lines diverged there. The PRR followed a northerly course that eventually led to Sugar Run Gap and on to Altoona, while the New Allegheny Portage Railroad proceeded directly to Sugar Run Gap. Both lines passed the summit via tunnels, however, the Public Works tunnel was shorter, because it was dug at a higher elevation than that of the PRR. The route then descended to the Juniata Valley along the face of the mountain. The route crossed the original portage route between inclined planes Nos. 8 and 9 via the Muleshoe Curve, then descended to the point of intersection with the original road, between Duncansville and the junction of the Pennsylvania Railroad branch from Altoona.

This route for the New Allegheny Portage Railroad was accepted, and contracts for its construction were made, on 29 July 1852. The two prominent engineering features of the New Allegheny Portage Railroad—the Portage Tunnel and the embankment, known as the Muleshoe Curve—are extant. The Portage Tunnel whose maximum ridge height is 135 feet, is sometimes confused with the Pennsylvania Railroad's Summit, but the working shafts for the PRR's Summit Tunnel were reported to be 200-300 feet below the mountain top, with entrances of more than 1100 feet. The contractors for the Portage Tunnel were Moorhead & Patterson.

The opening of the Summit Tunnel in January 1854 signalled the beginning of the end for the state canal. The Pennsylvania Railroad suspended operation of its trains over the Portage Railroad route in February 1854, which was a major blow to the economic health of the Portage Railroad. Work on the New Allegheny Portage route continued, however. The eastern portion, built to avoid inclined planes Nos. 9 and 10 opened in April 1855; and the entire route, though unfinished opened in July 1855. Work on the tunnel and the embankment was still needed, but the PRR's trains en route from Harrisburg to Pittsburgh out paced the canal boats and portage trains, and could operate year-round, so pressure to abandon the Public Works mounted. In May 1855 the legislature and governor approved an Act to Sell the Main Line Canal and Allegheny Portage Railroad. Since no interested parties appeared, the state continued to appropriate money for canal construction and maintenance. Another act permitting the sale of the canal and portage railroad passed the legislature in May 1857; the sale was made in June 1857 to the only bidder, the Pennsylvania Railroad. The Public Works were transferred to the PRR's control in August 1857, and were finally closed in November 1857 after running at a loss for three months. The New Allegheny Portage Railroad was dismantled in 1858. Rails were

---

sent to the Pittsburgh, Fort Wayne & Chicago Railroad, and a large number of stone blocks were shipped to Altoona, to be used as masonry in the shops.

By 1898 the double-tracked line over Allegheny Mountain was insufficient to handle the existing traffic. The most expedient way to alleviate the bottle neck was to reactivate the New Allegheny Portage Railroad right of way. Therefore, the New Allegheny Portage Railroad, including the tunnel, was rebuilt as a double-tracked line. This offered some relief for a few years, but by 1905 still more tracks were needed, so the PRR bore a new tunnel through the mountain north of the original Summit Tunnel. Both tunnels constructed by the PRR are still in use. The New Allegheny Portage Railroad route from Cresson to Hollidaysburg was abandoned again after Conrail was established in the 1970s, however the tunnel is still in use as an eastbound track for passenger trains and helpers.  

The advent of the railroad in southwestern Pennsylvania in the 1840s and 1850s undercut the business of the Pennsylvania Canal and the Allegheny Portage Railroad. Not only was shipping slower via the canal, but the waterway was impassable during the winter months due to ice. Despite the advantages of railroad transportation, the changeover from canal to railroad transportation took nearly 30 years to complete. The first railroad to challenge the canal's dominance of the Pennsylvania Canals' Main Line was the Pennsylvania Railroad.  

The Pennsylvania Railroad:

In April 1846 the state legislature incorporated the Pennsylvania Railroad and, shortly thereafter chief engineer and later president, J. Edgar Thomson, oversaw construction of the famous Horseshoe Curve. Completed in 1854, the Horseshoe Curve and Summit Tunnel linked Blair County and all points east to Pittsburgh. Over the next 30 years, the PRR expanded dramatically, acquiring the Cumberland Valley Railroad (1859), the Philadelphia and Erie Railroad (1861), the Allegheny Valley Railroad (1868), and by 1900 the Northern Central Railroad. In its attempt to eliminate competition during the 1880s and 1890s, the PRR bought into the Baltimore & Ohio, the Norfolk & Western, and the Reading railroads and in cooperation with the New York Central Railroad, purchased the Chesapeake & Ohio line. By 1876 the PRR was moving 31 million tons of freight annually, with reported net earnings of $22 million; in that depression year PRR "stood astride the heart of the nation's iron, coal, steel, and petroleum districts."  

The PRR established shop facilities in Altoona in 1849 and began locomotive construction there in 1866. Altoona's population grew with the railroad, increasing from 2,500 in 1854 to 30,260 in 1890. Irish, German, Italian, Lebanese, and Jewish immigrant workers settled in Altoona to work for the company, making it the most cosmopolitan city in Blair County. The railroad  

---


5 Alexander, Klein and Hoogenboom,
Transportation

connected Altoona to Tyrone in 1850, and Tyrone became one of the most important stations between Philadelphia and Pittsburgh, as a hub for several branch and independent lines serving the timber- and coal-rich Centre and Clearfield counties. The Morrison and Cass Paper Company located in Tyrone in 1878 because of easy access to rail transport. George King of Johnstown formed the Cambria Iron Company in 1852 and soon began manufacturing rails for the PRR. The Cambria Iron Company acquired the PRR rail contract in 1856, and within 20 years, produced 45,000 tons of rails annually for the railroad. The work force for the rapidly developing region was increasingly composed of eastern and southern Europeans, and the PRR served as the primary means for bringing the newly arrived immigrants into the cities and towns of Blair and Cambria counties.  

Structures:

Few PRR passenger or freight stations built before 1940 still stand. In Blair County, the Hollidaysburg freight station, built of wood in 1855 and one of the oldest in the region, was recently demolished. Another historic freight depot in Martinsburg remains in place. Built in 1878 by the PRR to serve this largely agricultural community, the frame depot rests on a stone foundation. In Roaring Spring the only surviving historic passenger station in Blair County, is being restored by local citizens. Built about 1900 by the PRR, it contains heavy, timber framing with brick load-bearing walls. The Martinsburg station is currently used by the Martinsburg Milling Company as a storage facility.

The most impressive passenger station in the region is located in Johnstown. The Pennsylvania Railroad Station, built in 1917, is now owned by a local real estate developer. Built of tapestry brick on a granite foundation, with Indiana limestone pilasters and cornice bracketing the station is made of two sections: the main building containing a waiting room, ticket and other offices, and a separate baggage and express room.

The PRR passenger station in Portage is located at the corner of Lee and Washington streets. This turn-of-the-century structure currently owned by the Stager Wrecking Company is barely recognizable as a train station. Two blocks east of the Portage PRR passenger station is the old PRR freight depot, built between 1906 and 1911, on a siding off the Main Line. It is now abandoned and has been covered with a brick-pattern asphalt siding.

Steam engines that powered the PRR's locomotives required enormous quantities of water. Consequently, the PRR built or purchased reservoirs in or near the towns of Bellwood, Tipton, and Wilmore, and near the Muleshoe Curve. When the PRR began to phase out steam engines

---


8 Art Heinz, "Train Station Study Results May be Delayed," Johnstown Tribune-Democrat, (9 July 1987), D-1; "Pennsylvania Track Elevation at Johnstown," Railway Age Gazette, 62 (19), 1013-17.

in favor of diesel locomotives in the 1950s, a number of railroad executives bought these reservoirs, formed Blair Gap Waterways, and began selling water to local municipalities. By the 1960s this ceased to be profitable, so Blair Gap Waterways sold its reservoirs to the City of Altoona Authority. Interestingly, an earlier generation of PRR executives had created the Altoona Telephone Company in 1882, thereby establishing close relations with that utility and the railroad.\footnote{Pennsylvania Writers' Project, Pennsylvania: A Guide to the Keystone State (New York: Oxford University Press, 1940); William L. Cochran, executive director, Altoona City Authority, Water Division, Altoona, Pennsylvania, Interview, 22 July 1987; and Fred Long, past president of the Blair County Historical Society, vice president of the Railroaders' Memorial Museum, Altoona, Pennsylvania, Interview, 18 June 1987.}

Bridges:

The Pennsylvania Railroad Company built a number of bridges on the Main Line. Initially the railroad relied on local, inexpensive construction materials—chiefly lumber and stone—to build its bridges. However, as the locomotives and rail cars became larger and heavier, new and sturdier materials were needed. In the 1860s and 1870s consequently, the PRR and other railroads began to erect iron bridges throughout much of the nation. Despite the introduction of steel bridge construction beginning in the 1880s, the PRR and its chief engineer, William H. Brown, opted to replace many of the railroad's iron bridges with stone. Although the construction costs for stone bridges were generally higher than those of steel, Brown argued that maintenance costs for stone spans was far less than those for steel construction. In the 1890s through the early 1910s, the PRR vigorously implemented Brown's stone bridge-building program.\footnote{William H. Shank, Historic Bridges of Pennsylvania (York, Pennsylvania: American Canal & Transportation Center, 1974); Engineering Record, v. 48, (10 October 1903), 418.}

More than twenty bridges on the main line in Blair and Cambria counties date from 1885 to 1915. The Trout Run Bridge, in Portage, however, was built in 1851. Many river crossings were of stone-arch construction. The most outstanding bridges surveyed include the Conemaugh Viaduct, built in 1890 to replace the one destroyed in the Johnstown Flood of 1889, and the bridge over the Little Juniata River and PA 350, south of Shoenberger. This 230 foot bridge, built in 1890, has five skew arches on stone piers. All the railroad bridges surveyed, except for the Muleshoe Bridge, are still used by Conrail.\footnote{Shank, 418.}

Other Rail Lines:

Although the PRR dominated rail transportation in Pennsylvania and controlled the state legislature until the 1930s, rival carriers occasionally attempted to challenge its hegemony. At the request of the Cambria Iron Company—which was unhappy with the limitations of shipping its products exclusively on the PRR—the Baltimore and Ohio Railroad completed 37 miles of track between its main line and Johnstown in 1881. At the border of Somerset and Cambria counties near Stony Creek, the B&O, operating under the name Somerset and Cambria Railroad, constructed a 306-foot "Hogsback Tunnel" to avoid building three additional miles of track along the banks of the river. The name comes from the slight curve the tunnel makes, which resembles the arch of a hog's back. The retaining walls and arches at both portals to the tunnel are cut stone, while the interior vault is a combination of cut stone and masonry. Trains
continue to use the "Hogsback Tunnel."\textsuperscript{13}

Serving primarily the iron, steel, and coal-mine industries, shortline railroads sprang up in Blair and Cambria counties throughout the late-nineteenth and early-twentieth centuries. By 1913 the \textit{First Industrial Directory of Pennsylvania} reported the existence of two shortlines in Blair and five in Cambria. Two of these, the Cambria & Indiana (C&I) and the Conemaugh & Blacklick (C&BL), are still in operation. The C&I dates from 1904, when A.W. Lee and John Wrigley of the Vinton Lumber Company incorporated their existing lines as the Blacklick & Yellow Creek Railroad. The system was originally intended for lumber transport, but in 1910 the Coleman & Weaver Company acquired the system to haul coal. In 1911 the first shipment of coal left the Colver mine on the newly renamed Cambria & Indiana Railroad. The C&I shipped bituminous coal over a distance of twelve miles along its lines through Cambria and Indiana counties. To meet the increasing demand for production and shipping between in 1891-1920 the C&I built a new engine house, machine shop, and office building at Colver, and in 1977 the Bethlehem Steel Corporation purchased the C&I; the Colver engine house is currently used for locomotive maintenance and repairs.\textsuperscript{14}

The Bethlehem Steel Company incorporated the Conemaugh & Blacklick Railroad in Johnstown in 1925. Consisting of more than 52 miles of track, the C&BL replaced an earlier shortline originated by the Cambria Steel Company. It served as a common carrier, linking the Johnstown Plant to the main line of the PRR and the B&O's Johnstown Branch line. Located near Bethlehem Steel's Wire and Rod Division, but on the opposite side of the Conemaugh River, is a three and one-half story car-repair shop built in the 1920s. Bethlehem Steel still repairs cars at this site and continues to ship products among the Johnstown facilities using the line.\textsuperscript{15}

**Interurban Railroads:**

The capability to efficiently transport products from industrial locations to commercial centers had been largely achieved by the 1870s. In contrast, the development of convenient and rapid means to move people within and between cities and towns did not occur until the last quarter of the nineteenth century. When streetcar, and then interurban, lines were introduced to American population centers, they had an immediate and enormous impact on urban society. Neighborhoods outside of the congested industrial and commercial centers began to expand. Streetcars originally pulled by horses, were soon converted to electric power in some cities.\textsuperscript{16}


Altoona and Johnstown, the two largest urban centers in Blair and Cambria counties, witnessed rapid growth during the streetcar era. Johnstown's neighborhoods, in particular, began growing up and down the valleys of the Little Conemaugh, Stony Creek, and Conemaugh rivers, and one neighboring town, Moxham, contributed to America's growing street-railway system.

Johnstown boasted an extensive street-railway system. The Johnstown Passenger Railway Company, founded in 1882 and originally located in nearby Woodvale, was purchased by Tom Johnson after the 1889 flood. Johnson subsequently electrified the system and relocated the car barns to Moxham. An 1893 fire destroyed the buildings, and they were reconstructed at their current location at the corner of Central Avenue and Bond Street. Five of the yellow-brick car barns remain. Also standing is a powerhouse built in 1890 on Baumer Street.\textsuperscript{17}

Also surviving in Cambria County are several historic structures that belonged to the Northern Cambria Railway Company and the Southern Cambria Railway Company. In 1909 the Southern Cambria Railway Company was organized to provide service by electric trolley between Johnstown and Ebensburg. Meanwhile, the Northern Cambria Railway Company, organized in 1906, agreed in 1909 to construct a line between Ebensburg and Carrolltown. The Southern Cambria Railway Company ran out of money when it reached Ebensburg, however, and had to abandon its plan to reach Carrolltown. Historic structures of the Southern Cambria Railway Company, which ceased business in 1926, include a car barn and power house in Brookdale. The Northern Cambria Railway Company, which ceased operations in 1926 has three historic structures in an engine room, a boiler room, and a car barn, northwest of St. Benedict. The remaining historic structures of the Northern and Southern Cambria Railway companies are presently used by light industrial concerns.\textsuperscript{18}

Several historic structures survive in Blair County, among them were structures of the Altoona and Logan Valley Electric Railway Company system, founded in 1888. The company constructed a six-mile line to Hollidaysburg in 1892, and two years later, developed Lakemont Park in Altoona. Between 1888 and 1891 the Altoona and Logan Valley Electric Railway Company built its trolley barns and maintenance shops in Altoona near Fifth Avenue and 35th Street. Of related interest is the company's Whittier Avenue Passenger Station, built in 1895 at the corner of Whittier and Logan streets in Altoona, which now serves as a private residence. Designed by the Beezer Brothers, one of Altoona's prominent late-nineteenth-century architectural firms, this ornate two-story, stone and shingle-faced building was completed in 1895 to serve the residents of Llyswen, a streetcar suburb. By 1901 the American Street Railway Company took over the Altoona and Logan Valley Electric Railway Company. The Whittier Avenue Station has survived in excellent condition and one of the Fifth Avenue and 35th Street trolley barns, constructed in 1891, is extant and used as a bingo parlor.\textsuperscript{19}


Allegheny Portage Railroad: Skew Arch Bridge \,(1833)\)

Current Name: Skew Arch Bridge  
Rating: 1

Crossing Incline No. 6, on old US 22, on E slope of Allegheny Mountain, Cresson vicinity, Blair County, Pennsylvania  
USGS Quad: Cresson, Pennsylvania \,(1:24000)\)  
UTM: 17 E.708310 N.4480720  
Engineer, Architect, Fabricator, Builder: J. Fenlon, A. & J. Darlin, R. Klininmouth (B)

Structure Type(s): Skewed Semicircular Arch  
Length: 70\,'; Number of Spans: 1; Length of Main Span: 21\,'; Width: 16'2"
Material: Ashlar sandstone; Condition: Good

This bridge carried the Huntingdon-Blairsville Turnpike, also called the Northern Turnpike, across Inclined Plane No. 6 of the Allegheny Portage Railroad on the east slope of Allegheny Mountain. It was originally designed, and partially built, to be perpendicular to the incline, but in 1833 its alignment was altered to the present skew arrangement, to facilitate the traffic on the steep grade of the turnpike. The firm of Fenlon, Darling, and Company was the contractor for this work. In 1849 one of the wing walls collapsed and was rebuilt. The ashlar stone was
Transportation: Blair County

cut from local sandstone quarries and the bridge was constructed without mortar. The overall length of the bridge measures 70'. The width at the ends of the curved abutments measures 43'.

Sources:

Altoona & Logan Valley Electric Railway Company: Altoona Car Barn (ca. 1890)
Current Name: Altoona Metro Transit Rating: 2
Fifth Avenue near Thirty-Fifth Street, Altoona, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000) UTM: 17 E.719360 N.4485400
Historic Use: Car Barn
Present Use: Social Hall

In 1882 leading Altoona businessmen formed the City Passenger Railway Company to construct and operate a horse-powered street railway. The line extended through the downtown along Chestnut Avenue from First Street to Eleventh Street and beyond, and cost $35,000 to build, and $10,000 to operate six cars and thirty horses. A site located near Fifth Avenue and Thirty-fifth Street was selected for its car and horse barns, as well as its maintenance shops. On 1 July 1891 City Passenger inaugurated Altoona's first electrified railway. At about the same time the company erected a new car barn to house its trolleys. This structure still stands and is the earliest surviving building associated with City Passenger Railway. It is a one-and-one-half-story brick building, measuring 60' x 20', and containing a stone foundation and an iron roof truss with riveted connections.

In 1892 the Altoona & Logan Valley Electric Railway Company was formed to construct a line from Altoona to Hollidaysburg. Two years later Altoona & Logan Valley Electric developed Lakemont Park, a 113-acre tract with a 13-acre artificial lake. In 1901 the American Street Railways Company, a Philadelphia-based holding company that dealt in street railway properties, acquired City Passenger Railway and Altoona & Logan Valley Electric Railway and hired railroad contractors, the Campbell brothers of Altoona, to expand the system. Eventually the interurban system in Blair County tied together a number of cities including Altoona, Tyrone, and Hollidaysburg. Trolley car service in Altoona ceased in 1954. In fair condition, the old trolley barn is currently used as a bingo parlor.

Sources:
"Official Program: Old Home Week Altoona and Blair County," 13-19 August 1922.
Transportation: Blair County

Altoona & Logan Valley Electric Railway Company: Llyswen Station  (1895)

Current Name: Private Residence  Rating: 3

Whittier and Logan Streets, Altoona, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania  (1:24,000)  UTM: 17 E.719560 N.4484800
Builder/Architect/Engineer: Beezer Brothers, Architects
Historic Use: Interurban Passenger Station
Present Use: Private Residence

The Altoona & Logan Valley Electric Railway Company built a station in 1895 at the corner of Whittier Avenue and Logan Street to serve the residents of Llyswen, a streetcar suburb of Altoona. Featuring rustic, cobblestone walls, a porte-cochere, and a hipped-roof dormer, the Whittier Avenue Passenger Station as it was originally called, was designed by Beezer Brothers, Architects, one of Altoona’s early architectural firms. The two-story building measures approximately 30' x 20'. Following the abandonment of Altoona’s streetcar service in August 1954, the Llyswen Station was closed. The structure is now privately owned.

Sources:
Clark, Charles B., ed. Altoona Illustrated: A Complete Pen-Picture of the City of Altoona, Pennsylvania at the Close of the Year 1895. (Altoona; Board of Trade, 1896).

Altoona & Logan Valley Electric Railway Company: Tyrone Car Barn  (ca. 1911)

Current Name: Unknown  Rating: 4

Logan Avenue near W Tenth Street, Tyrone, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania  (1:24,000)  UTM: 17 E.738024 N.4506630
Historic Use: Car Barn
Present Use: Maintenance Garage

In 1901 Tyrone businessmen organized the Tyrone Street Railway which was to run from Tyrone to Bellwood. Clearing, grubbing, and grading for the line commenced, with the work carried out largely by Italian immigrants. Branch lines to Nealmont and East Tyrone were soon built, and four cars were operating by 1902. One year later an electrified interurban system linked Tyrone with Altoona and Hollidaysburg. The Tyrone Street Railway system was linked to Altoona and Hollidaysburg by 1903, when it was absorbed by the Altoona & Logan Valley Street Railway, an Altoona concern owned by the American Railways Company, of Philadelphia. In 1916 the 12-mile railway ride from Tyrone to Altoona took thirty minutes, with cars operating from 5:45 a.m. to 11:15 p.m.

In the 1910s the Altoona & Logan Valley Electric Railway Company purchased an old (ca. 1890s) steam plant and converted it into a car barn. Located at Logan Avenue near Tenth Street, the one-and-one-half-story building was erected by the Home Electric Light Company of Tyrone and measures 120' x 40'. It contains a stone foundation, brick load-bearing walls, and timber rafters. After Altoona & Logan Valley Electric Railway was disbanded in the late 1930s, the car barn in Tyrone passed through several hands. The building is currently used by a trucking firm, but is scheduled for demolition.

Sources:
Most coal operators did not own cars to ship coal to market, but instead relied on the railroads to supply them. Invariably, there were car shortages which delayed shipment and halted mining operations. To avoid these problems, Berwind-White made an early effort to maintain its own railroad car fleet. In 1888 Charles Berwind purchased 500 cars from the Powelton Coal and Iron Company. Over the next two decades Berwind-White enlarged its fleet of rail cars and by 1912 owned at least 2000 cars.

To maintain its rolling stock, in 1905 Berwind-White purchased land in Hollidaysburg for a repair shop. The following year the company completed construction of a machine shop, fabricating shop, and blacksmith shop, as well as buildings housing the physical plant. A number of these stone and timber-frame buildings still stand. One of them, the machine shop where wheel repairs are made, measures approximately 60' x 50', with a gable roof and monitor, and board-and-batten siding. It adjoins a 1960s steel-frame building. The roof of the original machine shop is supported by large timber and iron trusses. The monitor provides light and ventilation through four pairs of multi-light, double-hung, sash windows. Nearby, the bearing shop, another of the original shop buildings, measures 40' x 20' and also contains a gable roof and board-and-batten siding.

Located just north of the machine shop, the original boiler house is a two-story stone building, measuring 30' x 30' and containing a hip roof. The coal-fired steam boilers have been removed, and the building houses a large air compressor. The old boiler house was altered during the removal of the boilers, when two large sections of the stone wall were torn down and rebuilt with concrete block.

In addition to the machine shop, two fabricating shops remain, both of which are large buildings, originally constructed with board-and-batten siding and tall, multi-light, double-hung, sash windows. One of the fabricating shops has been covered with sheet-metal siding. Several small wooden auxiliary buildings remain, including a 12' x 12' frame structure, which once housed the fire hoses. Historic equipment at the site includes an operating blacksmith's forge and an old gas-fired oven for tempering battered sheet metal.

By 1940 Berwind-White, one of the region's major coal producers, operated a fleet of nearly 4,000 mine cars. With the decline of the county's coal industry in the 1960s, the company halted its mining activity. Currently, the Hollidaysburg Division of Berwind-White services and repairs cars belonging to other companies in the mining, chemical, petrochemical, agricultural, and transportation industries.
In addition to the car shops, Berwind-White erected a number of houses for its workers. A row of ten company houses, erected in the 1910s, is located across from the company office on Windber Avenue. No longer owned by Berwind-White, these houses are two-story frame duplexes with two-story ells, gable roofs, and stone foundations. They have been covered with aluminum siding, but otherwise their appearance is largely unchanged from the 1910s.

Sources:

Beaverdam Creek Bridge: Claysburg (ca. 1920)
Current Name: Old US 220 Beaverdam Creek Bridge Rating: 4
Old US 220 spanning Beaverdam Creek, Claysburg, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000) UTM: 17 E.716800 N.4463080
Structure Type(s): Girder
Length: 100'; Number of Spans: 2; Length of Main Span: 50'; Width: 18'
Material: Concrete; Condition: Fair

In 1924 the contracting firm of Joseph F. Drass erected this two-span reinforced concrete girder bridge across Beaverdam Creek at Claysburg. The bridge was probably part of the original construction of US 220, a north–south highway connecting Altoona with Bedford, Pennsylvania. Located on a slight skew, each span of the two-lane bridge measures approximately 50' in length. No longer on US 220, the bridge is used primarily by local traffic in Claysburg, a town so-named because of its association with a large refractory brickworks.

Sources:
- Nameplate on bridge.

Birmingham Bridge (1898)
Current Name: Birmingham Bridge Rating: 2
Local Road spanning the Little Juniata River, south of PA 453 at, Birmingham, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania (1:24000) UTM: 17 E.736800 N.4503360
Engineer, Architect, Fabricator, Builder: J. A. Patterson (E), M. H. Stebbins (B)
Structure Type(s): Through Pratt Truss
Length: 140'; Number of Spans: 1; Length of Main Span: 140'; Width: 15'
Material: Ashlar sandstone; Condition: Good

This single span pin-connected Pratt through-truss was erected across the Little Juniata River, just north of Birmingham, in 1898. According to an inscription in the east abutment, the bridge was built by M.H. Stebbins, contractor, C.H. Reimard, inspector, and J.A. Patterson, civil engineer. Measuring approximately 140' in length, the bridge rests on sandstone abutments and consists of compression members of steel channel sections and riveted lacing bars; and tension members of forged steel eyebars. The portals of this bridge are somewhat unique for a Pratt truss in that they contain hip verticals that carry compressive stresses (hip verticals for the standard Pratt truss type carry tensile stresses only). In addition, a diagonal compression member extends from the junction of the lower chord and hip vertical to the main portal
member. The portals feature decorative panels containing clover-leaf cutouts in the web section of the lateral bracing. Steel I-beam floor-beams and stringers support the wooden deck. Presently in good condition, the bridge serves a single residence on the south side of the Little Juniata.

Sources:
Date of construction and names of engineer and builder are inscribed in stone abutment.
Flowing Spring Bridge  (1909)
Current Name: Flowing Spring Bridge  
Rating: 3

Twp. Road 444 spanning Frankstown Branch, Juniata River, S of US 22 at Frankstown Branch, Canoe Creek vicinity, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania (1:24000)  
UTM: 17 E.731220 N.4483640
Engineer, Architect, Fabricator, Builder: American Bridge Company (F)

Structure Type(s): Girder
Length: 150'; Number of Spans: 2; Length of Main Span: 75'; Width: 18'
Material: Ashlar sandstone; Condition: Fair

The American Bridge Company, a subsidiary of U.S. Steel, built this fishbelly plate girder bridge in 1909. Consisting of riveted steel plate girders which increase in cross section at the center of the span, this structure is one of only two fishbelly plate girders in the county. Each span measures approximately 75' in length and rests on ashlar sandstone abutments and an ashlar sandstone river pier. The Flowing Spring Bridge continues to serve several farms on the south side of the Frankstown Branch of the Juniata River.

Sources:
Nameplate on bridge.

Furnace Road Bridge  (1903)
Current Name: 17th Street Bridge  
Rating: 2

Spanning Conrail tracks and Little Juniata R. Between PA 4013 and PA 4019 at 17th Street, (East) Altoona, Blair County, Pennsylvania
USGS Quad: Bellwood, Pennsylvania (1:24000)  
UTM: 17 E.722620 N.4491846
Structure Type(s): Pony Truss
Length: 1388'; Number of Spans: 23; Length of Main Span: 113'; Width: 17'7"
Material: Steel; Condition: Poor

The 17th Street Bridge, also known variously as the Blast Furnace Road Bridge, or the Roundhouse Bridge, spans the former Pennsylvania Railroad's Main Line and classification yards between Juniata and East Altoona. It was erected by the railroad in 1903. In addition to connecting the two communities, the bridge provided access, via a ramp, to the PRR's East Altoona Shops and its giant roundhouse. The bridge consisted of twenty-three spans, six of which were pony truss spans, and 17 deck girder spans. The ramp leading to the railroad shops consisted of a pin-connected Pratt deck truss.

In 1966 a rail car on the Main Line hit one of the 17th Street Bridge spans and the bridge was closed. The PRR removed the eastern approach spans, barricaded the western approach, and demolished the damaged span crossing the Main Line. In 1967 the PRR filed a legal notice in the Altoona Mirror newspaper advising the public of its intention to remove the bridge, however, it took no action. The bridge still stands in its partially demolished state; several plate girder and pony truss spans supported on steel bents are extant along with the ramp into the former East Altoona Freight Terminal Shops, although virtually nothing survives from this once sprawling shop complex.

Sources:
Geeseytown Bridge  (1902)
Current Name: Geeseytown Bridge  
Twp. Road 427 spanning Frankstown Branch, Juniata River, E of Geeseytown, Blair County, Pennsylvania
USGS Quad: Frankstown, Pennsylvania  (1:24000)  UTM: 17 E.725620 N.4480460
Engineer, Architect, Fabricator, Builder: American Bridge Company (F)
Structure Type(s): Girder
Length: 100'; Number of Spans: 2; Length of Main Span: 75'; Width: 18'
Material: Ashlar sandstone; Concrete; Condition: Fair

Nearly identical to the Flowing Spring Bridge, this two-span fishbelly plate girder was erected in 1902 by the American Bridge Company of New York, a subsidiary of U.S. Steel. Each span measures approximately 75' in length and the bridge is 18' wide. Ashlar sandstone abutments with wing walls are located on each river bank and the central river pier is composed of concrete. The Geeseytown Bridge serves several farms on the south side of the Frankstown Branch of the Juniata River and is the only highway bridge crossing the river between Frankstown and Canoe Creek.

Sources:
Nameplate on bridge.

Lewisburg & Tyrone Railroad Bridge  (ca. 1890)
Current Name: Conrail: Nealmont Bridge  
Abandoned railroad spur spanning Little Juniata River, .5 miles W of Nealmont, Tyrone vicinity, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania  (1:24000)  UTM: 17 E.734260 N.4504140
Structure Type(s): Deck Pratt Truss
Length: 200'; Number of Spans: 3; Length of Main Span: 150'; Width: 20'
Material: Ashlar sandstone; concrete; Condition: Ruins

The Lewisburg & Tyrone Railroad (L&T) was created on 31 December 1879, as the result of the reorganization of the Lewisburg, Centre, & Spruce Creek Railroad. On 1 January 1880, the railroad was leased to the Pennsylvania Railroad for a term of ninety-nine years. The owners intended to operate a continuous line from Lewisburg in Union County, through Mifflin, Centre, and Huntingdon Counties, to Tyrone, a distance of ninety miles. The first tracks were laid from Montandon, on the east bank of the Susquehanna River, to Lewisburg in 1871-72. The Lewisburg to Mifflinburg section, an additional 10.7 miles, opened in 1872-73. Although the eastern portion of the L&T terminated at Oak Hall, its track was eventually connected to the Bald Eagle Valley Branch of the Pennsylvania Railroad at Milesburg by the Bellefonte, Nittany, & Lemont Railroad. The southern division of the L&T was built from Tyrone to Scotia between 1881-1882 to serve the freight and passenger service needs of the iron mines and limestone quarries in the region. In the late 1880s there were two passenger trains in each direction every day between Scotia and Tyrone. Service on the line was phased out in the 1890s. The Lewisburg & Tyrone merged with the Pennsylvania on 30 April 1915. The Tyrone to Scotia division was sold to the Bellefonte Central Railroad in 1928 to serve the growing potato farming interests. However, the Great Depression doomed this enterprise, and the line was finally abandoned around 1932.

The L&T spanned the Little Juniata River between Tyrone and Nealmont with a high deck-truss resting on ashlar sandstone piers. Several steel plate girder spans also supported on ashlar piers served as approach spans. Prior to its abandonment, one of the piers of the single track
bridge was partially rebuilt with concrete. In the 1970s one of the deck truss spans was removed. The surviving pin-connected Pratt deck truss span is the only one of its kind in Blair or Cambria Counties.

Sources:

PA 164: Frankstown Branch, Juniata River Bridge (1925)
Current Name: PA 164 Frankstown Branch, Juniata R. Bridge
Rating: 4
Spanning Frankstown Branch, Juniata River, between East Freedom and McKee on PA 164, East Freedom vicinity, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000) UTM: 17 E.718180 N.4470260
Engineer, Architect, Fabricator, Builder: G. E. Stout (E), Joseph F. Drass (B)
Structure Type(s): Three-centered Arch
Length: 80'; Number of Spans: 1; Length of Main Span: 110'; Width: 20'
Material: Concrete; Condition: Fair

Containing a single span of approximately 80', this concrete arch bridge crossing the Frankstown Branch of the Juniata River, between East Freedom and McKee, was erected in 1925. Joseph F. Drass served as contractor and G.E. Stout was the bridge engineer. During the 1920s Drass constructed a number of concrete girder and arch spans in the region including the Beaverdam Creed Bridge (a two-span girder bridge) in nearby Claysburg. G.W. Selwitz, John R. Dunkel, and John C. Gorsuch were the County Commissioners in the mid 1920s when a great deal of road and bridge building was carried out in Blair County. Presently, the bridge is in fair condition.

Sources:
Nameplate on bridge.

Pennsylvania Canal: Main Line: Upper Juniata Division: Lock No. 22 (ca. 1830)
Current Name: Pennsylvania Canal: Upper Juniata Division: "Burnt Lock" Rating: 1
One mile S of ironmaster's house in Mt. Etna, E of RR trace, Mt. Etna vicinity, Blair County, Pennsylvania
USGS Quad: Spruce Creek, Pennsylvania (1:24000) UTM: 17 E.740140 N.4487820
Historic Use: Canal Lift Lock
Present Use: Abandoned

For administrative purposes, the Pennsylvania Canal Commissioners divided the 127-mile long Juniata Division of the Main Line of the Pennsylvania Canal, into two divisions, Upper and Lower. The Upper Juniata Division extended from the guard lock at the Huntingdon Dam to the canal-boat basin in Hollidaysburg, a distance of 37 miles. Instead of constructing a canal over this entire length, canal engineers employed a series of slack-water pools on the river, for 16.5 of the 37 miles. As a result, of the forty-seven locks on the Upper Division, twenty were guard or outlet locks, and twenty-seven were lift locks.
Transportation: Blair County

One of the few remaining canal locks of the Upper Juniata Division is Lock No. 22, known as "Burnt Lock." Located approximately one mile south of Etna Furnace, this lift lock measured 15' in width and 90' in length, with a lift of 9'-8". As recently as the early 1970s, the lock chamber was in excellent condition, however, the area has become overgrown with large trees, the roots of which are dislodging the stone masonry.

Sources:

Pennsylvania Railroad: Alto Tower (1880)
Current Name: Conrail: Alto Tower
W of 17th Street on the N side of the Main Line, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E. 719760 N. 4487600
Historic Use: Railroad Traffic Tower
Present Use: Railroad Traffic Tower

Since the late nineteenth century rail traffic on the Pennsylvania Railroad has been regulated by either mechanical or lighted signals arranged in blocks along the right of way. The signals were manually controlled by signal operators, who were assigned to traffic towers, located along the right of way, usually adjacent to track crossovers or junctions of spur lines to a main line. The operators communicated with each other via telegraph, and with train crews via the signals or written messages, called train orders, which were delivered to passing trains. Additional towers were often located at the entrance or exit of major yard facilities. Due to the development of electronic communications in recent years, railroads have been consolidating signal operations at facilities with automated controls. The former Pennsylvania Railroad's Antis Tower was recently razed due to inactivity at the classification yards. The only remaining active Main Line tower in Altoona is the Alto Tower. Several other Main Line towers are extant in Cambria County including "AR" Tower in Gallitzin, "C" Tower in Conemaugh, "MG" Tower on the east slope of Allegheny Mountain between the Horseshoe Curve and the Summit Tunnels, "MO" Tower in Cresson, and "SO" Tower (see entry) in South Fork.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.
Pennsylvania Railroad: Antis Tunnel  (1902)
Current Name: Conrail: Antis Tunnel

Spanning Conrail Mainline and Homer Gap Run at Mile No. 232.99, under main line S of Homer Gap Run, East Altoona, Blair County, Pennsylvania
USGS Quad: Bellwood, Pennsylvania (1:24000) UTM: 17 E.722840 N.4492450
Engineer, Architect, Fabricator, Builder:

- William H. Brown (E)
- William A. Pratt (E)
- H.S. Kerbaugh, Inc. (B)

Historic Use: Railroad Tunnel
Present Use: Railroad Tunnel

The Pennsylvania Railroad (PRR) built Antis Tunnel is located north of East Altoona on the old PRR Main Line (Conrail mile 232.99). During the first decade of the twentieth century PRR spent over ten million dollars on stone and masonry work for bridges, retaining walls, buildings, and other rail structures on its main line. The 380' long semi-circular arch tunnel was built in 1902, to allow the West Classification Yard tracks to cross the Main Line without interfering with through traffic. It consists of coursed, ashlar sandstone and remains relatively unchanged.
Transportation: Blair County

The approach to the northern portal of the tunnel appears to pass through a partial cut. In the wing wall, protecting the face of this cut is another tunnel through which Homer Gap Run passes. There is a plaque memorializing the supervising engineer and construction date in the face of the wing wall between the two portals. Traffic using the tunnel crosses Homer Gap Run on a girder bridge, which rests on ashlar sandstone piers.

Sources:

Pennsylvania Railroad: Birmingham Road Overpass (1906)

Current Name: Conrail: Birmingham Road Overpass Rating: 4

Spanning Birmingham Road, W side of Little Juniata River, W side of Little Juniata River, Mile No. 219.49, SW of, Birmingham, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania (1:24000) UTM: 17 E.736690 N.9503290

Structure Type(s): Arch
Length: 20'; Number of Spans: 1; Length of Main Span: 20'
Material: Cut, coursed stone; Condition: Good

In 1906 the PRR erected this stone arch bridge to carry its Main Line across a local road northwest of Birmingham. Located at Conrail mile No. 219.49, this structure contains a modest span of only 20', however, it was part of a larger bridge rebuilding program initiated by the PRR in the 1890s. At that time the railroad began replacing its undersized iron bridges with brick and masonry arch bridges; this was done despite the advent of steel bridge construction. The PRR's chief engineer, William H. Brown, contended that although the construction costs for stone bridges were higher than those for steel, the maintenance costs were dramatically less. This rebuilding program lasted from the 1890s to the early 1910s, and included masonry work for PRR bridges, buildings, retaining walls, and other rail structures after the turn of the century.

This bridge consists of a brick, segmental arch with coursed, ashlar sandstone spandrel walls and earth fill. It remains virtually unchanged except for a modern concrete parapet with metal railing.

Sources:

Pennsylvania Railroad: East Altoona Freight Locomotive Terminal: Roundhouse (1904)

Current Name: Conrail: Site of East Altoona Roundhouse Rating: 4

200' NE of Furnace Road Bridge, East Altoona, Blair County, Pennsylvania
USGS Quad: Bellwood, Pennsylvania (1:24000) UTM: 17 E.722620 N.4491846
Historic Use: Roundhouse and Turntable
Present Use: Abandoned

The Pennsylvania Railroad built a vast classification yard and freight locomotive maintenance and repair facility at Blair's Furnace, now called East Altoona in 1904. Separate classification yards for eastbound and westbound traffic were placed outside of the Main Line freight tracks,
while the passenger tracks were diverted to the western edge of the right-of-way. Train classification in each yard was assisted by the use of gravity humps (see Juniata Scales and Hump). The locomotive repair facility centered on the East Altoona Freight Locomotive Roundhouse, which had a 100' turntable at its core. This table served 50 stalls plus the entry and exit tracks. Four of the stalls had drop tables. After the heavy repairs had been completed the locomotives were transferred to the storage tracks. Other important features of the freight locomotive terminal were the inspection pits (75' in length), the ash pits (280' in length), the coal, sand and water wharves (located east of the roundhouse), a power plant, a machine shop, an oil house, a wash house, and an office and storehouse, part of which was used to accommodate crews which were required to layover at the terminal. Unfortunately almost all of these structures were demolished in the 1960s, including the giant Roundhouse. Interestingly, the rusting turntable of the Roundhouse remains in place.

Sources:
"The East Altoona Freight Terminal of the Pennsylvania Railroad," Railway Age 19 January 1906, pp 86-97
"East Altoona Freight Locomotive Terminal," American Engineer & Railroad Journal 80 (February 1906, March 1906 Serial in two parts, pp 46-52, 81-87

Pennsylvania Railroad: Frankstown Branch, Juniata River Bridge (1909)
Current Name: Conrail: Frankstown Branch, Juniata River Bridge Rating: 3
Local road spanning Frankstown Branch, Juniata River, .6 mile N of PA 164 and PA 2010, East Freedom vicinity, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000) UTM: 17 E.716460 N.4471180
Engineer, Architect, Fabricator, Builder: Pennsylvania Steel Company, Steelton, Pennsylvania (F)
Structure Type(s): Girder
Length: 180'; Number of Spans: 2; Length of Main Span: 90'; Width: 16'
Material: Concrete; Condition: Fair
The Bedford Branch of the Pennsylvania Railroad, extending from Hollidaysburg to Bedford, Pennsylvania, crossed the Frankstown Branch of the Juniata River at this location with this riveted-steel plate girder bridge, erected in 1909. The Pennsylvania Steel Company of Steelton, Pennsylvania, fabricated the plate girders for the two 90-foot long spans. It is nearly identical to a plate-girder bridge on the same line near Loop, southeast of Hollidaysburg. This other plate girder span was also probably fabricated by Pennsylvania Steel. Both bridges are in fair condition.
Sources:
Nameplate on bridge.

Pennsylvania Railroad: Hollidaysburg Freight Station (ca. 1855)
Current Name: Unknown Rating: 1
Blair and Juniata Streets, Hollidaysburg, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000) UTM: 17 E.721100 N.4478200
Historic Use: Freight Station Present Use: Abandoned
Erected by the PRR as early as 1855, this former freight depot is located at the junction of Blair and Juniata Streets in Hollidaysburg. It may be one of the earliest PRR freight depots in the region. Owned by Conrail, the building has been used recently by the Hines Feed Store for storage, and more recently, the depot was leased by the Blair Foundation for Historical Hollidaysburg in hopes of raising sufficient funds to preserve it. In spite of these efforts, it is likely that Conrail will demolish the building.
The one-story, freight depot measures approximately 100' x 22', and has a stone foundation, with timber post-and-beam framing, and vertical board siding. The gable roof extends along the length of the building, and the projecting gable ends contain lightly ornamented woodwork.
Sources:
Pennsylvania Railroad: Halter Creek Culvert  (1884)
Current Name: Conrail: Halter Creek Culvert  
Rating: 3
Conrail spur line spanning Halter Creek Spur .25 miles N of Appleton Paper Co., Roaring Spring, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000)  UTM: 17 E.720460 N.4468680
Structure Type(s): Semicircular Arch
Length: 20'; Number of Spans: 1; Length of Main Span: 20'; Width: 80'
Material: Ashlar sandstone; Condition: Fair

The Pennsylvania Railroad erected this brick and stone arch culvert over Halter Creek in 1884. The arch ring is formed by six courses of brick and each portal is highlighted by ashlar sandstone wing walls with a stone coping. The culvert spans about 20' and measures nearly 80' in width. Located on the Morrisons Cove Branch between McKee and Roaring Spring, the culvert is part of a long embankment leading into the mill of the Appleton Papers, Inc., at Roaring Spring. This rail line is used infrequently, however, Conrail still provides freight service as far as Roaring Spring. A private road extends along Halter Creek through the culvert. The culvert remains virtually unaltered from its original appearance, and the inscription "1884" is still visible in the keystone of the southern portal.

Sources:
Inscription in keystone.

Pennsylvania Railroad: Horseshoe Curve  (1852-54)
Current Name: Conrail: Horseshoe Curve  
Rating: 1
5 miles W of Altoona on PA 4008, Altoona vicinity, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000)  UTM: 17 E.713020 N.4485860
Builder/Architect/Engineer: John Edgar Thomson
Historic Use: Railroad Cut, Fill, and Road Bed
Present Use: Railroad Cut, Fill, and Road Bed

In 1847 John Edgar Thomson was appointed chief engineer and began to survey a route to take the Main Line of the Pennsylvania Railroad across Allegheny Mountain. The surveyors were restricted to a grade of 1.8 percent to ensure reliable and easy travel. Southwest of Altoona the party found a valley running west, that could provide a grade of 1.75 percent. However, before the route reached the summit the valley split into two deep ravines, with Kittanning Point in the middle. Although it would have been shorter to build a trestle across the valley, and bypass Kittanning Point, that route would have required a 4.37 percent grade. Thomson decided to build a large embankment across Kittanning Run and Burgoon Run, the fill for which was to come from the material removed from area around Kittanning Point. Although this required an additional 1.8 miles of track, it permitted maximum grade of 1.75 percent. The difference in height between the eastern leg of the horseshoe and the western leg is 275'. A number of culverts were built along with the Horseshoe Curve including one crossing Kittanning Run, and another, a double-barrelled culvert at Burgoon Run (also known as Glen White Run), that allows Burgoon Run and PA 4008 to pass beneath the massive embankment.

The Horseshoe Curve opened for traffic on 15 February 1854 as a two-track right-of-way. A third track was added in 1898, and a fourth in 1900. In 1925 the railroad built a stone horseshoe decoration 34' long in the side of the hill below the right-of-way. The PRR gave the City of Altoona a permit to operate a park at the apex of the curve in 1940, and the Civilian Conservation Corps built a rest house of stone to accommodate visitors. (The rest house is used as a souvenir store today, and has eight large engraved wood tablets depicting railroad-related scenes around the fireplace.) During World War II the Horseshoe Curve and the nearby tunnels
Transportation: Blair County

at Gallitzin were closed to the public and put under guard. The Curve was promptly reopened for public viewing after the war.

The Horseshoe Curve was designated a National Historic Landmark by Secretary of the Interior Stewart L. Udall on 13 November 1966. This portion of Conrail's Main Line now operates with three tracks, as one track was removed in the 1970s.

Sources:
City of Altoona, "Horseshoe Curve" (Altoona, Pennsylvania, No Date)

Pennsylvania Railroad: Horseshoe Curve Tunnel (ca. 1854)
Current Name: Conrail: Horseshoe Curve Tunnel Rating: 3
Conrail line crossing under part Horseshoe Curve, 5 miles W of Altoona, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000) UTM: 17 E.713040 N.4485680
Historic Use: Railroad Tunnel
Present Use: Railroad Tunnel

This tunnel through the famous Horseshoe Curve (see Pennsylvania Railroad: Horseshoe Curve) is a masonry-lined, segmental arch tunnel measuring 10'-4" high. It is 100' long and has two, coursed, ashlar, sandstone portals. One tunnel carries vehicular traffic on PA 4008, and the other forms a culvert for Glen White Run. The road is separated from the stream by a random range, ashlar sandstone retaining wall.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: Ironville Bridge (Mile 220.41) (1893)
Current Name: Conrail: Ironville Bridge Rating: 4
Spanning Little Juniata River and local road, Mile No. 220.41, E of Ironville and S of PA 453, Ironville, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania (1:24000) UTM: 17 E.735610 N.4504200
Structure Type(s): Arch
Length: 188'; Number of Spans: 3; Length of Main Span: 58'
Material: Cut, coursed stone; Condition: Good

Spanning the Little Juniata River and a local road, the PRR's Ironville Bridge was erected in 1893 as part of the Main Line improvements carried out in the 1890s and early 1900s. The bridge consists of skewed, segmental arches of coursed, ashlar sandstone resting on piers of the same material. The total length of the three spans is 188'. Located at Conrail mile No. 220.41, the bridge was modified within the last decade with the addition of a concrete deck and concrete spandrel girders. It is in good condition.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.
Engineering Record 48 (10 October 1903): 418.
Pennsylvania Railroad: Juniata (Eastbound) Scales & Hump  (ca. 1900, 1927)

Current Name: Conrail East Altoona Yards

E. Classification Yard, .15 miles W of 6th Avenue, East Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania  (1:24000)  UTM: 17E.721820 N.4489960
Historic Use: Hump and Car Scale
Present Use: Abandoned

Altoona was important for the Pennsylvania Railroad Company, not only as the home of locomotive and car shops, but also as a marshalling area for trains operating on its Main Line. There are two major classification yard complexes in Altoona, the West Classification Yard complex and the East Classification Yard complex. The East Classification Yard complex is between the Fourth Street and the location of the former Antis Tower.

The classification of cars to form trains required several steps. First, trains from the Main Line entered the Scale (or Receiving) Yard, where a yard engine and crew took over, after the Main-Line engine crew had cut off their engine. The yard engine pushed strings of cars from the Scale Yard over the top of a hump slowly enough to allow the uncoupling of the lead car without stopping the train. Once the car was uncoupled, its forward motion was determined by gravity and the amount of brake applied by a brakeman. One brakeman rode each car to avoid derailments due to speeding around curves, hitting a string of stationary cars at too high a speed while coupling, or crossing open switches in the Classification Yard. Rail scales located at the crest of the hump weighed each car as it passed over. The operations of a gravity hump and scales, the focal point of a classification yard complex, were controlled by the yard tower.

The East Classification Yard Hump featured two track leads, which could be used simultaneously, but were generally used alternately. Originally, the Juniata Scale was a 52’ long knife-edge scale, but ca. 1927 a two-unit 75’, 400,000 pound capacity, plate-fulcrum track scale was installed at the top of the Juniata Hump. Each track lead had its own scale reading house. Test results from the Bureau of Standards inspection in the late 1920s indicated that the new scale was accurate to within 0.04% at an 80,000-pound load. The new scales maintained their accuracy at higher speeds, thereby allowing the movement of more cars in less time, than the original scales. The east track scale house is attached to the yard tower by locker rooms and offices, and there is a car maintenance facility on the lower level of the building. The west track scale house stands alone. Remnants of the scales remain in each scale house.

During its heyday, approximately fifty brakemen per shift were needed to handle the cars at this hump. Prior to the installation of the "modern" scales, as many as seventy-eight crews were needed daily to classify cars. In 1928 the number of crews dropped to fifty-four. However, the efficiency of the "modern" scales allowed the remaining crews to process 109 cars per crew per day in 1928, compared to eighty-four cars per crew per day in 1926. Trains classified in Altoona’s East Classification Yard complex were returned to Main Line crews and locomotives at the Antis Tower.

Sources:
Pennsylvania Railroad: K-4 Locomotive No. 1361 (1918)

Current Name: Spirit of Altoona

Behind Railroaders Memorial Museum, 1300 Ninth Avenue, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720190 N.4487850
Builder/Architect/Engineer: James T. Wallis, Alfred W. Gibbs, William F. Kissel (E)
Historic Use: Steam Locomotive
Present Use: Steam Locomotive

The Pennsylvania Railroad's Altoona Works, Juniata Shops produced 350 K-4s Pacific class steam passenger locomotives between 1914 and 1928. The first K-4s, dubbed No. 2825, emerged from the erecting bay in May 1914. Production of additional K-4s was delayed during the First World War, however, by May of 1918 Altoona produced No. 1361. The K-4s class locomotive weighed 308,890 pounds and its fully loaded tender weighed 213,000 pounds. The tender stored 12,150 gallons of water and eighteen tons of coal. The locomotive was capable of pulling a train of fourteen heavyweight cars at more than ninety miles per hour, on flat terrain. (In comparison, Amtrak diesels pull only 9-10 cars per locomotive.) At fifty miles per hour the locomotive produced 300 horsepower at the drawbar.

Locomotive No. 1361 was retired from active service in May 1956, and sent to the scrap line in East Altoona. Local officials requested that it be spared to serve as a memorial for the 6,900 plus steam locomotives that had been erected at the Altoona Works. On 8 June 1957 the city and PRR officials dedicated No. 1361 to that purpose at the city park at the Horseshoe Curve. The locomotive had been restored and detailed prior to the dedication, however, it received little maintenance after the ceremony. On 5 September 1985 the deteriorating locomotive was moved from the curve to the Railroaders Memorial Museum in Altoona. Initially the museum was to perform cosmetic restoration on the locomotive, but through the efforts of the museum's officers, a thorough restoration project was begun. In early 1987 the state legislature recognized No. 1361 as the State Steam Locomotive of Pennsylvania. After thirty-one years of disuse, No. 1361 was refired on 9 April 1987, and three days later it pulled its first excursion train. In addition to being known by its number, the locomotive is now officially known as the Spirit of Altoona.

Sources:
**Pennsylvania Railroad: Little Juniata River Bridge (Mile 217.25) (1890)**

Current Name: Conrail: Little Juniata River Bridge

Spanning Little Juniata River and PA 455, Mile No. 217.25, Shoenberger vicinity, Blair County, Pennsylvania

USGS Quad: Tyrone, Pennsylvania (1:24000) UTM: 17 E 739120 N 4501000

Structure Type(s): Arch

Length: 230’; Number of Spans: 5; Length of Main Span: 42’

Material: Cut, coursed stone; Condition: Good

In May 1889 a disastrous flood was washed out extensive sections of the PRR Main Line and destroyed a number of its bridges; however, the PRR worked very rapidly to restore service along this important rail corridor. By June 1889 only five weeks after the flood, nearly all passenger schedules were reestablished and freight service was restored.

In 1890 the PRR rebuilt several bridges crossing the Little Juniata River, east of Tyrone, including this five-span skew-arch structure. Composed of ashlar sandstone, the bridge is 230’ long; its longest span is 42’. In 1962 the bridge was reinforced with concrete spandrel columns and a concrete deck. Located at mile 217.25, the bridge is presently in good condition.
Pennsylvania Railroad: Little Juniata River Bridge (Mile 217.50)  (1889)

Current Name: Conrail: Little Juniata Bridge
Rating: 4

Spanning Little Juniata River, Mile No. 217.50, under new PA 453 bridge, Shoenerger vicinity, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania  (1:24000)  UTM: 17 E.738750 N.4501060

Structure Type(s): Arch
Length: 194'; Number of Spans: 3; Length of Main Span: 60'
Material: Cut, coursed stone; Condition: Good

Shortly after the disastrous Flood of 1889, the Pennsylvania Railroad rebuilt several Main Line bridges in central Pennsylvania including this three-span structure crossing the Little Juniata River Bridge, east of Tyrone. The multi-span skew-arch bridge was built with ashlar sandstone, the segmental arches supporting earth fill and the railroad bed. Each span measures 60' in length and the bridge contains four tracks. A highway bridge carrying PA 453 was built over the PRR bridge and more recently the stone arch structure was reinforced with concrete spandrel columns and a concrete deck.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: Martinsburg Freight Station  (1898)

Current Name: Martinsburg Milling Co.
Rating: 4

Railroad Street S of PA 164, Martinsburg, Blair County, Pennsylvania
USGS Quad: Martinsburg, Pennsylvania  (1:24000)  UTM: 17 E.727200 N.4465500
Historic Use: TRANS: RR: Freight Stations
Present Use: ADAPT: CG: Storage/Warehouse

In 1872 the Pennsylvania Railroad completed its Martinsburg Branch which extended from Altoona to Henrietta in southern Blair County. A number of passenger and freight stations were erected in the towns along this line. In 1898 the PRR built a freight depot in Martinsburg, a hub for agricultural products produced in this part of the county. The freight depot remained in service until 1962 when the PRR abandoned it. In 1967 the Martinsburg Milling Company acquired the property, and the building is currently used for storage. Its appearance, other than the addition of new roof shingles, has not changed since 1898. The one-and-one-half-story building contains a heavy timber frame and horizontal wood siding, a gable roof, and rests on a stone foundation. It measures 35' x 15' and is in fair condition.

Sources:
Pennsylvania Railroad: New Portage Railroad: Muleshoe Curve Bridge (1902)

Current Name: Conrail: Muleshoe Curve Bridge
Rating: 2

Spanning old US 22 (PA 3012) and Blair Run, 3 miles SE of Allegheny Portage Railroad NHS, Cresson vicinity, Blair County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.710330 N.4478750
Engineer, Architect, Fabricator, Builder:

William H. Brown (E)
William A. Pratt (E)
W. K. Barton (E)
H. S. Kerbaugh, Inc. (B)

Structure Type(s): Arch
Length: 40'; Number of Spans: 1; Length of Main Span: 40'
Material: Stone; Condition: Good

By the late 1840s the Pennsylvania Canal commissioners knew that the Allegheny Portage Railroad needed to be modernized, due to traffic bottlenecks at the inclined planes. The state legislature authorized the commissioners to survey the mountain for a new route, one that would cross the mountain without the aid of any inclined planes. The route that their surveyors chose required the new line to criss-cross the original line several times, while descending the eastern slope of the mountain (see entry of New Allegheny Portage Railroad Tunnel). In order to maintain a gentle grade on the east slope, the engineers decided to build an embankment across Blair Gap Run between Inclined Planes Nos. 8 and 9. The original Portage Railroad remained in use while the new route was being built.

In addition to a tunnel near Gallitzin, the New Portage Railroad featured a massive embankment climbing the eastern slope of Allegheny Mountain called the Muleshoe Curve. Included in the Muleshoe Curve was a two-span stone arch bridge that carried the railroad over Incline No. 6, and Blair Gap Run. The New Portage Railroad opened around 1855. State operation and ownership of the New Portage Railroad was short-lived, however, for in May 1857 it was sold to the Pennsylvania Railroad. The PRR attempted to operate the line for the next few months, but ceased operations in November of 1857. In 1858 the tracks were removed and shipped west for use on the Pittsburgh, Fort Wayne, and Chicago Railroad between Plymouth and Chicago.

Throughout the late nineteenth century the right-of-way of the New Portage Railroad remained unused until PRR Main Line traffic crossing Allegheny Mountain became so heavy that an additional route was needed. Beginning in 1898 the PRR began construction of a double-track line that extended from a wye near Duncansville, west to the Summit, using part of the New Portage Railroad grade, including the Muleshoe Curve. Supervised by William H. Brown, chief engineer of the PRR, the improvements were completed around 1902. Part of the reconstruction involved the replacement of the two-span stone arch bridge along the Muleshoe Curve. The new bridge consisted of a single-span stone arch with a length of about 50'. H.S. Kerbaugh served as contractor for this ashlar sandstone filled-arch bridge. Abandoned by Conrail in the 1970s, the bridge remains in good condition, however, much of the New Portage Railroad right-of-way, including the Muleshoe curve, has become overgrown with trees.

Sources:
Engineering Record 48 (10 October 1903): 418.
Inscription in wing wall of bridge.
Railroad Gazette 33, no. 33 (16 August 1901): 58.

-129-
PENNSYLVANIA RAILROAD
ALTOONA-HOLLIDAYSBURG-GALLITZIN

NOT TO SCALE

Robert G. Calozino  Oct '30
Pennsylvania Railroad: Petersburg Branch: Milepost Marker  (ca. 1900)
Current Name: Unknown  
Rating: 4
1.7 miles south of Mt. Etna along old railroad right of way, Mt. Etna vicinity, Blair County, Pennsylvania
USGS Quad: Williamsburg, Pennsylvania  (1:24000)  UTM: 17 E.739980 N.4486770
Historic Use: Milepost Marker
Present Use: Abandoned

The long-abandoned Petersburg Branch of the PRR line ran from Hollidaysburg in Blair County to Petersburg in Huntingdon County. The section through Yellow Spring and Mount Etna was completed in the 1890s. Nearly two miles south of its intersection with PA 2017, the old right-of-way retains a cast-iron milepost, approximately 4' high above grade. It is "V" shaped, and placed so that the flanges of the "V" face northeast and southeast. The southeast face panel shows the numbers 25 over 14, and the northeast face panel shows 2 over 14. The face panels and top are painted white, and the rear side of the post is unpainted. The numbers may represent the distance to the boundary of the division, or the distance between two principal settlements.

Sources:

Pennsylvania Railroad: Roaring Springs Passenger and Freight Depot  (ca. 1900)
Current Name: Unknown  
Rating: 3
Main and Spang streets, Roaring Spring, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania  (1:24000)  UTM: 17 E.720660 N.4467720
Historic Use: Railroad Passenger Station and Freight Depot
Present Use: Abandoned

In 1871 the Pennsylvania Railroad extended its Morrison's Cove Branch to serve a quarry, forge, and paper mill in the Roaring Spring area. The first passenger and freight depot in Roaring Spring was of wooden frame construction. It was replaced between 1900 and 1910 by this one-story brick building. It features rough-faced stone lintels and sills, a hip roof, and an extensive shelter over the train platform. Abandoned by the Pennsylvania Railroad in the 1960s, the building is now being refurbished by local citizens.

Sources:
Transportation: Blair County

Tyrone Forge: Little Juniata River Bridge  (1912)
Current Name: Tyrone Forge: Little Juniata River Bridge  
Rating: 3
Spanning Little Juniata River old PA 453 between Tyrone Forge and Ironville, Tyrone Forge, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania  (1:24000)  UTM: 17 E.735180 N.4504480
Engineer, Architect, Fabricator, Builder:
H. G. Hinkle, (E)
Curwensville Construction Company (B)
Structure Type(s): Three-centered Arch
Length: 120'; Number of Spans: 2; Length of Main Span: 60'; Width: 20'
Material: Concrete; Condition: Fair
This two-span concrete arch bridge crossing the Little Juniata River carries the former main highway between Tyrone Forge and Ironville in northeastern Blair County. It was constructed in 1912 by the Curwensville Construction Company of Curwensville, Pennsylvania. Each span measures approximately 60' in length and the bridge is 20' (two lanes) wide. The bridge is aligned on a slight skew and is presently in fair condition.
Sources:
- Nameplate on bridge.

US 220: South Dry Run Bridge  (1916)
Current Name: Old US 220: South Dry Run Bridge  
Rating: 4
Spanning South Dry Run, .125 mile N of PA 164 and old US 220, East Freedom, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania  (1:24000)  UTM: 17 E.718140 N.4470280
Engineer, Architect, Fabricator, Builder:
York Bridge Company (B)
H. G. Hinkle (E)
Structure Type(s): Skewed Three-centered Arch
Length: 30'; Number of Spans: 1; Length of Main Span: 30'; Width: 18'
Material: ; Condition: Fair
Crossing South Dry Run in East Freedom, this concrete arch bridge was erected by the York Bridge Company of York, Pennsylvania, in 1916. The three-centered filled arch structure measures 30' in length and is about 18' wide. Upon its completion the bridge carried the main highway between Altoona and Bedford, Pennsylvania, across South Dry Run. Presently in fair condition, the bridge is used for local traffic in East Freedom; the main east-west route through town, US 220, was relocated west of the bridge.
Sources:
- Nameplate on bridge.
Allegheny Portage Railroad: Staple Bend Tunnel  (1828–34)
Current Name: Staple Bend Tunnel

.25 miles E of Conrail Bridge across Conemaugh River, E of Parkhill, Conemaugh Borough, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania  (1:24000)  UTM: 17 E.682120 N.4469620
Historic Use: Railroad Tunnel
Present Use: Abandoned

The Staple Bend Tunnel, one of the least known, yet most important American railroad sites, was constructed between 1828 and 1834. It is proclaimed to be the first railroad tunnel in the United States and is located between Inclined Plane Nos. 1 and 2 of the Allegheny Portage Railroad on the so-called "Long Level". Measuring 901' in length, the tunnel was built by lining the first 150' at each end with cut stone. The 600' in the middle was cut

through solid rock. Each opening was surrounded by a classical facade consisting of four Tuscan pilasters supporting a full entablature of ashlar sandstone. Unfortunately, only the southern portal remains intact. The cost of construction for the tunnel amounted to $37,498. When the Portage Railroad fell into decline after the completion of the Pennsylvania Railroad, the tunnel was abandoned. It is currently owned by the Bethlehem Steel Corporation and is sealed at both ends with concrete-block infill and steel plates.

Sources:

Allegheny Portage Railroad: Summit Level (ca. 1832)

Current Name: Allegheny Portage Railroad National Historic Site: Summit Level Trace
Rating: 1

Between Inclined Planes No. 5 & No. 6: Blair-Cambria Road to US 22, Cresson vicinity, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.707630 N.4481060
Builder/Architect/Engineer: Sylvester Welch (E)
Historic Use: Railroad Road Bed
Present Use: National Historic Site

The Summit Level of the Allegheny Portage Railroad ran for two miles between the western end of Inclined Plane No. 6 and the eastern end of Inclined Plane No. 5. Originally double-tracked, the partially uncovered trace is located within the Allegheny Portage Railroad National Historic Site, and may be accessed at the Lemon House Interpretive Center. Although not continuous, many of the stone sleepers remain in place on this level. A series of stone sleepers may be seen over a length of about 300' beginning approximately 950' northwest of the excavated ruins of Engine House No. 6. The embankment is about 22' wide, but the area is cleared to a distance of 30'.

Sources:

Allegheny Portage Railroad: Summit Level Stone Culvert (ca. 1832)

Current Name: Unknown Rating: 1

Approximately 1850' W of Inclined Plane No. 6: Engine House, Cresson vicinity, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.707800 N.4481420
Historic Use: Railroad Culvert
Present Use: Culvert

This vaulted sandstone culvert runs in a northeast-southwest direction under the Summit Level of the Allegheny Portage Railroad. It is interpretive site number four (4) on the Allegheny Portage Railroad National Historic Site's Summit Level interpretive trail. The vault rises about 1.5' above the water level, and is 3' wide at the base. The arch is faced with 1'' tapered stones, that are curved on the top and bottom edges. The retaining wall abutments curve outwards at both ends to form cheek walls.

Sources:
National Park Service. Trace Tracker - for the trails at Allegheny Portage Railroad National Historic Site n.d.
Incline No. 6 is the uppermost plane on the eastern slope of Allegheny Mountain. Much of the slope of this plane is natural and its construction required less earth work and grading than did several other inclines on the eastern side of the mountain. Incline No. 6 lifted the Allegheny Portage Railroad 266' in a horizontal distance just under 2714'. At the upper end of this plane a pair of tracks with a gauge of 4'-9" and extending over 140' in length has been reconstructed for interpretive purposes. In addition, the National Park Service excavated the foundations of the stationary engine house, and these remain in view for park visitors. The original engine house, and road sheds at the top and bottom of the planes were constructed by James Stackpole, William Woodburn, and H. Simonton, in 1833. Construction of a second engine house, store room, and coal shed was carried out the following year with Stackpole, Casper Dull, and Hiram Willis, serving as the contractors.

The stationary engines originally raised and lowered trains of railway cars (and later canal boats on flat cars) by counterbalancing loads moving in opposite directions. During its first dozen years of operation the cars were pulled by a hemp rope, 8-1/2" in diameter. In 1845 John Roebling's innovative wire rope superseded the original hemp rope. The inclined planes ceased operating about 1855 when the New Portage Railroad was completed.

Sources:

The roots of the Baltimore and Ohio (B&O) Railroad in Cambria County go back to 1879 when Daniel J. Morrell, general manager of the Cambria Iron Company, became increasingly dissatisfied with the limitations of shipping his company's products exclusively on the Pennsylvania Railroad and proposed to B&O president John W. Garrett the extension of a branch line from the B&O's Main Line at Rockwood, Pennsylvania, to Johnstown. The proposed route would shorten the shipping distance between Johnstown and Baltimore by sixty miles, by eliminating the need to trans-ship through Pittsburgh or Philadelphia. The net result
of putting the B&O in a more competitive position with the PRR would be the opening of the Baltimore market to Cambria's coal, steel and iron products.

Construction began on thirty-seven miles of track between the B&O Main Line and Johnstown under the name of Somerset and Cambria Railroad. The work included several iron bridges, and a tunnel at Riverside. B&O freight service began in early 1881, and passenger service was added later that same year. Although the B&O garnered very little of Cambria County's rich coal market, serving less than 3 percent of the county's coal companies in 1901, its greatest profits were derived from shipping steel and iron products from Johnstown. Later, U.S. Steel and many smaller companies used the B&O railroad to gain access to markets not served by the PRR. Passenger service to Johnstown on the B&O lasted until 1932, when the popularity of the automobile made rail travel less desirable.

At the border between Somerset and Cambria counties in Riverside, the Stony Creek makes a sharp bend. At this site in 1881, the B&O constructed a 306' "hog back" tunnel to avoid building three additional miles of track along the banks of the river. The name comes from the slight curve the tunnel makes that resembles the arch of a hog's back. The retaining walls and arches at both portals are made of cut stone, with 1881 carved into the keystones. The vault inside the tunnel is a combination of cut stone and masonry, which was perhaps added later. Both portals were fortified with concrete buttresses at a much later date. B&O trains still pass through the tunnel daily and although the trains are shorter and less frequent, the tunnel still serves a vital role in the movement of Cambria County goods.

Sources:

Baltimore and Ohio Railroad: Johnstown Freight Station (1937)
Current Name: Unknown
Rating: 4
W side of Baumer Street N of PA 56 Stony Creek Bridge, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677100 N.4465320
Historic Use: Freight Station
Present Use: Abandoned

In 1879 the Cambria Iron Company approached the Baltimore and Ohio (B&O) Railroad about building a rail line into Johnstown which would, among other things, provide Cambria with expanded freight outlets for its products. In order to encourage the B&O to expand into Johnstown, a local subscription of $7,500 was raised, half of which was supplied by Cambria Iron and the rest by local business leaders. Booth and Flynn, the contractors, completed the line by 1881. Freight service began in January 1881 and passenger service started in the spring of the year.

The line cost the B&O over 1 million dollars. In addition to the laying of track, some of this investment was spent on seven iron bridges as well as new passenger stations for Rockwood and Somerset. In Johnstown, a former school house on Washington Street was remodeled as a passenger station. Passenger service to Johnstown on the B&O was discontinued in 1932. The abandoned passenger station was demolished after it was severely damaged by the Flood of 1936. The flood also damaged the freight depot. It was replaced by a new depot located on Baumer Street by 1937. During the 1930s three to five freight trains, consisting of 250 to 300
Transportation: Cambria County

cars, utilized the facility every day. Three switching engines were employed to keep the tracks clear. Although B&O freight operations in Johnstown ceased during the 1970s, the company maintains an office in Johnstown. Recently, the freight depot has housed a tile and carpet store.

The freight depot consists of two sections, including a one-story office which measures approximately 40' x 30'. It contains common-bond brick walls and has six-over-six light, double-hung windows on the north and west sides. The warehouse section of the building measures 200' x 25' with a concrete loading platform extending along the east side. The exterior has been covered with sheet metal so that the original material is not apparent, and the doors on both sides of the freight section have been infilled with precast panels. The entire structure rests on a concrete and concrete-block foundation.

Sources:

Cambria and Indiana Railroad: Engine House No. 1  (1920)
Current Name: Bethlehem Steel: C&I Shop Rating: 3

.25 miles NW of Colver, 80' S of Engine House, Colver vicinity, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.686250 N.4490240
Historic Use: Railroad Repair Shop
Present Use: Abandoned

Shortly after the completion of No. 2 Roundhouse in 1921, the Ebensburg Coal Company erected a second roundhouse with an adjoining machine shop and blacksmith shop. Called the Lower Roundhouse, this facility handled the repair of rail-car trucks, and served as storage area. The engine house contains timber and iron Howe roof trusses, brick pilasters, and brick walls. To the north, the machine shop and blacksmith shop contain structural steel frames and steel purlins supporting the roofs. In 1977 the Bethlehem Steel Company acquired the C&I Railroad and continued to operate the repair shop facility at Colver. The two roundhouses remain in service and are in good condition.

Sources:

Cambria and Indiana Railroad: Engine House No. 2  (1918)
Current Name: Bethlehem Steel: C&I Shop Rating: 3

.25 miles NW of Colver, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.686250 N.4490300
Builder/Architect/Engineer: J. J. Foye(B)
Historic Use: Railroad Repair Shop
Present Use: Railroad Repair Shop

In 1917-18 the Ebensburg Coal Company erected at Colver Heights an engine house and machine shop for its captive railroad, the Cambria & Indiana. The building housing these facilities was a steel-frame structure erected by the Truscan Steel Company of Youngstown, Ohio. Measuring 100' x 60', the roundhouse and machine shop was placed in service in December 1918, however, after only two years locomotive exhaust and weathering seriously
corroded the all-metal building and it was removed from service. Its replacement was a three-
bay brick building erected in 1920-21. Called No. 2 or the Upper Roundhouse, this facility 
contained an adjoining machine shop, a one-story stone structure. The roundhouse contains 
timber and iron Howe roof trusses resting on brick pilasters. It is still used as an engine house 
and machine shop for the repair and service of diesel locomotives

Sources:
Cambria County Historical Society. *Sesquicentennial of Cambria County: 1804-1954.* Johnstown, Pennsylvania: 
Hamley, David H. "This is a Shortline?," *Trains* (March 1971): 38-39.
Jencks, S.H. "A History of the Cambria and Indiana Railroad," unpublished diary of S.H. Jencks, former Chief Engineer,
Cambria and Indiana Railroad, Colver, Pennsylvania. 1885-1931.

**Cambria and Indiana Railroad: Office (1918-19)**

Current Name: Bethlehem Steel: C&I Office Rating: 3

.3 mile NW of Colver, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E.686110 N.4490260
Builder/Architect/Engineer: J. B. Fluke & Sons (B)
Historic Use: Office Present Use: Office

A.W. Lee and John W. Wrigley, of the Vinton Lumber Company, incorporated their existing rail 
lines as the Blacklick and Yellow Creek Railroad, in 1904. The railroad was originally intended 
for lumber transport, but in June 1910, the system was acquired by the Coleman & Weaver 
Company at the cost of $100,000, and used to haul coal from its newly acquired coalfields. In 
1910 a new drift mine, named Colver, was opened in central Cambria County. The Ebensburg 
Coal Company, a subsidiary of Coleman & Weaver, operated the Colver mine and its associated 
railroad shops. By May 1911 construction of a large power plant and nearby workers' housing 
had commenced. The town of Colver Heights, which included housing, an hotel, a store, and a 
movie house, was laid out the following summer. The B&YC was renamed the Cambria and 
Indiana Railroad in 1912, and the first shipment of coal left the Colver Mine in October. In 
June 1918 the contract for a new C&I office building was awarded to J.B. Fluke and Sons, of 
Altoona, and construction was completed by March of the following year. The C&I still 
operates out of Colver, primarily hauling bituminous coal.

Except for the concrete lintels and window sills, the red brick building is unornamented. The 
pyramidal roof has two hip-roof dormers on each side. The building continues to house the 
C&I's main offices.

Sources:
Hamley, David H. "This is a Short Line?," *Trains.* (March 1971): 38-39.
Jencks, S.H. "A History of the Cambria and Indiana Railroad," unpublished diary of S.H. Jencks, former Chief Engineer,
Cambria and Indiana Railroad, Colver, Pennsylvania. 1885-1931.
Cambria and Indiana Railroad: Supply House  (ca. 1918)

Current Name: Bethlehem Steel: C&I Supply House  
Rating: 2

.25 miles NW of Colver, Cambria County, Pennsylvania  
USGS Quad: Colver, Pennsylvania  
UTM: 17 E.686290 N.4490300

Historic Use: Storage Building  
Present Use: Storage Building

Serving as a storage facility, this structure was probably part of Ebensburg Coal Company’s expansion of its Cambria & Indiana Railroad Shops at Colver. Its structural system consists of heavy timber frame with brick nogging. The roof is supported with timber Howe trusses. A porch extends along the front and east side. This building was for the storage of parts, equipment, or other supplies necessary for locomotive repairs. The supply house was later acquired by the Eastern Association Coal Company along with the rest of Ebensburg’s Colver site. The building is now owned by the Cambria and Indiana Railroad, which became a subsidiary of the Bethlehem Steel Corporation in 1977.

Sources:

Condron Bridge  (1904)

Current Name: Condron Bridge  
Rating: 3

Twp. 510 spanning Clearfield Creek, W of Condron, .5 miles N of Dysart, Dysart vicinity, Cambria County, Pennsylvania  
USGS Quad: Ashville, Pennsylvania  
UTM: 17 E.710380 N.4497940

Engineer, Architect, Fabricator, Builder: Owego Bridge Company, Owego, New York

Structure Type(s): Through Pratt Truss
Length: 90'; Number of Spans: 1; Length of Main Span: 90'; Width: 16'
Material: Ashlar sandstone; Condition: Fair

Erected in 1904, this bridge carries Township Road 510 across Clearfield Creek between Dean and Dysart. The Owego Bridge Company of Owego, New York, built this single span, pin-connected Pratt through-truss. The one-lane bridge measures approximately 90' in length and rests on ashlar sandstone abutments. It is one of three late-nineteenth and early-twentieth century pin-connected Pratt through-truss bridges spanning Clearfield Creek in Cambria County. (See entries of the Dean Bridge and the Dysart Bridge). The Condron Bridge remains virtually unaltered.

Sources:
Field visit, March 1988.
Transportation: Cambria County

Conemaugh & Blacklick Railroad: Little Conemaugh River Bridge  (1920)
Current Name: C&BL Railroad: Little Conemaugh River Bridge  Rating: 3

C&BL spanning Little Conemaugh River at East Taylor Slag Dump, Parkhill vicinity, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania  (1:24000)  UTM: 17 E.681680 N.4469720
Engineer, Architect, Fabricator, Builder: McClintic-Marshall Company (F)

Structure Type(s): Through Pratt Truss and Deck Warren Truss
Length: 350'; Number of Spans: 2; Length of Main Span: 180'; Width: 20'
Material: Reinforced concrete; Condition: Fair

The Conemaugh & Blacklick Railroad, a captive line of the Bethlehem Steel Company, extends north of the Franklin works along the Little Conemaugh River, to a large slag dump in East Taylor Township. The C&BL crosses the Little Conemaugh and the former PRR Main Line (now Conrail) east of the slag dump. This chasm is spanned by a riveted steel Warren deck truss, and a riveted steel Pratt through truss. The deck truss comprises the longest span measuring about 180' in length. It rests on concrete piers. The Pratt through truss measures about 160' in length and crosses four sets of tracks of the Main Line. It contains a plaque bearing the name of the bridge builder, McClintic-Marshall Company of Pottstown, Pennsylvania, and the construction date, 1920. At the time of its construction, the Midvale Steel & Ordnance Company of Philadelphia owned the Cambria Steel Company. Bethlehem Steel acquired Midvale's Johnstown plants and railroad in 1923. Containing a single track, the bridge is still in service.

Sources:
Nameplate on bridge.

Conemaugh & Blacklick Railroad: Repair Shop  (ca. 1925)
Current Name: Bethlehem Steel: C&BL Repair Shop  Rating: 3

Cooper Avenue .25 mile N of PA 56, W of PA 403, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E.675000 N.4468160
Historic Use: Railroad Repair Shop
Present Use: Railroad Repair Shop

The Bethlehem Steel Company incorporated the Conemaugh & Blacklick Railroad (C&BL) as a new subsidiary on 31 December 1925, in Johnstown. Consisting of over fifty-two miles of track, the C&BL essentially replaced an earlier shortline originated by the Cambria Steel Company. It served as a common carrier, linking the Johnstown plant to the mainlines of the Pennsylvania Railroad and Baltimore and Ohio Railroad. A 1913 insurance map indicates a frame structure labeled as a Cambria Steel Company car repair shop at this spot, which apparently was replaced by the present structure. It has a steel skeleton and truss system erected upon a poured concrete foundation. The walls are brick infill and three-and-a-half stories high. Three tracks lead into the shop from the north side. The tracks and building are still in use by the C&BL Railroad.

Sources:
Dean Bridge  (ca. 1900)

Current Name: Dean Bridge  Rating: 3

Twp. 512 spanning Clearfield Creek, .25 miles W of PA 53 in, Dean, Cambria County, Pennsylvania
USGS Quad: Ashville, Pennsylvania  (1:24000)  UTM: 17 E.711180 N.4499680

Structure Type(s): Through Pratt Truss
Length: 90'; Number of Spans: 1; Length of Main Span: 90'; Width: 16'
Material: Ashlar sandstone; Condition: Fair

Erected about 1900, this Pratt through-truss bridge is one of only three remaining turn-of-the-century bridges of this type in the area. It provided access to several mining communities in the area. The steel sections used to fabricate the bridge were produced by the Jones and Laughlin Steel Company of Pittsburgh.

Sources:
- Mill mark on steel sections.

Dysart Bridge  (ca. 1890)

Current Name: Dysart Bridge  Rating: 2

PA 1012 spanning Clearfield Creek, .5 miles NW of PA 53 on PA 1012, Dysart, Cambria County, Pennsylvania
USGS Quad: Ashville, Pennsylvania  (1:24000)  UTM: 17 E.709880 N.4496940
Engineer, Architect, Fabricator, Builder: Massilon Bridge Company (B)

Structure Type(s): Through Pratt Truss
Length: 75'; Number of Spans: 1; Length of Main Span: 75'; Width: 16'
Material: Ashlar sandstone; Condition: Fair

Erected about 1890, this bridge is one of three Pratt through-truss bridges spanning Clearfield Creek, and is believed to be the oldest surviving truss bridge in either Blair or Cambria counties. It served the mining communities of Dysart and Dean. The Massilon Bridge Company of Massillon, Ohio, built the bridge. Massilon Bridge was a major Midwestern bridge fabricating and building concern in the late 19th and early 20th centuries. The Dysart Bridge measures approximately 75' in length and rests on ashlar sandstone abutments. The one-lane bridge is in fair condition.

Sources:
- Nameplate on bridge.

Fifficktown Bridge  (1910)

Current Name: Fifficktown Bridge  Rating: 3

Local road spanning Little Conemaugh and Conrail Line, .3 miles E of confluence, South Fork, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania  (1:24000)  UTM: 17 E.687510 N.4470680
Engineer, Architect, Fabricator, Builder: Fort Pitt Bridge Works (E)

Structure Type(s): Warren Deck Truss
Length: 535'; Number of Spans: 5; Length of Main Span: 105'
Material: Concrete; Condition: Good

The Fifficktown Bridge crosses the Little Conemaugh River and the old Pennsylvania Railroad Main Line (Conrail) north of South Fork. Built in 1909 by the Fort Pitt Bridge Works of Pittsburgh, Pennsylvania, the bridge is 535' long, and its main span, 105' in length, consists of a Warren deck truss with riveted gusset-plate connections. There are three Warren deck truss...
Transportation: Cambria County

approach spans each approximately 70' long and a half-deck Warren truss 60' long. The trusses rest on concrete piers. The bridge, now threatened with demolition, retains much of its original detailing including ornate iron railings and full-width towers for overhead wires of the abandoned Northern Cambria Railway Company interurban railway.

Sources:
Nameplate on bridge.

Johnstown Inclined Plane

Current Name: Johnstown Inclined Plane

West side Stony Creek, .4 mile S of Little Conemaugh River, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.675080 N.4465760
Builder/Architect/Engineer: Samuel Diescher (E)
Historic Use: Inclined Plane
Present Use: Inclined Plane
Rating: 1

(1890)

One result of the disastrous Johnstown Flood of May 1889 was the construction of an inclined plane for use as an escape route in the event of future flooding. Engineer Samuel Diescher of Pittsburgh, designed the inclined plane to transport people and wagons, in cars with a horizontal orientation, to the new hilltop community of Westmont in September 1889. However, the actual construction, financed by the Cambria Iron Company, did not begin until 1890.

At the same time a pin-connected Pennsylvania through-truss bridge was constructed to connect the base of the incline (on the west side of the Stony Creek River), with Johnstown on the opposite side. The single span bridge, which is 225' in length and rests on stone piers, was designed to carry both vehicular and pedestrian traffic.

Transportation: Cambria County

Service was initiated on 1 June 1891. Throughout the 1890s well-to-do residents of the region constructed new homes on this hill overlooking Johnstown. Several of the largest homes were built by presidents and managers of the Cambria Iron Company. The incline was electrified in 1911 and a 300 horsepower motor was installed to replace the original steam engine. In 1935 the Bethlehem Steel Company, the successor to the Cambria Iron Company, sold the incline to Westmont Borough for one dollar. The inclined plane and bridge are credited with transporting 4,000 persons to safety during the Flood of 1936.

Management of the incline was transferred to the Cambria County Tourist Council by a lease arrangement after the borough ceased operating it as a commuter service in January 1962. The tourist council's refurbishment of the plane, included an upgrade to a 400 horsepower motor. The plane reopened for service in July 1962. The Johnstown Inclined Plane Railway was listed on the National Register of Historic Places in June 1973. It is now owned and operated by the Cambria County Transit Authority, which rehabilitated it at a cost of $3.2 million in 1983. It has become one of the area's most important tourist attractions, as well as remaining in commuter service.

The inclined plane consists of two cars running on a pair of sloped tracks. Two steel cables, one pulling cable and one safety cable capable of supporting 165 tons, are wound around a cast iron drum 16' in diameter at the top of the plane to pull and lower the cars over the 71 percent grade. With a length of 896.5' and a slope of 35 degrees, it is reputedly the steepest vehicular incline in the world.

Sources:

---

Johnstown Passenger Railway Co.: Baumer Street Powerhouse  
(ca. 1890)

Current Name: Dale Oxygen, Inc.  
Rating: 3

Baumer Street .15 mile S of PA 56, at B&O tracks, Johnstown, Cambria County, Pennsylvania  
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677280 N.4465040  
Historic Use: Powerhouse  
Use: Demolished

The Flood of 1889 devastated the Johnstown Passenger Railway Company by sweeping all of its tracks away and damaging much of the rolling stock. Subsequently, Tom Johnson of the Johnson Steel Street Rail Company purchased the city's street-car property and began electrifying the system. In 1890 Johnson constructed a powerhouse on Baumer Street to provide steam generated electricity for the street car line. A coal mine located behind the power house provided the coal for the boilers. (The original coal tipple still exists.) By 1911 the turbines had a 1,000 horsepower capacity. In 1945 the company began purchasing electricity from Penelec, and the powerhouse was converted to a substation. It was shutdown in the early 1960s, when the Johnstown transit system converted to buses. Currently, the structure is owned by Dale Oxygen, Inc., and one-half of the building is leased to an auto repair firm.
Prior to its demolition in 1988, the tall one-story powerhouse measured 105' x 100'; the engine room was taller than the adjacent transformer room. The powerhouse contained brick pilasters, steel roof trusses, and a stone foundation. Its walls were composed of stretcher bond red brick. The powerhouse featured circular brick arches spanning the multiple, double-hung sash windows. None of the steam engines, generators, exciters, or transformers remained in the building at the time of the HAER inventory.

Sources:

Johnstown Passenger Railway Company: Car Barns (1893)

In 1882 the Johnstown Passenger Railway Company was founded. The system used horse-drawn trolley cars, which operated twenty minutes apart, and passengers were charged a fare of five cents. The offices and barns were originally located in Woodvale, however, they were destroyed in the Flood of 1889. Tom Johnson acquired the company after the flood, and began electrifying the system. In 1890 new car barns and an office were built on Central Avenue in Moxham (the current location of the Johnstown Corporation offices). However, the complex burned in 1893 and was rebuilt at its present location at the corner of Central Avenue and Bond Street. In 1907 the system had 31 miles of track and 110 cars. The company began converting to "trackless trolleys" in 1951, which was completed by 1960. Declining ridership and high costs placed the system in poor financial condition in 1977. The system was purchased by Cambria County and reorganized into the Cambria County Transit Authority. In addition to operating the Johnstown bus system, the authority operates the Inclined Plane and the Johnstown and Stony Creek Railroad.

There are five remaining car barns. The two barns on the northeast corner of Central and Bond have been joined by a continuous brick facade as have the two barns on the southeast corner. The fifth barn is located to the south along the alley. The structures vary in size from 170' x 120', to 280' x 120', to 160' x 50'. They are all two-stories high and have a yellow-brick exterior. (However, the walls on the alley side of each of the barns are constructed with red brick. This may be because red brick was a less expensive material, therefore it was used where it was not seen.) The roof structure is probably steel frame although the ceilings have been dropped and the framing is not visible. The foundations are stone block-in-course. All of the buildings have arched windows which have received a variety of treatments; some have been entirely bricked over; some have been filled with glass block; and others have been replaced with modern windows. The trolley tracks are still visible on the floors of the structures. The buildings are currently used as the main offices of the Transit Authority and for storage and maintenance of the systems's buses.
Transportation: Cambria County

Sources:

New Allegheny Portage Railroad: Allegheny Tunnel  (1852-56)

Current Name: Conrail: Summit Tunnel No. 1  Rating: 1

N side of Portage Street, under Blair-Cambria Road (PA 4001), Tunnelhill, Cambria County, Pennsylvania  
USGS Quad: Cresson, Pennsylvania  (1:24000)  UTM: 17 E.708100 N.4483400  

Historic Use: Railroad Tunnel  
Present Use: Railroad Tunnel

The New Allegheny Portage Railroad Tunnel is sometimes confused with the Pennsylvania Railroad's Summit Tunnel. However, the Portage Tunnel lies a few hundred yards south of the Summit Tunnel, and its western portal is in the town of Tunnelhill, rather than Gallitzin. W. Milnor Roberts and Edward F. Gay, Civil Engineers, were appointed by the Board of Canal Commissioners of the State of Pennsylvania to re-survey the route of the proposed realignment of the Portage Railroad. Their report in 1852 supported the route proposed by Robert Fairies (chief engineer of the rebuilding project), and provides us with a description of the route which names geographical references and compares the route to the Pennsylvania Railroad's path across Allegheny Mountain. According to the report the route commenced:

a short distance below the foot of plane No. 4 (being the continuation of the new line already located, under contract, and in the process of construction, thence to Johnstown, avoiding planes Nos. 1, 2 and 3), and continues along the western slope of the main range of the Allegheny Mountain, parallel with and almost touching the Pennsylvania Railroad for five and a half miles to the crossing of a small branch from Clearfield, where the two lines diverge. The Pennsylvania line inclines to the left and passes through the main ridge of the mountain through Sugar Run Gap by a tunnel of 3357' in length, and thence descends by the left branch of Sugar Run and along the slopes of the eastern face of the mountain to Altoona, a new town, about six miles from the Portage Railroad, with which it is connected by a branch. The line surveyed for the New Allegheny Portage Road continues on a very direct course from this point of divergence to Sugar Run Gap, more to the south, and passes the mountain ridge by a tunnel 1800' in length, the grade at the eastern approach of the tunnel being 25' above that of the Pennsylvania Road.

The contractors, Moorhead & Patterson, began work on the tunnel in 1852. The tunnel passed through perishable shale and required a brick and stone lining. By 1855 appropriations for these materials were exhausted, so the remaining unlined portion was shored up by timber. The tunnel opened in July 1855, but the lining was not completed until December 1856.

The Pennsylvania Railroad purchased the New Allegheny Portage Railroad from the state in June 1857. Most of the route was abandoned by November, but the PRR built a branch line to utilize the New Allegheny Portage Tunnel, and converted some portage tracks into coal spurs at Lilly and Hollidaysburg. In 1898 the PRR was experiencing severe traffic delays due to the bottle neck caused by its single tracked Summit Tunnel. The PRR rebuilt the New Portage Railroad to alleviate the traffic backlog. It continued in service until the 1970s. The Portage Tunnel still serves the PRR by providing a "shortcut" for helper locomotives to return to Altoona, without blocking the Summit Tunnels.

The tunnel is 1800' in length, and the highest point of the ridge above it is 135'. The eastern portal is 25' higher than the eastern portal of the Summit Tunnel. The Portage Tunnel's western portal opens into a long, curving cut in Tunnelhill.

Sources:

Transportation: Cambria County

Northern Cambria Railway Co.: Shops and Car Barn  (1910s)
Current Name: P.E.R. Co.  Rating: 4
S side US 219; .5 mile NW of St. Benedict, St. Benedict vicinity, Cambria County, Pennsylvania
USGS Quad: Hastings, Pennsylvania (1:24000) UTM: 17 E.691360 N.4549850
Historic Use: Interurban Railroad Repair Shops and Car Barn
Present Use: Garage

In early 1906 the Northern Cambria Railway Company started streetcar service in Barnesboro. This small trolley company served Barnesboro, Spangler, St. Benedict, Carrolltown, and Patton operating thirteen miles of track. When the company was chartered, the investors agreed to provide service to Carrolltown, if the Southern Cambria Railway Company made the connection from Ebensburg to Carrolltown, thus providing passenger service from Johnstown to Barnesboro. However, once Southern Cambria Railway reached Ebensburg sometime after 1910, construction expenses incurred in attempting to surmount the steep terrain prevented the completion of the final link. In the meantime, Northern Cambria Railway built a car barn, an engine room, and a boiler room large enough to accommodate the expected junction with the Southern Cambria Railway, one-half mile northwest of St. Benedict. When that venture failed, the company struggled to meet the operating expenses for the large physical plant. Northern Cambria continued to provide service into the 1920s. However the increasing use of the automobile doomed the passenger railway. The company dissolved on 31 July 1926. Currently, the building is owned by P.E.R.Co., a heavy equipment and repair service.

Three masonry structures built by Northern Cambria Railway are located on the south side of US 219. The west facades of each are similar in appearance, consisting of masonry pilasters and intricate, stepped masonry corbeling that follows the gable roof lines the full width of each structure. The three roofs are supported by modified compound Fink trusses bearing on brick pilasters. The car barn is the largest of the three buildings. Its original doors have been removed and infilled with brick to meet the needs of the present owner. The engine room and the boiler room are identical in size and shape, and each retains most of the original multi-light windows. However, the original doors and windows in the middle bay of the engine room and the end bay of the boiler room have been eliminated and replaced by large garage doors.

Sources:

Pennsylvania Railroad: Lilly Footbridge (Mile 253.95)  (1928)
Current Name: Conrail: Lilly Foot-Bridge  Rating: 4
Local road spanning Conrail mainline, at Church Street, Lilly, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.701720 N.4477620
Structure Type(s): Beam
Length: 59'; Number of Spans: 1; Length of Main Span: 59'
Material: Concrete; Condition: Good

Measuring 59' in length, this pedestrian bridge spans the old Pennsylvania Railroad Main Line (Conrail mile No. 253.95) in the community of Lilly, which in the early to mid 1900s was an active coal mining town. It was built by the PRR in 1928 and consists of a steel, double-intersected, Warren pony truss resting on concrete piers. Timber stairs lead to the bridge. It is presently in good condition.
Pennsylvania Railroad: Conemaugh River Bridge (Mile 277.57) (1887)

Current Name: Conrail: Conemaugh River Bridge
Rating: 2

Conrail spanning Conemaugh River and PA 56, at Mile No. 277.57, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676240 N.4466530

Structure Type(s): Arch
Length: 490'; Number of Spans: 7; Length of Main Span: 70'
Material: Cut, coursed stone; Condition: Good

This skewed segmental-arch bridge of stone and concrete construction spans the Conemaugh River and PA 56 north of "the point" in Johnstown. Built in 1887 by the Pennsylvania Railroad (PRR) to replace an existing 1860s PRR Main Line bridge, it played a grisly role in the disastrous Flood of 1889. Although the flood caused widespread damage to the rail system and many bridges were completely destroyed, this Johnstown bridge not only survived, but backed up a mountain of debris carried down the river by the flood. The debris caught fire, and burned for days. Weeks after the flood, workmen were still tackling its removal utilizing dynamite to dislodge the materials piled against the bridge.

The bridge measures 490' in length, and has seven spans each approximately 70' in length. The bridge and its piers are constructed of coursed ashlar sandstone. In 1915 the south side of the bridge was reinforced with concrete. The bridge remains in use as part of the Conrail system (mile No. 277.57).

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: Cresson Yard Office (1910s)

Current Name: Conrail: Changing House
Rating: 3

In classification yard N of 1st Street; .25 miles W of MO Tower, Cresson, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.704540 N.4481985
Historic Use: TRANS: RR: Office
Present Use: TRANS: RR: Office

Situated between several sets of converging railroad tracks in Cresson, this one-story building was built ca. 1910 by Pennsylvania Railroad as a small office. The clapboard building stands a quarter-mile west of the "MO" Tower and today serves as a coffee room and changing house, as well as an office, for the railroad yard workers. The building's central location in relation to all the tracks probably means that it has served a similar function since its construction. Containing clapboard siding and a gable roof, the building is in good condition.

Sources:
The Pennsylvania Railroad reached Hollidaysburg in the fall of 1850, in order to utilize the "Main Line of Public Works" route through the mountains, since its own route through the Alleghenies was still being surveyed. The PRR's route was slated to move westward from the new town of Altoona along Burgoon Run, across Kittanning Run, Kittanning Point, and Glen White Run, around Allegheny Mountain to Sugar Run, and to a tunnel under the summit, which would eliminate the last 150' of grade, near Sugar Run Gap. Contracts were let for constructing the eastern approaches to the tunnel in 1851, and by January 1852 all of the grading work of the Mountain Division had been placed under contract. Thomas Seabrook was the engineer in charge of the tunnel, and the contractor was Thomas Rutter. Work initially proceeded from both ends, with the aid of three vertical working shafts in between the ends. Stationary steam engines were used at all shafts to provide ventilation and remove water. The route of the tunnel crossed layers of sandstone, perishable shales, fire clay, and even a four-foot vein of coal. The engineers decided to arch the tunnel, except through the 800' of sandstone. A fourth shaft was sunk during the winter of 1853-54 to facilitate the work of masons and bricklayers. Although the first locomotive passed through the tunnel late in 1853, it was not officially opened until 21 January 1854, and the lining work was not completed until 17 February 1855.

The PRR's use of the Portage Railroad route ended on 15 February 1854, in favor of the all Pennsylvania Railroad route. The unlined section of the tunnel collapsed in March 1856 after a period of severe freezing. The roof was reinforced with timbers, until this section was arched in 1869. During the 1857-58 snow season the west portal was closed with doors, opened only to permit the passage of trains, to reduce the expense of removing snow and ice from the tunnel, and to reduce the damaging effects of freezing moisture in the tunneled stone. A second tunnel was added in 1905, to facilitate the flow of trains through the four tracked Mountain Division.

The original tunnel is the southern of the two PRR tunnels at Gallitzin. Its overall length is 3,612'. It is 24' wide, and was originally graded for double tracks. The roof of the tunnel is 22' above grade, and 202.7' below the summit of the mountain. The tunnel's western portal was the highest point on the PRR, 2161' above tidewater. The vertical shafts measured 10' x 6' in cross section.

Sources:
Pennsylvania Railroad: Glasgow Passenger Station  (ca. 1895)
Current Name: Unknown  Rating: 3
W of Tracks 100 feet S of PA 253 by J.H. Kommer Lumber Company, Glasgow, Cambria County, Pennsylvania
USGS Quad: Blandburg, Pennsylvania  (1:24000)  UTM: 17 E.716200 N.4509620
Historic Use: Passenger Station
Present Use: Abandoned

The train depot in the town of Glasgow, Reade Township, was originally on the east side of the former Pennsylvania Railroad tracks. However, today it rests without a foundation in a field of weeds some 30' to the west of the original site. Built ca. 1895, the building served as a passenger depot until passenger service ended, probably in the 1930s. The building is currently abandoned and locked up. It contains several pieces of dusty furniture.

The small, two-story structure has stud walls and clapboard siding. The first floor was a waiting area and ticket office, while the second floor contained living quarters for the railroad agent. The building has a gable roof and a small overhang on the north side. The original clapboard siding is still visible on the south side; the other three sides are covered with asphalt shingles.

Sources:

Pennsylvania Railroad: Johnstown Freight Depot  (ca. 1890)
Current Name: Reese Electric Supply, Inc.  Rating: 4
S of tracks on Widmann Street at Feeder Alley, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E.677310 N.4465840
Historic Use: Freight Station
Present Use: Retail Store

The Pennsylvania Railroad’s Johnstown freight station on Clinton Street was built on the site of the former Johnstown Boat Basin of the Pennsylvania Canal system. After the completion of the Pennsylvania Railroad system in the 1850s, the canal system declined and was eventually abandoned. The Cambria Iron Company purchased this land and used the site for company housing. The Pennsylvania Railroad bought the property from Cambria Iron in 1889, after the Flood of 1889 had destroyed all of the houses, and built the freight depot within one to two years. The depot operated until the 1960s. The Pennsylvania Railroad sold the property in the early-1970s, but rented it back from the new owners and maintained an office on the premises. In July 1985 Reese Electric Supply, Inc. purchased the property, gutted the interior, made extensive renovations to the structure, and moved in on 4 June 1986.

There are two sections to the structure. The first is a two-story, common-bond brick section that measures 180' x 40'. It has undergone extensive remodeling: the loading platform was enclosed in glass, and new windows have been added. This section has a showroom on the first floor, and offices on the second. The second section, currently used as a warehouse, is one-story tall, made of brick, and also measures 180' x 40'. It has steel roof-trusses and a 7'-8' wide concrete loading platform on the north side. Both sections have a concrete foundation.
Pennsylvania Railroad: Johnstown Passenger Station  (1912)

Current Name: Johnstown Train Station

47 Walnut Street, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676510 N.4466230
Builder/Architect/Engineer: A.C. Shand (E); F.M. Sawyer (E); A.L. Ware (E); F
Historic Use: Railroad Passenger Station
Present Use: Railroad Passenger Station

In 1917 the Pennsylvania Railroad carried out a number of improvements in Johnstown including the elevation of its tracks to eliminate grade crossings, the laying of additional tracks, building a six-span, double track, deck girder bridge across the Conemaugh River to connect the freight line with the main line, and the construction of a new station. All of this work was accomplished while an average of 200 trains per day passed through the work area in Johnstown. The construction crew accomplished the elevation of the roadbed through a succession of small lifts, each being a only a few inches high, to reduce interference with the daily traffic. This project, including the purchase of additional right-of-way, represented a capital outlay of more than $3,000,000. The project engineers were: A.C. Shand, chief engineer; F.M. Sawyer, assistant engineer; and A.L. Ware, resident engineer in charge of construction in Johnstown. Today the station is owned by David Doemling, a real estate developer, although Amtrak maintains a ticket office in the station to service its two west-bound and two east-bound passenger trains that stop daily in Johnstown.

The station is built of tapestry brick on a granite foundation with Indiana limestone trim, in the form of pilasters and a bracketed cornice. The station consists of a main section, which contains a waiting room, ticket office, and general offices; and a baggage and express section. The main section has a street frontage of 90' and a depth of 98'. The waiting room is 62' x 45'. The interior of the waiting room is brick with marble pilasters and wainscoting, and the floors are terrazzo with marble borders. The vaulted ceiling was built using the Guastavino system of brick and concrete. High above the floor, large arched windows extend around the building, permitting natural light into the main waiting room and ticket office. An underground tunnel leads to the train platforms. The waiting room is in good condition and has remained relatively unchanged since 1917.

The baggage and express section is located on the west side of the main section. It was set back from the street by 30' to allow for a driveway and turn-around. The one-story building is brick and is 97' x 50'. It has an elevated platform that would have been level with a wagon floor. It appears that this area is no longer used. Although it is not in as good condition as the main part of the structure, its appearance seems relatively unchanged.

Sources:
Pennsylvania Railroad: Little Conemaugh River Bridge (Mile 261.20)  (1902)

Current Name: Conrail: Little Conemaugh River Bridge  Rating: 4

Conrail spanning Little Conemaugh River, Mile No. 261.20, .1 mile E of PA 160 at river, Wilmore, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.693730 N.4472890

Structure Type(s): Arch  
Length: 100'; Number of Spans: 2; Length of Main Span: 50'  
Material: Cut, coursed stone; Condition: Good

This two-span semi-circular stone arch bridge on the old Pennsylvania Railroad Main Line (now Conrail mile No. 261.20) spans the Little Conemaugh River south of Wilmore. Built in 1902 by the PRR as part of a bridge rebuilding program, it consists of two coursed ashlar sandstone arch spans each measuring 50' in length. Modifications include a concrete deck with metal railings, concrete reinforcement, and a curved, concrete retaining wall abutting the bridge at the base of the pier.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.  
Engineering Record, 48 (10 October 1903): 418.  

Pennsylvania Railroad: Little Conemaugh River Bridge (Mile 263.59)  (1896)

Current Name: Conrail: Little Conemaugh River Bridge  Rating: 4

Spanning Little Conemaugh River, Mile No. 263.59, .5 mile NE of Summerhill, Summerhill vicinity, Cambria County, Pennsylvania  
USGS Quad: Nanty Glo, Pennsylvania (1:24000) UTM: 17 E.690450 N.9471620

Structure Type(s): Arch  
Length: 159'; Number of Spans: 3; Length of Main Span: 53'  
Material: Cut, coursed stone; Condition: Good

This skewed segmental-arch bridge of stone construction was erected in 1896 to carry the Pennsylvania Railroad's Main Line across the Little Conemaugh River and a wagon road northeast of Summerhill. During the 1890s the PRR began replacing its undersized iron bridges with masonry arch spans. The three-span bridge crossing the Little Conemaugh is typical of the PRR bridges built at this time and consists of coursed, ashlar sandstone arches. The bridge contains a total length of 159', its longest span is 53'. Located at Conrail mile No. 263.59, the bridge has undergone a number of alterations including the construction of a concrete deck, concrete spandrels, and steel electric line towers attached to the concrete spandrels.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.  
Engineering Record, 48 (10 October 1903): 418.  
Transportation: Cambria County

Pennsylvania Railroad: Little Conemaugh River Viaduct (Mile 267.18) (1889)
Current Name: Conrail: Little Conemaugh River Viaduct Rating: 3
Spanning Little Conemaugh River Mile No. 267.18, 1.5 miles W. of South Fork at oxbow, South Fork vicinity, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania (1:24000) UTM: 17 E.685150 N.4470700
Engineer, Architect, Fabricator, Builder: William H. Brown (E), Drake & Stratton (B)
Structure Type(s): Arch
Length: 120'; Number of Spans: 2; Length of Main Span: 60'
Material: Cut, coursed stone; Condition: Good

The Little Conemaugh River Viaduct is located west of South Fork and was erected in 1890 to carry the old Pennsylvania Railroad (PRR) Main Line (Conrail mile No. 267.18) across a gorge created by the Little Conemaugh. The original viaduct at this location was built about 1832 and carried the Portage Railroad. Solomon Roberts designed this earlier stone-arch bridge, which was considered one of the most spectacular masonry arches in the United States. The devastating flood of 1889 destroyed this structure which had been part of the PRR Main Line since the 1850s. In addition, the flood damaged extensive sections of the roadbed and many other bridges were obliterated. PRR crews worked very rapidly to restore service through this important rail corridor. Nearly all passenger schedules had been reestablished only five weeks after the flood. Freight was also moving. On 14 June a PRR spokesman stated that "all of the two and four-track system of railway was reconstructed and opened for traffic with as many tracks as we had before the flood, excepting of course, single track-gauntlets across high bridges and trestles." The company intended to replace these with three-track, stone arch bridges as rapidly as was practical.

William H. Brown served as chief engineer on the reconstruction of the flood-damaged bridges, including the Little Conemaugh Viaduct. William R. Michie, a surveyor for the PRR's Pittsburgh Division, served as inspector for the rebuilding of the viaduct. In place of the original one-span structure, the PRR built a two-span semi-circular arch bridge of coursed, ashlar sandstone. Each span measures 60' in length and the viaduct is nearly 100' tall. A stone fender pier is located about mid-stream. The viaduct remains virtually unaltered from its 1890s appearance.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: Main Street Bridge (Mile 258.33) (1896)
Current Name: Conrail: Main Street Bridge Rating: 4
Spanning Main Street (PA 164), Mile No. 258.33, Portage, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.697500 N.4473560
Structure Type(s): Arch
Length: 30'; Number of Spans: 1; Length of Main Span: 30'
Material: Cut, coursed stone; Condition: Good

This segmental arch bridge of stone construction carries the former Pennsylvania Railroad Main Line (Conrail mile No. 258.33) across Main Street (PA 164) in Portage. It was erected in 1896 as part of a PRR program to replace its iron bridges with masonry spans. It consists of a
single-span coursed, ashlar sandstone arch with ashlar sandstone abutments and wing walls. The bridge measures 24' in length and remains unaltered, even retaining the "Portage" sign at the keystone of the arch.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.
Engineering Record 48 (10 October 1903): 418.

Pennsylvania Railroad: "MO" Tower  (1888)
Current Name: Conrail: "MO" Tower  Rating: 2

At classification yard N of First Street E of tracks, Cresson, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.704650 N.4482185
Historic Use: Railroad Traffic Tower
Present Use: Railroad Traffic Tower

An important component to the efficient movement of trains involves the coordination of switching between the tracks. The Pennsylvania Railroad built towers along the Main Line to manage the switching of its trains. Although each tower may differ in the type of building material and architectural style used, each structure served the same purpose and utilized the same basic two-story plan. The first story houses relay equipment and backup batteries. The second story is designed for optimal viewing of the tracks, while keeping the switching and communication equipment easy to reach. Many of the towers are designated by Morse code call letters.

The "MO" Tower, built in 1888 in Cresson is designed in the Stick Style using timber post-and-beam construction with clapboard siding on the first floor and double hung windows on the second. This is the most common type of tower seen on the Main Line. The crescent-shaped rafter ends and decorative cut-outs give the "MO" Tower a Victorian character.

Much of the switching and relay equipment on the first and second floors appears to be original. A small brick shed just east of the tower, which appears in an 1890 photograph, serves as a control room for propane heaters which are used to keep the switches free of ice and snow. Two high-pressure propane reservoirs and connecting pipes sit outside this brick structure, on the side away from the tower and tracks. The "MO" Tower's significance lies in its original appearance and turn-of-the-century switching and relay equipment.

Sources:
Broadman, Mr.  Operator at "MO" tower.  Interview, 9 July 1987.
Kahn, Homer.  Superintendent of buildings, Pittsburgh Division, Conrail.  Interview, 4 August 1987.
Pennsylvania Railroad: Rail Bridge (Mile 256.90)  (1896)
Current Name: Conrail PA 2015 Bridge  Rating: 4
Spanning: PA 2015 between Cassandra and Oil City, Mile No. 256.09, SW of Lilly, N of Oil City over PA 2015, Cassandra vicinity, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania  (1:24000)  UTM: 17 E.700180 N.4475220
Structure Type(s): Arch
Length: 24'; Number of Spans: 1; Length of Main Span: 24'
Material: Cut, coursed stone; Condition: Good

This single span stone-arch bridge on the old Pennsylvania Railroad Main Line spans PA 2015 south of Cassandra. Built in 1896, it measures 24' in length and contains ashlar sandstone abutments and wing walls. A concrete parapet with metal railings was added at an unknown date, otherwise the bridge remains unchanged.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.
Engineering Record. 48 (10 October 1903): 418.

Pennsylvania Railroad: Spur Line Bridge over Mainline  (1910s)
Current Name: Conrail: Railroad Bridge over Mainline Rating: 4
Conrail spur line spanning Conrail Mainline, S of "MO" Tower on First Street, Cresson, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania  (1:24000)  UTM: 17 E.704440 N.4482080
Structure Type(s): Beam
Length: 150'; Number of Spans: 3; Length of Main Span: 70'
Material: Cut, coursed stone; Condition: Good

This double-tracked bridge was built by the Pennsylvania Railroad in the 1910s as part of a spur line through Cresson. It crosses the old PRR Main Line (Conrail) west of PA 53. The three-span bridge consists of a riveted steel-plate girder resting on coursed, ashlar sandstone piers. Its total length is 150'. Interestingly, the bridge also serves as a signal tower for the Conrail Main Line.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: "SO" Tower  (1913)
Current Name: Conrail: "SO" Tower Rating: 3
Conrail milepost 266.100 on E side of Tracks, South Fork, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania  (1:24900)  UTM: 17 E.686720 N.4470630
Historic Use: Railroad Traffic Tower
Present Use: Railroad Traffic Tower

This is one of the six remaining manned traffic control towers on the former Pennsylvania Railroad Main Line in Blair and Cambria counties, with the other towers being the "ALTO" Tower (see entry) in Altoona, the "AR" Tower in Gallitzin, the "MG" on Allegheny Mountain at Sugar Run, the "MO" Tower (see entry) at Cresson, and the "C" Tower at Franklin. It is two stories tall, with equipment located on the first floor, and traffic control boards and the operator on the second floor. The tower operators work two of the railroad's three shifts: First
Transportation: Cambria County

Trick from 7:00 a.m. - 3:00 p.m.; and Second Trick from 3:00 p.m. - 11:00 p.m. Above the operator's desk is the Panel Blocking Device, which is used to manually set block signals to close either of the three tracks of the Main Line in this section for inspections or repairs. Behind the operator's desk is the Signals and Switches Panel as well as hand devices to set the switches. The tower operator's main responsibility is to coordinate traffic between the Main Line and the South Fork branch line. The tower operator uses a radio to communicate with the other tower operators, and a hand-held hoop to pass "19 Orders" (written authorization to use a track for travel in the wrong direction in respect to the normal flow of traffic) messages to train crews. The average volume of traffic past this tower is twenty-five to thirty trains per day.

The tower rests on a concrete foundation, and appears to have clapboard siding, that was sheathed in aluminum siding in the early 1970s. The tower measures 26' x 16', and is 21' high.

Sources:

Pennsylvania Railroad: Summerhill Signal Bridge (1903)

Current Name: Conrail: Summerhill Signal Bridge
Rating: 4

At Mile No. 263.70, Main Street and old PRR-Conrail mainline, Summerhill, Cambria County, Pennsylvania
USGS Quad: Nanty Glo / Geistown, Pennsylvania (1:24000) UTM: 17 E.690220 N.4471540
Structure Type(s): Truss
Length: 70'; Number of Spans: 1; Length of Main Span: 70'
Material: Concrete; Condition: Good

This signal bridge of steel construction spans the old Pennsylvania Railroad Main Line (Conrail mile No. 263.70) south of Summerhill. Built by the PRR in 1903, it consists of a riveted Warren truss, with steel bents, resting on concrete foundations. The bridge has a single 70' span and arched knee-braces.

Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: Susquehanna Secondary: Dishart Tunnel (1905)

Current Name: Conrail Dishart Tunnel
Rating: 4

Intersection of US 219 and Susquehanna Secondary, Dishart, Cambria County, Pennsylvania
USGS Quad: Carrolltown, Pennsylvania (1:24000) UTM: 17 E.693220 N.4494700
Historic Use: Railroad Tunnel
Present Use: Abandoned

The PRR's Susquehanna Secondary Branch between Bradley Junction and Dishart passes under US 219 southwest of Carrolltown through a stone cut tunnel. Built in 1905 the timber lined tunnel measures 830' in length. The single track tunnel is out of service, as the portion of this line from the south portal of this tunnel to Barnesboro has been abandoned by Conrail. The track is scheduled for removal in 1989.

Sources:

-157-
Transportation: Cambria County

Pennsylvania Railroad: Trout Run Bridge, (Mile 269.37)  (1851)
Current Name: Conrail: Trout Run Bridge  Rating: 3
Conrail spanning Trout Run, Mile No. 259.37, .8 mile west of Portage vicinity, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania  (1:24000)  UTM: 17 E.696160 N.4473240
Structure Type(s): Arch
Length: 20'; Number of Spans: 1; Length of Main Span: 20'
Material: Cut, coursed stone; Condition: Good
This semi-circular, arch bridge of stone construction carries the old Pennsylvania Railroad Main Line (Conrail mile No. 259.37) across Trout Run, formerly known as Spring Run, west of Portage. Built in 1851, it is one of the few remaining original PRR Main Line structures in the region. It consists of a coursed, ashlar sandstone arch with stepped wing walls. Measuring 20' in length, the bridge is virtually unaltered from its 1850s appearance.
Sources:
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: Twin Rocks Bridge  (1916)
Current Name: Unknown  Rating: 4
Former PRR tracks spanning South Branch, Blacklick Creek, Twin Rocks, Cambria County, Pennsylvania
USGS Quad: Nanty Glo, Pennsylvania  (1:24000)  UTM: 17 E.681020 N.4484240
Engineer, Architect, Fabricator, Builder: Phoenix Bridge Company, Phoenixville, Pennsylvania
Structure Type(s): Girder
Length: 100'; Number of Spans: 2; Length of Main Span: 50'; Width: 18'
Material: Ashlar sandstone; Condition: Fair
This two-span riveted steel plate girder bridge carried a Black Lick Branch line of the former Pennsylvania Railroad across the South Branch of Blacklick Creek south of Twin Rocks. This line served several coal mines in western and central Cambria County, as well as a number of coal mines Indiana County. The branch line, now abandoned in the Twin Rocks area, originally began at Ebensburg Junction, and passed through Ebensburg, Nanty Glo, Twin Rocks, Vintondale, Rexis, and Heshbon en route to Black Lick in south central Indiana County. The Twin Rocks Bridge measures 100' in length, with each span measuring about 50' in length. Although it is a typical plate girder structure, it is the only known bridge in this area to have been constructed by the Phoenix Bridge Company, one of America's major bridge fabricators and builders in the late nineteenth and early twentieth centuries.
Sources:
Nameplate on bridge.
Transportation: Cambria County

Pennsylvania Railroad: West Branch Susquehanna River Bridge (ca. 1910)  
Current Name: Unknown  
Former PRR Tracks spanning West Branch, Susquehanna River, at Garmantown, Cambria County, Pennsylvania  
USGS Quad: Barnesboro, Pennsylvania (1:24000) UTM: 17 E.685320 N.4505160  
Structure Type(s): Girder  
Length: 60'; Number of Spans: 1; Length of Main Span: 60'; Width: 16'  
Material: Ashlar sandstone; Condition: Fair  
This single-span riveted steel plate girder bridge was erected across the West Branch of the Susquehanna River about 1910 by the Pennsylvania Railroad and was part of a branch line that served western Cambria County. The primary traffic on this line served the coal mines around Barnesboro, the largest city in this area. The single-tracked bridge measures about 60' in length and rests on ashlar sandstone abutments.  
Sources:  
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.

Pennsylvania Railroad: Wilmore Main Street Bridge (Mile 261.30) (1902)  
Current Name: Conrail: Wilmore Main Street Bridge  
Mile No. 261.30, .25 mile S of PA 53 on PA 160, Wilmore, Cambria County, Pennsylvania  
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.693600 N.4472810  
Structure Type(s): Arch  
Length: 40'; Number of Spans: 1; Length of Main Span: 40'  
Material: Cut, coursed stone; Condition: Good  
This semi-circular arch bridge of stone construction carries the former Pennsylvania Railroad Main Line (Conrail mile No. 261.30) across Main Street in Wilmore. Built by PRR in 1902, it consists of a random-range sandstone arch with a stepped, wing wall of the same material. It is 40' long and remains relatively unchanged. This bridge is similar to other PRR-built Main-Line bridges in the towns of Cassandra and Portage.  
Sources:  
Existing Structures Inventory. Pennsylvania Main Line, Pittsburgh Division, Conrail, Altoona, Pennsylvania.  
Engineering Record 48 (10 October 1903): 418.  
Red Mill Bridge  (ca. 1890)

Current Name: Red Mill Bridge  Rating: 2

Two. Road 749 spanning North Branch, Blacklick Creek, north of Red Mill, Red Mill, Cambria County, Pennsylvania
USGS Quad: Strongstown, Pennsylvania  (1:24000)  UTM: 17 E.677620 N.4486890
Engineer, Architect, Fabricator, Builder: Variety Iron Works (B)
Structure Type(s): Through Pratt Truss
Length: 100'; Number of Spans: 1; Length of Main Span: 100'
Material: Stone; Condition: Good

One of the few iron truss bridges still standing in rural Cambria County is located on Township Road No. 749 near the small community of Red Mill. The single-span bridge, measuring 100' in length, was built about 1890 to carry wagons and pedestrians across the North Branch of Blacklick Creek. A plaque on the end post identifies the builder as the "Variety Iron Works, Bridge Builders, Cleveland, Ohio." The portal members contain channel sections with lacing bars and a top plate and the portal bracing is ornamented with lattice ironwork. The top chords and vertical members consist of laced channel bars, and the lower chords and diagonals are forged iron eyebars. Interestingly, the iron floor beams, which support timber stringers and wood decking, are variable in section. The bridge is supported on stone abutments.

Sources:
Nameplate on bridge.

Southern Cambria Railway Company Car Barn and Power Plant  (1910s)

Current Name: C.J. Merlo, Inc. (Construction)  Rating: 4

PA 3030 .8 mile SE of PA 271, Mineral Point vicinity, Cambria County, Pennsylvania
USGS Quad: Nanty Glo, Pennsylvania  (1:24000)  UTM: 17 E.682390 N.4472050
Historic Use: Interurban Car Barn and Power Plant
Present Use: Maintenance Building

The Southern Cambria Railway Company was organized 1 May 1909 to provide passenger service by electric trolley between Johnstown and Ebensburg. Southern Cambria Railway made an agreement with the Northern Cambria Railway Company to construct a line between Ebensburg and Carrolltown, to the north. Northern Cambria Railway was to make the connection from Barnesboro to Carrolltown. However, by the time the Southern Cambria Railway reached Ebensburg, its financial resources were exhausted and the company abandoned the plan to reach Carrolltown. Both Northern Cambria Railway and Southern Cambria Railway, which had built large car barns and power houses in anticipation of the completed line, were left with oversized physical plants for the relatively small networks each finally operated.

Passengers riding on a trolley of the Southern Cambria Railway could board in Johnstown, travel to Brookdale, and change there for a trolley headed to either Ebensburg or South Fork. In 1918 the Southern Cambria Railway, beset by accidents, high rail construction costs, and great expense in the maintenance of its line through the mountains, was taken into receivership by the Cambria Trust Company. The trolley continued to operate until 1926 when the popularity of the automobile, combined with the high costs of mountain trolley passage, ended nearly two decades of service.
Transportation: Cambria County

Brookdale, below the Saltlick Reservoir, was the site of Southern Cambria Railway's car barn and powerhouse. The largest of the three buildings in Brookdale, the car barn, provided sheltered space for the storage and maintenance of trolley cars, and included a pit for undercarriage work. A smaller, flat-roofed building, attached to the west side of the car barn, was divided into rooms for an office, a machine shop, and storage. The rectangular-shaped power house was divided into two spaces; one for the generator room and the other for the boiler room. Both the car barn and the power house use a structural system which combines load-bearing walls and pilasters made of cut stone block-in-course construction. The concrete-slab roofs over all the buildings are supported by steel Warren trusses.

Today, C.J. Merlo, Inc., a construction company, uses all three structures for storage and heavy-equipment maintenance. The company has built an office of concrete block between the two original buildings. All the windows in the original stone buildings have been filled in with concrete and glass blocks.

Sources:

Township Road 509: North Branch, Blacklick Creek Bridge (ca. 1910)

Current Name: Twp. 509: North Branch, Blacklick Creek Bridge

Twp Road 509 spanning North Branch, Blacklick Creek, 1 mile W of Blue Goose at Blacklick Creek, Nicktown vicinity, Cambria County, Pennsylvania

USGS Quad: Colver, Pennsylvania (1:24000) UTM: 17 E 682210 N 4495400

Structure Type(s): Girder
Length: 60'; Number of Spans: 1; Length of Main Span: 60'; Width: 20'
Material: Reinforced concrete; Condition: Fair

Located in a sparsely populated section of western Cambria County, this single span bridge crossing the North Branch of Blacklick Creek is one of the earliest extant reinforced concrete bridges in the region. It contains a single span of 60' and although the bridge appears to be an arch, it is actually a concrete girder structure. The arched girders on either side of the bridge are merely facing. Lightly ornamented concrete railings extend the length of this short span and the bridge is in fair condition. A few of the Ransome twisted reinforcing bars are exposed where the concrete facing has spalled away.

Sources:
Township Road 497: North Branch, Blacklick Creek Bridge  (1902)

Twp. Road 497 spanning North Branch, Blacklick Creek, .25 mile W of PA 271, SW of Duman Lake, Belsano vicinity, Cambria County, Pennsylvania
USGS Quad: Colver, Pennsylvania  (1:24000)  UTM: 17 E.681280 N.4492040

Structure Type(s): Pony Pratt Truss
Length: 60'; Number of Spans: 1; Length of Main Span: 60'; Width: 18'
Material: Ashlar sandstone; Condition: Fair

Carrying a rural road across the North Branch of Blacklick Creek, this bridge is one of the few surviving pin-connected pony truss bridges in the region. Its superstructure is comprised of steel channel and angle sections, and forged steel eyebars. Containing a single span of approximately 60', the bridge rests on ashlar sandstone abutments. The wooden deck was altered in the 1960s with the installation of steel wide-flange stringers and a steel grate deck. It is currently in fair condition.

Sources:
BULK PRODUCTS INDUSTRIES

A number of industries, which the Historic American Engineering Record categorizes as bulk products industries, including grist and feed mills, meat products, textiles, and lumber, pulp, and paper processing plants, dating from the mid-nineteenth through the early twentieth centuries exist in Blair and Cambria counties. Not surprisingly, each of these industries was closely tied to the exploitation of the region's natural resources throughout the late nineteenth and early twentieth centuries. With the advent of the Main Line of the Pennsylvania Canal and the Allegheny Portage Railroad in the 1830s, the development of bulk products industries began to grow steadily. It was with the completion of the Pennsylvania Railroad two decades later, that locally based bulk products industries grew rapidly in number. By the early 1900s, outside industrial concerns based in larger East Coast and Midwest cities increasingly acquired local companies, or through competition, put them out of business. Presently only a handful of historic structures remain that housed the county's bulk products industries.

GRIST MILLING:

Typically grist mills were among the first industrial structures erected in newly settled regions. In 1787 the first tax assessment for Huntingdon County, from which Blair County and the northern part of Cambria County were later formed, recorded ten or so operating grist mills. By 1832 when the Pennsylvania Canal reached the western terminus of the Juniata Division at Hollidaysburg, Huntingdon County (which still included Blair) boasted sixty-two grist mills serving a population of 27,159. The region's farmers, who by 1790 produced grain in excess of local needs and rafted it as far as Baltimore in the form of flour and whiskey, were enjoying great prosperity. The merchant millers and distillers (eighty-four of them in 1832) processed the grain locally for easier shipment to market. Local mills were able to satisfy local markets as well as support a healthy export trade, until the opening of the West through improvements in rail transportation stimulated demand that area farmers and processors could not meet. Throughout the remainder of the nineteenth century, local grist mills were unable to meet the region's needs, therefore, many of these mills were abandoned. However, several modest operations continued in business into the 1930s. Flour milling gradually gave way to increased processing of livestock feeds. The handful of mills currently in operation in Blair and Cambria counties (as opposed to feed stores which handle products ground elsewhere) no longer produce flour at all.¹

Many of the early grist mills in western Pennsylvania were operated in conjunction with the region's numerous iron plantations. Two such grist mills still survive in Blair County: one at Tyrone Forge, also called Ironville, and the other at Sarah Furnace. Both were originally water powered. The wood-frame Tyrone Forge mill is the oldest continually operating industrial site included in the inventory of Blair and Cambria Counties. The Sarah Furnace Grist Mill retains its nineteenth century milling machinery and, significantly, its overshot water wheel. The wood-frame two-and-a-half story structure retains much of its historic appearance including wood clapboard siding.

Milling continued in the two counties well into the twentieth century. The former Hagey and Clapper Mill at Martinsburg, located in the heart of the intensely farmed Morrison's Cove region of southern Blair County, closed about 1940. At that time its owners bought a second

Bulk Products Industries

mill in Martinsburg, which had a railroad siding, and began developing it into what would later become the largest and most modern milling company in the county. A fifth mill in Blair County, the Keystone Mill erected ca. 1910 in Williamsburg, operated as a flour and feed mill, serving the northern part of the Morrison's Cove area. The region's only surviving flour mill built of brick, it ceased milling flour in 1983, however, the milling machinery remains in place.

In Cambria County, the frame Lantzy Mill north of Barnesboro was built in 1923 on the site of an 1870 mill which had been destroyed by fire. Much of its 1923 equipment and machinery is still in use. Only one other flour mill was found in Cambria County, a wood-frame building erected in Portage about 1915. It is now abandoned.

MEAT PRODUCTS:

A number of turn-of-the-century slaughterhouses remain standing in Blair and Cambria counties. These range from the larger meat-packing operations of Edward Hahn, in Hornerstown, to the modest-size abattoir of George Bender in Hollidaysburg, to the small-scale facility of the Berwind-White Coal Mining Company in the company-built town of Mine No. 40. Among the most unaltered of these facilities is the Bender abattoir, founded in 1907 by the Bender family. Located along Beaverdam Creek, the brick building with a gable roof retains much of its original equipment including butchering kettles, winches, pulleys on which were hung the carcasses, a grinder, a boiler, and an insulated refrigeration compartment.

TEXTILE INDUSTRY:

The textile industry came to Altoona in 1889 and soon after silk mills and garment factories were established in a dozen or more communities throughout the region during the next half century. These towns and cities offered excellent rail transportation, inexpensive coal for fuel, and importantly a large labor pool. This ready work force consisted primarily of unemployed women and children, primarily the wives and families of the huge work forces employed by the railroad, the steel mills, and the coal mines of the region. Mirroring labor practices of the textile industry in the Northeast and the South large, outside manufacturing companies established what came to be termed "parasite industries". The "parasite industries" were characterized as those that sought out and preyed upon a captive labor force that had few educational or employment opportunities, and therefore little inclination to demand better working conditions, higher wages, or shorter hours. The established silk manufacturers of New Jersey, New York, and Philadelphia, found an agreeable home offering such conditions in Pennsylvania's rugged coal region in the 1880s and 1890s. Wages were reported to be one-third those paid in the mammoth silk manufacturing center of Paterson, New Jersey.

The largest and most impressive textile mill in Blair County is located in Altoona at 25th Street and 9th Avenue. Schwarzenbach-Huber Company of New York City opened this mill, erected 1888-89, and hired 200 women, girls, and boys to throw raw silk into thread. The original two-story, brick mill building which lies southwest of 25th Street remains virtually unchanged.

---

2 Sadly, the Bender abbatoir, the most intact of the historic meat-processing facilities surveyed in the two counties, was demolished in 1987.

Expansion occurred in an adjacent block where a series of buildings constructed between 1890 and 1905 greatly enlarged the factory complex. It remains in operation as an American Eagle Company knitting mill and garment factory, however, it no longer produces fabrics.  

Schwarzenbach-Huber and Company constructed additional mills in Hollidaysburg and Juniata around 1910, and drew upon the largely untapped labor pools in those communities. The company soon employed more than a thousand workers in Blair County. The mill in Juniata, much smaller than its Altoona counterpart, is a one-story, brick building with large, closely-set multi-paned windows. Its style resembles that of a school building and blended visually with the surrounding residential buildings. Doubling in size between 1910 and the 1930s, this mill continues to manufacture nylon yarns and industrial fabrics. The Hollidaysburg mill, and one operated by Lehigh Mills in Williamsburg during the 1920s and 1930s have been torn down.

The silk industry came to Cambria County in the early-twentieth century with the Buser Silk Mill, in Johnstown, and the Century Ribbon Mills, Inc., in Portage and Patton. Buser was associated with a Paterson, New Jersey, manufacturer and Century Mills with a New York City firm. At its peak in the 1920s and 1930s, the silk industry added a total of four hundred to five hundred jobs to the county's economy. Silk production in Johnstown ended in the 1940s, with the demolition of the Buser Mill in the Hornerstown district of Johnstown. The small factories of the Century Mills continue to produce finished textile products, such as ladies dresses at Portage and woven guitar and camera straps in Patton. The mill at Portage includes the original, two-story, gabled roof, brick structure erected about 1910, which contains a coal fired steam-generating station to power weaving and sewing machines. Much less remains of the mill at Patton.

The garment industry followed the silk industry into Blair and Cambria County. Two other textile factories, one in Gallitzin, Cambria County, constructed in 1928, and one in Tyrone, Blair County, built in 1934, produced shirts. As with the silk mills, these sewing factories were established by distant garment manufacturers seeking locations which offered convenient transportation facilities and an eager labor pool. The Tyrone plant was constructed during the Depression for the Reliance Manufacturing Company of Michigan City, Indiana, with contributions from the townspeople. With additions which have doubled its size, the mill continues in operation, producing "Big Yank" work clothes, so named due to the company's temporary conversion to the production of military uniforms during World War II. The Gallitzin shirt factory was one of sixteen nationwide operations owned by S. Liebowitz and Sons of New York City. The large, flat-roofed, brick building completed in 1928, has been altered by later additions and the infilling of windows. Now known as Eaglewear, Inc., the plant, which employed 400–450 during the Depression years, continues to produce shirts.

LUMBER PRODUCTS:

From the earliest settlement of Blair and Cambria counties, the heavily forested mountains have provided large quantities of timber for a variety of commercial uses. The demands of the area's insatiable charcoal-fired iron furnaces denuded thousands of acres of hardwood forest in the

---


nineteenth century. After the mid-century development of railroads and coal mining in the region, the lumber industry shifted its emphasis to satisfy a steady demand for railroad ties and mine props from local saw mills. At the same time the influx of workers employed in the area's rapidly expanding industries created a huge market for housing, which in turn spurred the growth of lumber yards and planing mills. By 1896 twelve planing mills were operating in Altoona, the largest employing fifty men. Five million board feet of lumber were being processed annually by the city's mills, at that time. Ten thousand railroad workers and their families in Altoona alone, needed houses, while in Cambria County whole towns were being erected, seemingly overnight, to house the fourteen thousand men employed in the mines by 1900.

Although the mid-nineteenth century witnessed a great deal of logging in the region, little physical evidence remains of the historic lumber industry. Sawmills were seldom, by nature, long-term installations; like the rail lines built to harvest contract lumber, they were dismantled and moved when a stand of trees had been cleared. The number of planing mills dwindled as the demand for housing created by rapid population growth slackened; they were, in addition, remarkably prone to destruction by fire. Six planing mills dating from with the late-nineteenth or early-twentieth centuries remain in the two counties; four in Blair County, and two in Cambria County.

Typically, planing mills used wood-frame buildings or shed structures that, over time, were modified or rebuilt. The Johnstown Planing Mill, located in Johnstown's early-twentieth century Hornerstown district (where five planing mills once occupied a six-block area) is one of the few surviving nineteenth century planing mill businesses. The earliest buildings however, have been covered with modern materials. Individual planing mill buildings survive at the former Planing Mill Company at Roaring Spring in Blair County, and at Moxham Lumber Company in Johnstown, but many of the other related buildings, lumber sheds, or equipment no longer stand.

The nature of the lumbering industry as it exists today in Blair and Cambria Counties differs markedly in certain respects from its nineteenth and early-twentieth century antecedents. Transportation of materials is almost entirely by truck rather than rail, and while saw mills continue to supply local demand for rough lumber, mine props, or railroad ties, the majority of timber cut locally is marketed out of the area. Few building materials are locally milled, being shipped, instead, from large suppliers in the South and West to jobbers who distribute them to area outlets.

**PAPER MAKING and PAPER PRODUCTS**

The area's first paper mill was established in 1795 at Laurel Springs near Birmingham, three miles east of Tyrone and just across the Blair County line. This enterprise continued for 40 or 50 years, producing a heavy rag paper used for the printing of the area's earliest newspapers and other documents. In 1865 John Morrison, D.M. Bare, and John Eby built a paper mill at Roaring Spring, so named due to the noise generated by the eight-million-gallon-per-day flow. To produce paper, the mill used a combination of straw, gunny sacking, rags, and water from

---

7 Wolf, p. 342.
the spring. A decade later Morrison and Bare installed equipment for processing pulp wood logs. Nestled along Halter Creek, the paper mill buildings, and the factory of the Blank Book Company became a visual landmark in Roaring Springs. Unfortunately few historic buildings remain from the Morrison and Bare paper mill. A digester explosion in 1951 resulted in extensive reconstruction of the mill, and the Appleton Paper Company, the mill complex's current owners, modernized the mill.\(^8\)

In 1878 John Morrison, D.M. Bare, and Joseph Cass erected a second paper mill at Tyrone. Unlike the mill at Roaring Spring, this mill complex, the largest in Blair County, included a pulp mill when it first opened. D.M. Bare withdrew from the Tyrone enterprise in 1882 to pursue his many interests in Roaring Spring, including the founding in 1886 of the Roaring Spring Blank Book Company, which converted paper from the D.M. Bare Paper Mill into account books. The West Virginia Pulp and Paper Company of New York consolidated with the Morrison and Cass Mill of Tyrone in 1899.\(^9\) The Tyrone mill is the most significant in terms of the number of historic structures which survive from the nineteenth and early-twentieth centuries, among which is a long, two-story, brick building along Pennsylvania Avenue. It has been altered by infilling of its long rows of narrow windows. Two powerhouses used to generate electricity and steam for the mill are among its surviving early structures. In addition, a carpenter's shop and adjoining blacksmith's shop survive.\(^{10}\)

In 1905 Blair County's third paper mill was erected in Williamsburg by steel magnate Charles Schwab. Once again, a large natural spring located in the community was a key factor in selecting the site. As with the region's other paper mills, the Williamsburg Paper Manufacturing Company was acquired by West Virginia Pulp and Paper Company of New York in 1906. Now called Westvaco Corporation, the firm continues to operate the Tyrone paper mill. WESTVACO's envelope division located in Williamsburg, has produced postage stamped envelopes for the federal government at a plant originally attached to the Williamsburg paper mill, since 1964. Although the main mill was closed and torn down in 1974, the envelope plant has been expanded and is still in operation.\(^{11}\)

EXPLOSIVES:

The Atlas Powder Company of Horrell, in Blair County, began at the turn of the century as a manufacturer of black powder for quarries and mines. The company provided steady employment for forty to fifty men until 1945. At that time, Blair County's quarrying and mining businesses as well as the military had less need for, or found other sources of, black powder. The only remains of the Atlas Powder Company's operation are a few foundations and four storage magazines for explosives.

---


\(^9\) Africa, P. 391; and Davis, p. 273

\(^{10}\) Africa, 213-14.

\(^{11}\) Wolf, 86.
Black powder manufacture in Blair County was closely tied to the region's extensive stone quarrying industry. Black powder was preferred over dynamite for quarry blasting because its force is sufficient to crack the rock without causing it to explode dangerously. The Atlas Powder Company plant, located at Horrell in Frankstown Township, was established ca. 1915. Atlas Powder employed about fifty men at its Horrell site. The materials required in the manufacture of black powder---charcoal, sulfur, and soda or saltpeter---were brought to the Horrell site by the Petersburg Branch of the Pennsylvania Railroad, which passed within a hundred yards of the plant. Much of the product was sold to local quarry and mine operators, and any excess was shipped out by rail.

During the Depression, the men worked thirty-six hours per week so that no one would be laid off. During World War II, the government took over the operation to provide powder for munitions. Employees were exempted from the draft as they were considered workers in an essential industry. The plant closed in 1945, when military demand ceased, and quarry activity had fallen off. The site is now occupied by a sawmill. Two explosions between 1927 and 1945 killed two men and destroyed a number of buildings. Surviving near the abandoned railroad bed are the poured concrete foundations of the soda house (on the saw mill is built), the concrete foundations of the can house (where powder was sealed in 25-pound cans), foundations of the sulfur and charcoal houses, and the ruins of a brick transformer house.

About half a mile from the plant are three powder magazines and a dynamite magazine. Two of the powder magazines are brick structures on concrete foundations, with metal roofs and heavy metal doors. They have small vent holes at floor level and stovepipe-like roof vents. One measures 20' x 10'; the other 30' x 10'. The third is a metal-clad building, 15' x 12', with metal shed roof and a metal-sheathed foundation. The dynamite house could not be reached. All are in heavily overgrown hollows northwest of the plant site.

Sources:
Bath, Hunter, and Sons: Planing Mill  (1905)
Current Name: Hollidaysburg Building Supplies  Rating: 4
Walnut and Bella Streets, Hollidaysburg, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000)  UTM: 17 E.721760 N.4478880
Historic Use: Wood Planing Mill
Present Use: Warehouse

Around 1905 the Bath, Hunter and Sons Company was established in Hollidaysburg to manufacture doors and sashes. The company erected this two-story planing mill on Walnut and Bell Streets. Measuring 60' x 50,' the wood-frame structure contained a concrete foundation, narrow clapboard siding, a steeply-pitched gable roof, and wood roof rafters. The company ceased making doors and sashes in the 1940s and subsequently closed the mill. Currently, the building is occupied by Hollidaysburg Building Supplies, a retailer in building materials. All of the old machinery in the planing mill was removed, and scrapped a few years ago. The building, however, retains much of its historic appearance.

Sources:

Bender Slaughterhouse  (1907)
Current Name: Unknown  Rating: 3
Hickory Street W of N Juniata Street, Hollidaysburg, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000)  UTM: 17 E.720470 N.4478620
Builder/Architect/Engineer: George Bender (B)
Historic Use: Slaughterhouse
Present Use: Abandoned

In 1907 George Bender along with his brother, Albert, and his sister, Mary, formed a partnership to operate an abattoir in Hollidaysburg. George Bender built this abattoir of brick on the bank of Beaverdam Branch, near the intersection of Hickory and White Streets. He died shortly thereafter, and his brother Albert operated the business until 1956.

The 40' x 20' building is constructed of brick laid in common bond on a foundation of coursed stone rubble. A tall chimney, two feet square, projects from the front wall, about 6' to the left of the smoke chamber. It extends nearly 10' above the eaves and ends in a decorative corbeling which includes a layer of stone or cast concrete. A name and date stone, inset in the chimney front, reads: "George Bender/1 May 1907." The gable ends of the building, are framed in wood and covered with clapboard. The badly deteriorated roof is covered with slate. The front facade contains a door along with several tall, narrow windows and one small window in the smokehouse. All the openings are topped by slightly rounded brick arches; the double-hung wooden sash windows are divided vertically by a single muntin. At the rear of the building are remnants of sheds and pens used to house animals waiting for slaughter.

The interior walls are exposed brick. A narrow tongue-and-groove board ceiling on wood joists supports a metal track from which carcasses were suspended and moved about the interior. A floor gutter extends the length of the building and passes through the wall and to the top of the adjacent creek bank. (It was here that waste from the abattoir was discharged directly into Beaverdam Branch.) A brick partition divides the interior into two rooms. The larger of the two rooms contains a two-story smoke room. The smoke chamber extends through the roof approximately 6' above the front eaves; the top is capped, but provides for the venting of
smoke via a row of regularly spaced openings through the brick. Next to the smokeroom, there stands a two-story insulated refrigerated compartment, two iron butchering kettles on stands, a boiler, and several large unidentified cast iron devices. Front and back entrances open into the smaller room. In this room are a white enamel bathtub and a hog scraper as well as piles of building materials (placed here after the abattoir closed). This room may have been used as a scalding and butchering area.

The current owner Albert Benfatta of Altoona, demolished the structure soon after it was inventoried by HAER. Small, locally owned and operated abattoirs were commonly found in this region's towns and cities, however, fewer and fewer of the historic ones survive.

Sources:
Bender, William. 1015 Douglass St., Reading, Pennsylvania. Interview, 30 July 1987.
Claar Planing Mill  (1914)
Current Name: The Wood Works  Rating: 4
E side US 220, .4 Mile S of PA 164, East Freedom, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania  (1:24000)  UTM: 17 E.718240 N.4470020
Historic Use: Wood Planing Mill
Present Use: Furniture Manufacture

Located along the former Bedford Branch of the Pennsylvania Railroad and old US 220 in East Freedom, the Claar Planing Mill buildings were constructed about 1914. The mill was operated continuously by members of the Claar family until 1979-80; it included facilities for finishing and air-drying lumber, manufacturing window sash and doors, and custom-finishing materials for various types of construction projects. The firm also did a small retail trade in builders' supplies and hardware. After standing idle for six years, the planing mill was purchased in 1986 for use in building office and computer furniture. This work is being done with the old equipment, some of which dates to the 1930s. The new owner plans to expand into the manufacture of custom sash and doors, also using the old Claar machines.

The planing mill complex includes a group of structures joined together to enclose the lumber yard, where wood was stored in roofed sheds, open to the central yard. The yard has wooden picket gates at each end to allow trucks to pass through to load and unload. The office, retail store, and mill equipment are housed in a pair of two-story frame buildings with hipped roofs and narrow clapboard siding. Six-over-six-light, double-hung, sash windows are predominate in the office and storage buildings. The store building has a one-story porch recessed beneath the second story of the front, with large plate-glass windows on which are painted "Claar Building Materials." A wooden bridge joins the second floor work areas of the two buildings. The buildings' doors are a style book of patterns the mill could fabricate, all painted in contrasting light and dark gray to call attention to their variety.

Sources:
Keithley, David. present owner, P.O. Box 348, Claysburg, Pennsylvania 16625. Interview, 7 August 1987.

D.M. Bare & Company Paper Mill  (ca. 1900)
Current Name: Appleton Papers, Inc.  Rating: 4
W of PA 867 (Main Street), .4 miles S of PA 36, Roaring Spring, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania  (1:24000)  UTM: 17 E.720380 N.4468240
Historic Use: Pulp and Paper Mill
Present Use: BULK: WOOD: Pulp Paper Facilities

In 1865 D.M. Bare, John Morrison, and John Eby of Roaring Spring founded the D.M. Bare Paper Company, and began to erect a mill on Main Street west of the PRR's Martinsburg Branch line in Roaring Spring. The mill was completed and the first paper produced in April 1866. The owners added a pulp mill to the site in 1875, to produce pulp from linden poplar wood. For over eighty years Bare's company produced paper for the nearby Blank Book Company (see entry of Blank Book Company: Factory), in which Bare had a financial interest. In 1946 Combined Locks Paper Company, of Combined Locks, Wisconsin, purchased the D.M.
Bare Paper Company. That year the company produced 60,000 to 70,000 tons of pulp and paper daily. By 1971 Appleton Papers, Incorporated, then a subsidiary of National Cash Register (NCR), had absorbed Combined Locks. Currently Appleton Papers, Incorporated, a wholly owned subsidiary of BATUS of Louisville, Kentucky, employs 525 people and makes carbonless writing paper, non-impact printing papers, and numerous speciality papers.

Over the years, this pulp and paper mill experienced a series of fires and floods. The mill was completely destroyed by fire a few months after it opened. The owners rebuilt the mill in 1867. The greatest devastation in recent years, however, occurred in 1951, when an enormous explosion destroyed many of the older buildings. The company also tore down numerous buildings in order to modernize the plant. Only two historically significant buildings remain, the maintenance office and the clay house. The old maintenance office dates from 1900 and consists of a one-story frame building that measures 69' x 20'. It contains a coursed stone foundation and a gable roof. Currently, this structure houses the maintenance employees' tools and the golf carts that are used to get around the site. The clay house, ca. 1900, is two stories high and contains a coursed stone foundation with brick walls and a wooden frame. There is a gable roof, half supported by wooden trusses and the other half by rafters. These buildings have not changed a great deal in appearance since their construction. Originally D.M. Bare Paper shipped its products by wagon, then by railroad. Combined Locks Paper and, more recently, Appleton Papers, Incorporated increasingly relied on trucking to transport goods, however, the former Conrail (formerly the Pennsylvania Railroad) continues to serve the plant.

Sources:

**Hagey and Clapper Mill** (1872)

Current Name: Unknown

 Penn and Nicodemus Streets, Martinsburg, Blair County, Pennsylvania
 USGS Quad: Martinsburg, Pennsylvania (1:24000) UTM: 17 E.726556 N.4465930
 Historic Use: Milling of Grain
 Present Use: Abandoned

Located at Penn and Nicodemus Streets in Martinsburg, this three-and-one-half story, wood-frame building was originally built in 1872 by Dr. S.M. Royer and Wike Brothers to serve as a flour mill. After passing through several hands, George W. Hagey acquired the steam-powered mill in 1885, operating it under the name of Hagey and Clapper Mill. Hagey installed new milling machinery and produced flour sold under the name of White Lily Mills products. The mill was closed in 1939 by G. Rollin Hoover, the owner-operator, when he acquired the Klepser Mill, now Martinsburg Milling. The building was later used by Martinsburg Machine Works, a locally owned business. Projectiles for the military were reportedly finished in the buildings. This company closed around 1950. The building was later used to house the construction business of Albert Kauffman, but it has been vacant in recent years. A two-story addition on the south side has a very slightly sloped shed roof, but it appears that there may once have been another story.
The original flour mill retains much of its historic appearance, including its distinctive gable roof. At the rear of this addition is a large square brick stack, which exhausted smoke from the boiler room. Although access to the interior was not permitted, several local sources reported that no milling equipment remains in the building.

Sources:
Bice, Blair M. Former Editor, Morrison's Cove Herald, 748 Thomas, State College, Pennsylvania 16801. Interview, 26 July 1987.

Keystone Mill (1910)
Current Name: Keystone Feed and Flour, Inc. Rating: 3 Survey #: 013.080
E side of Canal Street (PA 866) .09 miles N of Front Street, Williamsburg, Blair County, Pennsylvania
USGS Quad: Williamsburg, Pennsylvania (1:24000) UTM: 17 E.736900 N.4482880
Builder/Architect/Engineer: George W. Brown (B)
Historic Use: Milling of Grain
Present Use: Milling of Grain

The Keystone Mill, located in Williamsburg, near the northern end of the Morrison's Cove area, was built in 1910. George W. Brown, proprietor of the Coveredale Mill erected the three-and-a-half story, brick building, and operated the flour mill until his death in 1946. The mill was steam-powered until 1948, when it was electrified. At about this time Gerald Barker, the mill's second owner, apparently replaced the flour milling operation with a feed mill; nonetheless, some flour milling continued. The flour milling machinery remains in place, however, flour has not been milled since about 1983 and currently, the Keystone Mill is operated solely as a feed mill.

The Keystone Mill is somewhat unusual in the region as the only flour and feed mill constructed with brick. Its west facade contains slightly arched window openings, a lunette window in the gable, and a handsome coursed stone foundation. The building measures 80' x 30' and contains brick load-bearing walls and a timber, post-and-beam interior frame.

Sources:

Morrison, Bare, and Cass Paper Company Mill (1880s, 1920s)
Current Name: WESTVACO Rating: 3
NW of Pennsylvania Avenue and Sixteenth Street, Tyrone, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania (1:24000) UTM: 17 E.733640 N.4506660
Historic Use: Pulp and Paper Mill
Present Use: Pulp and Paper Mill

In 1880 the firm of Morrison, Bare, and Cass, owners of a paper mill at Roaring Spring, in southern Blair County, established a second mill at Tyrone, in the county's northernmost township. In 1886 the firm was dissolved and the property divided, with Morrison and Cass retaining the Tyrone mill while Bare assumed control of the Roaring Spring operation. The
Bulk Industries: Blair County

Tyrone mill's first superintendent was John G. Luke, later president of the West Virginia Pulp and Paper Company (WESTVACO), which consolidated with the Tyrone mill in 1899. The Tyrone mill utilized timber from the forests of northern Blair and surrounding counties. Water for the mill was drawn from the adjacent Bald Eagle Creek. High quality book, magazine, and writing papers constituted the company's major products. By 1920 the paper mill was the town's largest employer.

Presently, the paper mill occupies several city blocks. Two, ca. 1890 paper-making factory buildings stand along Pennsylvania Avenue. These brick buildings have been greatly altered with the infilling of the original multi-light windows. However, two other 1890s buildings, a machine shop and carpenter's shop, and a blacksmith's shop remain virtually intact. The former building consists of a two-story brick structure with a gable roof and the latter is a one-story brick structure. A power generating station built about 1960 and containing a yellow brick exterior, stands east of Pennsylvania Avenue and supplies steam to plant machines from coal-fired boilers. A smaller plant, dating from 1920 is located west of the newer power station. Steam from both plants is carried through a network of large overhead ducts, which cross Pennsylvania Avenue and branch out to all the company buildings.

In 1970 WESTVACO ceased processing pulp at its Tyrone mill. However, the company continues to produce high quality specialty papers and remains the town's largest employer.

Sources:

Reliance Manufacturing Company (1934)
Current Name: Big Yank Corporation
Rating: 4

Lincoln Avenue and Sixteenth Street, Tyrone, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania (1:24000) UTM: 17 E.733580 N.4507840
Historic Use: Finished Textile Products
Present Use: Finished Textile Products

In July 1933 the Reliance Manufacturing Company of Michigan City, Indiana, producers of "The Standard work shirt of the World," began operations in Tyrone, Pennsylvania, in a downtown storeroom. Through the contributions of area citizens, who desired to attract businesses to the town, a building at Lincoln Avenue and 16th Street was constructed, and ready for occupancy in 1934. A dance, with Tyrone native Fred Waring and his orchestra, dedicated the new plant. During World War II, Reliance produced military uniforms just as it had during World War I. The production of uniforms inspired the company's Big Yank trademark.

The one-story plant has yellow-brick bearing-walls on a concrete foundation. A succession of large ventilating shafts rise almost one-story above the plant's flat roof. A large warehouse, built in 1963 has greatly increased the factory's square footage. Still in operation, the Tyrone plant is the principal shipping point for Big Yank uniforms to all parts of the world.

Sources:
Roaring Spring Blank Book Company (1900)

Current Name: Roaring Spring Blank Book Co. Rating: 2

On Spang Street between Spring and Water Streets, Roaring Spring, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000) UTM: 17 E.720650 N.4467900
Historic Use: Paper Consumer Products
Present Use: Paper Consumer Products

In 1886 D.M. Bare, John Morrison, and Joseph Cass formed a partnership to build and operate pulp and paper mills in Tyrone and Roaring Spring. In 1887 a factory for the Blank Book Company was built in Roaring Spring at Spang and Spring Streets. Around the turn of the century, the Blank Book Company was one of the largest manufacturers in Blair County. By 1920 the factory complex covered three acres, and the company employed 179 workers, reportedly the third largest paper plant of its kind in the world. In 1943 workers organized Local 488 of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers Union and received recognition from the company.

As one of the principal employers of Roaring Spring, the Blank Book Company shaped the development of the town. The company provided the first electrical power to the town, and D.M. Bare built the bank and the Methodist church. In addition to the book business, the Blank Book Company operated a spring water bottling plant.

Virtually the entire Blank Book Factory complex remains standing and includes several buildings which were built over a period of thirty years. The oldest structure is the two-story, brick Binding Building, measuring 100' x 100.' It was erected in 1888 replacing an older wooden building that was destroyed by fire. The Printing House, built in 1895, is a three-story, brick structure measuring 100' x 50'. The Shipping and Stock Room Building, erected in 1905, is three stories tall and contains brick load-bearing walls, and measures 100' x 57.' A Warehouse, built of brick in 1914, is five stories tall and measures 170' x 40.' The most imposing structure on the site is the three-story, native blue-limestone Warehouse and Office Building. It was built in 1900 and measures 100' x 57'.

Originally the company's products were shipped on the Martinsburg Branch of the Pennsylvania Railroad Company. There is still a spur from the rail line running directly into the complex. The Blank Book Company continues to manufacture ledgers, day books, memorandums, school composition books, and tablets, but it no longer processes pulp.

Sources:
Roaring Spring Planing Mill  (ca. 1905)
Current Name: Blank Book Company: Outlet Store  Rating: 3  Survey #: 013.068
Spring Street S of Spang Street, Roaring Spring, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000)  UTM: 17 E.720680 N.4467760
Historic Use: Wood Planing Mill  Present Use: Commercial Building

This former planing mill at Roaring Spring was built in 1887 by a combination of interests. One of these was D.M. Bare a founder of the Roaring Spring Blank Book Company. In 1897 Bare assumed complete ownership of the planing mill, which sold lumber and coal from the Bare Coal Yard. The company was also responsible for building nearly all of the buildings in Roaring Spring. The original planing mill, constructed of wood, was destroyed by fire in 1903. As a result, Bare erected a new brick structure at the same site.

The mill measures 65' x 25' and is one-and-a-half stories tall. It contains a coursed rubble foundation, brick bearing-walls, and a common-bond brick exterior. There is a new roof on the structure, but its appearance has changed little since 1903. The building is currently used as an outlet store for the Roaring Spring Blank Book Company.

Sources:

Sarah Furnace Grist Mill  (1830s)
Current Name: Yingling Mill  Rating: 2
1 mile S of Sproul on old US 220, Sproul vicinity, Blair County, Pennsylvania
USGS Quad: Roaring Spring, Pennsylvania (1:24000)  UTM: 17 E.715920 N.4459990
Historic Use: Milling of Grain  Present Use: Abandoned

Sarah Furnace was developed in the southern part of Greenfield Township, then Bedford County, in 1831-32 by the renowned ironmaster, Dr. Peter Shoenberger. On a tract of land south of the iron furnace, a young local builder, Jacob Fries, erected this wood-frame gristmill in 1840. (Fries was purportedly just sixteen years old at the time he erected the mill. Subsequently, he designed and built a number of the region's houses, bridges and churches.) Farmers from southern Blair County and northern Bedford County brought their grain to the mill, which was water-powered. The mill's raceway extended from a small earth and rock dam on a stream about one-eighth mile from the mill. The buhrstones and elevators inside the mill were powered by a wood and iron breastwheel.

In 1876 the mill property along with forty-five other buildings in the Sarah Furnance complex was purchased at a sheriff's sale by George W. Smith. The mill, a dwelling house, and 30 acres of land was acquired by Martin Yingling in 1894, and has remained in his family since that time. Sometime in the early twentieth century, a steam engine was installed along the north side of the mill and was used during periods of low water. The Yingling family continued operating the mill until the late 1950s, when it was closed.
The three-story mill building rests on a one-story, course-rubble foundation. The building retains its original, six-over-six-light, window sash, nail-studded doors, and unpainted clapboard siding. A hoisting mechanism projects from the peak of the gable roof on the west side of the mill which faces old US 220.

Sources:
Schwarzenbach-Huber Company Silk Mill (1889)

Current Name: Warneco
Rating: 2

Branch and Twenty-Fourth/Twenty-Sixth Streets, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.719560 N.4486240
Historic Use: Silk Spinning and Weaving
Present Use: Finished Textile Products

In 1889 the Schwarzenbach-Huber Company, headquartered in New York City, erected a silk mill in Altoona between Eighth and Ninth Avenues and bounded by Twenty-fourth and Twenty-sixth Streets. In 1896 the mill employed 250 people with wages averaging ten dollars per month per person. By 1911 it was one of the four largest silk mills in the United States. The mill employed one-thousand workers, mostly women. By the early 1930s Schwarzenbach-Huber was operating mills at Juniata and Hollidaysburg. Puritan Knitting Mills acquired the Altoona plant by 1936, and ceased producing silk, converting the factory to a knitting mill. In 1979, the Altoona plant came under the direction of Warneco Knitwear.

On the southwest side of Twenty-fifth Street, stands a two-story structure which was part of the 1889 mill complex. It measures approximately 120' x 45'. The annex, connected to the main structure by a second story passageway (erected ca. 1892), measures 120' x 48'. The structure was originally two stories high, but an additional two stories have been added. Both structures contain gable-roofs, brick load-bearing exterior walls, and stone foundations.

Sources:

Schwarzenbach-Huber Company Juniata Mill (1911)

Current Name: Bomont Mills Incorporated
Rating: 4

1301 Broadway, Juniata, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720580 N.4490520
Historic Use: Silk Spinning and Weaving
Present Use: Silk Spinning and Weaving

In 1911 nearly thirty years after opening a silk mill in Altoona, the Schwarzenbach-Huber, constructed a second plant at 1301 Broadway in Juniata. By 1916 the two mills employed more than 1,000 persons. The silk mills offered employment opportunities to women, boys, and girls in a city where the dominant industry, the shops of the Pennsylvania Railroad, provided employment exclusively to men.

The Juniata silk mill is a one-story, red-brick building which extends about 300' along the west side of Broadway between 13th and 14th Avenues. The building's most impressive features are its continuous row of large, closely-spaced, eight-over-eight-light, double-hung, sash windows topped by segmental brick arches. Sawtoothed skylights which once lined the plant's flat roof have been replaced by a few modern roof-top ventilators. Recently the plant has doubled in size with the construction of two, one-story, brick additions to the rear, so that the factory complex now occupies an entire city block. Textiles are still produced here.

Sources:
Tyrone Forge: Grist Mill    (1836)
Current Name: Tyrone Milling, Inc.  
Rating: 2

S PA 1014, 1 mile S of PA 453, Ironville, Blair County, Pennsylvania
USGS Quad: Tyrone, Pennsylvania (1:24000) UTM: 17 E.735220 N.4504200
Historic Use: Milling of Grain
Present Use: Milling of Grain

This wood-frame gristmill at Ironville was erected in 1836 by William M. Lyon & Company, owner of the forges, rolling mill, and slitting mill at Tyrone Forge. The Ironville and Tyrone Forges were located on opposite sides of the Little Juniata River, which was the power source for all local industries. Originally powered by a waterwheel, by 1900 the mill contained three turbines. A severe flood in 1936 destroyed the mill's hydraulic system including the turbines and shortly afterward the mill owners switched to electrical power. Reportedly the turbines were left in place and simply covered over in the basement of the mill.

The original section of the four-and-a-half-story mill is constructed of huge hand-hewn timbers, covered by clapboard siding. The clapboard has in turn been covered by asphalt siding. The post-and-beam frame appears to be in excellent condition, and the building retains much of its original fabric, as well as a variety of late-nineteenth and early-twentieth century milling machinery. This includes a corn cracker, made of wrought and cast-iron and two elevators, one for feed bags and the other for millers. A rear addition contains the head house for the elevators. Adjacent to the rear addition are a group of grain silos with an electric dryer, which the present owner suggested may have been the earliest drying facility in the Central Pennsylvania region. A wood-frame warehouse building, east of the mill, dates from as early as the 1850s. The feed mill continues in operation, the present owners purchasing the property in 1980. A new retail store was erected along the east facade in 1986.

Sources:

Williamsburg Paper Manufacturing Company: Schwabtown Company Housing    (ca. 1910)
Current Name: Private Residences  
Rating: 3

Third and Fourth Streets, E of Liberty, Williamsburg, Blair County, Pennsylvania
USGS Quad: Williamsburg, Pennsylvania (1:24000) UTM: 17 E.735750 N.4482385
Historic Use: Workers' Housing
Present Use: Private Residences

A section of Williamsburg, on Third and Fourth Streets, east of Liberty Street, has been unofficially known as Schwabtown since the early 1900s. Steel magnate Charles Schwab, a native of Williamsburg, constructed a paper mill there in 1898, which for many years was the town's major employer. A dozen or so company houses were erected in Schwabtown for paper mill employees. The company houses are uniform in appearance, each two-stories tall, measuring 25' x 25', and containing clapboard siding and hip roofs with gable-roofed dormers. Each has a coursed stone foundation and a full-length porch across the front. Although in private ownership for many years, the houses remain largely unaltered form their original
Bulk Industries: Cambria County

construction. Schwab's paper mill in Williamsburg was acquired by West Virginia Pulp and Paper Company (WESTVACO) in 1906 and ceased operation in the 1970s. The factory complex was demolished it in the early 1980s.

Sources:

B. N. Palmer Feed Dealer: Feed Mill (ca. 1916)
Current Name: Fedore's Old Farm Market
Rating: 4

E of PA 164, 4 mile S of PA 53, Portage, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.697605 N.4473220
Historic Use: Milling of Grain
Present Use: Abandoned

This two-and-one-half-story timber-frame building in Portage was erected about 1916 and served as a feed mill. B. N. Palmer of Portage operated the mill at this time. A spur of the Pennsylvania Railroad served Palmer's mill. The building measures approximately 60' x 20', and contains a gable roof with a one-story cupola, supported on a timber frame which rests on a stone foundation. A one-story timber-frame building that served as an office for B.N. Palmer is attached to the south facade of the feed mill. Presently vacant, the milling machinery was presumably electrically powered. None of the machinery is known to have survived. The most recent occupant of the building was Fedore's Old Farm Market. The former feed-mill building is in fair condition and retains its original narrow weatherboard siding.

Sources:

Century Ribbon Mills, Inc. (ca. 1906)
Current Name: Marty Finkelstein/Garment Manufacturing
Rating: 4

816 Farren Street, Portage, Cambria County, Pennsylvania
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.697600 N.4472800
Historic Use: Silk Spinning and Weaving
Present Use: Finished Textile Products

Ernest and Herman Levy opened two silk mills in Cambria County in the early 1900s; one was located in Patton and the other in Portage. The Levy's erected the Century Ribbon Mills in Portage in two stages. The north section was erected between 1906 and 1911 and included a large two-story mill (120' x 30'), a coal shed, and a steam generating room. Between 1911 and 1916 another mill of similar dimensions was erected to the south. A small courtyard separated the two mills. Both buildings contained brick load-bearing walls and steel roof trusses. Possibly as early as the 1930s the two mill buildings were joined together by a two-story brick addition. Other alterations include the infilling of the original multi-light, sash windows with concrete and glass block masonry. In recent years, Antmart, Inc., a manufacturer of ladies apparel has operated the mill.

Sources:
Century Woolen/Silk Mills (1907)
Current Name: Sottile Manufacturing Company
Rating: 4

Along Conrail tracks, .1 mile N of PA 36, Patton, Cambria County, Pennsylvania
USGS Quad: Carroltown, Pennsylvania (1:24000) UTM: 17 E.699010 N.4500700
Historic Use: Silk Spinning and Weaving
Present Use: Finished Textile Products

In 1907 the Beech Creek Coal and Coke Company sold a portion of its Chest Creek land holdings in the town of Patton to Ernest and Herman Levy for $50.00. That same year, the Levys erected a silk mill on this property, and it remained under the control of the two brothers for over forty years. Called the Century Silk Mills, the mill buildings appear to have been built in two phases; a 1930 insurance map makes the distinction between an old and new mill. The older, one-story mill built of brick was used for raw silk throwing. Its structural system is a combination of wood posts and brick load-bearing walls with segmental brick arches over the window openings. By 1930 the company had expanded and added a gable-roofed mill, a water tower, and a small electrical plant to the original site, although today only the mill still stands. A concrete block addition was made to the west side some time after 1930.

A spur line of the Pennsylvania Railroad served the mill complex, which filled a triangular space created by two converging sets of railroad tracks. The newer mill contains brick load-bearing walls supporting a gable roof made of timber Howe trusses with steel-rod tension members. In 1951 the mills became the site of the Patton Paper Box Company. And in 1964 the present owner, Sottile Manufacturing, purchased the property and began using the buildings for offices, light sewing, and storage. The floor of the later mill was excavated in the 1970s to create a taller space for vehicles.

Sources:
Deed between Beech Creek Coal and Coke Company, and Ernest and Herman Levy, 1907, now in the possession of Sottile Manufacturing, Patton, Pennsylvania.

Cresson Springs Brewery (ca. 1900)
Current Name: Unknown
Rating: 4

Arch Street, S of railroad tracks, Cresson, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.704090 N.4482000
Historic Use: Brewery
Present Use: Abandoned

The former Cresson Springs Brewery complex, located south of the Pennsylvania Railroad tracks on Arch Street in Cresson, was established about 1900. The brewery contained a brew house, a hops storage building, an office, a bottling plant, and a warehouse. The brewery made "malted liquor" and by 1916 employed twenty-eight men. The brewery operated for only about two decades, closing in 1920 with the advent of prohibition. Currently the brewery is part of a scrap iron yard. The brew house and the office building, now a private residence, are the most outstanding structures associated with this short-lived brewery. Today the building is vacant.

There were three main structures in the complex. The Brew House has common-bond, red brick load-bearing walls with brick arches over the window openings, an ornamental corbeled brick cornice, and concrete floors. The main portion is two-stories tall and measures

-181-
Bulk Industries: Cambria County

approximately 140' x 75'. A one-story wing extending from the west facade, which served as a warehouse, measures 100' x 35'. The office is a two-story, brick structure with a hip roof that measures approximately 25' x 25'. It has a one-story, wooden addition on the west side that is 15' x 15'. At one time there was also a brick bottling building which measured 80' x 27'. However, according to the 1927 Sanborn Map of Cresson this structure had been removed by that year.

Sources:

Germania Brewing Company (ca. 1907)

Current Name: Hammermill Paper Co. Warehouse
Rating: 3

200 Sixth Avenue, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.675686 N.4467340
Historic Use: Brewery
Present Use: Warehouse

In 1907 a large brewery was built in Cambria City for the Germania Brewing Company, a local Johnstown brewery concern. Several brick buildings, ringing an interior courtyard, occupied the corner of Fifth Street and Sixth Avenue. The tallest building stood five stories in height and contained the brew house, malting mill, keg dispensary, and beer cellars. The bottling plant was located next to the two-story brewery office building, and a two-story brick building, housing the cooperage and warehouse, stood next to the J.W. Walters Lumber Yard, at the end of the courtyard. By 1910 Cambria City, a growing working-class neighborhood composed predominantly of eastern European immigrants, had three of Johnstown's six breweries. The Germania Brewery operated in Cambria City until 1919 when, with the advent of Prohibition, the company sold the building and its equipment to one Louis Zang, for $38,000. Shortly after, Zang sold the property to the Ferguson Packing Company for one dollar. After the Cambria County Sheriff seized the property in 1930, it passed through several hands. Finally, in 1946 the Morris Electric Supply Company acquired the buildings. This business continued until 1970 when it became the Morris Paper Company. Presently, the Hammermill Paper Company uses the building as a warehouse. It appears unlikely that any of the original brewing equipment survives, however, the exterior of the five-story brew house retains much of its early appearance.

Sources:

Edward Hahn Meatpacking Plant (ca. 1910)

Current Name: Unknown
Rating: 4

W of B&O tracks, S of Hickory Street in Hornerstown Borough, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677300 N.4464420
Historic Use: Meat Packing Plant
Present Use: Abandoned

Edward Hahn Meatpacking of Johnstown was established in 1904 and until 1910 was located at Somerset and South Streets on the west side of Stony Creek in the Kernville Borough. At that time, the plant was moved to Hornerstown on the opposite side of Stony Creek. A two-story,
Bulk Industries: Cambria County

steel-frame building was constructed on Hickory Street next to the B&O rail lines. This common-bond brick building measures 110' x 35' and was used as a slaughter house. The company expanded the facilities several times. In the 1920s, a three-story, 200' x 40', brick addition was built which contained the office, storage space, and the ice and cold storage sections. Finally, in 1950 a one-story section was added to the west side of the three-story structure. As late as the 1940s, there was a wooden cattle shed, measuring 70' x 20' at the south end of the site (the little shed no longer stands). By 1925 the business employed 51 people and continued to employ between fifty and sixty people until it closed in February 1987, after filing for bankruptcy. The facilities are currently vacant.

Sources:

Hines and Noel Feed Mill (ca. 1925)
Current Name: Cresson Feed Mill, Inc.
Rating: 4
Survey #: 021.021
W side of PA 53, .525 mile N of US 22, Cresson, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.704545 N.4482060
Historic Use: Milling of Grain
Present Use: Retail Seed Store

In the early-1920s a flour and feed mill was built north of Cresson on PA 53 by Joseph E. Hines and his father-in-law A.A. Noel. In the mid-1920s Hines bought his father-in-law's share of the business and operated the mill as Joseph E. Hines and Sons until the 1940s. At this time the feed mill operation was discontinued. Hardware and farm equipment sold by Hines beginning in the 1930s, superseded the feed mill business. Since the 1940s the property has passed through a number of hands, however, the current owners, Ed and Eugene Hines, are grandsons of the mills founder. The original feed mill rises two-stories and contains a wood frame supported on a stone foundation. Over the years, the exterior has been covered with various types of asphalt shingles. There have also been additions to meet the company's changing needs. Storage sheds were added to the west side of the structure, and a warehouse was added to the north.

Sources:

Johnstown Planing Mill Company (1895)
Current Name: Johnstown Planing Mill Company
Rating: 4
422 Horner Street, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677360 N.4464400
Historic Use: Wood Planing Mill
Present Use: Wood Planing Mill

Throughout the early part of the nineteenth century, logging timber was one of the most lucrative enterprises in the Conemaugh Valley. Lumber companies operated captive railroads, sawmills, planing mills and lumber yards to facilitate the processing and transportation of the regions hardwood and softwood timber. In Johnstown, lumber companies clustered in an area
Bulk Industries: Cambria County

called Hornerstown. At the turn of the century, the David Ott Lumber Company, Johnstown Builder's Supply Company, William H. Smith and Brothers Planing Mill and Joiner Shop, Thomas-Kinzey Lumber Company, and the Johnstown Planing Mill Company were all located in a six-block area bounded by Horner Street and the Stony Creek River.

The Johnstown Planing Mill was founded in 1895 by Norman Statler and John Woy. It is one of the oldest continually operating lumber companies in Hornerstown, currently in its 92nd year of business. The planing mill complex consists of several frame warehouses, a frame planing mill, and a brick-faced office building. The Sanborn-Perris Insurance map of 1911 shows the planing mill, a separate joiner's shop, three warehouses, and a dry kiln. In 1908 and 1924 the company suffered severe damage from fire, and again in 1936 from flooding. The few standing historic buildings, probably date from the 1910s and 1920s. They are primarily warehouse structures.

Sources:

Lantzy Milling Company (1923)

Current Name: Lantzy Milling Company Rating: 3

US 219 at PA 0240, .25 miles N of PA 4029, Garmantown vicinity, Cambria County, Pennsylvania
USGS Quad: Barnesboro, Pennsylvania (1:24000) UTM: 17 E.685210 N.4505870
Historic Use: Milling of Grain
Present Use: Milling of Grain

Located on US 219 along the West Branch of the Susquehanna River nearly two miles north of Barnesboro, this three story feed mill was erected about 1921 by Simon Lantzy. It succeeded two earlier mills on this site, the oldest, a water-powered operation dating from 1870.

The 1920s mill contains timber post-and-beam construction. It has a broad first story, a narrower second story with an attic under a gable roof, and a taller tower containing the hoisting machinery and temporary storage bins. The exterior has been refinished with a brick pattern asphalt siding. Much of the 1920s machinery is still being used: crushers, grinders, mixers, cleaners, hoists, and three weighing scales ornamented with miniature Doric columns. Presently, all the power is supplied by electricity. However, the water-powered shafts and pulleys, connected to the cleaner on the second floor, are still in place, and the leather belts, though decaying, are stacked on a shelf in the same room. Walter P. Lantzy Jr., the grandson of Simon Lantzy, continues to operate the old feed mill.

Sources:
Moxham Lumber Company  (1907)
Current Name: Moxham Lumber Company  
Rating: 4

Park and Du Pont streets, Moxham Borough, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E.676770 N.4463080
Historic Use: Wood Planing Mill
Present Use: Warehouse

The Moxham Lumber Company, founded by Daniel Statler, began operations in Johnstown in 1907 at the junction of Park, Du Pont, and Griffith Streets. From its original 120' x 40' lot, Moxham Lumber eventually expanded to both sides of Griffith Street. In 1951 a fire swept through the adjacent National Radiator Company's Century Plant. Damage was so extensive that National Radiator decided not to rebuild. Instead, the company sold the two gutted brick buildings to Moxham Lumber for use as storage space. Another fire in May 1983 destroyed much of the lumber yard and buildings. Most of the remaining nineteenth century structures and equipment were lost. The company rebuilt and is still in operation.

The two story planing mill on Griffith Street is the only surviving building. The first floor contains large electrically powered planers, while the second flour houses offices. An addition on the west side of the planning mill is used for storage.

Sources:

S. Liebowitz and Sons  (1921)
Current Name: Eaglewear, Inc.  
Rating: 4

Donoughe Street, near Chestnut, Gallitzin, Cambria County, Pennsylvania
USGS Quad: Cresson, Pennsylvania  (1:24000)  UTM: 17 E.707125 N.4484040
Historic Use: Finished Textile Products
Present Use: Finished Textile Products

In 1877 the S. Liebowitz and Sons Company, a shirt manufacturing firm, was founded by Fanny and Simon Liebowitz of New York. In July 1921 a branch factory opened on the second floor of the Victoria Theater building in Gallitzin, Pennsylvania. The company further expanded and subsequently located facilities on the second and third floors of the nearby Isaacson Building. By 1928 ground had been broken for a new factory on Donoughe Street. This new structure, one of sixteen owned by the Liebowitz's, employed 150 women and produced 2,000 dozen shirts per week. In the 1950s, S. Liebowitz and Sons incorporated and changed their name to Public Shirt Corporation. The factory has brick bearing-walls built on a random-range, rough-cut stone foundation. The roof system is made up of steel I-beams, and is supported by a central row of steel columns. Two wings were added to the original structure, one in 1932 and one in 1955. Otherwise, the building is unchanged. The factory is now operated by Eaglewear, Inc., and continues to manufacture shirts.

Sources:
MANUFACTURING INDUSTRIES

The development of manufacturing industries in Blair and Cambria counties in the late nineteenth and early twentieth centuries parallels the growth and prosperity of the larger, primary industries in the region: iron, steel, coal making, and transportation. The seven companies surveyed can be classified as either: Mining Equipment manufacturing (three sites), Transportation Equipment manufacturing (two sites), or General Manufacturing (two sites). Each of these companies was either dependent on, or grew out of, the major industries of the region. Several of the companies chose to locate in Johnstown, near the steel plants to insure a reliable supply of materials for production. Clearly, the well-being of a company serving the mining industry followed the fortunes of the coal market. The western Pennsylvania coal companies lost a large portion of the electric utility business due to the influx of cheap residual oil in the late 1950s, a time when many mines were exhausted of the coal that was economical to mine. The manufacturing companies dependent on the coal industry either had to diversify or go out of business. Although all of the historic manufacturing companies in Johnstown still exist in one form or another, only Davis Brake Beam produces the same type of product that it did originally.

Mining Equipment:

The McLanahan and Stone Company, founded in Hollidaysburg in 1835, is one of the oldest family-owned foundries in the nation. The company's present location was apparently acquired from the Pennsylvania Railroad in 1863. Three years later, McLanahan built the first retort coke ovens in the United States at the site. The company specialized in manufacturing machinery for foundries and quarrying. It also owned some limestone and iron ore quarries. The company currently produces several items for the various phases of the mining, quarrying, and steel-making industries. Only two buildings at the site pre-date World War II: the Machine Shop and the Moulder's Shop. Due to its fireproof construction, the brick and concrete Machine Shop, erected ca. 1918 still serves as a machine shop. The owner of the company, Michael McLanahan, claims that the Moulder's Shop was originally built in the 1850s as an engine house, for the Portage Railroad.1

The Madden Boiler Works Company was founded in 1882 in Hollidaysburg. Historically, Madden built boilers for steam engines used by mining concerns, but today, the company is engaged in custom steel fabricating for the production of hoppers, chutes, coal and stone bins, and other steel structures. The oldest building at the Madden Boiler Works, a one-and-one-half-story tile-block building, was constructed about 1927.

The Leman Machine Company of Portage was formed in 1928, after moving from New Kensington. Samuel Leman acquired the property on the south side of the Pennsylvania Railroad main line from the Portage Bronze Electric Company and incorporated a 1916 brick building into his operation.2 Leman Machine Company has always been involved in the manufacture and repair of mining equipment, and today the company has enlarged its services to include machining and welding for the railroad and steel industries.

---

Manufacturing Industries

Transportation Equipment:

The availability of steel in Johnstown at the turn of the century lured two manufacturers of transportation equipment to the growing Conemaugh Valley. The Johnson Steel Street Rail Company formed in 1883 to produce a new type of rail for horse-drawn and cable streetcar lines. The Davis Brake Beam Company moved from Wilmington, Delaware to Johnstown in 1913, to fabricate its patented braking device for railroad cars.

The Johnson Steel Street Rail Company dates back to 1883 when Tom L. Johnson of Louisville, Kentucky, an inventor and manager with street railway companies, went into business with Arthur J. Moxham and began the manufacture of a new rail section known as the "Jay Bird," designed especially for use with street railways. A.V. du Pont, along with Johnson and Moxham, financed the operation which took hold in Johnstown after D.J. Morrell, of the Cambria Iron Works, agreed to experiment with his company's rolling mills to produce the unique rails. By the end of 1883, the Cambria Iron Company had rolled 47,000 tons of rails for the Johnson Company. The demand for Johnson rails increased along with the growing popularity of electrified street railways, and in 1887, the Johnson Company opened its own rolling plant in Moxham. By 1890, the company was one of the nation's leading producers of track and track hardware for electric and cable streetcars. The company grew at such a pace, that in 1891, the executives of the company decided to explore the possibility of producing its own steel, with its own blast furnaces, thereby shedding its dependence on the Cambria Iron Company. When talks between the Johnson Company, the City of Johnstown, and the railroads failed to produce an equitable solution by 1895, the Johnson Company moved its rolling operations to Lorain, Ohio. The Moxham plant continued to produce specialized railway products, and subsequently became a subsidiary of the newly formed Lorain Steel Company. By 1907, the plant was owned by U.S. Steel and employed over 1,300 men. The Moxham plant produced railroad trackwork until 1958. U.S. Steel used the facility for steel fabrication. About 1985, the Johnstown Corporation, a local concern acquired the plant and presently produces specialty steel castings.

The Davis Brake Beam Company was established about 1890 in Wilmington, Delaware, to produce Nathan Davis' patented braking device for railroad rolling stock. The company moved to Johnstown, in 1913, to take advantage of the availability of materials and transportation necessary for the efficient production and marketing of brake beams. The Davis Company acquired the site of the Basic Brick Company, just south of what is now the Rod and Wire Division of Bethlehem Steel, and adapted one of the brick company buildings into the Carpenter and Machine shop. The remainder of the Davis Company structures at the site were built soon after 1913. The plant has been in continuous use since the company's relocation in Johnstown.

General Manufacturing:

The National Radiator Company continually developed new products and markets, and grew independent of the local iron and steel industry, even though the company still found Johnstown a convenient base of operations. National Radiator constructed a plant in Moxham, in 1896, and grew steadily as a manufacturer of radiant heating products. By 1905, the company's

---

4 Alexander, p. 2.
5 Alexander, p. 5.
annual profits amounted to $50,000. Through the production of residential and commercial heating equipment, the company rode a building boom into the 1920s, while developing a market throughout the eastern United States. A short mid-1920s strike by the "shakeouts," the workers who removed hot radiators from sand encased moulds, serendipitously resulted in the creation of a new branch of National's operations. When Samuel B. Waters, the head of technical operations at National, saw the damaging effects of work stoppage, he decided to seek out an alternative to the incredibly hot and dirty process of casting large iron radiators. Apparently his brother, John H. Waters, president and founder of the company, agreed and research was sponsored at the Mellon Industrial Research Institute. Aided by a National Radiator chemical engineer, the Institute developed an electrolytic casting process for iron. The new process did not replace the previous methods of casting, however, it opened up the new industry of metal powders manufacturing. During the Depression, National Radiator acquired two former Johnstown competitors: Union Radiator Company, and Century Stove Manufacturing Company. The Union Radiator Company plant was used for metal powder production, while the Century Stove plant specialized in sheet metal fabrication. The emphasis in the heating industry was shifting away from radiant heat, by the 1940s, and to stay competitive, National merged with several other firms. The National Radiator name endured in Johnstown until 1960, when Crane Corporation purchased the company and moved its operations to Illinois. Crane sold the metal powders division to SCM Corporation in 1961. The old Union Radiator Company plant has been in continuous operation since the Depression, using the electrolytic process developed by National Radiator in the early 1930's, to produce food grade iron and other metal powders.

Besides the Union Radiator Company plant, the National Radiator offices in Moxham, and portions of the Century plant are still standing. Cambria-Rowe Business College uses the architecturally ornate office building, and the adjacent Moxham Lumber Company adapted the remnants of the Century plant's storage and office space, after a 1951 fire.

(Continued)

Madden Boiler Works Company: Boiler Shop  (1927)
Current Name: Madden Boiler Works
S Juniata and Clark Streets, Hollidaysburg, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania  (1:24000)  UTM: 17 E.721580 N.4478260
Present Use: Foundry and Boiler Shop
Historic Use: Foundry and Boiler Shop
Established in 1882 at South Juniata and Clark streets, in Hollidaysburg, the Madden Boiler Works Company manufactured boilers for stationary steam engines used by local mining concerns. The earliest remaining building is the old boiler manufacturing shop which was built in 1927. The tall one-story building contains brick walls and measures 40' x 30'.

The building adjoins a larger concrete-block structure erected in the 1950s. The boiler shop is the only historic building at this site, and its appearance is virtually unchanged since its original construction. Madden Boiler Works continues in operation, manufacturing custom steel-fabricated products, such as storage tanks, heat exchangers, and dust collectors.

Sources:

McLanahan-Stone Machine Company  (1850s, 1918)
Current Name: McLanahan Corporation
200 Wall Street, Hollidaysburg, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania  (1:24000)  UTM: 17 E.211090 N.4478020
Historic Use: Foundry
Present Use: Foundry

The McLanahan Corporation, founded in Hollidaysburg in 1835, is one of the oldest continuously operating family-owned foundries in the nation. The site of the current operation, at Jackson and Beaver streets in the area known as Gaysport, was acquired from the Pennsylvania Railroad in 1863. McLanahan made forge hammers, castings for forge fires, heating and cooking stoves, plows, and charcoal iron furnaces. The company specialized in manufacturing machinery for foundries and quarries, and owned a number of limestone quarries and iron ore mines in the area. In 1892, McLanahan designed and patented the first single roll crusher used in the quarry business.

Various fires have destroyed a number of the historic structures. The only pre-World War II buildings that remain are the Moulders Shop and the Machine Shop. The Moulders Shop is the oldest building on the site, dating from the 1850s. (The McLanahan Corporation claims that this building was built by the Portage Railroad and served as an engine house.) Containing brick load bearing walls, wooden roof trusses, and a large summer beam, this structure measures 95' x 35'. The large one-story Machine Shop, erected about 1918, measures approximately 60' x 50' and has a reinforced concrete frame, with brick curtain walls. The central section of the building contains overhead cranes and is flanked on either side by shorter one-story sections. The Machine Shop continues to serve its original function, while the Moulders Shop serves as a foundry. The McLanahan Corporation currently produces such items as reciprocating plate feeders, mudmaster log washers, and other related equipment.
Manufacturing Industries: Blair County

Sources:

Davis Brake Beam Company (ca. 1913)

Current Name: Davis Brake Beam Company

Rating: 4

Broad Street, S of PA 403, .2 mile N of PA 56, Johnstown, Cambria County, Pennsylvania

USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.674800 N.4468240

Historic Use: Brake Manufacturer

Present Use: Brake Manufacturer

Named for Nathan Davis, the inventor of the brake beam, the Davis Brake Beam Company was established about 1890 in Wilmington, Delaware. (The brake beam formed the primary support for the braking mechanisms of rail cars; brake shoes operated with compressed-air were attached to either end of the brake beam.) In 1913 the company moved to the thriving industrial city of Johnstown. Significantly, it was the only manufacturer of brake beams in the United States until the mid-twentieth century. Although another brake beam manufacturer was recently established in Buffalo, New York, Davis Brake Beam stills enjoys a virtual monopoly. Its plant is located on Broad Street near the Rod and Wire Division of Bethlehem Steel's Johnstown Plant. Originally, the site was occupied by the Basic Brick Company, but by 1911 its factory building, of brick and frame construction, was vacant and dilapidated. It is believed that after Davis Brake Beam acquired the property, the company adapted the old brick factory into a carpenter and machine shop, which still stands on its original site and is the oldest building of the Davis Brake Beam complex. The interior of the carpenter and machine shop is lighted by multi-light windows spanned by segmental arches. Although two small storage sheds were added to the north side, the building is largely unaltered from its early 1900s appearance.

Behind the carpenter and machine shop are the fabrication and assembly shops. Built in three phases, the hot shop is a steel-frame structure enclosing the stamping, forging, and other fabricating operations in one large open space. The stamping shop has a monitor roof and the forging shop a shallow gable roof. A shed-roof addition is attached to both shops on the east. The assembly and testing shops share a brick structure to the north of the hot shop. An addition, constructed about 1970, which serves as a locker room, links the former electric motor room to the assembly shop. The testing shop in the northeast corner of the building retains some early-1900s testing equipment. Other structures on site include a steel-frame sand-house, a storage shed with a loading dock and railroad platform. An architecturally undistinguished office building, erected about 1932, stands near the storage shed. Since 1913 Davis Brake Beam has continuously operated the Johnstown factory.

Sources:
Johnstone Steel Street Rail Company (1887-1911)
Current Name: Johnstown Corporation
Rating: 2

525 Central Avenue (between Stony Creek and Central Ave) Moxham, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E 677200 N 4462470
Historic Use: Foundry and Rolling Mills
Present Use: Foundry (steel castings)

The Johnson Steel Street Rail Company began operations in Johnstown in 1885. Tom Johnson and Arthur Moxham had developed a new design for street rails, and they convinced the Cambria Iron Company to roll their rails. The street rail company fabricated the trackwork in an open shed on a cinder dump adjacent to Cambria's Gautier works in Woodvale. During the late-nineteenth century, interurban street rail systems were experiencing rapid expansion, and Johnson Steel Street Rail Company was at the forefront of this expansion. Both of the founders held several patents in the field, and Johnson Steel Street Rail was one of the leaders in innovation. In 1886 the company moved to a new location in Woodvale, and, as more room was needed, Johnson purchased the Von Lunen farm in Stony Creek Township in 1887 to construct a new plant. By mid-year the new steel-rail plant was completed, employing some 500 men in the fabrication of steel rail. In addition to the new plant, the company had purchased neighboring land in Stony Creek and began developing a residential community. Named Moxham in honor of one of company's engineer and partner, the community was recognized as the "society part of Johnstown" during the latter part of the nineteenth century and the city expanded south along Stony Creek.

The 1889 flood destroyed the older plant in Woodvale, but left the Moxham works untouched. Within a month, the Johnson Company had erected wooden sheds on the Moxham site and was filling orders for special trackwork. Johnson Steel continued to expand, though it still relied on Cambria for its steel blooms and billets. The company's growth was somewhat hindered its lack of access to a major railroad line on the undeveloped south side of Johnstown. To correct these problems and to provide for the possibility of further expansion, the company applied for access to the main line of the B&O Railroad and purchased additional land in Ferndale. The company also made plans to build a blast furnace and blooming mills with the aim of operating an integrated mill. Despite the arrival of the B&O, the Johnson Steel plant remained a relatively isolated facility and, as a result, the company relocated its rolling mill to Lorain, Ohio. Located in the burgeoning Great Lakes steel-producing region, the Lorain works was far better suited for the manufacture of rail because of its central location to markets and the transport of raw materials needed in the mills. However, because of the company's heavy investment in the Johnstown area and the availability of skilled labor, the switch works remained in Moxham. The company became a part of Federal Steel in 1898, and in 1901 it became a part of United States Steel Corporation. By 1907 the Moxham plant employed 1,700 men.

In operation for the last 100 years, the site is very large and complex. As industrial production needs changed, the site developed from one with smaller, individual buildings to one with large, continuous spaces under one roof. Some structures were torn down, others enlarged, joined together, or built over. Most of the structures were in place by 1911. In addition to the main iron foundry and several miscellaneous smaller buildings there are three large shop complexes: Lower, Middle, and Upper.
The Iron Foundry

The Iron Foundry is a one-story brick and metal clad structure with a gabled monitor roof. It consists of one 56' x 40' bay and includes the original foundry and core ovens, constructed in 1890, which were contained in the southeastern face (front) of the core building. A machine shop and a blacksmith shop were added to the southwestern wing of the core building in 1895, and the wing further extended in 1899. In 1902-03, the northwestern section of the core building (the wheel floor) was completed, more than doubling the size of the building, and the frontal sections (around the core ovens) squared off. A chipping room was added to the northeastern end of the original core building in 1921. Until 1960, the iron foundry still made pure iron castings, and most of one cupola is still on site. It is currently used for pattern storage.

The Iron Foundry's Storage Facility is a one-story brick and metal clad structure, with a gabled roof and corrugated metal covering. It was constructed in 1926-27 as a pattern and sand storage facility and contained a carpenter shop. It contains a 25' x 25' bay and is currently being leased to C. C. Korns.

The Upper Shops Storage Area

The Pattern Storage building is a two-story structure with a gabled-wood roof. It is, however, two buildings attached. The southern half of the structure, brick with somewhat ornate brickwork around doors and windows, is the plant's original pump room with pattern storage on the second floor. It was probably built in 1891 or 1892. Under the wooden floorboards is a large brick foundation on which the pumps were probably set and a brick-lined flue channel leading east from the building and curving north toward the position of the original roll mill. This section was probably converted entirely to pattern storage after the rail mill was moved to Lorain, Ohio in 1895 (although plant maps continue to refer to the structure as the pump house as late as 1898). The northern half of the structure is wood-sided and was probably built after 1900. Both sides are currently used for pattern storage.

Machinery Hall is a one-story wooden structure constructed on brick pilings in 1900. With 12' of height and 5,400 square-feet of space, the building continues as a storage facility. The No. 1 Electric Foundry is housed in a one-story brick and metal-clad structure with a gabled metal roof. Constructed in 1922, this foundry is used to make small (up to one ton) castings.

The Upper Shops

The Upper Shops, originally the Switch Works, consist of a series of one-story brick and metal-clad structures, with gabled monitor roofs of corrugated metal, containing five rail tracks. The buildings are fronted (on the east) by a large open space along Central Avenue, which served as the primary lay out yard for trackwork from 1889 until 1959 when trackwork lines were discontinued. Originally, the upper shops were the site of wooden structures of the switch works moved from the Woodvale plant site in June 1889 and the plant's primary lay out yard. When the plant became part of U.S. Steel, the upper shops were almost entirely reconstructed, assuming their current form. In 1904-07, the bolt, hammer and shear shop was added, and in 1906 the southernmost bays were added. The present configuration, buildings and lay out yard, is essentially the same as it was in 1907. Currently, the upper shops are used for preparing primary end plates and structural sections prior to fabrication in the lower shops. The Johnstown Corporation also maintains a mill liner operation in these bays and a shop for forged
steel grinding balls.

The Electrical Department and Boiler Houses are one-story brick buildings with gabled, monitor-type roofs and corrugated metal covering, predominantly constructed between 1910 and 1930. They encompass 17,380 square-feet of space and contain one 51' bay. These two buildings stand, however, exactly on the site of the plant's first (1888-89) electrical department and boiler house and the western walls of both structures appear (at least from the type of the brickwork and foundation) to be original.
Manufacturing Industries: Cambria County

The Electric Power House is a one-story brick structure with gabled, monitor-type, wood roof with slate covering. Constructed in 1907, it reaches a height of 26' and contains one 33' bay.

The Steel Foundry Area

The Roll Shop, originally the Mine Car Shop, is a one-story 30,000 square-foot brick and metal-clad building constructed in 1922 as a mine car shop. It has a gabled, monitor-type corrugated metal covered roof, a height of 32', and two rail tracks. It was converted to a roll shop in 1967 when U.S. Steel installed a new 30-ton electric furnace in its No. 2 Foundry in order to expand its roll product line. The mining car facilities were then moved into the upper shops.

The Pattern and Carpenter Shops are housed in a large, one-story brick and corrugated sheet iron building, with gabled, corrugated metal covered roof. The southern two-thirds of the structure, entirely brick-encased with ornate brickwork and high-vaulted windows, is the original track welding shop constructed in 1892. Its ceilings feature exposed wooden-beams (probably original). The northern end of the building is the carpenter shop extension, built in 1911, onto which a second floor (a Tin Shop for sheet metal work) was later added.

Constructed in 1906, the Metallurgy Department is a one-story, 6,600 square-foot brick building with a slate-covered wooden roof. This facility has continued the same function since its construction: testing samples from the melting unit and final product analysis, work previously completed in the plant's first laboratory (see General Office Buildings).

Two other brick structures are in the steel foundry area. One, a four-story brick structure with gabled, corrugated metal roof and elevator was used for pattern storage, and the other, a one-story lean-to, was appended to the No. 2 iron foundry in 1914.

The No. 2 Electric Foundry, originally the Steel Foundry, is a huge 243,946 square-foot metal-clad structure with a gabled, monitor-type, corrugated metal covered roof and six rail tracks. This site has undergone significant conversion and bears little resemblance to its original building. Initially, the site contained the steel foundry, the core ovens, and the roll mill (the latter approximately at the site of the current shakeout bay). When the rail mill was dismantled in January of 1895, the entire site was converted to foundry operation. Major alterations and conversions were completed in 1907 by U.S. Steel. In 1967 the foundry's two 30-ton open hearth furnaces were replaced by a 30-ton electric furnace in order to expand the plant's roll capacity. This is considered a large foundry, making castings of one ton or more.

The General Office Building Area

The buildings in area of the General Office Building were constructed between 1889 and 1893, and include the general offices, drawings rooms and laying-out floor, the main machine shop and an industrial laboratory. Except for the Laboratory building which was torn down around 1962, the area around the general office remains much as it did in 1895. And while the interiors of each building have been converted several times, the building exteriors remain virtually unaltered.

The Middle Shop, which comprises the Machine Shop, consists of two attached one-story brick buildings enclosing 19,000 square-feet of space. The northern wing (or front) of the building with ornate brick work, gabled offset roof, exterior brick chimney, and characteristic square
tower with pyramidal roof (on the eastern corner) is the plant's original 125' x 53' machine shop, constructed in 1891. The rear (southern) extension was added in 1924, allowing the building to abut the rear of the Engineering Building (see below). The newer section has a flat tar and slag covered roof with ceiling height up to 27'-6" and one rail track. This structure continues its original (1891) function as a maintenance shop for the rest of the plant.
Manufacturing Industries: Cambria County

The Engineering Building, originally the Drawing Rooms and Laying-Out Floor, is a two-story 35,200 square-foot brick building with gabled, monitor-type wood and slate covered roof adjoining both the Middle Shops (by common wall) and the General Office Building (by second-floor enclosed walkway). Victorian in style with corbelled brickwork, the multiple window facades along Central Avenue are flanked by square towers with pyramidal roofs. The three northernmost facades are window-less by design, one containing the second-floor drawings vault. Constructed in 1893 as the Drawing Room Building and Laying Out Floor, the building exterior is essentially original. The laying out floor was open from the ground floor to the second story skylight, ringed on three sides by an enclosed balcony of drawing rooms where drawings were completed by the Company's engineers and stored in the vault. Blueprints were made in a small extension off the second floor on the northwest corner of the building. The rear extension to the building was added in 1907. Trackwork designs were first made of wood from a carpenter shop in the rear of the first floor until 1958 when trackwork lines were discontinued. Toward the end of the 1960s, pilings were constructed directly on the laying out floor and an interior shell constructed independent of the outside building structure, a second level of flooring added, and the original skylight covered over with batt and tar paper (the hump of the covered over skylight is still clearly visible). Currently the first floor is used for engineering and the second floor for training rooms.

The General Office Building is a three-story brick building containing a gable roof covered with slate. Originally constructed in July 1889 as a two-story structure, a third floor was added in 1890. This addition included ornate brick towers with pyramidal roofs framing a gable roof. The building still serves as offices.

The Lower Shops

The Lower Shops were housed in a huge 189,303 square-foot one-story brick and metal clad building with monitor-type gabled wood and slate covered roof, constructed in 1907. The ceiling height is 24', with 47' bay size and two rail tracks. It is currently used for machine and fabricating work on products from the upper shops.

Post World War Two Years

In 1958, the Johnson Steel Street Rail Company plant ceased to produce trackwork, and in 1983 U.S. Steel closed the plant. It was reopened under the auspices of the Johnstown Corporation in 1984 and remains under local control. Currently, plant produces custom industrial steel castings for a wide range of customers.

Sources:
Leman Machine Company, Inc. (1920s)  
Current Name: Leman Machine Company, Inc.  
Rating: 4  
S Railroad Avenue .2 mile E of Portage Athletic Field, Portage, Cambria County, Pennsylvania  
USGS Quad: Ebensburg, Pennsylvania (1:24000) UTM: 17 E.696880 N.4473220  
Historic Use: General Machining/Tool and Dye  
Present Use: General Machining/Tool and Dye  

In 1928 the Leman Machine Company, Inc. moved to Portage, Pennsylvania, from New Kensington in Westmoreland County. Samuel Leman acquired the property which included a ca. 1916 brick building from the Portage Bronze Electric, a mining supply operation. The structure has pilastered brick walls and timber trusses with iron rods. A wooden frame addition covered with clapboard siding is attached to the west side. The complex also includes a concrete-block building, erected about 1956, attached to the wooden frame structure via a series of frame additions. The Leman Machine Company is involved in machining, welding, fabricating, and assembling equipment for the mining, railroad, and steel industries.

Sources:  

National Radiator Company: Offices (1926)  
Current Name: Cambria-Rowe Business College  
Rating: 4  
221 Central Avenue, Moxham, Johnstown, Cambria County, Pennsylvania  
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677480 N.4463310  
Historic Use: Steam-Heat Radiator Manufacturer  
Present Use: Business College  

In 1894, John H. Waters, a Johnstown plumber, went into business with Arthur Fowler of Philadelphia and opened a radiator manufacturing plant in Norristown, Pennsylvania. The Fowler Radiator and Manufacturing Company quickly shifted its operations to Johnstown where iron and steel used in radiator production were readily available. A plant was constructed in Moxham in 1896, on what is now the property of the Johnstown Corporation. A decade later, the company turned a $50,000 profit and also adopted the National Radiator name. National Radiator greatly benefited from a nationwide building boom into the 1920s, producing residential and commercial heating equipment and marketing it throughout the eastern United States.

In 1926 National Radiator built its company offices at 221 Central Avenue in Moxham. During the Depression, National Radiator acquired two competitors in Johnstown: Union Radiator Company and Century Stove Manufacturing Company. The newly acquired facilities were used for metal powder production and specialized sheet metal fabrication, respectively. In 1938, National Radiator had 461 employees in Johnstown. The emphasis in the heating industry shifted away from radiant heat in the 1940s. National Radiator merged with several other firms into the 1950s to remain competitive in a shifting market.

The offices of National Radiator are located on Central Avenue, apart from the factory complex. (Further work is needed within the factory to determine the number and condition of historic buildings as well as the kind of machinery used in radiator production.) Built in 1926, the "U"-shaped, two-story office contains a concrete and steel frame sheathed in brick. Its
exterior features ornate concrete work around the windows and cornice. Four-over-four light, double-hung sash windows with metal mullions are located on each side of the building except the west facade, where newer aluminum frames replaced the old metal-frame windows.

The National Radiator name endured in Johnstown until 1960 when the Crane Corporation, a Chicago-based plumbing company, purchased National and moved the operations to Illinois. Crane sold its metal powders division, with its physical plant on Bridge Street in Johnstown, to the SCM Metals Corporation in 1961. Today SCM still produces metal powders and food grade iron using an electrolytic process developed by National Radiator in the early 1930s. The old National Radiator office building is currently owned and operated by the Cambria-Rowe Business College.

Sources:
The Historic American Engineering Record groups structures and systems used to manufacture, store, or distribute water, steam, sewage, gas, compressed air, and electricity into the category of utility industries. In Blair and Cambria counties the only major resources identified in this category were waterworks and reservoirs and electric-power generation facilities. As will be seen, the development of water and electric utilities in the two counties was dominated throughout the nineteenth century by the large iron, railroad and coal mining companies.

Water:

The oldest large water storage and distribution systems in the two counties originated with the Pennsylvania Railroad (PRR) and the Cambria Iron Works. Just as the PRR required vast amounts of water to operate its fleet of steam engines and its railroad shops, so did Cambria Iron need large quantities of water to manufacture iron and steel products. The railroad and steel industries controlled the water supply of the majority of the counties' residents into the 1920s. By then, Blair County had eight municipal and four private water companies, while Cambria County water was controlled by more than fifteen coal and steel companies, but less than ten publicly owned companies. Today, municipal ownership of the water supply, similar to that of many other towns and cities in the United States, is predominant. However, Bethlehem Steel maintains the Manufacturers' Water Company to meet its own substantial need for water.¹

In addition to the growing population of Johnstown and its environs through the late nineteenth and early twentieth century, the production of iron and steel in the Conemaugh River and Stony Creek River valleys during this period required large amounts of clean, soft water. Although the several serious floods suffered by Johnstown have given the impression that this city possesses abundant water resources, in actuality the volume of water flowing in the region's rivers and streams fluctuates dramatically with the season. Generally, the greatest flow occurs in the spring and early summer while the late summer, fall, and winter often find the streams running extremely low. This widely varying flow coupled with the rugged, mountainous topography have created considerable difficulties in the storage and distribution of water in the Conemaugh valley. Johnstown's first waterworks was created in 1866 by the Cambria Iron Company's Johnstown Water Company and supplied water to the sprawling iron works as well as the residents of Johnstown. The company established reservoirs on Wildcat and Laurel Runs west of the city. By the 1890s Cambria Iron was operating a waterworks that consisted of an impounding dam on the Conemaugh River in the vicinity of Coopersdale where water was pumped to storage reservoirs of the Johnstown Water Company and then supplied to the iron company and the city by gravity flow.²

This water supply system remained in place until about 1900 when the Cambria Steel Company, successor to Cambria Iron, created the Manufacturers' Water Company to construct new impounding and distribution facilities. In 1904, Manufacturers' Water completed construction on a new dam and intake on the Little Conemaugh River near South Fork, a gravity system

carrying water in a wood-stave pipe nearly seven miles to Franklin. The following year the company completed the Hinckston Run system which included a 1 billion gallon reservoir and a riveted steel pipeline that carried water over three miles to Johnstown. These two water supply projects, along with the Quemahoning Reservoir in Somerset County, which was completed in 1913, constituted the major portion of a water supply network that, by the 1930s, provided the Johnstown steel plants with over 135 million gallons of water each day. Bethlehem Steel retained ownership of the Johnstown Water Company until 1964. At that time, the City of Johnstown purchased the water company and created the Greater Johnstown Water Authority, which still provides the majority of the water needed in the region.3

Four of the reservoirs included in the HAER Inventory were constructed by the Pennsylvania Railroad (PRR). The Blair County reservoirs are located near Blair Gap, Tipton, and Homer Gap. The Blair Gap Reservoir, built about 1900, lies west of Gallitzin Spring, on the eastern slope of Allegheny Mountain, near Cresson. A gravity line connected the reservoir to Horseshoe Curve, where helper locomotives took on water before returning to Altoona, in order to assist trains for the climb to the Summit Tunnel. The large cyclopean masonry Tipton Dam, built in 1924, nearly doubled the railroad's water resources. Homer Gap Reservoirs provided water to Juniata Borough, and to the Altoona shops and yards complex. The Altoona City Water Authority acquired each of these dam and reservoir complexes after the PRR discontinued the use of steam locomotives in the 1950s.

In Cambria County the PRR-built Wilmore Dam and Reservoir, located two miles northeast of the town of Portage, was completed in 1902. Manufacturers’ Water purchased the property in the early 1950s and operated the reservoir in conjunction with the Bethlehem Steel mills in Johnstown, some twenty miles to the southwest.

One of the most ornate reservoirs in the region is located on the former estate of steel magnate Charles Schwab near the town of Loretto in Cambria County. This above-ground reservoir resembles a medieval castle keep, replete with random-range stone walls and buttresses and a 70-foot high stone tower. The town of Loretto maintains the reservoir for its municipal water supply.

Electricity:

The development of the electric supply network in Blair and Cambria counties followed a pattern characteristic of the electrification of early-twentieth-century America. However, the predominance of the steel and coal industries in Cambria County created a period of private ownership of electric companies that lasted well into the 1940s. At that time, one large utility company gained control of the power generation and distribution of electricity in both counties.4

Several entrepreneurs in Altoona and Johnstown invested in Thomas A. Edison’s electric lighting systems in the mid-1880s. Demand for the new product grew steadily, and the two new companies, Edison Electric Illuminating Company and the Johnstown Electric Light Company,

met the demand for the next two decades. Early electric companies typically sold residual steam from their generating plants to nearby homes and offices for heating. Efficient electrical transmission and power technologies became readily available around the turn of the century, at which time some Cambria County coal mining companies began to exploit electricity for the mining of coal as well.\(^5\)

Many of the larger and more prosperous companies soon installed lights in the mines. In addition, locomotives used to transport workers and coal were electrified, and other applications of electric power were instituted for the extraction of the coal itself. As early as 1902, electrically powered machinery removed between five and ten percent of the coal from Cambria mines. By 1917, almost thirty percent of the total coal production (over five million tons) in one district of Cambria County was extracted by electrically powered machinery, although most of the region's coal continued to be removed manually with a pick.\(^6\)

By the 1910s and 1920s the largest coal companies, Pennsylvania Coal and Coke, Berwind-White, and Ebensburg Coal, among others, made the biggest investment in electrification.\(^7\) These same companies, having created company towns, sold or provided excess electricity to miners living in company-owned housing. As a result, the ownership of electric utilities varied widely between the two counties. Whereas in Blair County electric power generation and distribution was largely controlled by one utility, the Pennsylvania Edison Company, in Cambria County about a dozen utilities and mining companies were in the electric power industry. Only two municipalities claimed ownership of Cambria County's many electric generating stations. The Pennsylvania Edison Company and the Pennsylvania Electric Company, the largest electric company in the region between the 1920s and 1940s, merged in 1946, forming the giant Penelec that exists today.\(^8\)

The HAER Inventory encompassed eight electric utilities in the two counties. In Blair County there existed five major electric companies at the turn of the century that were subsequently absorbed by the Pennsylvania Edison Company. These early utilities include Edison Electric Illuminating (1887), Citizens Electric Light, Heat & Power (1902), Bellwood Electric Light (1892), Home Electric Light & Steam Heating Company (ca. 1886), as well as the fledgling Pennsylvania Central Power and Light Company (1910). All of them operated coal-fired steam plants, however, only one early power plant, the 1930s Pennsylvania Central Power & Light Company's Williamsburg station, continues to generate electric power. Among the most impressive historic power plant buildings that survive, two are located in Altoona, the brick and terra-cotta Citizens Electric Light plant (ca. 1910), and the ornate brick power plant (1896) of the Edison Electric Illuminating Company. A third large brick power plant building, erected about 1910 for Home Electric Light & Steam Heating Company in Tyrone, still stands but has also been stripped of its power generating equipment.

---


\(^{7}\) Several electric power plants included in the HAER Inventory were built by coal mining companies and are discussed in the EXTRACTIVE INDUSTRIES section.

In Cambria County the HAER Inventory included a number of electric substation buildings, though one in Johnstown and another in Beaverdale may have originally housed electric generating equipment. Both are modest one-and-one-half-story brick buildings with steel roof trusses. The one in Beaverdale was probably built about 1920, by the Logan Light, Heat & Power Company, a subsidiary of the Logan Coal Company. The Johnstown substation was built about the same time by a small, local utility company.\(^9\)

Altoona Gas Company  (1891)
Current Name: Peoples’ Natural Gas  
Rating: 4

Lloyd Street and Bellwood Avenue, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.721340 N.4488960
Historic Use: Gas Works
Present Use: Maintenance Garage

In 1857 a number of Altoona businessmen founded the Altoona Gas and Water Company. By 1859 the company was providing illuminating gas to the city. Fifty-two years later the Pittsburgh-based Peoples’ Natural Gas Company, a subsidiary of the Consolidated Natural Gas Company, became the distributor for the Altoona Gas and Water Company.

In 1891 the Altoona Gas and Water Company located its second works at Lloyd Street and Bellwood Avenue (formerly First Street and Seventh Avenue, respectively). Only one original building remains at this site. This building was used for the purification and manufacture of natural gas. The tall one-story building measures 100' x 68'. It a stone foundation, brick pilastered walls, common-bond brick exterior, and a gable roof. Currently, the Peoples’ Natural Gas Company uses the building for equipment maintenance.

Sources:
Clark, Charles B., ed. Altoona Illustrated; A Complete Pen-Picture of the City of Altoona, Pennsylvania at the Close of the Year 1895. (Altoona: Board of Trade, 1896).

Bakerton Municipal Water Reservoir  (ca. 1920)
Current Name: Bakerton Water Authority: Reservoir  
Rating: 4

On Dishart Tunnel access road .25 miles S of PA 4004, Bakerton, Cambria County, Pennsylvania
USGS Quad: Carrolltown, Pennsylvania (1:24000) UTM: 17 E.692100 N.4495660
Historic Use: Water Reservoir
Present Use: Water Reservoir

The Bakerton Water Company constructed this dam and reservoir in 1920, to supply the town with municipal water. This system allowed for the installation of a water fed fire suppression system throughout the town. An additional reservoir, large enough to supply the town with a forty-eight hour supply of water, is located in the hills above the town. The 15 million gallon reservoir replaced an artesian well system at the J.B. Reed Mine, which used pipes made of tar coated wood to carry the water into town. The breast of the dam is composed of earth fill and rocks, and the spillway is concrete.

Sources:
Bellwood Light and Power: Dynamo House  (1892)
Current Name: Bellwood Borough Garage  Rating: 4
Corner of Antis Street and N First Street, Bellwood, Blair County, Pennsylvania
USGS Quad: Bellwood, Pennsylvania (1:24000) UTM: 17 E.725460 N.4497860
Historic Use: Power Plant
Present Use: Maintenance Garage

The Bellwood Electric Light Company's dynamo house, a one-story stone structure was built in the early 1890s. The dynamo house is located along the Pennsylvania Railroad Main Line, which allowed for convenient delivery of fuel to the coal-fired boilers. A 1910 Sanborn map noted that the facility operated night and day. By 1925 Pennsylvania Electric absorbed Bellwood Electric and removed the dynamo house from service. The building was then used for storage of patterns by an adjacent foundry business. Eventually Penelec sold the building to Bellwood Borough.

Measuring 60' x 20' and containing a dirt floor, the random-range stone structure has survived in fair condition, although its windows have been removed and the openings boarded up. Double garage doors have been installed in the north end facing Antis Street, but two original Gothic arched doorways along the west facade survive. An interior stone bearing-wall has been partially removed and part of the original tongue-and-groove wooden ceiling is intact. The Borough of Bellwood currently uses the building for the storage of trucks and road maintenance equipment.

Sources:

Citizens Electric Light, Heat & Power Company  (ca. 1910)
Current Name: Penelec Storage Building  Rating: 4
Twentieth Street off of Railroad, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.719860 N.4487080
Historic Use: Power Plant
Present Use: Storage Building

Citizens Electric Light, Heat & Power Company of Altoona was incorporated in 1902 at a time when a number of independent generating companies were offering electric service. Citizens' generating station and adjacent office building were constructed on 20th Street, on the north side of the Hollidaysburg Branch of the Pennsylvania Railroad, which provided convenient delivery of coal to fuel the plant. By 1919 Citizens Electric had been absorbed by Penn Central Light and Power, successor to the Edison Electric Illuminating Company, whose main generating plant and office were just two blocks away (see entry of Edison Electric Illuminating Company Complex).

The original Citizens Electric generating station, built about 1910, is a pilastered brick structure, approximately 60' x 60'. Recessed brick panels along all four facades are highlighted by arched windows with transoms. The two-story office building contains a coursed rubble foundation, brick load-bearing walls, a round-arched door opening, and two segmented arch windows on the first floor. White keystones highlight each of the segmented arches. The windows contain
cast stone sills and are now boarded up. The generating station now appears to be used for storage. A large fenced area to the rear contains a small modern utility building and an operating substation. Penelec, a successor to Penn Central Light and Power, currently owns the site.

Sources:
Edison Electric Illuminating Company Complex  (1896, 1914)  
Current Name: UVA Club  
Rating: 4  

Nineteenth Street and Union Avenue, Altoona, Blair County, Pennsylvania  
USGS Quad: Altoona, Pennsylvania  (1:24000)  UTM: 17 E.719680 N.4487300  
Historic Use: Power Plant  
Present Use: Social Hall/Office  

The Edison Electric Illuminating Company began operations in Altoona in March 1887. In 1896, the company built a new steam plant between Eighteenth and Nineteenth streets on Union Avenue. Measuring 110' x 80', the steam plant was constructed with a steel frame, brick walls, steel rafters, and slate roofing. Fire-proof brick partitions divided the interior into three sections: the first housed the boilers; the second, contained the steam engines; and the third, housed the generators. The south (Union Avenue) facade of the powerhouse featured two, small circular windows flanking a huge round-arched window, and the cornice contained decorative brickwork.

Following a consolidation between the Edison Electric Illuminating Company and the Citizens Electric Light, Heat, and Power Company in 1910, a new, larger utility was formed, the Pennsylvania Central Electric Light & Power Company (now Penelec). In 1914, Pennsylvania Central Electric built a new office building adjoining the Union Avenue powerhouse. Constructed with reinforced concrete pilasters and a steel frame, the three-story structure featured a decorative terra-cotta cornice and brick parapet walls. Unfortunately, this office addition obscured from view the highly ornate main (Union Avenue) facade of the powerhouse.

After Penelec ceased operations at this location in the 1960s, the United Veterans Association (UVA), an umbrella organization for Blair County charitable organizations, took over both buildings. The electric generating equipment was removed and the structures converted into a service club for retired railroad men and offices. The exteriors of both the powerhouse and the office buildings have been considerably altered through the infilling of window openings, and the covering of the entrance area with modern siding.

Sources:

Home Electric Light & Steam Heating Company  (ca. 1910)  
Current Name: N & N Truck and Equipment Repair  
Rating: 4  

Logan Avenue S of W Tenth Street, Tyrone, Blair County, Pennsylvania  
USGS Quad: Tyrone, Pennsylvania  (1:24000)  UTM: 17 E.733240 N.4505600  
Historic Use: Steam Plant  
Present Use: Maintenance Garage  

The first electric light company in Tyrone, the Home Electric Light & Steam Heating Company, was founded in 1886. This company operated a 360-horsepower boiler, a dynamo, and AC generator capable of supplying electricity for 120 arc and 1500 incandescent lights used by the borough and its railroad and business facilities. According to an 1896 Sanborn map of Tyrone, the boilers and generating equipment of Home Electric were located in a one-story, brick
building. Around 1900 the plant began providing steam heat to area buildings. About ten years later the Home Electric Light & Steam Heating Company greatly expanded its operations, constructing two, large, brick buildings. The original (ca. 1886) one-story building became a car barn for the Altoona and Logan Valley Railway Company.

The surviving 1910s structures include the power plant, the boiler house, and the concrete piers of the elevated rail spur. The power plant, located near Logan Avenue, is an impressive tall one-story building containing a scored concrete foundation, red brick walls, and decorative segmental arches spanning the door and window openings. The south (main) facade contains a lightly ornamented parapet with the inscription "Home Electric Light & Steam Heating Company" placed in the center brick panel. The large one-story boiler house adjoins the powerhouse to the north and contains similar ornamental brickwork including stepped parapet walls at the east and west facades. Although access to the interiors was not permitted, the brick buildings probably contain steel frames. Along the west side of the boiler house stand the remains of an elevated rail spur and coal dump.

Pennsylvania Electric (Penelec) eventually acquired the Home Electric Light & Steam Heating Company. The new owners transferred the steam turbine from the Tyrone plant to its powerhouse in Johnstown. In the early 1960s, Penelec removed the Tyrone plant's large stack, and the powerhouse was abandoned. Currently, a truck repair business uses the buildings, however all of the structures are scheduled for demolition.

Sources:

**Homer Gap Reservoirs Complex  (1897, 1914)**
Current Name: Homer Gap Reservoirs  
Rating: 4

1.6 miles NW of Orners Corner on Homer Gap Run, Orners Corner vicinity, Blair County, Pennsylvania  
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.718540 N.4494180  
Historic Use: Water Reservoir  
Present Use: Water Reservoir

The Homer Gap Reservoirs upper and lower level were constructed by the Juniata Borough in 1897 and 1914, respectively. The upper reservoir, containing a modest stone and earth dam with a spillway across the breast of the dam, is the smaller of the two. A stone retaining wall topped by a decorative iron fence extends around the upper reservoir. The larger lower reservoir features a cylindrical brick intake containing a conical roof. The earth dam of the lower reservoir measures 800' in length, 29' in height, and 10' in width. The Homer Gap Reservoirs became part of the City of Altoona water system when Juniata was annexed to the city in 1920. At about the same time the city carried out minor repairs to the 1897 stone and earth dam. The station consists of a small stone building with a gable roof. Recently the Altoona City Authority installed a chlorinating station below the upper reservoir.
Utilities: Blair County

Sources:
- Cochran, William L. Executive Director, Altoona City Authority, Water Division, 20 Greenwood Road, Altoona, Pennsylvania 16602. Interview, 22 July 1987.

Pennsylvania Central Power & Light Company: Williamsburg Power Plant  (1914)
Current Name: Penelec Williamsburg Power Plant  Rating: 4
E side of Canal Street (PA 866) .6 miles NW of PA 2013, Williamsburg, Blair County, Pennsylvania
USGS Quad: Williamsburg, Pennsylvania (1:24000) UTM: 17 E.736760 N.4483400
Historic Use: Power Plant
Present Use: Power Plant

In 1914 the Pennsylvania Central Power & Light Company (Penelec) built a power generating plant in Williamsburg on Canal Street (PA 866). Containing steam turbines and AC generators, the plant had an initial capacity of 4,000 kilowatts, reportedly the largest single producing power station in the region. Penelec obtained water for the boilers from the nearby Frankstown Branch of the Juniata River. In 1917, Penelec installed an additional generator which had a capacity of 5,000 kilowatts. Two years later another generator was installed, this with a capacity of 8,000 kilowatts. A major addition to the power plant occurred in 1944 when the building was enlarged and a new 25,000-kilowatt generator was installed. Day and Zimmerman architects designed the 1944 addition. When the refurbishment was completed Penelec retired the older generators.

The original (1914) section of the power plant is still visible and contains a concrete foundation, a steel frame, and a brick exterior. The tall one-story building measures approximately 80' x 60'. Currently the power plant has a capacity of 34,000 kilowatts. Coal for the boilers is trucked to Williamsburg from strip mines in Cambria, Indiana, and Blair counties. The original railroad spur to the power plant has not been used since 1972. The plant burns 400 tons of coal a day, a relatively modest operation by today's standards.

Sources:

Pennsylvania Railroad: Blair Gap Reservoir  (1903-05)
Current Name: Altoona City Authority: Blair Gap Reservoir  Rating: 3
E slope of Allegheny Mountain on PA 3012, 1.6 mile E of PA 4001, Cresson vicinity, Blair County, Pennsylvania
USGS Quad: Cresson, Pennsylvania (1:24000) UTM: 17 E.709560 N.4480200
Historic Use: Water Reservoir
Present Use: Water Reservoir

The Blair Gap Reservoir was constructed about 1903-05 by the American Pipe Manufacturing Company for the Pennsylvania Railroad (PRR). It lies just west of Gallitzin Spring, between the divided highway of old US 22, on the steep slope of Cresson Mountain, at an elevation of about 1,700'. A twelve-inch pipeline was laid to convey water by gravity to Kittanning Point Station on the east leg of the Horseshoe Curve, where it was used to water steam snapper
Utilities: Blair County

(helper) engines returning to Altoona to assist passenger and freight trains in the climb to Cresson Summit. The reservoir also provided water to engines at the Muleshoe Curve, a mile southeast of the Blair Gap dam.

This reservoir became the property of the Blair Gap Water Company in the mid-1920s, when the PRR consolidated its water system subsidiaries into one company. Since 1981, it has been owned by the Altoona City Authority. The 47'-high masonry dam is 316' long with a 53' spillway. The rough-cut limestone blocks are laid in courses approximately 8' high. A one-story cylindrical building of random-range limestone serving as a valve house, stands at the base of the dam. A projecting rough stone drip-course encircles the building 2' below its battlemented top.

Sources:
- Cochran, William L. Executive Director, Altoona City Authority, Water Division, 20 Greenwood Road, Altoona, Pennsylvania 16602. Interview, 22 July and 6 August 1987.

Pennsylvania Railroad: Tipton Reservoir (1923-24)

Current Name: Tipton Reservoir
Rating: 3

On Tipton Run about 3-4 miles NW of Tipton, Blair County, Pennsylvania
USGS Quad: Tipton, Pennsylvania (1:24000) UTM: 17 E.725780 N.4506400
Builder/Architect/Engineer: A. L. Anderson and Brothers (B)
Historic Use: Water Reservoir
Present Use: Water Reservoir

The Tipton Dam was built in 1923-24 by A. L. Anderson and Brothers of Altoona for the Tipton Water Company, a subsidiary of the Pennsylvania Railroad. Charles Haydock, engineer for the Pennsylvania Railroad Water Company, designed and wrote the specifications for the $600,000 project, and J. W. Ledoux of Philadelphia served as a consulting engineer. The design consisted of a cyclopean masonry dam, standing approximately 50' high and 200' wide, and founded on bedrock. The spillway, designed across the breast of the dam, extends 150' in width. The downstream face of the dam was built with stones, as large as the equipment could handle (some of the stones measure 3' x 8').

The Tipton Dam and Reservoir, along with five other Altoona area reservoirs, served the Pennsylvania Railroad's special water requirements in the manufacturing and operation of steam locomotives. The Tipton Watershed included eleven-and-one-half square miles of forested company-owned land, and nearly doubled the local water resources of the railroad. In the 1920s, the Pennsylvania Railroad's Blair County water supply subsidiaries were consolidated into the Blair Gap Water Supply Company. In 1956, when the Pennsylvania Railroad (PRR) switched to diesel motive power for its trains, the Tipton Reservoir was sold to the General
Water Works Company. The Altoona City Authority, Water Division, took over the reservoir in 1981. Recently, the Tipton Dam was inspected by the U.S. Army Corps of Engineers, and the structure was pronounced sound.
Utilities: Cambria County

Sources:

Beaverdale Substation (1920s)

Current Name: PENELEC Substation
S of PA 869 .8 miles W of Beaverdale, Cambria County, Pennsylvania
USGS Quad: Beaverdale, Pennsylvania (1:24000) UTM: 17 E.694450 N.4465950
Historic Use: Electrical Substation
Present Use: Electrical Substation

Erected ca. 1920 this brick substation located west of Beaverdale on PA 869, may have originally served as a generating plant for the Logan Light, Heat & Power Company, a

subsidiary of the Logan Coal Company. Logan Coal began its mining operations in the region in the late 1890s. The region's dominant utility, Pennsylvania Central Power & Light Company, subsequently absorbed Logan Light, Heat & Power Company in the early 1940s. Presently, the one-story substation building is vacant and nothing remains of the electrical transformers or generating equipment. Brick pilasters support riveted steel Howe trusses and the exterior of the building contains some handsome brickwork. In addition, all of the doors and windows appear to date from the original (ca. 1920) construction.

Sources:

Loretto Reservoir  (ca. 1910)

Current Name: Loretto Reservoir  Rating: 3

.3 mile NE of PA 1001 & PA 1007 (NE of Loretto), Loretto vicinity, Cambria County, Pennsylvania
USGS Quad: Carrolltown, Pennsylvania  (1:24000)  UTM: 17 E.700215 N.4487760
Historic Use: Water Reservoir
Present Use: Water Reservoir

Resembling a medieval castle keep, this imposing reservoir stands north of Loretto and was built about 1915 by steel magnate Charles Schwab, to provide water for his estate. The main reservoir measures 138' x 77', and contains two reinforced concrete chambers, each of which hold approximately 750,000 gallons of water. The exterior is built of random, rough-cut stone with heavy stone buttresses positioned around the exterior walls. The large stone tower at the southeast corner contains an elevated steel tank of approximately 100,000 gallon capacity, which is no longer used. This tower is ornamented with stone corbeling and machiolations. An additional turreted tower, attached to the main tower, contains a circular stairway.

The water stored in this facility came from two sources and was used for two different purposes. Water stored in the elevated tank came from springs in the nearby Wildwood area, that was pumped up to the reservoir location. This water was used for domestic consumption at Schwab's mansion. The water stored in the concrete chambers came from wells, and was used for Schwab's livestock. The structure appears to be in excellent condition with no major alterations in appearance. The concrete chambers are now used to store well-water for the town of Loretto.

Sources:
Geishauser, Bernard. Director, St. Francis College, Division of Maintenance. Interview 16 June 1988.

-214-
Manufacturers' Water Company: Hinckston Dam (1902)
Current Name: Manufacturers' Water Company: Hinckston Dam
Rating: 3

NE of Johnstown, .35 mile NW of PA 271, Goods Corner vicinity, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E 679320 N 4471190
Historic Use: Earth-fill Dam, Water Reservoir
Present Use: Earth-fill Dam, Water Reservoir

In 1905 the Manufacturers' Water Company, a subsidiary of the Cambria Steel Company, completed construction of the Hinckston Dam and Reservoir. The reservoir held 1,124 million gallons of water for use in Cambria Steel's mills at Gautier and the Lower Works. The water was used primarily for the mills' boilers, but was also clean enough for drinking. An earth-rolled dam, 78' in height, impounded the water that was conducted to the mills by an eight-mile long cast-iron pipe measuring 24" in diameter. Near the dam, an iron pier extending into the reservoir provided access to an intake control tower. From the tower, maintenance personnel controlled the water intake to the mills, and subsequently chlorinated the water supply.

Manufacturers' Water was retained by the Bethlehem Steel Company following the large steel company's acquisition of Cambria in 1923. By the 1930s, Hinckston Run Reservoir supplied the mills with 8 million gallons of water each day. The reservoir continues in service, however, the site is dominated by the giant slag pile extending two-miles below the downstream face of the dam.

Sources:

South Fork Electric Light, Heat & Power Company: Substation (1910s)
Current Name: South Fork Substation
Rating: 4

W of South Fork near Maple Street Bridge, South Fork, Cambria County, Pennsylvania
USGS Quad: Geistown, Pennsylvania (1:24000) UTM: 17 E 687110 N 4470250
Historic Use: Electrical Substation
Present Use: Electrical Substation

This small substation in South Fork, just above the confluence of the South Fork and Little Conemaugh Rivers, was built about 1920. The town of South Fork may have initially received electricity from the South Fork Electric Light, Heat & Power Company which was established in 1897. The substation is the town's oldest structure associated with electric power generation. It is a one-story, brick building, resting on a concrete foundation, and containing a shallow gable roof supported by small I-beam rafters. An entrance on the west side is now infilled with brick. Around the top third of the building, groups of insulators extend to the transformers south of the building. The Pennsylvania Electric Service Company absorbed the South Fork Electric Light, Heat & Power Company in the early 1910s and still uses the building as a substation.

Sources:
1854–1925: Development of the Pennsylvania Railroad’s Altoona Works

In the twentieth century, the Pennsylvania Railroad often promoted itself as the "Standard Railroad of the World." Among its many achievements, it could claim, in 1945, over 16 per cent of all passenger miles in the U.S. It was among the first to use coal-burning locomotives, steel rails, and air brakes; and its Altoona shops, the largest railroad-owned construction shops in the country, had been the training ground for many American railroad builders and engineers. The company saw itself as setting the "standard" by which all railroads should be run and against which all railroads might be measured. In another sense, however, the railroad, particularly in its shops at Altoona, pioneered in standardization itself. At Altoona, the railroad introduced standard car designs in 1859, standard locomotive classes in 1868, and, with the establishment of the first railroad test department in 1874, standard product specifications. These factors played an important role in the growth of the railroad as a whole, as well as in the evolution of the Altoona works from a random collection of small shop buildings to a carefully organized production facility. This essay examines the development of the Altoona Works between 1854 and 1925, when the last major shop facility was constructed.

1846–1874: J. Edgar Thomson and the Creation of the PRR

The Pennsylvania Railroad was organized in 1846 to provide a through route from Philadelphia to the Ohio River. Its guiding spirit, initially as its chief engineer, and then as its president from 1852 until his death, was J. Edgar Thomson (1808–1874). Altoona was Thomson’s choice as the site of the PRR’s principal locomotive and repair facility. Thomson chose Altoona on the theory that the heavy work of crossing the Alleghenies should be concentrated into a reasonably short distance of relatively steep grades, rather than spread out over much longer grades of less elevation, but which required heavy and expensive cuts, tunnels, and viaducts. At Altoona, extra locomotive power could be added in order to accomplish the summit. The 12-1/4-mile run to the summit was up a continuous gradient of 80 feet per mile—less, Thomson noted than, the maximum used on either the Boston & Albany Railroad or the Baltimore & Ohio.

Land for the shops was purchased at what was known as Robinson’s Ridge in 1849, and the first shops were laid out by one of the Thomson’s assistants, Strickland Kneass (1821–1884), a Rensselaer Polytechnic Institute (RPI) graduate who had worked under Schlatter on the first survey for a state railroad a decade before.

---

3Thomson’s was not the only view, however. In part, he was rejecting an earlier survey by state engineer Charles Schlatter. In Schlatter’s survey for a state railway between Harrisburg and Pittsburgh, conducted between 1839 and 1842, no grades exceeded 45 feet per mile. But to accomplish this, he had many grades of that magnitude, and in order to cross the divide, it was necessary to approach the mountains at a considerable elevation, requiring expensive cuts, tunnels, and viaducts.
5Kneass has also been credited with laying out the road from Altoona to the summit, including Horseshoe Curve, though Samuel W. Mifflin (1805–1888), and George Leuffer (1814–1899) are also names that are given that honor (See "Strickland Kneass," Dictionary of American Biography, Vol. 5, pp. 456–456; "Samuel W. Mifflin," Railroad Gazette 17 (21 August 1885), p. 541; "George Leuffer," Engineering Record 40 (22 July 1890), p. 182.).
Pennsylvania Railroad: Altoona Works

The shops were designed for new car construction, as well as for repairs to cars and locomotives. Superintendent of Transportation, Herman Haupt explained the reasoning for new car construction:

Our experience thus far has demonstrated that cars can be built cheaper and better by the company than by contract. The location in Altoona is particularly eligible, and it will be to the interest of the company to concentrate the work as much as possible at this point.6

A year later (February 1853) the directors reported that:

Repairing of cars, formerly done at Harrisburg, is now done at Altoona, where arrangements are partially perfected; and the introduction of more tools and manufacturing at that point, will enable us to proceed rapidly with the building of new cars and duplicate parts of locomotives. The foundry there is in full operation, making the castings for all our shops, except the West Philadelphia Repair Shop.7

By the time the main line opened in 1854, the shop buildings consisted of a half-round car erecting shop (on the site of the present Erecting Shop No. 3), and a long, one-story building with wing, extending west from Twelfth Street. The latter building housed a locomotive erecting shop and such ancillary facilities necessary including foundry, blacksmith, machine, wood-working, and paint shops necessary to support the locomotive and car work.8 The same year, a new 26-engine roundhouse was constructed, and a new erecting shop was to be ready in the spring of 1855. By the end of 1855, the shops had already reached sizable proportions, and were equipped to do almost any kind of work. The PRR at that date operated 115 freight and passenger locomotives. Passenger cars, numbering ninety-seven, consisted of thirty-six "wide" cars for most of its routes, thirty-four "narrow" cars for use on the Philadelphia & Columbia Railroad (whose tracks were too close to allow the wider PRR cars), and twenty-seven "immigrant" cars. Freight cars numbered over 1500, of which 70% were the eight-wheeled "house" (or box) cars.9

An important stimulus to PRR development was its purchase in 1857 of the state-owned Pennsylvania Canal and its connecting railroad, the Philadelphia & Columbia.10 Built in 1834 to connect Philadelphia with the terminus of the main line canal at Columbia, the 82-mile long railroad added nearly 100 locomotives to the PRR's existing stock. A similar increase in cars meant that demands on the repair facilities grew dramatically. The shops were considerably enlarged at this time.

A significant aspect of the state acquisition was the introduction of standardized car design. The Philadelphia and Columbia utilized a car size smaller than that on the main line, and it must have been this that impressed upon Ambrose Ward, the General Foreman of the Car Department, to introduce a "uniform standard of pattern" for the Car Department at all the shops. Ward wrote in the annual report for 1859:

---

76th PRR Annual Report (2/7/1853).
10The acquisition was intended as part of a deal with the State of Pennsylvania: in return for taking over the state's money-losing transportation system, the state would repeal the tax on railroad tonnage. But the state reneged on the deal, and the tonnage repeal was not enacted until the mid 1860s.
This arrangement I consider of much importance, as it will enable us to get our entire equipment in each class uniform, and thus dispense with the necessity of keeping such a large variety of patterns and duplicate work on hand for repairs.11

Standardized parts moved the Altoona shops closer toward interchangeability, an important factor in converting what was in many respects still a skilled craft to a modern production line. In the late 1850s, few special-purpose machines existed. Instead, general-purpose wood and metal-working machines were used for whatever job was at hand. As a consequence, all parts entering into the repair of locomotives or cars were shaped and fitted by hand and eye, requiring patience, as well as skilled craftsmanship.12 Interchangeable parts were virtually unknown, although an effort at standardization existed in "indexing," using wooden templates or sticks as primitive gauges. Materials were carried by hand or sometimes on narrow-gauge tracks through the shops, frequently held up by some obstruction on the shop floor. The overhead crane was as yet unknown here.

The 1860s were a critical period for the PRR, and some of the most radical changes took place during this decade. Coal, first used by the railroad on an experimental basis in 1853, came into full use by all freight locomotives by 1862, and by all others in 1864. Steel rails, introduced in 1864, were rapidly adopted for the entire system. In 1860, despite the movement toward interchangeability begun in the car department, the company still acted on a job-by-job basis. Functions shifted around the yard as space was made available, not for any rational scheme of movement: in 1861 the building used as a passenger car shed was altered for use as a freight car repair shop; in 1863 the eastern section of the main shop, formerly used for passenger car repairs, was added to the machine shop, and passenger car repairs were moved into a southern wing.

Despite the war, the company saw a great increase in eastbound traffic as the European demand for breadstuffs grew due to the closing of the Mississippi. In addition to the increasing traffic, the system mileage also greatly increased, as additional lines were leased or purchased. This increase brought new equipment along the line, and numerous physical changes to the Altoona shop complex. The machine shop received an addition in 1864, and in 1865 a brick blacksmith shop (274' x 60') and wood-frame freight car repair shop (210' x 90') were erected. Superintendent Laird wrote in February 1865, that the addition of 100 locomotives without a corresponding increase in yard room had seriously hampered his work; he strongly recommended that another roundhouse be constructed.13 His request was granted and in 1867-68, the largest of the new buildings, the 300-foot Western Roundhouse for Pittsburgh Division engines, was constructed.

Locomotive design and construction were also undergoing transformation. Like the Car Department, the Motive Power Department had also had its share of non-PRR transfers from the Philadelphia & Columbia in 1857. Unlike the practice in the car department, however, all of the company's early locomotives were the products of commercial locomotive builders, like Norris or Baldwin of Philadelphia, who were the railroad's principal suppliers in its early years. The Baldwin Locomotive Works, whose founder Matthias W. Baldwin (1795-1866) was a prominent stockholder in the line, was the PRR's largest supplier for much of this early period: in 1857, 99 of the company's 216 engines were Baldwin built.14 Even with engines from the same builder, interchangeability was rare, and fitting was inevitably required. John P. Laird,


-219-
Pennsylvania Railroad: Altoona Works

Superintendent of Motive Power between 1862 and 1866, following Ward's work in the Car Department, began the process of rebuilding older locomotives, bringing in standard parts and designs wherever possible.\footnote{16}

Altoona began producing its own locomotives in 1866. It is tempting to speculate that the wresting of some production from Baldwin may have been facilitated by the death of the founder and PRR shareholder Matthias Baldwin in 1866. However, a reading of the annual reports seems to suggest that the move toward new construction was gradual. In reporting the output of the shops in the early 1860s, the reports list the number of "locomotives rebuilt entirely new." This expression may reflect how Altoona came to enter the locomotive construction business: not by any conscious decision, but as an extension of its repair business. Perhaps by 1866, repairs had become so complete, replacing so much material that the rebuilt engines were considered "new." In any case, with this repair experience, it would be a short step to building new engines from scratch.

It was not until Andrew J. Cassatt was appointed Superintendent of Motive Power in 1867 that the first complete series of "standard locomotive" drawings, for eight distinct classes of locomotives, was produced. A. J. Cassatt (1839-1906) is best known for his term as president of the road, 1899-1906. Graduated from RPI in 1859, in 1861 he entered the service of the Pennsylvania Railroad as a rodman, becoming successively assistant engineer, resident engineer of the road's Middle Division in 1864, and Motive Power Superintendent in 1867. The man Cassatt made responsible for the standard designs was John B. Collin (18307-1886), Mechanical Engineer between 1866 and his death in 1886. With very few exceptions, all motive power built after 1867 conformed to the railroad's standard designs. By 1873, of the 873 locomotives in service, 373, or 42.7 percent, were classed as "standard."\footnote{16}

Under the impetus of this new work, special-purpose machinery was introduced into the shops. In 1870, a correspondent for the \textit{Baltimore Sun} described the shops:

> Improved machinery for doing almost every character of work is in operation, including some not often found in the shops of other railroads. The riveting of the boilers, for the locomotives for instance, is nearly all done by a powerful riveting machine, driven by steampower. Two small stationary engines are now being built for pumping gas into cylindrical tubes, to be used on passenger trains instead of oil lamps.\footnote{17}

As the traffic and rolling stock expanded, it became increasingly difficult to handle railroad repair, maintenance, and storage in the yard. In 1869, Cassatt called for the establishment of a separate location for the car shops:

---


\footnote{17}{Quoted in the \textit{Altoona Tribune}, 29 June 1870, p. 2.}
The motive power and shops during the year [1868] were taxed to their full capacity, and although they were able to meet all demands made upon them, it has become evident that additional facilities will be required at Altoona to provide for rapidly increasing business. These additional facilities would be furnished by the erection of new car shops at that place, when the room now occupied for that work could be made available for the locomotive department.18

Constructed on an empty lot north of Twelfth Street, the car shops were laid out by the PRR’s Assistant Engineer on the main line, William H. Brown (1836-1910). A Civil War engineer, Brown later became the PRR’s chief engineer in 1881, responsible for much of the right-of-way improvements initiated under Cassatt. The original car shop buildings were organized around the Foreman’s office. To the north of the office was the 40-stall freight car repair house, providing the railroad with a capacity of constructing 500 new cars a month, or repairing 2000 cars. To the south of the office were located the original passenger car erecting shop, the blacksmith shop, and a combined machine and cabinet shop. Contemporary descriptions describe the advanced way these shops were fitted. Interchangeability is a frequent theme of these reports: in the blacksmith shop, all the work is brought to shape upon forming blocks, so that parts of every description can be duplicated and made interchangeable. Considerable time is also saved by this system, so that orders sent for repairs from different parts of the line can be fitted at once, and sent away with the certainty that they will come exactly into place.19

Immediately to the south of the original Car Shops, the railroad expanded the Car Shops in the late 1880s with a Paint Shop, Planing Mill, and Upholstery Shop.

1874-1899: Theodore N. Ely and the Establishment of the Juniata Shops

Thomson’s death in 1874 caused a reorganization of the officers of the PRR. Among the changes were the elevation of the Frank Thomson from Superintendent of Motive Power and Machinery to General Manager.20 In his place was appointed Theodore N. Ely (1846-1916). Graduating from RPI in 1866, he had joined the engineering staff of the Fort Pitt Foundry in Pittsburgh, where he gained valuable experience in the investigation of the quality of metals. Two years later he went to work for the PRR’s leased road, the Pittsburgh, Fort Wayne & Chicago Railroad. Ely was responsible for many of the changes that took place in locomotive and passenger car construction over the next forty years. One of his earliest acts was the establishment of a Department of Tests, which in turn developed the necessary specifications for purchased materials. He introduced the piecework system to the Altoona Shops, and began the use of committees to study important questions. He was probably also responsible for initiating, if not designing, the Juniata Shops.21

During the 1870s, despite the financial depression which hit the country in the fall of 1873, the PRR made important additions to the Machine Shops. Indeed, these changes probably represented the last major improvements until Cassatt’s modernization program thirty years later. These new buildings, together with the rest of the Altoona Shops, were described in detail by James Dredge, correspondent for the London journal, Engineering. In 1879 Dredge published a

---

20 Frank Thomson (1841-1899); no relation to the late president, but later president himself, 1897-99.
lengthy description of the Pennsylvania Railroad. His account provided a detailed examination of all aspects of the railroad's organization, construction, and management. He gave particular attention to the Altoona shops, to which he devoted over 15,000 words and five plates of measured drawings. This record provides the best documentation for the Altoona shops at this period.

Three key buildings were completed during the 1870s: a new erecting shop, a new two-story machine shop parallel to it, and a new foundry. Of these, the most controversial was the longitudinal erecting shop. U.S. erecting shop practice hitherto—as well as subsequently—was to design erecting shops for transverse operation, arranging locomotive erecting pits perpendicular to the long, side walls. In the new Altoona shop, three lines of rails ran from end to end of the building. New locomotives were erected on the center track; repairs were made on the side tracks. Each track had room for seven engines.

Of all the debates about shop layout, the issue that evoked the most comment was the arrangement of tracks in the erecting shop. Because the erecting shop was where the various pieces came together, its arrangement in large part determined the arrangement of the entire shop facility and equipment. In 1896, a writer noted that the shop "has been the subject of frequent study and much criticism by railroad men ever since it has been erected." Despite the disrepute in which the longitudinal shop was held elsewhere, he noted that "it would be very hard to find any one about Altoona who would advocate ... an erecting shop with transverse tracks and a transfer table." Altoona stuck with the longitudinal form until 1925.

One of the shop's innovative features, and indeed, what made the design possible, was the use of "rapid running cord cranes"—two 25-ton traveling cranes, powered by a cotton rope traveling at the rate of 5074 feet per minute (or approximately 84 feet per second). The cranes, possibly the earliest in the country, were manufactured by the English firm of Henry Wren & Co. of Leeds. Below the floor of the shop, on each side of the center track were deep, paved pits extending the whole length of the building to store machinery and other engine parts. In the winter steam radiators placed in them warmed the building, with hot air rising through timber gratings.

Like the erecting shop, the new machine shop also utilized a rope drive to power hoisting apparatus. Two stories in height, and 426' x 70'in plan, the shop was provided with a floor crane running on rails down the center of the shop. Motion was given to the crane by a rope running at high speed. Heavy machine tools were located toward the middle of the shop so as to be within reach of the crane, thus reducing the handling of heavy objects. Overhead belting, from two lines of shafting, provided the power to most of the machines in this shop.

---

22 James Dredge, op. cit.
24 The traveling crane is thought to have been first used in England in 1833, by the inventor Johann Bodmer. It was slow to be picked up even in England, however. Early 20th-century American commentators on railroad practice link its use to the advent of electric power, which made it one of the most important pieces of equipment in the modern railroad shop. See Siegfried Giedion, Mechanization Takes Command (New York: W.W Norton & Co., Inc., 1969), p. 92; A.I. Totten, "The Evolution of the Railroad Shop," Railway Review (3 October 1914), pp. 408-411; also "Car Shops Old and New," Railway Age Gazette 48 (4 March 1910), pp. 467-468.
25 Dredge, pp. 78-79.
26 Dredge, pp. 76-78. 27; pp. 79-83, 167.
Construction of a new foundry brought the PRR closer to their goal of self-sufficiency. The main foundry, 250' x 100' in plan, was supplied by two cupola furnaces, each capable of melting ten tons of iron per hour, and furnished all the castings for both locomotives and cars. Wings attached to the foundry provided space for a brass foundry and a large wheel foundry. Hitherto, the railroad had purchased cast-iron wheels from a Philadelphia firm. The new wheel foundry, 138' x 35' in plan, was furnished with its own cupola furnaces. The casting floor was arranged for thirteen hydraulic cranes, each of which was surrounded by a circle of fifteen moulding flasks, for wheels up to 33" in diameter. A day's production amounted to 195 wheels.27

The interchangeability of parts was one of the key accomplishments of this period. James Dredge paid special attention to this aspect of the shops:

The Pennsylvania Railroad Company have carried out completely their system of interchangeability of parts, and very many details of one engine are applicable to others of a different type. Thus, the maximum variation is only four different patterns of brass or iron castings for any given part, for the ten different classes of engines built.28

Standardization of parts also had implications for the systematic way in which operations were carried out by employees. Wrote one Boston columnist in 1879:

[In the tool and standard sample shop] you notice again how thoroughly every part of this great system has been thought out. All gauges, templates, etc. are finished on standard measurements. No workman is allowed to set a pair of calipers for himself; they are made rigid. The motive for this is at once obvious. It ensures against error... It allows the employment of men less highly skilled than used to be the case in fine work, and it ensures also absolute interchangeability of parts in engines of the same class.29

As Superintendent of Motive Power, one of Ely's first acts in 1874 was to establish a Department of Tests. Initially concerned with physical testing, chemical testing was added in 1875. The testing department was designed to establish standard qualities for materials purchased from outside suppliers, as well as to test materials produced in Altoona. Testing machines designed to measure stresses in iron and steel were the earliest pieces of equipment acquired, allowing detailed experiments on wheel castings and car axles. Engine performance early became an important part of the work of the department. By 1896, the chemical laboratory had standard specifications for a variety of different metals, paints, oils, petroleum products, rubber, disinfectants, mineral wool, and other substances.30

Today, easily Ely's most visible achievement is the Juniata Shop complex. The construction of this complex was made necessary by the increasing locomotive size. Prior to 1880, most American locomotives were relatively small machines, rarely over 30 tons. Individual parts could be moved with handpower and swing cranes, blocks, jacks, and human muscles. But the increasing traffic after the Civil War, and the increasing engine size meant that by the 1890s this was no longer true. Power cranes and large overhead clearances were needed to clear a finished engine above its neighbor. On the Pennsylvania, the first real break came in 1885 with the first of a new design of Consolidation engines (Class R) built in Altoona. Steam pressure

---

27 Dredge pp. 79-83, 167.
28 Dredge, p. 111.
29 "Railroad Science, the Birth, Life and Death of a Locomotive," Boston Herald 2 August 1879, p. 4.
Pennsylvania Railroad: Altoona Works

was increased from 125 to 140 pounds per square inch. It was also the first engine to use the new Belpair boiler, and it became a highly successful design, built in large numbers. Its weight, however, was the first to break 50 tons, weighing 57.3 tons. The old Consolidation had been 48 tons, and as a result, the new engines could no longer be handled by the smaller overhead cranes. Commercial makers like Baldwin of Philadelphia, Cook Locomotive Works of Paterson, New Jersey, Pittsburgh, and a few others, opened new plants in this period. Juniata was part of this program.\textsuperscript{31}

At the Machine Shops, the longitudinal erecting shop had been laid out parallel to the Machine Shop. The Juniata layout capitalized on the success of this arrangement, placing the four principal shops, boiler, blacksmith, machine, and erecting shops in a parallel relationship. This arrangement made possible a smooth, orderly production flow. Raw material came in at one end of the boiler shop. As it passed along through the building it was flanged, punched, assembled, riveted, and passed out at the opposite end as a completed boiler. From there it was moved to the Erecting Shop, directly opposite. From the Blacksmith Shop, frames and forgings entered the Machine Shop, directly opposite it. The layout of the Machine Shop was such that the forgings were finished as they passed through it, without going over the same path twice, reaching a completed stage at the center of the building. Cylinders and other castings entered the Machine Shop from the opposite end, reaching a completed stage at the center of the building, where they met the frames and forgings. From the Machine Shop, parts went in company through an outside door to the Erecting Shop, where they were met by the boiler which had come in from the Boiler Shop.\textsuperscript{32}

The actual designer of the Juniata shops is not known. Ely may have been responsible, although Axel Vogt, appointed Mechanical Engineer at Altoona in 1887, about the time that the Juniata Shops were being designed, has also been suggested.\textsuperscript{33}

1899-1906: A.J. Cassatt and the Expansion of the PRR

The man who did the most to bring the Pennsylvania to its peak operating efficiency was Andrew J. Cassatt, the former Motive Power Superintendent. Between 1890 and 1902, PRR traffic had more than doubled and Cassatt faced the rapidly rising traffic needs with a massive overhaul of the road, completing the four-tracking of the main line and building a complete separate freight line over the Alleghenies, freeing the main line from the slower traffic. His most significant single achievement is widely recognized as the extension of the Pennsylvania into New York City via tunnels beneath the Hudson and East Rivers. By Cassatt’s death in 1906, road investment had reached $172.9 million, a 128% increase over the figure ten years before.\textsuperscript{34}

Altoona shared in this expansion. All of Juniata’s existing shops were expanded less than fifteen years after they were constructed, and a series of new shops, including a second blacksmith shop were constructed. At the Machine Shops, facilities had again reached their critical stage, with foundry activities woefully inadequate. The Eastern Roundhouse was

\textsuperscript{31} Warner, p. 39; White, p. 11.
\textsuperscript{33} Vogt served as mechanical engineer for more than thirty years, improving motive power efficiency, and refining the design of locomotive details.
\textsuperscript{34} Burgess, pp. 463, 507.
demolished in 1905, and in its place was constructed Erecting Shop No. 3, built between 1905 and 1907. It retained the successful longitudinal design of the 1875 erecting shop, together with the floor pits and overhead cranes. In addition, the railroad introduced electric jib cranes, carried on overhead runways. In part to replace the Eastern Roundhouse, the railroad built at East Altoona what was reputedly the largest roundhouse in the world to service the large number of freight engines then passing through Altoona. With a diameter of 395', the building contained fifty-two locomotive stalls, 90' deep.

Crowding at the Machine Shops also forced the wheel foundry to relocate, and in 1904 the company began construction of two foundries in South Altoona, complete with its own machine and pattern shops. The wheel foundry was the largest and the most important of the six main buildings built in South Altoona, with a capacity of 900 wheels per day, more than three times the capacity of the old foundry. It was made up of three sections, each containing a pair of cupolas, and twelve 25-wheel molding floors, arranged in three bays. Opposite the wheel foundry was the gray-iron foundry, designed chiefly to produce castings for car and locomotive repairs, and for new engines built at Juniata. Also constructed at this time was an 161' x 89' power house, supplying not only steam, but compressed air for foundry purposes, and water at 500 pounds pressure to operate cupola elevators, wheel breakers, and hot metal reservoirs. To supply the foundries, the railroad constructed a single-story pattern shop (193' x 91') and adjacent three-story pattern storehouse (180' x 91'). A small single-story machine shop, 110' x 60' in plan, was located between the two foundries, and a small office located at the northeast corner of the lot.

1906-1925: Peak & Consolidation: James McCrea and Samuel Rea

After Cassatt’s death, the railroad reached its peak, as the financial depression of 1907 brought a downturn in earnings. Although James McCrea (1848–1913) was able to continue most of Cassatt’s programs, including the opening of Pennsylvania Station in 1910, few new programs were begun. Among them, however, was the steel passenger car, first introduced in June 1906. The new steel car shop completed soon after rapidly shifted the emphasis of car construction away from the wooden cars that had been standard up to that time. The new all-steel car design known as "Class P70" introduced in December 1907 became the basic PRR design for many years.

McCrea’s successor was Samuel Rea (1855–1929), the engineer responsible for the New York tunnels and station construction, who had been made Vice President and ranking officer of the company by Cassatt. U.S. railroad mileage reached its peak in 1916; for the Pennsylvania, it climbed slowly a few years longer, until in 1920 the road reached its maximum with 11,107 miles. The most well known among Rea’s accomplishments during his term was the construction of the Hell Gate Bridge and a through route to New England, which opened in 1917. Traffic continued to increase until the mid 1920s, when the growing impact of automobile and truck traffic began to have its effect. Heavier locomotives continued to be built, the most famous of which were the K-4s Pacific Class Locomotives, introduced in 1914. This locomotive class was the dominant passenger engine on the non-electrified lines until after World War II. Between 1914 and 1928, the Juniata Shops constructed 350 engines of this class.

---

Another major event of 1914 was the completion of the new Test Department building. At the St. Louis Exposition in 1904, the PRR had exhibited a unique locomotive testing machine—the only equipment in the country capable of testing a locomotive in motion on a stationary bed. After the fair, the equipment was removed to Altoona where in 1914 it was housed in a new three-story reinforced concrete testing plant, 154' x 47' in plan. The new building nearly tripled the quarters available for the department, which by this time was issuing over 60,000 reports of material tests a year.\textsuperscript{40}

Increasing engine size brought with it the need to improve repair shop facilities to handle larger engines. As a result, the number of shops for general repairs was cut to ten locations during this period.\textsuperscript{41} Heavy repair work, in addition to locomotive construction, was concentrated at Juniata, where in 1925, the company built the 5.5 acre Erecting and Machine Shop, together with an adjacent warehouse and office. Contemporary accounts described it as the largest and most complete railroad-owned erecting shop in the country. Unlike the earlier longitudinal shops, the new shop was a transverse shop. It combined erecting facilities in two outer bays, with machine shop facilities in two inner bays, thus reversing the deliberate separation of functions into different buildings which Juniata had originally represented. The shop's intended role in the PRR system is summarized by the figures for 1926 shortly after the new facility opened: three quarters of the PRR's 7300 operating locomotives had been built at Juniata, which, together with the Machine Shops, was responsible for half the repaired locomotives in the system.\textsuperscript{42} Here, in the 1930s, as electrification of the PRR's eastern lines progressed, would also be built many of the company's celebrated GG1 electric locomotives.

Although auxiliary buildings have continued to be built at Juniata, the Erecting and Machine Shop was the last major building constructed. A serious fire destroyed a large part of the Machine Shop complex in December 1931. What remained of the former Machine Shops became the Twelfth Street Car Shops in 1938, as all steam locomotive repairs were shifted to Juniata. Functions shifted at South Altoona as well: after the fire at the Machine Shops, the brass foundry moved into the former wheel foundry. To repair locomotive tenders, a new tank shop was constructed in 1927, adjacent to the steel car shops. Although the last locomotive was constructed in 1946, the Altoona Works remained in full operation as a car and locomotive maintenance facility until the 1960s, when portions of the car and machine shops were sold. Despite the changes in ownership of the railroad itself, today the Juniata shops, as the railroad's principal repair facility, under Conrail, have a much-expanded service territory. At South Altoona, the wheel foundry has been adapted as a major distribution facility for the company. Conrail has also retained a presence at the Machine Shops, where the office was in use until 1984. The northern portion of the car shops now serves as a part of the Juniata operation.

\textsuperscript{40}C.D. Young, "The Test Department of the Pennsylvania Railroad," \textit{Railway Age Gazette}, 59 (2 July 1915), pp. 6-11.
\textsuperscript{41}The ten shops were: Altoona Machine Shops, Trenton, Wilmington, Renova, Canton, Olean, Dennison, Columbus, Fort Wayne, and Logansport See \textit{Railway Age} 79 (21 November 1925), p. 936.

-226-
The Blacksmith shop is one of the two oldest buildings remaining of the Pennsylvania Railroad's Altoona Works, and one of the first buildings to be completed when the Car Shops were established at Fourth Street in 1869. The shop was designed to produce all the wrought-iron work required for passenger and freight cars produced in Altoona. Although the building was only 74' in width, as constructed, it was evidently only 204' in length; within two years of its completion the building had been extended 51' east and 102' west, giving it a plan of 357 x 74' in 1872. The company's annual report of that year reported that the building contained "31 double fires, besides 3 large heating furnaces and several small furnaces."

James Dredge described the building extensively in 1879: "It contains 34 double forges, or 68 fires, one double bolt-heating furnace, and a single heating furnace for springs. The forges are ranged down each side of the building," while in the central space were arranged punching machines, hammers, bolt-making, drilling, and shearing machines. Dredge noted that as all the work was shaped on forming blocks, "parts of every description [could] be duplicated and made interchangeable." The shop employed 177 men when fully utilized.

Between 1888 and 1894 the building was extended to its present length of 472'. It retained its function as a Blacksmith Shop until the mid 1960s, when Altoona Enterprises purchased the building from the PRR. Stanley Electric occupied the building from 1968 until its bankruptcy in 1976. The Stanley property was sold at auction to Lumax Industries, which has been manufacturing lighting fixtures here ever since.

The structure is a single-story, gable-roofed building, now linked by modern concrete-block construction to the adjacent Cabinet Shop. Only the end walls retain their original brickwork, displaying the distinctive pedimented gable end supported by pilasters which was characteristic of most of the buildings of the car shops. The side walls were rebuilt with concrete block by Stanley Electric.

Sources:
Pennsylvania Railroad: Altoona Car Shops

Pennsylvania Railroad: Altoona Works: Altoona Car Shops: Bolt Shop  (1870s, 1906)
Current Name: Lithcote Company  Rating: 2

Chestnut Avenue & Sixth Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania  (1:24000)  UTM: 17 E.720730 N.4488550
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The "Bolt Shop" is the sole surviving structure of a group of buildings constructed in the 1870s as "Maintenance of Way Shops." The group also included a small carpenter and tin shop, a small planing mill, a paint shop, and a handle and buffing room. These shops were constructed by the Department for Maintenance of Permanent Way at the southern end of the Car Shop complex, some distance from the original Car Shop buildings. This complex serviced a wide range of facilities including signal houses and switches, fittings, watch boxes, and passenger and freight stations.

Originally 130' x 40' in plan, this structure was known by the 1880s as the Bolt Shop. Between 1896 and 1909 the building was extended to its present length of 352'. For much of its history, the building was referred to as the Battery Shop, because batteries for the passenger cars were stored and charged there. Many of the first cars equipped with electric lights were provided with batteries only, making it necessary to hold cars out of service to charge batteries. Only later were generators added to charge batteries en route.

The one-story structure displays repeating bays of segmental-arched windows, though the easternmost 70' has been sheathed in corrugated, metal siding. Today, most of the window openings have been infilled with glass block and two railcar openings have been punched through the west end of the building for two new tracks. A monitor roof crowns the ridge.

Sources:
Ewing, James H. and Step, Harry.  History of the City of Altoona and Blair County, including Sketches of the Shops of the Pennsylvania Railroad Company  (Altoona, 1880).
Pennsylvania Railroad Company, Annual Reports of the Board of Directors of the Pennsylvania Railroad Company.

Current Name: Lumax Industries  Rating: 2

201 Chestnut Avenue, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania  (1:24000)  UTM: 17 E.720850 N.4488900
Builder/Architect/Engineer: William H. Brown
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: GENMFG: Lighting Products

Together with the adjacent Blacksmith Shop, the Cabinet, Tin, and Machine Shop is one of the two oldest railroad shop buildings in the Pennsylvania Railroad's Altoona Works. The structure was one of the first buildings completed when the car shops moved to Fourth Street in 1869.

The building was designed to house three different functions: a cabinet making shop, a tin smithing shop, and a machine shop. Over half of the original building (the northern 168') was devoted to cabinet work for passenger cars. James Dredge wrote in 1879 that only "a few light

-228-
tools are in this building, comprising moulding, mortising, tenoning, and scraping machines, a variety of light band and scroll saws, lathes for circular mouldings, and general work, and machines for making the louvered window shutters for the cars. About eighty men are employed here." The section to the south of the cabinet shop was the tin shop. It was 34' in length and was devoted to making roofs, filters, lamps, and other items for passenger cars. The average work force here in 1879 was twenty-seven men. The remaining 100' (at the south end of the building) was devoted to the machine shop, containing all the necessary equipment for the rolling stock machine work. This included axle lathes, hydraulic presses, drilling machines, bolt cutters, nut-tapping machines, and the like. James Ewing wrote in 1880, that almost all of the original machines were from two Philadelphia firms, William Sellers & Co. and William B. Bement & Son. This equipment was installed under the direction of James Sharp, who continued to act as the machine shop's foreman for many years. Sixty-two men were employed here in 1879. The interior brick wall and arched opening separating this shop from the rest of the building is still visible, together with the supports for a craneway traversing the building.

The entire structure was originally 304' in length. Like the adjoining Blacksmith Shop, it was originally a one-story gable-roofed building. Between 1896 and 1909 it was extended another 150' to the north with a two-story steel-frame and brick addition. It retained its functions as a machine and sheet metal shop, with a tin shop on the second floor until the mid 1960s, when Altoona Enterprises purchased the building from the PRR. Stanley Electric occupied the building from 1968 until its bankruptcy in 1976. The Stanley property was sold at auction to Lumax Industries, which has since used the building as a factory for manufacturing lighting fixtures. Under Stanley ownership, the building was linked to the Blacksmith Shop with a concrete block paint shop and tool room. The present metal siding and office was installed by Lumax in the early 1980s.

Sources:

Pennsylvania Railroad: Altoona Works: Altoona Car Shops: Fire Engine House No. 8 (1871)
Current Name: Home Nursing Agency Garage Rating: 2
201 Chestnut Avenue, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720900 N.4489030
Builder/Architect/Engineer: W. Hasell Wilson (E)
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: ADAPT: CG: Maintenance Garage/Automotive

In his annual report of February 1871, the railroad's Chief Engineer of Construction noted that the stable and fire engine house (33' x 53' in plan) would be among the four buildings which would be completed in the month of February. Eight years later, James Dredge described the single-story, brick engine house as "containing besides the steamer, hose, fire-escapes, buckets, axes, and all the paraphernalia of a fire station. A regularly organized fire brigade is established among the workmen, who are always ready to respond to any alarm of fire..." Charles Clark's Altoona Illustrated (1896) includes an early photograph of the building with a
Pennsylvania Railroad: Altoona Car Shops

high five-story, hose-drying tower at the east end. On the west end were three windows. Between 1894 and 1909, the building was lengthened by about 20', probably equipping the west end with engine-house doors (replaced by the present pair of garage doors about 1970), and installing two roof-dormers. Today, each longitudinal facade displays five window bays (now infilled), with stone lintels and sills. A denticular brick cornice extends around the building. Engaged brick corner-piers support the roof eaves on the southwest facade.

The building remained part of the PRR Car Shops until the mid-1960s, when Altoona Enterprises purchased it and nearby buildings from the railroad. Stanley Electric occupied the property from 1968 until its bankruptcy in 1976. The Stanley property was sold at auction to Lumax Industries, which leased the building and then sold it to the Home Nursing Agency, in 1986.

Sources:

Pennsylvania Railroad: Altoona Works: Altoona Car Shops: Planing Mill (ca. 1906)

Current Name: Lithcote Company: Rubber Building

Chestnut Avenue and Sixth Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720680 N.4488540
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

According to James Dredge the original Planing Mill, measuring 224' x 74' in plan, stood east of the Blacksmith Shop, and supplied the construction needs of the car department. It employed about sixty men. "The plant is not very extensive," he noted, "for the work to be done is simple and uniform for the most part in every class of rolling stock." Another writer, local historian James Ewing, described the mill as "the most complete and largest in the United States," the following year. His writings also described in detail the mill's 1880s-era equipment.

This early planing mill was replaced by a new one, ca. 1906. By 1909 the new structure was known as Planning Mill No. 1. The PRR continued to operate it as a planning mill until about 1960. The Lithcote Company purchased the planning mill, and several other nearby buildings in 1963. Lithcote cleans, coats, and paints a variety of hoppers, tank cars, gondolas, and box cars. In this, the rubber building, Lithcote cuts and installs rubber linings for specialized tank cars. In order to run tank cars into the building, Lithcote opened three new car entrances in the west facade, together with the necessary tracks. Riveted, I-beam columns supporting the steel trusses are retained, as are the wooden catwalks above the planing mill floor and the no-longer-used dust collectors. Although it no longer contains any planing machinery the former planing mill is one of the few relatively unaltered historic PRR buildings in the shop complex.

Sources:
Ewing, James H. and Step, Harry. History of the City of Altoona and Blair County, including Sketches of the Shops of the Pennsylvania Railroad Company (Altoona, 1880), pp. 175-77.
Pennsylvania Railroad Company, Annual Reports of the Board of Directors of the Pennsylvania Railroad Company.

PRR: Altoona Works: Altoona Car Shops: Foreman's Office & Stores (1871, 1906)

Current Name: Home Nursing Agency

201 Chestnut Avenue, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720900 N.4488950
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: ADAPT: CG: Health Care

The central portion of this two-story, hipped-roofed office and storehouse may date to the establishment of the car shops in 1869. A small office and storehouse (80' x 40') was completed in early 1871, according to the company's annual report; and James Dredge, in his 1879 account, shows a building of approximately this size, with a bell tower on the southern end. Dredge wrote that the space was evenly divided between offices and storage. "The offices are entirely for the use of the general foreman and the miscellaneous clerks belonging to the establishment." By 1888 the single-story building had been extended to the north (for a total length of 140'). Charles Clark's Altoona Illustrated (1896) includes an early photograph of the building as a single-story structure of eight bays, with a hipped-roof and a three-story, Italianate bell tower. Each bay was highlighted by slightly ornamented brick pilasters. By 1909 a number of major alterations had been made, including the addition of a second story, and the removal of the bell tower, and the extension of the building by 173'.
Pennsylvania Railroad: Altoona Car Shops

The irregular window pattern of the 11-bay street facade denotes the early utilization of storage and office space within the building. The storage areas had a single window, and the office space had a pair of windows. From north to south, the pattern of paired and single windows runs: 2-1-1-1-1-1-2-2-2-2. The fourth bay from the south displays a broad round-arched, recessed entrance, below a pair of office windows.

Between 1870 and 1911 only three men occupied the position of general foreman of the car shops: Colonel John Piper, Mr. Levan, and W.F. Eberle. Eberle, General Foreman beginning in 1904, may have been responsible for the enlargement of the office about 1906. The building remained part of the PRR Car Shops until the mid-1960s, when Altoona Enterprises purchased the building from the railroad. Stanley Electric occupied the building from 1968 until the firm filed for bankruptcy in 1976. The Stanley property was sold at auction to Lumax Industries, which leased, and then sold, the building to the Home Nursing Agency, in 1986.

Sources:
Ewing, James H. and Step, Harry. History of the City of Altoona and Blair County, including Sketches of the Shops of the Pennsylvania Railroad Company (Altoona, 1880).

Current Name: Lithcote Company
Rating: 2

Chestnut Avenue N of Seventh Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720600 N.4488460
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

"A new brick building, 420' long and 134' wide, is ... being built for use as a paint-shop by passenger cars" the directors wrote in their annual report dated 12 March 1889. The one story foot structure was divided into four rooms, lit by twenty-one skylights, over twenty-one separate tracks, fed by a transfer table still in use along the building’s east facade. By 1909 the shop area had been expanded to over 70,000 square feet, by moving the long, northeast wall some 40' further northwest, and by extending its length some 50' toward the railroad tracks. One addition included the Paint Stock Room, a gable-roofed, brick structure sandwiched between the shop and the Seventh Street bridge. Later additions were made to the southwest along Seventh Street.

In 1963 the PRR sold the Paint Shop and several other nearby buildings to the Lithcote Company. Lithcote cleans, coats, and paints a variety of hoppers, tank cars, gondolas, and box cars, and most of this work is done in this building. Although much of the original concrete floor remains in place, together with gratings designed to carry away excess coatings, the original roof-structure was entirely replaced by a modern flat-roof supported by a steel truss. (A small portion of the building, closest to Chestnut Avenue and retained by Conrail for a telephone exchange, still displays the original roof-monitors.) Concrete block additions also
date to Lithcote's modernization of the plant in the 1970s. Still in place from PRR days is a sheet-metal baking oven large enough to house a small freight car in order to bake on thermal finishes. Now disused, the oven is dwarfed by an even larger oven installed by Lithcote. Although the single-story paint shop has seen considerable alteration and expansion since its initial construction, under Lithcote ownership it still functions as it was designed to in 1889, serviced by a 75' x 380' transferway.

Sources:


Current Name: Conrail: Miscellaneous Shop No. 2
Rating: 3
E of Fourth Avenue, across from Meridian Park, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.721240 N.4489600
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

When this building was under construction in 1945 PRR Works Manager Fred G. Grimshaw observed:

Changes in methods of repairing freight cars have led to the adoption of the runway system under which cars move from position to position where the repairs are progressively made, and the cars leave the runway completely repaired and ready for paint. This procedure necessitates the allocation to a particular runway of one class of cars at a time. In line with this requirement, the Altoona Car Shops handle repairs to system box cars. The old runway is now being entirely rebuilt, a steel shelter over 860' long installed, the tracks relaid, and the entire working area concreted. It will, when completed, be one of the best shops of its kind in the country.

There is no evidence, however, that the building reached the planned 860' length. The building was referred to as "Passenger Shop No. 4," by 1952, but is now known as Miscellaneous Shop No. 2.

Sources:
Grimshaw, Fred G. "The History of the Pennsylvania Railroad Company in Blair County," Chapter XXII in George A. Wolf, ed. Blair County's First Hundred Years, 1846-1946 (Hollidaysburg: Blair County Historical Society, 1945).

Pennsylvania Railroad: Altoona Works: Altoona Car Shops: Steel Car Shop (1906, 1911)
Current Name: Conrail: ACS Steel Shop (VE 511)
Rating: 2
Chestnut Avenue & First Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.721100 N.4489240
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The original Steel Car Shop measured 553' x 92' in plan, and consisted of a one-story, steel-frame structure, to which wooden boards and studding were attached, the walls being clad on the exterior with corrugated iron. In 1911 the car shop doubled in size with the addition of a duplicate building against its track side. The Tank Shop (a.k.a. Freight Shop No. 2 [see the entry for this structure], was constructed about 1927 on its opposite flank. On the
southwestern side of the steel shop, separating it from the original section of the car shop complex was the great Freight Car Shop, a roundhouse of 433' diameter, furnished with forty radiating tracks. At the time of its construction in the 1870s, it was said to be the largest roundhouse in the country.

The original car shops had been built to handle the construction and maintenance of wooden passenger and freight cars. The first all-steel passenger car was completed in these shops 11 June 1906. However, a new Steel Car Shop was completed soon after. Here, all steel car parts were fabricated. Drawings in the Juniata Engineering Department for the building's enlargement, dated 1911, are signed by Chief Engineer of Maintenance of Way, Joseph J. Richards.

Sources:
"PRR Shops established Altoona as Gateway to West," Altoona Daily Mirror, 2 August 1945. Clipping file, Altoona Public Library.

Current Name: Conrail: Freight Shop No. 2 (VE 1034)
Rating: 3
Chestnut Avenue, E of First Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (t.24000) UTM: 17 E 721080 N 4489260
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The Tank Shop was completed about 1927 to handle repairs to locomotive tenders that were formerly performed at the Machine Shops and the Juniata Shops. PRR Works Manager Fred G. Grimshaw explained that "from this Tank Shop, [sic] repaired tenders go directly to the Locomotive Finishing Shop, where a number of stalls have been assigned for painting; and the tenders are thereafter conveniently available for coupling to the repaired locomotives on the other side of the house, with a minimum of shifting." By 1941 the building was known as Freight Shop No. 2 (the nearby roundhouse, called Freight Shop No. 1, was demolished in the 1960s). Abandoned for some years, Freight Shop No. 2 was reactivated in 1986-87 by the Railroaders Memorial Museum to restore K-4s locomotive number 1361 (see entry).

Sources:
Grimshaw, Fred G. "The History of the Pennsylvania Railroad Company in Blair County," Chapter XXII in George A. Wolf, ed. Blair County's First Hundred Years, 1846-1946 (Hollidaysburg: Blair County Historical Society, 1945).
By the early 1900s the crowded conditions at the Altoona Machine Shop dictated a substantial reorganization of the complex. Extensive additions were made to the machine shop facilities. In 1904 iron and wheel foundries were transferred to South Altoona, and the following year the present erecting shop was begun at Twelfth Street on the site of the old Round House No. 1.

Completed in 1907 Erecting Shop No. 3 was one of the last major facilities to be constructed in the shop complex. The new shop building preserved several of the design features in which the PRR had pioneered in the 1870s including longitudinal (as opposed to transverse) tracks and powered overhead cranes. In addition, the railroad introduced electric jib cranes carried on overhead runways supported by longitudinal girders below the large traveling crane bridges. These were built by the Morgan Engineering Company of Alliance, Ohio. The two-ton cranes have a maximum radius of 24'.
Pennsylvania Railroad: Machine Shops

The PRR last erected box cars here in the 1950s, before selling the property to Altoona Pipe & Steel Supply Co., who used the building as a steel warehouse for a number of years. About 1978 they began railcar repairs (now about 30 percent of the plant’s business), thus returning the building to the railroad repair operations for which it was built. Many of the PRR tie downs are still in place, now used by AP&SS in its own repair business. Although both the old traveling crane and jib cranes are still in place, the steel company installed a new crane in 1961.

Sources:
Grimshaw, Fred G. "The History of the Pennsylvania Railroad Company in Blair County," Chapter XXII in George A. Wolf, (ed.) Blair County’s First Hundred Years, 1846-1946 (Hollidaysburg: Blair County Historical Society, 1946).
Pennsylvania Railroad Company. Annual Reports of the Board of Directors of the Pennsylvania Railroad Company.

Pennsylvania Railroad: Altoona Works: Machine Shops: Fire Engine House No. 7  (ca. 1900)
Current Name: Altoona Pipe & Steel Supply Company
1128 Ninth Avenue, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720360 N.4487860
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The present 2-1/2-story, brick firehouse was constructed between 1896 and 1909 on the site of a smaller, earlier fire station. Its architectural details, including brick pilasters, denticular cornice, and pedimented gable end suggests that it is probably contemporary with the final enlargement of the adjacent Stores/Laboratory, about 1905. The PRR converted the firehouse to office use probably in the late 1950s. Apparently as an annex to an adjoining office building. This office building was connected to the old firehouse via the wooden Twelfth Street Bridge, which survived until about 1970, when it was torn down. About 1975 the original wood-frame stable attached to the building’s east end was replaced by the present two-story brick addition. Although the window openings have been bricked in, the firehouse retains its five-story hose-drying tower at the eastern end of the building.

Sources:
Pennsylvania Railroad Company. Annual Reports of the Board of Directors of the Pennsylvania Railroad Company.
Imler, Carey N. Vice President--Operations, Altoona Pipe & Steel Supply Co., Interviewed, 22 July 1987. [Telephone: (814) 944-1631]

Current Name: Altoona Pipe & Steel Supply Company Steel Warehouse
Ninth Avenue at Eleventh Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.720400 N.4487920
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: SPECSTRU: MATS: Warehouse

James Dredge described the 1870s PRR Locomotive Paint Shop operation which was carried out in a large 345' x 32' wooden structure at the southern end of the railroad shop complex. "Two lines of rails traverse it (the paint shop building) from end to end," Dredge observed, "and engines & c. [sic] brought in for painting enter at the eastern door, and are gradually advanced as the work progresses until they are complete and leave by the western exit." In March 1888
the directors of the Pennsylvania Railroad reported that under their aegis a new locomotive paint shop was constructed of brick. Measuring 302' x 37', it contained an attached fan and stack house, 63' x 15'. Two tracks ran the length of the building. By the early-twentieth century, the PRR Locomotive Paint Shop served as a railroad stores warehouse, a use it retained until it was sold by the railroad in the 1960s to its current owner, Altoona Pipe & Steel Supply Co.

While nothing remains of the original wooden Paint Shop building, it is not clear how much exists of the 1880s Paint Shop structure. By 1909 the western end of the building had been lengthened 130' for Stores Department No. 1 & No. 2. When Altoona Pipe & Steel Supply was enlarging the building in the 1960s a heavy windstorm blew down the temporarily unsupported brick walls, which were then replaced with concrete-block, and only the original wood roof trusses were retained. The building was further extended to the east in 1971 using material from the old Juniata roundhouse for roof sheathing and trusses. Today the building is slightly over 600' in length, much of it consisting of concrete block walls. The ca. 1906 additions show some original exterior brickwork and several large multi-light windows remain along with iron lintels and sills. These few remaining window details match those of the nearby Erecting Shop No. 3 dating from 1905-07.

Sources:
the yard in 1914. For its additions to the original 1882 building the PRR employed a number of compatible architectural elements including segmental-arched windows with 4-over-4 double-hung wooden sashes, and iron sills. Rising the full height of the building, brick pilasters articulate each of the seventeen bays. The gable ends display full denticular pediments, while the longitudinal facades are highlighted with a metal cornice and shed roof dormers. A denticular belt course also separates the attic story from the three lower floors. Much of the original woodwork remains in the western portion of the building, which is divided from the east by a brick fire wall. The building was located adjacent to the former Twelfth Street Bridge, to which the eastern end gave access via a second-story crosswalk leading to offices in the adjacent firehouse. In the 1960s the PRR's medical offices were located on the upper floors at the eastern end. On the floor below the medical facilities was the Railroad Police office. Although currently abandoned, this building housed Conrail's Allegheny Division offices as late as 1984. Importantly the 1882 section is the oldest surviving structure of the former "Machine Shops" branch in Altoona.

Sources:
Clark, Charles B., ed. Altoona Illustrated: A Complete Pen-Picture of the City of Altoona, Pennsylvania at the Close of the Year 1895 (Altoona: Board of Trade, 1896), pp. 31-35.
Pennsylvania Railroad Company. 36th and 49th Annual Reports of the Board of Directors of the Pennsylvania Railroad Company (1883, 1896).
Pennsylvania Railroad: Juniata Shops

Pennsylvania Railroad: Altoona Works: Juniata Shops: Blacksmith Shop No. 1 (1890, 1903)
Current Name: Conrail: Blacksmith Shop No.1 (VE 537) Rating: 1
E of Fourth Avenue at Second Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.721520 N.4489900
Builder/Architect/Engineer: William H. Brown (E)
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The single story Blacksmith Shop No. 1 was one of the four original Juniata Shop buildings constructed between 1888 and 1890. The shops were connected by an impressive hydraulic transfer table which measured 261' x 60'. Blacksmith Shop No. 1 produced the locomotive frames and forgings, which were then finished in the adjacent Machine Shop. Originally 306' in length, by 1905 the building had been extended to 515' in length, and had been joined by a second smith shop some seventy yards to the northwest. In 1937 Shop No.1 was equipped with eleven furnaces serving hammers of various sizes, with several large steam hammers in the center.

Similar to the Machine and Erecting Shops, with which it was contemporary, Blacksmith Shop No. 1 displays a round-arched central opening in its end wall, with side elevations pierced by segmental-arched windows. Today the building is used by Conrail for dead storage. It retains several of the large steam hammers possibly original to the construction of the building, as well as a number of the twentieth-century furnaces and miscellaneous tools.

Sources:
Clark, Charles B., ed. Altoona Illustrated: A Complete Pen-Picture of the City of Altoona, Pennsylvania at the Close of the Year 1896 (Altoona Board of Trade, 1896), pp.31-35.

Pennsylvania Railroad: Altoona Works: Juniata Shops: Blacksmith Shop No. 2 (1904, 1918)
Current Name: Conrail: Blacksmith Shop No.2 (VE 530) Rating: 2
E of Fourth Avenue between First and Second Streets, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.721420 N.4489900
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The company's annual report for 1903 makes passing reference to large expenditures made in the extension of the Juniata Shops; this is probably referring to the construction of the Second Blacksmith Shop, which is shown under construction in a photograph taken that year (Altoona Public Library - #5,035). Originally 210' x 80' in plan, the building was extended in 1918 to its present length of 403'.

-240-
In 1936 the shop contained six large furnaces used in conjunction with the steam hammers, eighteen smaller furnaces for swing belt hammers and forging machines, six car-bottom furnaces, and four cylindrical vertical furnaces for various kinds of heat treatment operations. Annealing, prior to machining, was accomplished in the car-bottom furnaces. Juniata's heat treating plant was located at the western end of the building, and Works Manager, Fred G. Grimshaw, noted in 1945 that the two blacksmith shops provided much of the forging and heat treatment for the PRR's locomotive parts. Presently used by Conrail for storage Blacksmith Shop No. 2 retains much of its early to mid-nineteenth equipment, including several gas-fired furnaces. The most recent change of note is the roof sheathing installed by the PRR in 1967. An overhead crane at the shop's west end is the only active piece of equipment in the building.

Sources:
Pennsylvania Railroad: Altoona Works: Juniata Shops: Erecting Shop (1890, 1903)

Current Name: Conrail: Welding Shop (VE 545) Rating: 1

E of Fourth Avenue at Third Street (Behind Storehouse), Altoona, Blair County, Pennsylvania
Builder/Architect/Engineer: William H. Brown (E)
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

In the 1880s the extension of the PRR lines west of Pittsburgh brought a corresponding increase in traffic. The new demands for motive power led to the planning of the Juniata Shops, which the PRR slated for use as erecting and repair facilities for locomotives. Ground for the first buildings was broken on 15 September 1888 and the shops were completed in 1890. The shops produced its first locomotive on 27 July 1891. The Erecting Shop was one of the four original shop buildings constructed adjacent to a 261' x 60' hydraulic transfer table which originally extended the length and width of the yard. Originally 351' in length, by 1905 the building had been extended to 580'. Facilities included a 15-ton crane and two 65-ton cranes. Over 200 men, or about 12 percent of the Juniata work force, were employed in the shop in 1907. Parts worked on individually in other areas of the complex were assembled in the Erecting Shop. Forgings and castings, which had come together in the center of the Machine Shop, passed from the machine shop to the erecting shop through facing side doors. There they were met by the boiler, which had come in through the west door from the Boiler Shop. In 1907 the annual capacity of the Juniata Shops was 275 locomotives.

In 1925 with the completion of the new Erecting and Machine Shop (today, the "E&M Shop,") the old Erecting Shop was converted to a Tank Repair Shop. In 1945 recalling the changes that had taken place to the building, Works Manager, Fred G. Grimshaw, wrote in his history of the Altoona Works: "The old erecting shop ... became progressively a tank shop, a shop for building
new freight cars on the process basis, a process shop for building new locomotive tenders, an electric locomotive cab construction shop, and finally, within the last two years, a welding shop. In this shop are concentrated much of the welding operations which have grown so rapidly during the past few years." Today it still houses Conrail's welding operations.

Sources:
Clark, Charles B., ed. Altoona Illustrated: A Complete Pen-Picture of the City of Altoona, Pennsylvania at the Close of the Year 1895 (Altoona: Board of Trade, 1896), pp. 31-35.

Pennsylvania Railroad: Juniata Shops


Pennsylvania Railroad: Altoona Works: Juniata Shops: Erecting and Machine Shop (1925)

Current Name: Conrail: E&M Building (VE 1008, 1009) Rating: 1
E of Fourth Avenue between Fourth and Fifth Streets, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E 721700 N 4490250
Builder/Architect/Engineer: W. H. Cookman (A)
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The Erecting and Machine Shop was the largest part of the last major expansion of the Altoona Works. The 5.5 acre shop was called "one of the largest locomotive building and maintenance plants operated by any railway in the world." In the 1920s, the Altoona Works supplied three quarters of the Pennsylvania Railroad's locomotives, as well as one half of the repaired motive power. The need for the new shop was dictated by the continuing increase in size and weight of modern locomotives. Such locomotives could not be handled efficiently in small shops such as those at Altoona, where construction activity was concentrated at a small number of the better equipped shops. The extension of the Juniata facilities was part of a plan to alleviate this problem.

The new erecting and machine shop, covering practically the full width of the shop yard, is divided transversely into four bays, of which the outer two bays are for the erecting pits and tracks, and the inner two bays comprise the machine shop. The bays are 85' wide and each of the erecting bays has twenty-seven pits and two crane runways, an upper and a lower runway. The upper runway contained a 250-ton crane and a lower runway contained five 15-ton "messenger" cranes. The machine bays are equipped with motor driven machine tools, and each of the machine bay crane runways are equipped with one 50-ton and two 15-ton cranes as well as a total of thirty-five pillar and jib cranes.
In 1945 Works Manager Grimshaw wrote that the shop handled fifty locomotives at one time in the erecting bays. In the center bays, three Machine Shop departments handled repairs to the running gear of the locomotives undergoing repair. By the mid 1940s, the Juniata Shop handled practically all of the heavy class repairs on steam locomotives, with an output of 5.5 engines per day. In addition to the repair work, the Juniata complex was building both steam and electric locomotives.

Today, the shop facilities have been given added space by enclosing, in the late 1970s, the craneway which ran the length of the west side. The shop currently turns out 480-500 diesel engine repairs each year.

Sources:
Pennsylvania Railroad: Altoona Works: Juniata Shops: Flue Shed (1906)

Current Name: Conrail: Tech Services Lab (VE 535)  Rating: 3

E of Fourth Avenue, N of First Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania  (1:24000)  UTM: 17 E.721470 N.4489810
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: ADAPT: EDUC: Research Center

A single-story, brick, gable-roof structure with segmental, arched windows adjacent to the former Boiler Shop (burned in 1982) was used as the Flue Shed. Here, flues fabricated in the Flue Shop were installed in the boilers. Its windows have been blocked in, and a single-story, modern addition added to the west end. The building today houses the railroad's Technical Services Laboratory.

Sources:
Pennsylvania Railroad: Altoona Works: Juniata Shops: Flue Shop (1925)

Current Name: Conrail: R & R Warehouse (VE 1022) Rating: 3

E of Fourth Avenue at Fourth Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E. 721560 N. 4490200
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

The Flue Shop was one of several buildings constructed during the Juniata Shop's last building campaign, to handle the metal work necessary for fabricating boiler flues. Flue-making constituted one of the four departments of the Boiler Shop. The boiler works, the tank works, and the tin shop, were located in the Boiler Shop building, which was adjacent to the Flue Shed. The Boiler Shop, an imposing brick structure, was destroyed by fire in 1982.

The Flue Shop was built with materials salvaged from the old Scale and Carpenter Shop, which was removed to provide space for a new storehouse. It has a brick and frame construction. At a later date, the building was extended by 40'. The building is a single-story structure with a pitched roof and segmental-arch window openings, which have been infilled. The shop has recently been linked to the Cab Shop, located behind it, with a modern brick-faced, concrete-block loading dock for Conrail trailers.

Sources:

Pennsylvania Railroad: Altoona Works: Juniata Shops: Machine Shop No. 1 (1890, 1903)

Current Name: Conrail: Machine Shop (VE 546) Rating: 1

E of Fourth Avenue at Third Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E. 721620 N. 4490000
Builder/Architect/Engineer: William H. Brown (E)
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

Erected about 1890 the two-story machine shop was one of the four original shop buildings constructed at this time, on opposite sides at Juniata. It was laid out directly opposite the Blacksmith Shop so that forgings from the latter could pass directly to the machine shop where they were finished, reaching a completed stage about the center of the building. The cylinders and other castings entered the Machine Shop from the opposite end, and after going through the various machining operations, reached a completed stage where they met the frames and other forgings. From this point, the completed pieces passed through a side door to the adjacent Erecting Shop. On the second floor of the Machine Shop, lighter machine work was performed, such as making bolts, main and parallel rods, and the like. Originally only 258' in length, the building was extended to its present 579' about 1903-5. Over five hundred men, or slightly more than 30 percent of the Juniata work force, were employed in the Machine Shop in 1907. It was, according to drawings in 1925, equipped with four 5-ton cranes, a 10-ton crane, and a 20-ton crane.
Today, the shop still functions as a machine shop for Conrail, though modern production machinery has replaced the earliest equipment. Nevertheless, the open ceiling still shows evidence of the line-shafting which once powered the machine tools. The original wood-block floor has been replaced with concrete, however, the original brick pilasters and buttresses, as well as the second-story riveted steel I-beams and roof trusses remain in place.

Sources:
Flanders, Ralph E. "Locomotive Building at Altoona," 4 successive articles in Machinery (Railway Edition), February, May, June, and July 1910.

Pennsylvania Railroad: Altoona Works: Juniata Shops: Machine Shop No. 2 (1917-18)
Current Name: Conrail: Warehouse (VE 558) Rating: 2
E of Fourth Avenue at Third Street, Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.721550 N.4490040
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: MFG: TEQUIP: Railroad Rolling Stock

Presently called Machine Shop No. 2 this two-story brick building was constructed in 1917-18 to serve as a Tank Shop for the repair and construction of locomotive tenders. The building originally measured 304' x 84' in plan. A 1918 photograph (Altoona Public Library #5,191) of the "New Tank Shop" shows the newly completed building. It contained eighteen bays, and was highlighted by triple sets of double and triple hung steel sash. The building was three bays wide. A small terra-cotta plaque with the date "1917" was placed in the shallow gable end facing the transfer table. At the opposite end stood an open storage yard within a five-bay open steel-frame to carry an overhead traveling crane. Drawings in the PRR: Engineering Office files at Juniata credit the construction of the building to Lewis F. Shoemaker & Co. of Pottstown, Pennsylvania.

The PRR used this building as a tank shop for about eight years. In 1925 the old erecting shop took over tank repairs, and the Tank Shop was converted into a machine shop, where heavy machining was carried out. Subsequently, the PRR constructed a new Tank Shop next to the Steel Car Shop.

Sources:
The core of this small, brick structure appears to have been constructed in 1889 as a paint storage building for the adjacent paint shop (now demolished). Both buildings are illustrated in a ca. 1900 photograph (#5,096) in the Altoona Public Library collection. The original structure measured 51'9" x 25'9" and displayed 12-over-12, segmental, arched windows. By 1926 the building had been extended to its present length of 73'8", and was still identified as the "Oil Paint and Storage" building. Today, the building functions as the office of the Tech Services Lab, and except for the addition of a wood-frame porch to the track side, it appears little changed from its original appearance.

Sources:

A 70' x 43' boiler house was one of the four original buildings constructed at Juniata in 1888-90. A 1900 photograph (#5,095 in the Altoona Public Library) shows the one-story building, with a gable-roof, segmental-arched windows in the longitudinal facades, and corrugated metal siding at the gable ends. The building housed six boilers, and a 130-foot iron chimney rose directly behind it. This building, more than doubled in length to 150' x 45', in 1925 was known as Boiler House No. 1.

A second building, also built in 1888-90, and known originally as the "Electric and Hydraulic Building," which measured 60' x 45' in plan, was located about 130' to the west. Steam from Boiler House No. 1 supplied the generators within the Electric and Hydraulic Building. Its interior was lit by large, paired, double-hung, sash windows and a high, glazed, round-arched entrance centered in the east wall (Photo #5,097, ca. 1900). By 1925 this building, then identified as the Power Plant, had also been expanded to 150' x 45' in plan.
Boiler House No. 2 (52' x 47'), was erected in 1925 at the end closest to the craneway to take care of the needs of the new erecting and machine shop. Mechanical equipment consisted of two 516 horsepower boilers, mechanical stokers, and feed water heaters, a facility designed to provide the 300-pound steam pressure used for testing locomotives, as well as for general heating and power purposes. Equipment also included a reciprocating steam air compressor, which is still in place and occasionally operated.
In 1955 the buildings were joined by modern glazed brick and a new stack. At the same time, turbine generator sets were installed in the power plant.

Sources:

Pennsylvania Railroad: Altoona Works: Juniata Shops: Store House (1925)
Current Name: Conrail: General Office Building (VE 1017)
Rating: 2

E of Fourth Avenue at Third Street (E of Machine Shop No. 2), Altoona, Blair County, Pennsylvania
USGS Quad: Altoona, Pennsylvania (1:24000) UTM: 17 E.721600 N.4490040
Builder/Architect/Engineer: W. H. Cookman (A)
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: ADAPT: Storage/Warehouse

The Storehouse was part of the Altoona Works last major building campaign, constructed simultaneously with the great 5.5 acre Erecting and Machine Shop. The reinforced concrete storehouse is carried on reinforced concrete columns spaced 20' on center longitudinally and transversely. Crane runways and cranes were installed to operate longitudinally in each of the three bays of the main floor, with provision for similar installation on the second floor when necessary. The storehouse was provided with three, five-ton freight elevators and one 2500-pound passenger elevator. Steel bins, cases, and cupboards were installed in the basement, on the main floor, and the upper floors for use by the offices of the mechanical and electrical engineers, and of the works manager, although, the use of the space for offices was intended only to be temporary.

Sources:
The Gray-Iron Foundry was the second major part of the South Altoona foundry complex completed in 1905. It was designed to be used chiefly for making castings for car and locomotive repairs and new engines built at Juniata. It was divided into three longitudinal bays, with part of the west side bay (closest to the pig-iron and coal supplies) taken up by three cupola rooms. The central bay was equipped with a 25-ton traveling crane and two smaller 5-ton cranes for lighter work. The core ovens were placed in the east bay, with the core room immediately behind them in a lean-to addition containing also a sand-mixing room and wash rooms. Outside the building at either end were flask storage yards, each provided with loading tracks and crane runways continuing out from the foundry’s middle bay.

Despite a sequence of different owners, the building has remained in use as a foundry. After its sale by the PRR in the 1960s, the building was a brass foundry operated by Altoona Hydrocon. In 1971 it was purchased by NL Industries and completely refurbished. Fifty, 12-ton kettles were installed for the lead manufacturer's tin-lead solder production. The company retired from the business in 1979 and the plant was sold to the London-based Lead Industries Association, now the Cookson Company. (Federated Fry Metals, Inc. is a wholly owned subsidiary of Cookson America.) Today, with a production of 50,000 tons of all types of solders annually, the plant is the largest solder plant in the world. The company also produces a variety of other tin and lead alloy products. The foundry retains the original, 25-ton traveling crane, as well as a number of jib cranes, though the crane runways extending into the storage yard have been removed. Many of the exterior, segmental-arched window openings have been infilled with concrete block.

Sources:
"Foundries of the Pennsylvania Railroad at Altoona," The Railway and Engineering Review 45 (10 June 1905), pp. 422-426.
now infilled with concrete-block. A modern loading dock has been added to one side, and a modern steel-frame and metal-sheathed addition is attached to the west end. The original, brick portion is eight bays in length. The building today is used for dead storage.

Sources:
"Foundries of the Pennsylvania Railroad at Altoona," The Railway and Engineering Review 45 (10 June 1905), pp. 422-426.

Pennsylvania Railroad: Altoona Works: South Altoona Foundries: Storage Building (1905)
Current Name: Federated Fry Metals, Inc.; Storage Building
Sixth Avenue & Forty-First Street, Altoona, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000) UTM: 17 E.718800 N.4484440
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: SPECSTRU: MATS: Warehouse

This one-story, brick building with stepped gables is located between the southern ends of the former Wheel Foundry and Gray-Iron Foundry. It was one of the six original buildings constructed as part of the PRR's South Altoona Foundry in 1904-05. At that time it was 110' in length. By about 1910 it was extended to its present length of 147'.

As part of the PRR's South Altoona Foundry the structure housed both a machine and smith shop, though the railroad must have soon decided that the machine shop needed larger quarters for the PRR erected a new machine shop in the 1910s. Currently, Federated Fry Metals, Inc. uses the building as a storage facility. Its exterior has been greatly altered with the infilling of the segmental-arched window openings using concrete block.

Sources:
"Foundries of the Pennsylvania Railroad at Altoona," The Railway and Engineering Review 45 (10 June 1905), pp. 422-426.

Pennsylvania Railroad: Altoona Works: South Altoona Foundries: Wheel Foundry (1905)
Current Name: Conrail: South Altoona Material Distribution Facility (VE 569)
715 Burgoon Road, Altoona, Blair County, Pennsylvania
USGS Quad: Hollidaysburg, Pennsylvania (1:24000) UTM: 17 E.718760 N.4484500
Historic Use: MFG: TEQUIP: Railroad Rolling Stock
Present Use: SPECSTRU: MATS: Warehouse

Part of the cast-iron wheels which the Pennsylvania Railroad (PRR) required for car construction and maintenance were made in two foundries located at the Altoona Works: Machine Shops. Each foundry had a capacity of about 220 wheels a day using the method of molding wheels on circular beds served by a post crane. By 1903 this method had become
Pennsylvania Railroad: South Altoona Foundries

outmoded, due in part to the foundries' inability to produce enough wheels to meet the PRR's requirements. However, it was not possible to construct a modern wheel foundry at the Machine Shops complex. In 1903 the company purchased eighty-five acres of land about 2.5 miles south of the Machine Shops on the Hollidaysburg Branch in South Altoona. When the South Altoona Foundries were completed 1905 the complex was called "one of the largest and best equipped foundry plants to be found in the United States."

The Wheel Foundry was the largest and most important of the six main buildings; its capacity of 900 wheels per day was said to be exceeded by only one other wheel foundry in the country. Contemporary accounts went to great lengths to describe the efficiency with which the foundry complex was laid out, with the Gray-Iron Foundry and the Wheel Foundry located on opposite sides of the coal wharf and pig-iron storage area. The Wheel Foundry was made up of three complete sections, each consisting of a pair of cupolas (12 tons per hour capacity) and twelve 25-wheel molding floors, arranged in three bays. At either end of the building were the annealing pits, which were capable of holding a week's production.

For many years, the Wheel Foundry turned out cast-iron wheels, but with the adoption of rolled steel wheels, the building was converted to other purposes. In 1945 it housed in order from west to east, the Brass Finishing Shop, the Brass Foundry, the Automatic Shop and Tool Room, and the Spring Shop.

In 1971-72 much of the facility was converted from a foundry to a storehouse, though bearing construction and brass production continued for three more years. The brass furnaces and brick floor, at the western end of the building, remained until 1978. A "brass sorting area" remains in the upper level of the original west cupola furnace. The window openings were infilled with concrete-block in 1981. Between 1983 and 1987 the building was completely stripped, and a new concrete floor, concrete-block partitions, lighting, and storage facilities were installed. Today, the building supplies parts and material ("general common items") to the entire Conrail system.

Sources:
"Foundries of the Pennsylvania Railroad at Altoona," The Railway and Engineering Review 45 (10 June 1905), pp. 422-426.
The subject of a recently published National Park Service study, the Cambria Iron Company's Johnstown works began as a financially strapped enterprise in the 1850s, but emerged as one of the nation's premier rail mills in the 1860s and 1870s. The company's swift rise from obscurity to a major producer of iron and steel rail was a result of three major factors. First was the ability of the Cambria Iron Company to attract several of the best technical minds in the nation's iron business (chief among these men were the Fritz brothers, John and George, "Captain" William R. Jones, Daniel Jones, Samuel Lapsley, Alexander Holley, and Robert Hunt). Second was the shrewdness with which the president of the company, Daniel J. Morrell, helped establish the Pnuematic Steel Association, a patent-pooling arrangement for the production of Bessemer steel, which ensured the dominance, for more than a decade, of Cambria Iron and a number of other rail producers, in the nation's steel-rail market. And third, the strongly paternalistic Cambria Iron Company dominated the city of Johnstown, ensuring a favorable political and business climate, as well as a rigid control over its workforce.

Although a number of histories have been written concerning Cambria Iron and these issues -- including an outstanding study of the company's nineteenth-century workers -- more work is needed in several areas, particularly in the realm of patent pooling and steel rail production. However, it is not the intent of this short essay and accompanying historic structures' inventory to explore these issues. Instead; its focus is the physical remains of Cambria Iron's buildings and steel making equipment, that is, it traces what the company built at its iron works and when these building activities occurred.

A Failed Enterprise (1852-1855)

The roots of Johnstown's iron industry may be traced to the early 1840s when merchant-turned-ironmaster George Shyrock King erected Cambria Furnace on Laurel Run, about three-quarters of a mile east of the Pennsylvania Canal. The Conemaugh Valley in the Johnstown area contained vast timberlands and rich deposits of limestone, coal, and iron ore, all of which were exploited for use in the region's burgeoning pig iron industry. By 1845 King and the prominent Pittsburgh iron merchant Dr. Peter Shoenberger, as well as several other partners, established George S. King and Company. From the 1840s through the early 1850s King and his partners

---

4 Shoenberger had extensive holdings in the Upper Juniata iron region as well as interest in the Juniata Rolling Mill No. 2 in Pittsburgh. (Dr. Peter Shoenberger, a well-known ironmaster throughout Pennsylvania, was the son of George Shoenberger who established the family in the iron business in Huntingdon County in the early 1800s. About 1824 Dr. Shoenberger opened the Juniata Iron Works in Pittsburgh, which included a large rolling mill.) See James M. Swank, Introduction to a History of Iron Making and Coal Mining in Pennsylvania (Philadelphia: James M. Swank, 1878), 39–40; and J. P. Lesley The Iron Manufacturers Guide to the Furnaces, Forges and Rolling Mills of the United States (New York: John Wiley, 1859), 250–81.
produced pig iron using charcoal and coke. Much of the pig iron produced in the area was probably shipped to Pittsburgh for processing in the city's numerous forges, rolling mills, and nail mills.

Compared with Pittsburgh in 1850, Johnstown was a primitive village with a population numbering around 2,000. The city was laid out along river bottom land at the junction of Stony Creek and Little Conemaugh rivers, and was surrounded by steep hills. As one traveler described it, Johnstown, although "pleasantly situated . . . is without the least interior attraction . . . [its] buildings are small and without ornament." The city's major thoroughfare was the Pennsylvania Canal which joined the Allegheny Portage Railroad at Woodvale, and crossed the Little Conemaugh River, extending northwest of Johnstown, along the base of Prospect Hill and following the east side of the Conemaugh River through the Conemaugh Gap. The canal served the impressive stone-constructed Johnstown Steam Hot Blast Coke Furnace, located across from the confluence of the Stony Creek and Little Conemaugh rivers, as well as Johnstown's two small foundries, each of which employed about nine men.

Johnstown's relatively small-scale iron industry, however, was rapidly transformed in the decade following 1852. That year not only marked the completion of the Pennsylvania Railroad through the Alleghenies, linking Philadelphia with Pittsburgh via Johnstown, but it also witnessed the formation of the Cambria Iron Works. Seeking to manufacture iron rail at a new works in Johnstown, George S. King convinced a reluctant Dr. Peter Shoenberger to become a partner in this enterprise. Using their land holdings in Cambria County as security, the two men sought financial backing to construct new furnaces and a rolling mill. After an unsuccessful attempt at interesting Boston financiers in this venture, King went to New York where he convinced banker Simeon Draper to provide the necessary capital. With great haste, King travelled to the state capitol at Harrisburg where he purportedly woke the governor late at night for his signature on the character creating the Cambria Iron Company, capitalized at one million dollars.

In the spring of 1853 construction commenced on four coke-fired blast furnaces near Hinckston Run, north of the city's downtown. Work was also begun on the large cruciform-shaped rolling mill, located just south of the furnaces at the foot of Prospect Hill. In December of 1853 company engineer S. A. Cox reported that the brick works completed on site the previous summer were in full operation and making all of the brick for Cambria Iron's buildings. Cox noted that several buildings were recently finished including a foundry, a machine shop, a pattern shop, and a blacksmith's shop. Pig iron production at the four existing King and Shoenberger charcoal blast-furnaces amounted to nearly 120 tons per week, and, as the engineer observed, the four new coke-fired furnaces were likely to be completed within the next several months. In addition, Cox announced, "the rolling mill will be making iron by the last of January or the first of February."
This optimistic pronouncement, however, was soon followed by the collapse of financial backing for the enterprise and its New York investors sold the Cambria Iron Company to Matthew Newkirk of Philadelphia. Work was halted on the rolling mill in early 1854 and for several months it remained only partially built. In the meantime, the original partners withdrew from the company; Shoenberger in Pittsburgh retained his interests in a number of other iron-mining and manufacturing properties, whereas George S. King moved to Lewistown, Illinois, where he founded several banks.9

With King's retirement from Cambria Iron the new company president, Matthew Newkirk, persuaded a young John Fritz to leave his newly established machine shop in Norristown, Pennsylvania, and assume the superintendency of the troubled iron works. Fritz arrived in June 1854 whereupon he supervised the completion of the cruciform-shaped rolling mill. On July 27, 1854, the mill finally produced its first iron rails.

The Takeoff (1855-1880)

As John Fritz observed in a paper presented at the annual meeting of the American Institute of Mining Engineers, the quality of the first rails produced at Cambria was far from satisfactory. All involved in the effort were disheartened at the appearance of the rails whose "flanges looked like saw-teeth, and the head was rough and full of holes."10 Hoping to improve the rails, Fritz, along with the skilled puddlers, heaters, and rollers, continually experimented with various iron ores, as well as the rolling process. As they soon discovered, however, the engine and flywheel driving the roll train was inadequate to attain the speed required to roll the quality rails. Much to the frustration of John Fritz, the company's continuing financial difficulties delayed for several months the purchase and installation of a new power system for the mill.11

The enterprise continued to flounder until May 1855, when the iron works was again reorganized, this time by Wood, Morrell & Company of Philadelphia. The company appointed Daniel J. Morrell, a highly successful merchant with no experience in the iron industry, as general manager of Cambria Iron. However, this change in organization did not immediately rescue the troubled iron works. The existing two-high rolling mill, though having been in use for less than one year, was still unable to produce inexpensive high-quality rail. John Fritz believed that only a drastic overhaul of the entire rolling mill would improve Cambria's rail production. As superintendent of the works, Fritz recommended a newer, more powerful steam engine, and, most importantly, a three-high rolling mill, of his design, in place of the existing two-high mill. However, his ambitious plan encountered stiff resistance from the company's stockholders, on the one hand, and the skilled iron workers, on the other. From the stockholders' standpoint a great deal of capital already had been expended in the completion of the existing two-high mill, the industry's standard rolling mill.12 At the same time, the iron

---

9 Richard A. Burkert, 264-65.
11 John Fritz, 601-02.
12 The first successful three-high mill in the United States was employed in 1853 by Charles Hewitt at the Trenton Iron Works in Trenton, New Jersey. Hewitt rolled iron rail and beams with this three-high non-reversing mill containing vertical rolls. See Allan Nevins, Abram S. Hewitt, with some account of Peter Cooper (New York: Harper & Brothers, 1935), 114-15; and Fritz, 602. Though it is narrowly focused on John Fritz and does not examine the important British contributions to the development of the three-high mill, see Elting E. Morison, From Know-how to Nowhere: The Development of Technology in America (New York: Basic Books, Inc., 1974), 81-86.
workers were greatly concerned that the Fritz-proposed three-high mill would reduce the number of skilled heaters and rollers required to operate the two-high mill and, additionally, would result in a grueling increase in the speed of production.13

Eventually, with the support of Cambria Iron's vice president E. Y. Townsend, John Fritz received additional capital to construct his three-high mill. The two-high mill was shut down on July 3, 1857, and work commenced on the Fritz-designed three-high mill. In addition, Fritz rearranged the rail department, raising the floor by two feet and installing a new, more powerful steam engine. John and George Fritz, Alexander Hamilton, the mill superintendent, and the head of the rail department, Thomas Lapsley, oversaw the work which was completed on the 29th of July. The successful rolling of the mill's first iron rails was soon overshadowed when, just two days after the three-high mill was placed in operation, a fire destroyed the mill building.14

Despite this setback, John Fritz managed to repair the three-high mill and its engine, and was able to produce rail in a temporary frame building less than one month after the fire. In January 1858, Cambria Iron completed construction of a large brick and iron-frame mill building, which housed the puddling furnaces, rail mill, and engine. Cruciform in plan, this building dominated the iron works and was among the largest rail mills in the nation. By the end of 1858, Cambria Iron's rail mill was vying with several other mills, all located in the northeast, as the nation's largest iron rail producer.15 Although much of Cambria's rail mill was destroyed in a second fire in 1872, another cruciform-shaped brick building was constructed in its place. (Today, sections of the mill survive which date from the 1860s and 1870s.) Construction of the third rail mill was carried out immediately for the Cambria Iron Company was undergoing considerable expansion in the early 1870s. A Bessemer steel plant, designed by Alexander Holley and completed in 1871, marked the establishment of Cambria as a fully integrated steel mill. By the mid 1870s, just prior to the completion of Andrew Carnegie's Edgar Thomson Works in Braddock, outside of Pittsburgh, the Cambria Iron Company led the nation in iron and rail production.16

During the 1860s and 1870s the Cambria Iron Company added a number of buildings to its Johnstown works. The largest of these structures, other than the rail mill, was the Bessemer Building, a tall brick structure with iron trusses supporting a clipped-gable roof. The Bessemer Building stood until the late 1950s when it was demolished prior to the construction of the 11" Mill. However, the most architecturally distinguished of Cambria Iron's nineteenth-century structures, the octagonally shaped brick blacksmith shop, was erected about 1864. It housed steam hammers used for forging tools and metal products used within the iron works. Large arched windows on all eight sides of the building permitted a great deal of natural light into the shop's interior. Containing a number of smoke-emitting forges, the building was vented with a central cupola that extended through the roof. During its peak in the late nineteenth and early twentieth centuries, the blacksmith shop employed as many as forty men in a single shift.

13Frits, 602-03.
14Frits, 602-03.
15The other large rail mills include the Bay State Rolling Mill in Massachusetts, the Rensselear mill in Troy, New York, the Phoenixville Iron Company's mill in Phoenixville, Pennsylvania, the Trenton Iron Company's mill in Trenton, New Jersey, the Lackawanna Iron Company's mill in Scranton, Pennsylvania, and the Montour Iron Company's mill in Danville, Pennsylvania. See J. P. Lesley, 219-262.
In 1865 Cambria Iron erected a new foundry adjacent to the blacksmith shop. The ornamented brick building featured a large cupola extending above the wide mansard roof. About 1870 the company constructed a pattern shop next to the foundry. The shop provided wood patterns for castings in the foundry and was also constructed with brick and a mansard roof. This collection of 1860s and 1870s mill architecture survives today, and along with the nearby rail mill and Rolling Mill Office (1874), are physical reminders of the Cambria Iron Company's Johnstown works during its peak years of operation.

The Decline of the Lower Works (1880-1916)

Despite the addition of an open hearth steel-making facility in the 1880s, the Cambria Iron Company's Lower Works was dropping in stature compared to a number of other mills in the Pittsburgh district. Although it was located on the Main Line of the Pennsylvania Railroad, it was relatively isolated from major East Coast and Midwestern markets. The growing importance of the Great Lakes iron ores in the 1880s resulted in the construction of several new steel mills in Pittsburgh, Cleveland, and Chicago. Cambria Iron owned ore mines in Michigan and, in the 1890s, considered relocating to the Great Lakes region. However, with the reorganization of the company in 1898, the newly formed Cambria Steel Company decided to expand its Johnstown operations. The Lower Works, having suffered little damage in the disastrous flood of 1889, continued producing steel rail and structural steel shapes. But its importance, even in Johnstown, diminished greatly when Cambria Steel elected to build a new modern mill in Franklin Borough, north of Johnstown, complete with blast furnaces, open hearths, and a steel railroad car department.\footnote{Brown, pp. 113, 120-3.}

In addition to the Franklin Works, Cambria Steel began to rebuild the nearby Gautier Works which had been completely destroyed in the 1889 flood. Gradually reconstructed in the late 1890s through 1911, Cambria Steel built the Gautier Works to produce steel for the agricultural needs including wire fencing and plows. The company also built a new rod and wire mill along the Conemaugh River in Morrellville. Part of the Lower Works was becoming increasingly used for maintenance shops for the Johnstown plants. Most notable of the maintenance facilities was the modern machine shop, constructed in 1906. This tall brick building contained three stories which flanked a large central shop floor. It was to be the last major building constructed at the Lower Works by the Cambria Steel Company.

The Midvale Years (1916-1923)

The Midvale Steel & Ordnance Company, located in Nicetown, Pennsylvania, acquired Cambria Steel in 1916. With orders for steel pouring in as a result of the war in Europe, Midvale undertook a series of expansions at Franklin and constructed a wheel mill north of the Franklin Works. In addition to the wheel mill, Midvale quickly built new blast furnaces and a by-product coke plant at Franklin. The Lower Works and Gautier, however, saw little improvement to its facilities. Midvale continued to operate all six blast furnaces at the Lower Works, along with the Bessemer and open hearth plants, but, as Bethlehem discovered when it acquired Midvale's Johnstown plants in 1923, the physical condition had deteriorated substantially.
Primary Metals

The Bethlehem Years (1923–Present)

In the early 1920s Bethlehem Steel, headed by the dynamic Charles Schwab, aggressively expanded its holdings in the nation's steel industry, acquiring the Lackawanna Steel works in Buffalo, and the plants of the Midvale Steel & Ordnance Company in Pennsylvania. Bethlehem Steel reorganized the Johnstown plants, adding to the Gautier Works, electrifying a number of its steam-powered rolling mills, and modernizing blast furnaces at Franklin, as well as two blast furnaces in the Lower Works. At the same time Bethlehem Steel was improving the Johnstown plants, it closed some of the older sections. This included dismantling the four oldest blast furnaces in the Lower Works. The buildings supporting these blast furnaces, namely the blowing engine house and boiler houses, were reused as storage facilities. One other change at the Lower Works marked the end of an era in Johnstown's history: in the 1920s Bethlehem Steel ceased operating the rail mill and converted the building entirely to the production of railroad axles. In the 1950s Bethlehem Steel closed the old Bessemer plant and open hearth shop in the Lower Works, and, with the construction of the 11" Mill in 1961 all traces of these buildings vanished. Today, the steel-frame 11" Mill, measuring nearly 1,000 feet long, 120 feet wide, and 50 feet tall, dominates the Lower Works. Sadly, the once-important shop facilities have been largely retired by Bethlehem Steel. The huge machine shop has been abandoned for a smaller shop that stands above the works on Prospect Hill. The foundry also has been closed and only a few men work in the blacksmith shop and pattern shop.18

SITE PLAN 1983

SCALE (approximate) in feet:

Based on Bethlehem Steel Corporation Drawing Number 123030, dated December 1, 1983, (Johnstown, Pennsylvania).
Cambria Iron Company: Steel Rail Mill  (ca. 1867)
Current Name: Bethlehem Steel: Car Truck Assembly Shop  Rating: 1
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E.676460 N.4466660
Historic Use: Rolling Mill
Present Use: Fabricated Structural Products

DESCRIPTION: When Bethlehem Steel last operated the Axle Plant in 1982 it contained four principal shops: (1) the Axle Forge Shop, (2) the Axle Turning Shop, (3) the Finishing Shop, and (4) the Steel Car Truck Assembly Shop. The Axle Plant is housed in several adjoining buildings the earliest of which includes the Steel Rail Mill (ca. 1867), now called the Steel Car Truck Assembly Shop, as well as the Merchant Mill (ca. 1872), now part of the Axle Turning Shop.

The Steel Car Truck Assembly Shop is a tall one-story building measuring 490' x 98'. Sections of the old Steel Rail Mill building survive including several wrought-iron, pin-connected Pratt roof trusses, several brick pilasters, and brick arches spanning the window openings, now infilled with brick. Each of the iron roof trusses span about 100'. A number of newer (1920s) steel roof trusses have been added along with steel columns, girders, and craneways. The Steel Car Truck Assembly Shop contains two Snyder boring mills, one dating from the 1950s, the other from 1968, one Niles boring mill, dating from the 1920s, a wheel press, dating from the 1930s, and a Chambersburg bearing press, manufactured in 1977. Bethlehem Steel closed the Axle Plant in 1982, however, the machinery remains in place.

HISTORY: The Cambria Iron Works' original rolling mill consisted of a brick cruciform-shaped building that measured 600' x 100' along the main axis, with each wing measuring 350' x 72'. The mill contained puddling and heating furnaces, as well as John Fritz's innovative three-high rolling train. Completely destroyed by a fire in 1857, the mill was quickly rebuilt by Wood, Morrell & Company, lessees of the Cambria Iron Works. By the late 1860s, the mill included several additions, one of which was the 1867 Steel Rail Mill. This mill had a production capacity of 1,500 tons of iron rail per week. Along with the rolling mill, Cambria's foundry, blast furnace operations, and shops employed about 2,500 men.

Having been reorganized in 1862 as the Cambria Iron Company, the iron works witnessed a major addition in 1869, when construction was begun on a Bessemer steel plant. Prior to this, Cambria Iron relied on steel for its rail mill from outside plants. (The Bessemer Steel Works at the Pennsylvania Railroad's Steelton plant was a major supplier of steel billets for Cambria Iron.) After 1872 when Cambria Iron began its own Bessemer operation, virtually all of the steel for the rolling mill was produced at the iron works. Shortly after the Bessemer plant was opened, a second fire destroyed much of the rolling mill. Within one week after the fire, the rolling trains were re-erected under temporary shelter and Cambria Iron continued rail production. Over the next year the rolling mill was rebuilt with brick walls and iron roof trusses. Interestingly, Cambria Iron produced the iron trusses using its rolling trains and fabricating the truss members in the company shops. By 1878 the Steel Rail Mill contained three straightening presses, two steel rail drills, a hot bed and hot saws, ten heating furnaces and, significantly, a 21", three-high, rolling train, an improved model of John Fritz's original three-high train.

Although initially established for the rolling of iron and steel rail, Cambria Iron's rolling mill also produced structural shapes including bars, I-beams, channels, and angles. When Cambria Iron was reorganized as Cambria Steel in 1898, the rolling mill continued to produce rail and
structural shapes. One important change to the rolling mill had occurred in the 1880s, when an axle plant was established in the southwestern section of the building. Over the next three decades the Axle Plant grew steadily, until by the 1910s it occupied the southwestern wing of the rolling mill and three adjacent buildings. In fact, by 1910 the rolling mill was virtually unrecognizable when compared to its 1870s appearance. Most apparent was the loss of the ca. 1872 north-south oriented section of the rolling mill used for iron rail production, which Cambria Steel demolished in the early 1900s. Cambria Steel subsequently used part of this site to erect an 18" Billet Mill.

Although this early rolling mill was demolished, the original Steel Rail Mill was retained. Bethlehem Steel used this building as a scarfing area in conjunction with the adjacent 48" Mill. The scarfing operation employed grinders and acetylene torches to remove surface impurities from the blooms and billets produced in the adjacent mills. Beginning about 1951 the old Steel Rail Mill, with its large 1930s addition to the north connecting it with the Axle Plant, was used as a car truck assembly shop. As with the rest of the Axle Plant, this building was abandoned about 1982 when Bethlehem Steel discontinued the manufacture of axles.

Sources:
"Key Plan, Johnstown Plants: February 16, 1923; revised January 26, 1927, March 29, 1930, and February 13, 1939," [copy available at the Canal Museum, Center for Canal History and Technology, Easton, PA].
Tax Assessment Records for Millville Borough, Cambria County, for year 1868 available at the Cambria County Courthouse, Ebensburg, PA.

Cambria Iron Company: Merchant Mill (ca. 1872)

Current Name: Bethlehem Steel: Axle Turning Shop    Rating: 1

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676500 N.4466860
Historic Use: Rolling Mills
Present Use: Fabricated Structural Products

DESCRIPTION: When Bethlehem Steel last operated the Axle Plant in 1982 it contained four principal shops: (1) the Axle Forge Shop, (2) the Axle Turning Shop, (3) the Finishing Shop, and (4) the Steel Car Truck Assembly Shop. The Axle Plant is housed in several adjoining buildings the earliest of which includes the Steel Rail Mill (ca. 1867), now called the Steel Car Truck Assembly Shop, as well as the Merchant Mill (ca. 1872), now part of the Axle Turning Shop.
The Axle Turning Shop occupies most of the old Merchant Mill, which is now enclosed on all but the east side. This east facade, containing five symmetrical bays, each of which is framed by brick pilasters, retains much of its original appearance. In addition to occupying most of the interior of the old Merchant Mill, the Axle Turning Shop extends to the north into an adjoining steel-frame and brick building erected by Bethlehem Steel in 1938. The western end of the former Merchant Mill is part of the Axle Forge Shop. Measuring approximately 200' x 75', the Merchant Mill has been altered most extensively along its south facade where sections of the original brick walls were removed to provide access into an electrical substation and the Axle Finishing Shop, a steel-frame building constructed in the 1960s. Its north facade was altered as early as the 1870s when an extension for the Rod Mill was built. Nothing remains from the wire mill since Bethlehem Steel tore it down in the 1930s to make room for the 1938 addition to the Axle Plant.
Importantly, the old Merchant Mill retains its original pin-connected, wrought-iron roof trusses, sections of its original brick walls, and its distinctive clipped-gable roof. It is about two-and-one-half-stories in height. Machinery that remains from the Axle Plant includes three shaper lathes and a Snyder finishing lathe. Re-heating furnaces from the Forge Shop stand in the extreme western end of the old Merchant Mill.

HISTORY: The Cambria Iron Works erected its first rolling mill in Johnstown in 1853-54. A fire in 1857 completely destroyed the brick cruciform-shaped building, but it was quickly rebuilt. A second fire in 1872 destroyed much of the reconstructed mill, however, Cambria Iron again quickly rebuilt it, adding a merchant mill to the eastern wing. By 1878 the Merchant Mill wing contained four heating furnaces and a bar mill, and produced a variety of iron bars and plates. The Merchant Mill continued to produce iron and steel bars and plates until about the 1920s, when Bethlehem Steel converted much of the old rolling mill into the Axle Plant. Although none of the original equipment survives, part of the 1872 Merchant Mill still stands. Its east facade is highlighted by the original common-bond brick walls, and multi-light windows. In addition, the building retains its original wrought-iron, pin-connected Pratt roof trusses. Housing part of the Axle Turning Shop, the building was abandoned in 1982 when Bethlehem Steel ceased manufacturing axles in Johnstown.


Bethlehem Steel Company: Axle Plant (ca. 1924)

Current Name: Bethlehem Steel: Axle Forging Shop Rating: 2

Lower Works, Johnstown, Cambria County, PA

USGS Quad: Johnstown, PA (1:24000) UTM: 17 E 676440 N 4466860

Historic Use: Fabricated Structural Products

Present Use: Fabricated Structural Products

DESCRIPTION: When Bethlehem Steel last operated the Axle Plant in 1982 it contained four principal shops: (1) the Axle Forge Shop, (2) the Axle Turning Shop, (3) the Finishing Shop, and (4) the Steel Car Truck Assembly Shop. The Axle Plant is housed in several adjoining buildings the earliest of which includes the Steel Rail Mill (ca. 1867), now called the Steel Car Truck Assembly Shop, as well as the Merchant Mill (ca. 1872), now part of the Axle Turning Shop.

Although part of the Axle Forge Shop is housed in the western end of the old Merchant Mill, most of it is located within one large (north-south) bay, approximately 225' x 96', adjoining two parallel (east-west) bays, one of which measures approximately 160' x 80' and adjoins the Steel Car Truck Assembly Shop, and the other of which measures approximately 120' x 60'. The large north-south bay was constructed in the 1920s with additions in the 1930s. It comprises the westernmost part of the Forge Shop, and consists of steel-frame supporting riveted steel roof trusses. The exterior of the north-south bay is marked by an intersecting gambrel roof covered with corrugated metal, topped by a series of circular metal vents. Common-bond, red-brick walls extend along its west facade. The east-west bays are similar in construction, however, they predate, perhaps by a decade, the large north-south bay. The Axle Forge Shop
contains a coke-gas-fired rotary furnace (installed in 1945 and measuring 34' in diameter) for heating the billets, a manipulator that loads and unloads the furnace, two 10,000-pound Erie steam hammers (manufactured in Erie, Pennsylvania, both hammers date from the early 1900s), two "GFF" forging hammers (manufactured in West Germany in the 1960s), three drawing furnaces, three reheating furnaces, three normalizing furnaces, two chain conveyors, one axle straightener, and thirteen adjacent cooling pits.

HISTORY: Around 1885, the Cambria Iron Company began manufacturing axles for railroad rolling stock. Located in the northwest section of the rolling mill, the axle shop contained two forging hammers, three cutting-off machines, three journaling machines, and two shapers. Cambria Iron produced 3.75" x 7" axles for 40,000 pound cars. Importantly, during the 1890s, Cambria Iron inaugurated the use of an innovative heat-treating and toughening process for making axles. Called the Coffin Process, it was developed by a Cambria Steel engineer. By 1910, Cambria Steel was producing axles made exclusively by the Coffin process, which consisted of several steps. First, billets were deposited in a long continuous furnace—the predecessor to the rotary furnace—where carefully regulated temperatures insured a uniform heat throughout the billets prior to forging. Second, rough forging was done using steam hammers (two 10,000-pound Erie steam hammers, dating from the early 1900s which are still in place) and after this, the forged axles were allowed to cool. In a final toughening process, workers placed the rough-forged axles in a smaller continuous furnace, where the recalescent temperature (the critical temperature of a cooling metal where a sudden increase of heat occurs) in the steel was reached at which point the axles were quenched in a cooling bath.

After cooling the rough-forged axles were delivered to an adjacent stock yard. From there overhead cranes transported the rough forgings into the Axle Turning and Finishing Shop where workers, using cutting-off machines, lathes, shaper, and grinders, produced both standard specialty rail axles.

Soon after Bethlehem acquired Cambria in the 1920s, the Axle Plant was expanded and improved. The entire northern half of the old rolling mill was given over to the manufacture of axles. In 1938, Bethlehem erected a new finishing shop where the Rod Mill once stood, and from 1944 to 1945, the forging operation of the Axle Plant was upgraded with the installation of a rotary furnace, 34' in diameter, used to reheat billets from the 34" Billet Mill at Franklin. Bethlehem Steel continued to upgrade the Axle Plant in the 1950s, installing new lathes, shapers, and grinders. A new continuous furnace capable of heat treating standard and special axles was added in 1956. It featured three separate thermal zones with air cooling or quenching between each zone. At its peak in the 1950s, the plant produced 5,000 tons of standard axles, and 1,000 tons of special axles per month. As the market for rail trucks and axles declined in the 1970s, Bethlehem Steel cut back its production. Finally, in 1982, the steel company ceased manufacturing axles and, although the machinery was left in place, the plant was abandoned.

Sources:
Primary Metals

Seven Steel Company Safety Exchange Group. "Visititation to the Johnstown Plant, Bethlehem Steel Company, January 16-17, 1951," pamphlet available in Iron and Steel Institute Papers, Box C-11: Bethlehem Steel Company-Plants-Johnstown, Hagley Library, Greenville, DE.

Bethlehem Steel Company: Axle Finishing Shop (1938)

Current Name: Bethlehem Steel: Axle Turning Shop
Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676500 N.4466880
Historic Use: Fabricated Structural Products
Present Use: Fabricated Structural Products

DESCRIPTION: This large one-story building measures 160' x 110' and adjoins the old Merchant Mill. The building contains a steel frame and brick walls, riveted-steel roof trusses supporting sawtooth monitors, and a concrete foundation. It was built in 1938 to serve as the Axle Finishing Shop and houses several cutting-off machines (40" diameter circular saws that cut the rough forgings to the required length), and journaling lathes (used for rough turning the axles). The grinders and finishing lathes that were once located here were moved in the 1960s to an adjacent newly constructed axle finishing shop. From the 1960s through 1982, the year Bethlehem Steel closed the Axle Plant, the 1938 building comprised most of the Axle Turning Shop.

HISTORY: Soon after Bethlehem Steel Company acquired the Midvale Steel & Ordnance Company's Johnstown plants in 1923, the existing axle plant was enlarged and modernized. This expansion continued into the 1930s when Bethlehem Steel demolished the Rod Mill, built in the 1870s, that extended off the north facade of the old Merchant Mill, and completed, in 1938, the construction of a new Axle Finishing Shop. From 1938 through the 1960s this building housed cutting-off machines that cut the forged axles to size, lathes that shaped the axles, and grinders and finishing lathes that produced the finished axles. With the construction of an adjacent Finishing Shop in the 1960s, the grinding, finishing, and inspections were moved from 1930s building to the newer one; the former Finishing Shop was then called the Axle Turning Shop.

Prior to the 1960s, the 1938 Axle Finishing Shop received the axle forgings from the adjacent stock yard, where the forgings were cut to length, rough turned on a lathe, and then finished in the adjacent grinding area. The cutting-off machines were arranged in a single row along the north wall of the building, paralleling a row of journaling lathes. Overhead monorails for the electric hoists extended above each machine thereby permitting easy positioning and movement of the axles. At its peak in the 1950s, the plant produced 5,000 tons of standard axles and 1,000 tons of special axles per month. The axles were then shipped to the nearby Car Truck Assembly Shop.

In 1982, Bethlehem Steel ceased the manufacture of axles. Although the Axle Plant complex is vacant, the machinery is still in place. The Axle Finishing Shop of 1938 contains two Snyder cut-offs, dating from the 1950s, a Niles cut-off, dating from the 1920s, a Morey lathe, dating from the 1930s, and two Snyder journaling lathes, dating from the 1950s.

Sources:
Bethlehem Steel Company: Axle Heat Treating Building (ca. 1950)

Current Name: Bethlehem Steel: Storage Building  
Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania  
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676490 N.4466940  
Present Use: Warehouse

DESCRIPTION: Measuring 125' x 44', this one-and-one-half-story building contains a steel frame clad with corrugated metal. It was erected in the 1950s to serve as a heat treating facility for rough-forged axles. One of the 1950s heat-treating furnaces remains in the building.

HISTORY: Standing east of the Roll Shop and north of the nearby Axle Plant, this corrugated-metal building was erected in the 1950s to house heat-treating furnaces. Part of Cambria Iron Company's Rod Mill (ca. 1873) occupied this site. Bethlehem Steel demolished the Rod Mill in the 1930s, when it expanded the Axle Plant. The 1950s structure is presently used for storage and contains one gas-fired heat-treating furnace.

Sources:

Cambria Iron Company: Blacksmith Shop (ca. 1864)

Current Name: Bethlehem Steel: Blacksmith Shop  
Rating: 1

Lower Works, Johnstown, Cambria County, Pennsylvania  
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676380 N.4466610  
Historic Use: Blacksmith Shop  
Present Use: Blacksmith Shop

DESCRIPTION: The original (ca. 1864) building is an octagonally shaped one-story structure, with an octagonal cupola, containing heavy timbered roof trusses with iron tension rods, common-bond, red brick walls and pilasters, and measuring approximately 70' x 70'. An 1870s brick addition extends to the west, a ca. 1900 shop building extends to the south (connecting a two-story lavatory built of brick in the 1920s), and a one-story brick annex, built between 1884 and 1885 extends to the east. The Blacksmith Shop contains several forging hammers and furnaces.

HISTORY: The earliest surviving building of the Cambria Iron Company is the Blacksmith Shop, erected about 1864. (The date of construction of the Blacksmith Shop is generally given as 1854, however, based on site maps, an early birdseye view of the iron works, and the Cambria County Tax Assessment Records, it appears that the date is actually about 1864.) The Blacksmith Shop produced a wide range of metal products throughout the nineteenth and early-
twentieth centuries. It contained a variety of grinders and tools, as well as steam-powered hammers and coal-fired furnaces.

Two additions to the Blacksmith Shop were made between about 1870 and 1885. The first consisted of a one-and-a-half-story, brick building, adjoining the west side of the octagon. The second addition, a large, two-story, brick wing erected to the east was built to provide room for an additional steam hammer. Constructed about 1885, this addition, with matching arched windows, now contains an overhead crane and a steam-powered, five-ton W. H. Sellers hammer, manufactured in Philadelphia, and dating to about 1900. Another addition was made about 1900 when a one-story brick building with a sloping roof was erected along the southwest facade. This addition contained more forges and an overhead crane. Finally, in the 1920s, Bethlehem Steel built a two-story, brick structure off the south elevation to serve as a locker room and lavatory. At its peak in the late-nineteenth and early-twentieth century, the Blacksmith Shop employed nearly 100 men and ran two and three shifts.

The Blacksmith Shop continues to function in its original role, however, much of the metalwork is carried out in conjunction with materials testing. The most frequently used forging hammer in the shop, a Chambersburg hammer that was originally steam-powered, now operates with compressed air. There is also an electrically powered Chambersburg hammer, however, it is seldom used. All of the furnaces are fired with natural gas. Only a handful of men currently work in the shop.

Sources:
Birdseye View of Cambria Ironworks, (labeled ca. 1860; probably dating from ca. 1867), on display at the Johnstown Flood Museum.
Photo - 41. Interior of the Blacksmith Shop, showing two early 1900s forging hammers (both were originally steam-driven -- the hammer on the far left is now operated with compressed air) manufactured by Chambersburg Engineering Company, Chambersburg, Pennsylvania. Photograph by Jet Lowe, HAER, 1988.
Cambria Iron Company: Iron Foundry (ca. 1865)
Current Name: Bethlehem Steel Corporation: Foundry  Rating: 1

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676370 N.4467000
Historic Use: Iron Foundry
Present Use: Abandoned

DESCRIPTION: Iron Foundry (1865): Measuring 148' x 73', this one-story building, features common-bond red-brick walls, round-arched window openings with decorative brick corbeling, and a stone foundation. The original mansard roof has been replaced by a sloping corrugated metal roof resting on steel bar joists. A small, one-story brick addition was erected about 1890 along the west facade.

Iron Foundry Wing (1881): This tall one-story building measures 160' x 66' and contains pin-connected wrought-iron Pratt roof trusses, gable-roof monitors, wrought-iron columns, common-bond brick walls, flat-arched door and window openings, most of which have been covered with translucent fiberglass, and a stone foundation. A three-story sand conveyor, covered with corrugated metal and located along the northwestern facade of the wing was built in the 1960s. The interior of the Iron Foundry and Foundry Wing has been gutted, and only an electrically powered overhead crane in the 1881 addition remains in place.

HISTORY: Soon after the formation of the Cambria Iron Works, ironmasters George S. King and Dr. Peter Shoenberger oversaw the construction of four, coke-fired blast furnaces, a rolling mill, a machine shop, and a foundry. Financial difficulties hampered the completion of the rolling mill until 1854, when Wood, Morrell & Co. of Philadelphia provided additional capital to carry forward the enterprise. Between 1855 and 1862, Wood, Morrell & Co. leased the iron works and inaugurated the Conemaugh Valley's first large-scale production of iron rail. Over the next three years a number of new buildings were erected including an octagonally-shaped blacksmith shop (1864) and an iron foundry (1865).

Located behind the Blacksmith Shop and the Machine Shop, the Iron Foundry comprised a large two-story structure containing ornate brick walls and a mansard slate-covered roof. Cambria Iron Company operated the Foundry not as a commercial enterprise, but rather to service the iron works. Iron castings for the company's machine parts as well as ornamental ironwork for buildings were made in the Foundry.

The 1870s witnessed considerable expansion at Cambria, and the existing Iron Foundry was soon in need of enlargement. In 1880 Cambria Iron designed a large, two-and-one-half-story addition to the north. Containing a stone foundation, brick pilasters, common-bond brick walls, and wrought-iron, pin-connected Pratt roof trusses, the wing measured 160' x 66'. Along with this addition, a new cupola was installed in the 1865 Foundry. As late as the 1930s much of the 1870s equipment was still in use. The Bethlehem Steel Company, after acquiring Cambria in 1923, continued to use the Foundry until about 1983. Since then, Bethlehem Steel has contracted with outside foundries for all of its iron castings for the Johnstown plants.
With the exception of the overhead crane in the 1880 addition no historic equipment remains in the Foundry. The sand conveyor, a 1950s addition, rises three stories along the north facade. Although the 1880 addition remains virtually unaltered, apart from transluscent fiberglass panels covering the windows, the original Foundry has seen extensive alterations to its roof. It retains, however, much of its ornate brick work.

Sources:

"Rafter for Wing to Foundry Building, Cambria Iron Works; June 2 1880," original drawing in possession of Bethlehem Steel Corporation, Engineering Division, Johnstown.
Cambria Iron Company: Pattern Shop  (ca. 1870)
Current Name: Bethlehem Steel: Carpenters Shop  Rating: 1
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676310 N.4466950
Historic Use: Pattern Shop
Present Use: Carpenter Shop and Metal Shop

DESCRIPTION: Pattern Shop: This two-story building was constructed about 1870 and measures 110' x 50'. It contains common-bond brick walls, cast-iron columns which support the wood joists of the second floor, and a stone foundation. The building features a distinctive mansard roof composed of timber rafters covered with an asphaltic material. Many of the original windows and decorative brick window surrounds may be seen inside the Pattern Shop. The original-line shafting and overhead belts that once powered the saws, planers, lathes, and drills, have been removed. The oldest extant machine is a pattern-maker's lathe, dating from the 1880s. The first floor of the building continues in use as a carpenter shop; the second floor is used for storage.

Addition to Pattern Shop: Constructed in 1890, this addition adjoins the northern end of the original shop and consists of a two-story brick building with a gable roof, and an interior framing system composed of heavy-timbered posts and beams. Its addition measures approximately 80' x 40' and has an attached one-story tower of brick construction, approximately 35' tall, which was also built in 1890 and served as a fire-hose drying and storage facility. The original windows, framed by brick segmental arches, remain in place. The addition to the Pattern Shop was recently converted into a sheet-metal shop.

HISTORY: Around 1870 the Cambria Iron Company erected a two-story Pattern Shop adjacent to the Foundry. It originally measured 110' x 50' and contained a distinctive mansard roof covered with slate. The machinery inside, including saws, planers, sanders, and lathes, was powered by a central line shaft with belts connected to the individual machines. The patterns were used for castings in the adjacent foundry that serviced the iron works. Nearby, a series of two-story timber-frame buildings, containing brick nogging, were erected in the 1880s and served as pattern storage houses until the 1920s, when they were demolished. The only major additions to the Pattern Shop occurred in 1890 when Cambria Iron built a two-story, gable-roofed addition to the north, along with a three-story, brick, fire-hose tower. By 1893 the second story of the northern addition was in use and contained a circular saw, a band saw, a 12" lathe, and a 6" lathe. A central line shaft, extending along a north-south axis, powered this machinery. Currently, the Pattern Shop is used for carpentry work and contains electrically powered machinery.
Primary Metals

Sources:
Tax Assessment Records for Millville Borough, Cambria County, for year 1871 and 1875, available at the Cambria County Courthouse, Ebensberg, Pennsylvania.

Cambria Iron Company: Rolling Mill Office (ca. 1874)
Current Name: Bethlehem Steel: Mechanical Department
Rating: 1

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676320 N.4466600
Historic Use: Office
Present Use: Office

DESCRIPTION: The two-and-one-half-story building of brick construction originally measured 65' x 32'. This 1870s section has floors composed of wrought-iron beams and brick vaulting, intersecting gable roof framed with wood rafters, and a stone foundation. It retains its stair tower featuring a wrought-iron spiral staircase, however, the original cupola has been removed. Also, the original second-story windows are extant and feature Gothic arches of brick along the north facade. Adjoining to the south is a three-story brick and steel addition, erected about 1900. It measures 21' x 20' and contains large one-over-one-light double-hung sash windows.
HISTORY: The Cambria Iron Company erected this two-and-one-half-story building about 1874 to serve as an office for its rolling mill operations. Throughout the years, the building served numerous functions: in 1911 it was listed as "Supplies," in 1917 it was noted as "Time Office and Supply House," and more recently it was called the "Mechanical Office." Originally it contained an intersecting gable roof, covered with slate, windows with brick Gothic arches, and a wrought-iron spiral staircase topped by a wooden cupola. The cupola and stair tower measured 15' in diameter and nearly 70' in height. The floor and ceilings were constructed with vaulted brick-arches spanning between wrought iron rails. Since the 1870s a number of alterations have occurred including a three-story addition, constructed about 1900, and the removal of the cupola. Prior to its recent abandonment, the building served as the Mechanical Office.

Sources:

Cambria Iron Company: Hot Blast Engine House (ca. 1873)
Current Name: Bethlehem Steel: E & F Blast Furnace Engine House Rating: 1
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676540 N.4466620
Historic Use: Engine House for Blast Furnaces
Present Use: Abandoned

DESCRIPTION: The original blowing engine house, erected about 1873, comprises the two southernmost bays of the current Blast Furnace Engine House. This 1870s section contains common-bond brick walls and pilasters, wrought iron, pin-connected Pratt roof trusses, and circular-arched door and window openings. The northern two-bay addition to the Engine House was probably constructed in the 1890s and features riveted steel Fink roof trusses, brick walls and pilasters, as well as flat-arched window openings. The entire building measures approximately 118' x 88'.

HISTORY: The early and mid 1870s witnessed increasing rail production at the Cambria Iron Company. To expand its pig iron capacity Cambria added two coke-fired blast furnaces adjacent to its giant rolling mill. Construction of Blast Furnace No. 5 commenced in 1873, though it was not put into blast until 1876. About six years later Cambria Iron completed Blast Furnace No. 6. The two furnaces produced 600 tons of Bessemer iron per week. Each furnace was provided with steam by cylinder boilers housed in adjacent boiler houses. The Hot Blast Engine House contained three blowing engines manufactured by the Southwark Foundry and Machine Company of Philadelphia.

The blast furnace operation at No. 5 and No. 6 remained relatively unchanged until about 1900, when the newly reorganized Cambria Steel Company, upgraded this site. New boiler houses were erected to the south and north of the blast furnaces, and one of the original boiler houses was demolished. A major change to the Engine House occurred in 1918 when the Midvale Steel and Ordnance Company replaced the original blowing engines with three Mesta horizontal engines. Soon after Bethlehem Steel acquired the works of the old Cambria Iron Company, Blast Furnace No. 5 was torn down and replaced with a new furnace, cast house, and electric.
skip hoist. The Engine House continued in service through the 1950s with Furnace No. 5 producing ferro-manganese. Even after the construction of a turbo-blower building in 1961, the original Engine House and Blower House were retained as backup facilities. The last blow at Furnace No. 5 occurred in 1977. Nine years later Johnstown's only remaining blast furnace was torn down. Only the hot blast stoves (1930-34), the Skip House (1925), the gas Cleaning Plant (1931), the stock bins (1931), the Sintering Plant (1950s), the Turbo Blower Building (1961), and the Engine House remain in place. Importantly, the southern half of the Engine House remains largely unaltered from its 1870s appearance. All of the machinery, however, has been removed.

Sources:

Cambria Iron Company: Blast Furnace No. 5 (1874, 1900)
Current Name: Bethlehem Steel: "E" Blast Furnace  Rating: 1
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676550 N.4466660
Historic Use: Blast Furnace
Present Use: Demolished

DESCRIPTION: At the site of the recently demolished blast furnace only part of the casting house and the skip hoist survive. The furnace bell is the sole remnant of the blast furnace.

HISTORY: Soon after the Cambria Iron Company established its initial Bessemer plant in 1869, Johnstown became one of the nation's leading iron and steel producers. By the mid 1870s, Cambria Iron was the leading producer of iron and steel rail in the United States. Led by Daniel J. Morrell, the president of Cambria Iron, and Daniel N. Jones, the chief engineer, the company sought to expand its iron production with the introduction of two additional blast furnaces. Both were to be located south of the original four blast furnaces and adjacent to the rolling mill. In 1873, Cambria Iron began the construction of Blast Furnace No. 5, however it was not put into blast until 1876. Two years later Cambria Iron completed Blast Furnace No. 6. The two furnaces were the largest in the area and nearly identical in size to the impressive Lucy No. 2 (1878) and Edgar Thomson "A" (1880), two of Andrew Carnegie's blast furnaces in Pittsburgh. Each furnace measured 75' in height and contained a bosh 20' in diameter, with a hearth 8' in diameter. Capped with a single bell, both furnaces were manually charged. Each produced 600 tons of Bessemer iron per week.

By the time Blast Furnaces No. 5 and No. 6 were completed the understanding of the chemistry of iron and steel making had advanced considerably from that of even a decade earlier. Under the direction of Daniel Jones, who had succeeded his brother, Captain William P. Jones, as chief engineer, Cambria Iron's new blast furnaces received carefully controlled amounts of ore, limestone, and coke. The composition of ore used in the furnaces in which Bessemer metal was produced consisted of one-half Springfield limonite ore (averaging 50 percent iron), and one-half Lake Superior specular ore (containing 60 to 66 percent iron). Interestingly, the native sphaetic ore, which was self-fluxing, was not used in the production of Bessemer metal, but it
appears to have been used for other grades of metal, such as wrought iron. Two years after Cambria Iron put it into blast, engineer Alexander Holley declared that the Furnace No. 5 was "uniformly successful in its performance, which is largely due to its excellent management on chemical principles, and partly, of course, due to its construction."

From the 1870s through about 1900, Blast Furnace No. 5 and No. 6 were run with few changes to their operation. Both furnaces were provided with steam by cylinder boilers housed in adjacent boiler houses. However, in 1901-03 the recently reorganized Cambria Steel Company, installed steam driven skip hoists, superseding the original manually charged operation. In the 1920s after the Bethlehem Steel Company acquired Cambria Steel, the four original blast furnaces were torn down leaving only No. 5 and No. 6 in the Lower Works, as well as the five blast furnaces at Franklin.

Shortly after Bethlehem Steel acquired Cambria, it renamed all of the blast furnaces: No. 5 became "E" Furnace and No. 6 became "F" Furnace. From 1924 to 1925, Bethlehem Steel replaced Blast Furnace "E," erecting a new furnace, cast house, and electric skip hoist. Further improvements occurred between 1930 and 1931 with the installation of new stock bins and a gas cleaning plant. Additionally, high efficiency hot blast stoves were built at "E" Furnace in 1930, and at "F" Furnace in 1934. By the 1950s, Bethlehem Steel used "E" and "F" Furnaces almost exclusively for smelting manganese. In fact, in 1957 Bethlehem's manganese production in Johnstown amounted to 180,000 tons, the largest of any plant in the nation. The manganese ore was imported from Bethlehem mines in South America. Blast Furnaces "E" and "F" increasingly deteriorated over the next decade as Bethlehem did little to improve blast furnace plants in Johnstown. Blast Furnace "F" was torn down in the 1960s, followed by the abandonment of "E" in 1977. Unfortunately, Blast Furnace "E", Johnstown's last extant blast furnace, was torn down in November of 1986.

Sources:
Cambria Iron Company: Car Shop  (ca. 1881)
Current Name: Bethlehem Steel: Paint Shop  Rating: 1
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676330 N.4467020
Historic Use: Car Shop
Present Use: Storage

DESCRIPTION: This two-story building measures 136' x 56' and is constructed of a heavy-timber frame with brick nogging, heavy-timber Howe roof trusses with iron tension rods, a wooden second floor with closely spaced 3' x 12' wood floor joists, multi-light windows with wood frames and mullions, and a stone foundation. It features a distinctive clipped-gable roof, probably the only one of its kind in an American steel works. The building now serves as a storage facility and washroom.

HISTORY: Around 1881, the Cambria Iron Company erected this two-story building to serve as a car shop for the repair of the company's railroad rolling stock and coal-mining cars. The building housed a machine shop on the first floor, and a carpenter shop on the second. All of the machinery was originally belt driven. By the 1930s, the Car Shop was used strictly as a carpenter shop, and subsequently as a paint shop and mechanical office. In good condition, the building presently serves as a storage facility for the adjacent Carpenter Shop.

Sources:

Cambria Iron Company: Brass Foundry  (1896)
Current Name: Bethlehem Steel: Brass Foundry  Rating: 2
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676300 N.4466910
Historic Use: Brass Foundry
Present Use: Abandoned

DESCRIPTION: This one-story building contains a steel frame, riveted steel Fink roof trusses, gable-roof monitor, steel columns, which are composed of channel sections and riveted lacing bars, common-bond brick walls, flat-arched door and window openings, multi-light windows with wooden frames and mullions, and a stone foundation. It measures 140' x 30'. Although no longer used, this building features a weighing scale of cast iron, ornamented in a neo-Classical style. The electrically powered overhead crane remains in place.

HISTORY: Cambria Iron Company built this one-story brick and steel-frame building about 1896 to serve as a Brass Foundry. It furnished brass fittings and parts for the Cambria Iron Company's buildings and machinery. The Brass Foundry continued to service the various steel works at Franklin, Gautier, the Lower Works, and the Rod and Wire Mill after Bethlehem Steel acquired Cambria in the 1920s. In more recent years the Brass Foundry generated a wide range of products including copper hammers and aluminum handles for jack hammers. The foundry continued in service until ca. 1983 when Bethlehem Steel Company eliminated its foundry operations at the Lower Works. The building retains much of its original appearance and some of the early 1900s foundry operation is still evident in the weighing scales, ovens, moulds, and the overhead crane.
Primary Metals

Sources:
"Columns, Truss, and Crane Girder; January 25, 1896)," original drawing in the possession of the Bethlehem Steel Corporation, Engineering Division, Johnstown.

Cambria Iron Company: Roll Shop (1895)
Current Name: Bethlehem Steel: Roll Shop
Rating: 2
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676470 N.4466660
Historic Use: Production of Rolls for Rolling Mills
Present Use: Production of Rolls for Rolling Mills

DESCRIPTION: This tall one-story building contains a steel frame, common-bond brick walls, and a stone foundation. The gable roof is composed of riveted steel Pratt roof trusses spanning about 54'. The building retains its original multi-light wood-frame windows at the second-story level. It measures approximately 160' x 55'. The 1895 Roll Shop and another 1920s roll shop at the Gautier works currently serve Bethlehem Steel's Johnstown plants.

HISTORY: Cambria Iron erected this large steel and brick building in 1895 to serve as a roll shop. It was here that the various rolls for Cambria's mills were turned on large, metal-cutting lathes. In addition to producing new rolls, machinists reconditioned rolls that had been damaged or worn out. Significantly, the building retains its original function, and much of its late-nineteenth century appearance. The original W. H. Sellers overhead crane remains in place and a metal-cutting lathe dating from about 1900 is still in operation. In addition, a large 48" hydraulic lathe, manufactured in 1958 by the Youngstown Foundry & Machine Co. of Youngstown, Ohio, receives a great deal of use as does the electrically powered lathe, dating from 1948, manufactured by the Monarch Tool Co. Presently, a crew of eight to ten men work a single shift in the Roll Shop, providing rolls for the 11" Mill and the three rolling mills still in operation at Gautier.

Sources:
Cambria Iron Company, "Roll Shop: March 26, 1895," original drawings showing elevations of Roll Shop, in possession of Bethlehem Steel Corporation, Engineering Division, Johnstown.

Cambria Steel Company: Blowing Engine House (ca. 1890s)
Current Name: Bethlehem Steel: Storage Building
Rating: 1
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676400 N.4467200
Historic Use: Engine House for Blast furnace
Present Use: Storage

DESCRIPTION: This large one-story brick building with riveted steel roof trusses and steel columns, which are composed of channel sections and lacing bars, rests on a stone foundation. It measures 182' x 44'. The building once housed the blowing engines for Blast Furnaces No. 1-4, all of which have been removed. Largely empty, part of the building is used for the storage of electrical parts.
HISTORY: Shortly after the Cambria Iron Works was formed in 1852 four coke-fired blast furnaces were erected near the site of this imposing brick building. Originally a smaller brick and iron-frame structure, which housed the blowing engines, stood adjacent to the furnaces. From the 1880s through the mid-1890s, this blast furnace operation was periodically improved, including the construction of the present blowing-engine house. Soon after the Cambria Iron Company was reorganized as the Cambria Steel Company in 1896, even greater improvements were carried out at the original blast furnace operation. The company erected new boiler houses, a powerhouse, and expanded the Blowing Engine House. The engine house contained Southwark vertical blowers, which forced air through twelve adjacent hot-blast stoves and into the four blast furnaces. In 1914 Cambria Steel installed three Mesta blowing engines in the building, replacing two of the old Southwark blowing engines. The last major improvement to this operation occurred in 1918, when Midvale Steel & Ordnance Company, after its acquisition of Cambria Steel, replaced the last of the Southwark blowers with turbo blowers, manufactured by the General Electric Company.

The upgraded blast-furnace operation continued in service until the 1920s, when the present owner, Bethlehem Steel, ceased using it. Bethlehem Steel then demolished the four blast furnaces, the casting house, and the hot-blast stoves. The Blowing Engine House was subsequently converted into a storage building, a function it continues to serve.

Sources:
Birdseye View of Cambria Ironworks, (ca. 1860), on display at the Johnstown Flood Museum.
Doran, T. Plan of the Boroughs Johnstown and Conemaugh Together with Cambria Iron Works, Cambria, and Prospect, Cambria County, Pennsylvania. surveyed, drawn, and published by T. Doran, 1854.
furnace plant were made in the late 1890s, shortly after the formation of the Cambria Steel Company. This included the construction of new boiler houses. Dating from about 1898, the eastern boiler house, a steel-frame structure with brick walls and a brick floor, originally housed twelve boilers, which fired the blowing engines in the adjoining Blowing Engine House. The engines forced air through the hot-blast stoves into the four blast furnaces. Ashes from the boilers appear to have been dumped into the basement, where they were removed manually by shovel. Shortly after Bethlehem Steel retired Blast Furnace Nos. 1-4 in the 1920s, the boiler house was converted into a pattern storage facility, a function it continues to serve. Another boiler house of a similar design, also dating from about 1898, is located just west of this building and is used for pattern storage.

Sources:
Cambria Steel Company: Boiler Shop (ca. 1880)

Current Name: Bethlehem Steel: Structural Shop  
Rating: 2

Lower Works, Johnstown, Cambria County, PA  
USGS Quad: Johnstown, PA (1:24000) UTM: 17 E.676440 N.4467020  
Historic Use: Fabricated Structural Products  
Present Use: Fabricated Structural Products

DESCRIPTION: Erected in 1880 the Boiler Shop has undergone a number of additions and alterations. The building is now a large one-story structure and contains a steel frame, riveted steel Fink roof trusses, steel columns, which are composed of channel sections and lacing bars, common-bond brick walls, a full-length monitor roof, flat-arched door and window openings, all of which are infilled with brick and glass-block masonry, and a stone foundation. The structural steel members do not date from 1880 and may have been erected as part of a large reconstruction of the Boiler Shop around 1900. The shop measures approximately 250' x 90'. From 1910 to 1911, a dipping plant was added along the west facade. It contains a steel-frame resting on a concrete foundation, and a gable roof composed of riveted steel roof trusses. This building measures 90' x 32'. Adjoining the dipping plant to the west, a welding shop addition was erected in the 1930s. It is a one-story steel-frame and brick building containing a shed roof. A long, tall narrow one-story building, containing a gable roof, extends through part of the welding shop. The inside of the Boiler Shop has been gutted and only the overhead cranes, dating from the early 1900s, remain.

HISTORY: In 1880 the Cambria Iron Company erected a large, iron-frame and brick building to serve as a boiler shop. Cambria Iron fabricated boilers and related iron and steel products for its blast furnaces and physical plant. By about 1890 a section of the Boiler Shop was used to fabricate roof trusses, also presumably used for structures at the iron works and not for commercial production. In addition, the Roll Shop occupied the western half of the Boiler Shop, and patterns from the Foundry were stored on the second floor. Running parallel to, and west of, the Foundry, this original Boiler Shop was enlarged in 1910.

In the winter of 1910 to 1911 the Cambria Steel Company began the expansion of its private water system. This entailed the development of the company reservoir on Quemahoning Creek, and called for the fabrication of 14 miles of steel pipe, 66" in diameter. The company decided to manufacture its own pipe for the project, and as a result revamped the Boiler Shop to accommodate 32' horizontal bending rolls, and a dipping plant. The Boiler Shop contained rolls, riveters, a flanging machine, shears, drills, and furnaces, where workers fabricated the pipe in 30' sections.

Adjoining the Boiler Shop to the west, a tall, narrow, gable-roofed building, was erected to serve as a dipping plant. In order to house the dipping tanks, which were placed upright, the plant was designed with a height of 76' from the from the ground to the bottom chord of the roof trusses. Using an overhead crane, workers placed the pipe sections into the dipping tanks that contained hot asphaltum. Although the company successfully fabricated the pipe for its water supply, a proposal to manufacture larger quantities of pipe for commercial sale was apparently not realized.

Shortly after Bethlehem Steel acquired Cambria in the 1920s, a welding shop was built parallel to the Boiler Shop. The Boiler Shop fabricated a variety of structural steel products for Bethlehem Steel's mills. These products ranged from roof trusses to overhead cranes. The
Boiler Shop was abandoned in the late 1970s when Bethlehem Steel cut back its operations in Johnstown. Currently, structural products needed by Bethlehem for its Johnstown plants are contracted to outside sources, and, except for the overhead cranes, the Boiler Shop contains no machinery.

Sources:

Cambria Steel Company: Erecting Shop  (ca. 1900)
Current Name: Bethlehem Steel: Structural Shop  Rating: 2

DESCRIPTION: This tall one-story building contains a steel frame, riveted steel Fink roof trusses, steel columns, which are composed of channel sections and riveted lacing bars, common-bond brick walls, flat-arched door and window openings, all of which are covered with translucent fiberglass, and a stone foundation. Measuring approximately 193' x 64', the building has been cleared of all steel erecting equipment. Only the overhead cranes remain.

HISTORY: As an addition to the Boiler Shop, Cambria Steel built this brick and steel-frame building about 1900 to serve as a steel erecting shop. It was here that the company produced structural steel roof trusses and other fabricated steel products. In addition, Cambria Steel fabricated overhead cranes for its mills. By the 1930s, after Bethlehem Steel acquired Cambria, the Erecting Shop was listed as a locomotive repair shop. However, it was used as an erecting shop when Bethlehem Steel closed the building in the late 1970s. Currently, the building remains vacant, and, except for the overhead crane, contains no machinery.

Sources:

Cambria Steel Company: Punching and Riveting Shop  (ca. 1910)
Current Name: Bethlehem Steel: Structural Shop  Rating: 2

DESCRIPTION: This large one-story building contains a steel frame, riveted steel Fink roof trusses, steel columns, which are composed of channel sections and lacing bars, common-bond brick walls with newer stretcher-bond brick infill, and a concrete foundation. Several original windows at the second-story level remain in place and are composed of double-hung, wood-sash windows. It measures approximately 150' x 80'. A one-story brick addition, containing a shed
Primary Metals

roof, extends along the west facade. This addition was probably erected in the 1930s and served as offices for the shops.

HISTORY: The Cambria Steel Company erected this steel-frame and brick building about 1910. It served as a Punching and Riveting Shop in conjunction with the adjoining Boiler Shop to the south. Cambria Steel built these facilities when it undertook the development of the company water supply system and needed large quantities of steel pipe. A rail line led into the north entrance of the Punching and Riveting Shop, where the steel plate arrived to be rolled into pipe sections. Workers moved the plates from the flat cars and placed them on a spacing table and punch. The plates passed through a series of operations including punching, countersinking, and scarfing. From there, workers using overhead cranes, placed the plates in the 32' bending rolls where each section of plate was formed into a 120-degree section of pipe. The pipe sections were then riveted together and sent to the Boiler Shop for final treating.

The building continued to be used as a steel fabricating shop until it was closed by Bethlehem Steel in the late 1970s. None of the 1910s machinery, including a spacing table and punch that was built by William H. Sellers & Co. of Philadelphia, remains. Currently, a metal fabricating company leases the building from Bethlehem Steel.

Sources:

Cambria Steel Company: Machine Shop (1906)
Current Name: Bethlehem Steel: Machine Shop Rating: 2

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676380 N.4466950
Historic Use: Machine Shop
Present Use: Abandoned

DESCRIPTION: This large four-story steel-frame and brick building measures 240' x 240'. Riveted steel roof trusses with monitors are supported on steel columns, and the building rests on a concrete foundation. The interior contains a large central space flanked on either side by a series of mezzanines. Most of the machinery, including lathes, shapers, planers, saws, and boring mills, has been removed since the Machine Shop ceased operation in this building in 1983. Among the most significant remaining machines in the shop is a vertical boring mill, dating from 1905, manufactured by William H. Sellers & Co. of Philadelphia.

HISTORY: One of the first buildings erected by the Cambria Iron Works at its iron works in Johnstown was a machine shop. It was used initially to machine parts for the rolling mill and the blast furnaces. According to the company's engineer S.A. Cox the shop contained "lathes, planers, and other tools, suitable for building any and all of the rolling mill and blast furnace machinery required." Located on the site of the present Machine Shop, this earlier shop was expanded a number of times. By 1867 the brick building measured 250' in length, 50' in width, and was one story tall. It was used as both a machine and pattern-making shop. Additionally, Cambria Iron erected an octagonally-shaped blacksmith shop with a connecting wing to the machine shop in 1864. By about 1890 a two-story addition had been built along part of the north elevation.
In 1906 the reorganized Cambria Steel Company demolished the outdated machine shop, erecting in its place a large, fire-proof, four-story machine shop complete with new machinery. The steel for the building was made by Cambria. A large central open space topped with steel monitors was flanked on either side by several mezzanine levels. From its completion in 1906 through the 1970s the machine shop employed as many as 400 men in a single shift. The Bethlehem Steel Company, having acquired Cambria in 1923, continued to use the Machine Shop until about 1984, when it began contracting out much of its machine work. Recently a much smaller machine shop was established in a former Cambria-built powerhouse located near the Turbo-Blower Building. Several lathes, boring mills, a universal mill, drill presses, and grinders, dating from the 1950s and 1960s, were relocated from the large 1906 Machine Shop.
Bethlehem Steel is currently selling the remaining machinery in the vacant 1906 shop. The most impressive machinery in the abandoned shop includes a 76" vertical boring mill, manufactured in 1905 by the William Sellers & Co. of Philadelphia, and a large 1950s Morton universal mill.

Sources:

Cambria Steel Company: Works Orders Office (1900)
Current Name: Bethlehem Steel: Works Orders Office
Rating: 2

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676410 N.4466640
Historic Use: Office and Metallurgical Laboratory
Present Use: Abandoned

DESCRIPTION: This six-story building of steel-frame construction with common-bond brick walls rests on a stone foundation. It measures 60' x 44'. The interior contains an electrically powered freight elevator and a single stairway. A fire escape is located along the west facade. Currently abandoned, the offices are strewn with papers and debris. The original multi-light, double-hung sash windows remain in place, though many are broken.

HISTORY: The Cambria Steel Company erected this slender, six-story office building in 1900. Upon its completion the building stood between the 18" Billet Mill, built in 1909, and the large Blooming Mill, built about 1872. To the east stood the Bessemer Steel Converter Building, erected about 1871. The first floor contained the physical laboratory, the second floor housed the works orders office, the third floor housed the rolling mill offices, the fourth floor contained the offices of the Bessemer steel division, the blast furnace division, and the open hearth division, and the fifth and sixth floors housed the chemical laboratory. As many as a dozen technicians worked in the laboratories in each shift. One lab worker recalled that the upper floors of the building provided an impressive view of the Lower Works. The men occasionally used the fire escapes along the west facade as a place to eat meals or get some "fresh" air. The lower floors served as offices for the mill operations, and consequently the building became known as the Works Orders Office. Although the laboratory has been removed and the building is vacant, this six-story structure is an important link in the increasingly scientific approach to making steel in the late-nineteenth century. The once nearby Bessemer Converter Building and Open Hearth Plant were torn down in the 1950s, and the 11" Mill now occupies this site. In addition, the Blooming Mill was demolished in 1952. Apart from the Works Orders Office the only other building dating from the Cambria Steel period and located in this section of the Lower Works is the gutted 18" Billet Mill.

Sources:
Cambria Steel Company: Skip House and Stock Bins (1926, 1931)

Current Name: Bethlehem Steel: Skip House and Stock Bins
Rating: 2

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676570 N.4466650
Historic Use: Blast Furnace Raw Materials Storage and Delivery
Present Use: Abandoned

DESCRIPTION: Skip Hoist (ca. 1926): This five-story, steel-frame structure supports a six-story conveyor that is covered with corrugated metal. The skip house, containing motors for the skip and bell hoists, consists of an elevated steel-frame building with brick veneer and gable roof.

Stock Bins (ca. 1931): A reinforced concrete retaining wall extends along the hillside above the blast furnace plant. In front of the retaining wall are the steel-frame stock bins. An elevated railroad runs above the stock bins and a brick wall extends along the western face of the steelwork supporting the stock bins and rail line.

HISTORY: Blast Furnace Nos. 5 and 6 each contained a single bell and were originally manually charged. Cambria continued to operate the furnaces in this manner until 1901, when a steam-powered hoist was installed at Furnace No. 5. Similar improvements were followed two years later with the installation of another steam-driven skip hoist at Furnace No. 6. In addition, Cambria installed new stock bins, erected with steel, in 1907.

In 1925 Bethlehem Steel tore down Blast Furnace No. 5, and completely rebuilt it the following year. Along with a new furnace, Bethlehem Steel erected a modern electrically powered skip house. The hoist at Furnace No. 6 was electrified in 1931. At the same time Bethlehem Steel installed new steel-constructed stock bins designed by the A. G. McKee Company.

Bethlehem Steel cut back on its hot-metal production at the Lower Works beginning about 1960. By 1963 Blast Furnace "F" and its hoist were demolished. However, Blast Furnace "E", formerly called Furnace No. 5 and producing ferro-manganese, was not retired until after the Flood of 1977. In November 1986 Bethlehem demolished Johnstown's last extant blast furnace, Furnace "E", but spared the Hoist and Skip House dating from 1925, and the Stock Bins, dating from 1931.

Sources:
Cambria Steel Company: Electric Light and Power Plant  (1908)

Current Name: Bethlehem Steel Corporation: Powerhouse No. 1  Rating: 2

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000)  UTM: 17 E.676600 N.4466400
Historic Use: Power Plant and Armature Repair Shop
Present Use: Machine Shop

DESCRIPTION: Powerhouse: Built in 1908, this two-and-one-half-story building contains a steel-frame and brick walls, concrete floors, and a concrete foundation. The structural steel sections for the building were rolled at Cambria. The building measures approximately 225' x 60'. Originally, the boilers were located in the basement and the steam-turbines, condensers, and generators were on the first floor. The control panels were located on the first floor in the southern half of the building, and the transformers were located on the second floor. Recently the last generator in the power plant, a 1950s General Electric unit, was removed and sold for scrap.

Armature Shop Annex: This two-story building measures approximately 150' x 40' and contains a steel-frame, brick walls, a concrete floor, and a concrete foundation was built in 1910. The structural steel for the annex was also produced at Cambria. In addition to armature repair, the large open space in this building was recently reorganized to accommodate a machine shop. This was done following the closing of the much larger Machine Shop, constructed in 1906. The machine shop in the annex includes boring mills, turret lathes, journaling lathes, shears, and drill presses, all of which date from the 1930s through the 1960s. This machinery was moved from the 1906 Machine Shop to the annex. In comparison to the 1906 Machine Shop, the current operation is decidedly modest. About fifteen to twenty machinists now work a single eight-hour shift, whereas during its peak years, from the 1910s through the 1970s, the old Machine Shop employed as many as 400 men and operated 24 hours a day.

HISTORY: Prior to the use of electric current supplied by low voltage direct current (DC) generators in the 1880s, the Cambria Iron Company relied on steam engines to supply the needed mechanical power. With improved technology in electrical power production during the 1880s and early 1890s, the use of alternating current (AC) generators with DC motors became widespread. In 1893 Cambria Iron undertook the construction of its first central light and power plant. Constructed with a heavy timber-frame and brick walls, this building measured approximately 100' x 50.' It was located near Blast Furnace No. 6 and probably housed DC generators.

In 1908 Cambria erected a new power plant on the sloping hillside above Blast Furnace No. 6. The building contained two stories with a full basement. Power was generated by the company's first steam-turbine and AC-generator unit, which had a capacity of 2,000 kilowatts, 2,300 volts, and operated at 25 cycles. By about 1910 an additional steam-turbine and AC-generator unit was installed with a capacity of 3,000 kilowatts. At the same time Cambria Steel added an armature repair shop along the west facade of the powerhouse. The powerhouse generated electrical power for lighting and machinery throughout the Lower Works.

Cambria continued to improve its electrical-power generating capabilities throughout the early 1900s, erecting a large powerhouse at Franklin. Soon after Bethlehem Steel Company acquired Cambria in the early 1920s an additional powerhouse was built at Franklin. By the 1950s Bethlehem Steel operated four powerhouses with the one at the Lower Works having the smallest output. Despite periodic improvements to the powerhouses in the 1950s Bethlehem Steel
Primary Metals

obtained increasing amounts of electrical power from the Pennsylvania Electric Company, one of the state’s largest private utilities. From 1954 to 1955 Pennsylvania Electric built a 23-kilovolt substation at Bethlehem’s Rod Mill to furnish the mill with 60-cycle current. In the 1960s and 1970s Pennsylvania Electric continued to expand its service to Bethlehem Steel and by about 1980 it provided the company with virtually all of its electrical power. The abandoned Powerhouse No. 1 was subsequently used as a machine shop. None of the early-twentieth century turbine generators remain in the Power House, however, a modest machine shop, and armature repair operation continues in the building.

Sources:
"Plan of Foundation of Electric Light & Power Plant; May 22, 1893," original drawing in the possession of Bethlehem Steel Corporation, Engineering Division, Johnstown.

Cambria Steel Company: 18" Billet Mill (1909)

Current Name: Bethlehem Steel: Storage Building
Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676420 N.4466700
Historic Use: Rolling Mill
Present Use: Storage

DESCRIPTION: This three-story, steel frame building is partially clad and is partially exposed. It measures approximately 200' x 90'. A brick building, containing one and two stories, and dating from the early 1900s, adjoins the larger, steel-frame structure.

HISTORY: In 1908 the Cambria Steel Company erected an 18" continuous billet mill, also referred to as the Morgan Mill, north of the 48" Blooming Mill. The steam-powered Morgan Mill housed four 21" roughing rolls and eight 18" finishing rolls. The Morgan Mill was first patented in the 1870s by C. H. Morgan, superintendent for the Washburn and Moen Manufacturing Company of Worcester, Massachusetts. Morgan replaced the cumbersome combination horizontal and vertical rolls with strictly horizontal rolls, devising a twisting guide that delivered the billet into the roll with the proper turn. Despite the difficulties in maintaining the correct positioning of the guides, the Morgan Mill permitted the rolling of two or more billets side by side at the same time. Despite the tremendous advantages offered by Morgan's continuous rolling mill, it was not until the turn of the century that the Morgan Mill predominated the nation's billet and rod mills.

By 1924 Bethlehem Steel, which had recently acquired Cambria, added a parallel set of four 21" roughing and three 18" finishing rolls. The mill received the blooms, each measuring 7" x 7" cross-section, and 8' in length, directly from the 48" Blooming Mill. An overhead rollway transported the blooms from one mill to the other, thereby eliminating the need for intermediate heating. Bethlehem Steel continued to operate the 18" Billet Mill in conjunction with the 48" Blooming Mill throughout the 1930s and 1940s. However, following the completion of a new 46" Slabbing and Blooming Mill at Franklin in 1952, the 18" Billet Mill was removed and the Blooming Mill was razed. Presently, only the steel frame of the 1908 billet mill remains, along with the electrically powered overhead crane. The structure contains recently installed
corrugated metal roofing and serves as a storage facility. Unfortunately, none of the original machinery survives.

Sources:

Cambria Steel Company: Foundry No. 2 (ca. 1900)

Current Name: Bethlehem Steel: Babbitt Shop
Rating: 3
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676370 N.4467000
Historic Use: Babbit Shop
Present Use: Abandoned

DESCRIPTION: This foundry comprises three one-story buildings joined together and dating from about 1900 through the 1950s. The central section, measuring about 40' x 30', contains ca. 1880s wrought-iron pin-connected roof trusses—these trusses were probably reused in the construction of this building—resting on brick walls. The southernmost section, measuring 30' x 30', adjoins the Brass Foundry and contains riveted steel roof trusses and brick walls. It was probably built in the 1920s. The northernmost section, measuring 35' x 35', dates from the 1950s and consists of a steel frame covered with corrugated metal.

HISTORY: This small foundry, located opposite the Iron Foundry and adjoining the Brass Foundry, was built in several stages, the earliest section dating from 1900. Since the 1930s this building has served as a babbit shop. The southern half of the Babbitt Shop, used until recently for the storage of patterns, and containing riveted-steel roof trusses, also probably dates from the 1920s. A one-story, corrugated-metal shed, added in the 1950s, adjoins the Babbitt Shop to the north. It was used for storing mandrels, a core material around which babbitt and other soft metals were shaped. Bethlehem Steel closed all of its foundry operations about 1983. Since then all of the bearings and babbitts required for steel company's mills in Johnstown are purchased from other foundry and manufacturing concerns.

Sources:
Bethlehem Steel Company: Steam Station No. 3 (1930)

Current Name: Bethlehem Steel: No. 1 Steam Station  
Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania  
USGS Quad: Johnstown, Pennsylvania (1:24000)  
UTM: 17 E.676550 N.4466800  
Historic Use: Steam Plant  
Present Use: Abandoned

DESCRIPTION: This four-story building measures 112’ x 60’. It is constructed with a steel-frame, concrete floors, a brick veneer, and a concrete foundation. The original boilers remain in place, however, this steam plant has been abandoned since about 1982.

HISTORY: Since its founding in the 1850s Cambria Iron Company had used steam to power its machinery. With the expansion of Johnstown’s steel industry at the Franklin and Gautier Mills in the early 1900s, Cambria required increasing amounts of steam for machinery in the mills, for turbine generators in the power houses, and for heating the company’s mill buildings. In 1917 the Midvale Steel & Ordnance Company built a large steam station (later called No. 7) at the Lower Works near the Johnstown’s Pennsylvania Railroad Station. It provided both Gautier and the mills of the Lower Works with steam. In addition, a number of other late-nineteenth-century steam stations, were located at the Lower Works, including one each at Blast Furnaces Nos. 1-4, one at the Blooming Mill, and one at the Rail Mill.

Soon after Bethlehem Steel Company acquired Cambria, vast improvements were made to the steam stations at Franklin and the Lower Works. Part of this modernization included the erection in 1930 of Steam Station No. 3, a large six-story building containing two Babcock & Wilcox Stirling boilers, each with a capacity of producing steam at 200 pounds pressure, evaporating 150,000 pounds of water per hour. Eventually the station produced steam at 400 pounds pressure, furnishing steam for Power House No. 1, the Lower Works, and Gautier. Initially the steam was heated with blast furnace gas obtained from Blast Furnaces No. 5 and No. 6, however, the boilers were later oil fired. By 1958 Bethlehem operated a total of thirteen steam stations, one at the Rod and Wire Mill, five at or near the Lower Works, and seven at Franklin. In the 1950s, Bethlehem Steel renumbered its steam stations, and Steam Station No. 3 became No. 1. More recently, Steam Station No. 1 has seen sporadic use. The nearby Turbo-Blower Building was converted into a steam station in 1985, thus superseding Steam Station No. 1. The older steam station remains largely unaltered from its 1930s appearance and retains its original boilers.

Sources:


"Key Plan, Johnstown Plants: February 16, 1925; revised January 26, 1927, March 29, 1930, and February 13, 1939," (copy available at the Canal Museum, Center for Canal History and Technology, Easton, PA).

Bethlehem Steel Company: Gas Cooler and Washer Plant  (1931)
Current Name: Bethlehem Steel: Gas Cooler and Washer Plant  Rating: 2
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676590 N.4466700
Historic Use: Gas Cleaning of Blast Furnace Gases
Present Use: Abandoned

DESCRIPTION: Located above the remnants of Blast Furnace No. 5, this complex includes three primary spray towers and four disintegrators, each of which is of steel plate construction, lined with refractory brick. Steel pipes carried hot gases from the blast furnace into the Gas Cooler and Washer Plant. With the demolition of the blast furnace in 1986, the main conduit from the furnace to the plant was severed.

HISTORY: Cambria Steel Company installed its first gas-cleaning plant at its blast-furnace operation in 1914, when spray towers were installed at Furnace No. 4. In the 1920s, the need for clean blast furnace gas in high-efficiency hot-blast stoves and boilers prompted Bethlehem Steel, which had acquired Cambria Steel, to revamp its gas cleaning plants. From 1930 to 1931, the company erected a gas cleaning plant at Blast Furnace No. 5 and No. 6, replacing two Kling-Weidlein dry-cleaners installed only a decade before by the Midvale Steel & Ordnance Company. Although abandoned since Blast Furnace No. 5 was blown out in 1977, this most recent gas-cleaning plant remains in place. It consists of three primary spray towers and four disintegrators, which were used for the final cleaning of the blast furnace gas.


Bethlehem Steel Company: Turbo-Blower Building  (1961)
Current Name: Bethlehem Steel: Steam Station No. 7  Rating: 3
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676590 N.4466750
Historic Use: Engine House for Blast Furnaces
Present Use: Steam Plant

DESCRIPTION: This three-story building of steel-frame construction contains a brick veneer and glass-block masonry windows. Completed in 1961 and providing compressed air for Blast Furnace "E," the Turbo-Blower Building originally housed a steam turbine and Ingersoll-Rand compressor unit. This was shut down when "E" Furnace was taken out of blast in 1977. About 1985 Bethlehem Steel removed the steam turbine and compressor unit, installing a gas-fired boiler to provide steam for Gautier, the Rod and Wire Mill, and the General Office. The building currently serves as a steam station.

HISTORY: In the late 1950s, Bethlehem Steel decided to upgrade the hot blast operation at "E" Furnace, which was then used for producing ferro-manganese. The existing Blowing Engine House, constructed in 1874 and enlarged about 1900, was operating with three Mesta horizontal engines that had been installed in 1918. From 1960 to 1961 Bethlehem Steel erected a turbo­blower building on the hillside overlooking the furnace and hot-blast stoves. The old Engine House was then used as a backup facility. The turbo-blowers continued in service until 1977 when "E" Furnace was retired. About 1985 Bethlehem Steel converted the building into a steam station, removing the steam turbine and compressor unit, and installed gas-fired steam boilers.
Primary Metals

that had been salvaged from Bethlehem's Lackawanna (New York) Steel Works. This steam station superseded Steam Station No. 3, also located in the Lower Works. The former Turbo-Blower Building was then designated Steam Station No. 7.

Sources:

Bethlehem Steel Company: Sintering Plant (1950s)
Current Name: Bethlehem Steel: Sintering Plant       Rating: 2
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676540 N.4466600
Historic Use: Dust Collector for Blast Furnace
Present Use: Abandoned

DESCRIPTION: This elevated three-story steel structure is clad with corrugated metal and is supported by a steel frame. It measures 87' x 54'.

HISTORY: Prior to the 1940s, flue dust from Johnstown's blast furnaces was removed from the furnaces and transported to Hinckston and Park Hill for dumping. By 1944 the amount of dust produced reached 173,000 tons per year. Some of it was recycled into the blast furnaces after processing in sintering plants; however, this was not particularly cost effective. The handling of flue dust in Johnstown changed dramatically between 1946 and 1947 when Bethlehem Steel installed a single strand sintering machine at the Franklin Works. About 1970 the steel company installed a new dust collector south of Blast Furnace No. 5, the last remaining blast furnace at the Lower Works. It consisted primarily of an elevated steel-frame structure with a large steel pipe extending from the blast furnace to the dust collector. Despite this improvement the blast furnace was blown out in 1977, and torn down in 1986. Presently, only the steel-frame dust collector remains along with part of the massive steel pipe.

Sources:
Bethlehem Steel Company: Scarfing Yard  (ca. 1930s)
Current Name: Bethlehem Steel: No. 9 Yard
Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676400 N.4466680
Historic Use: Finishing of Billets
Present Use: Storage

DESCRIPTION: Two-story shed structure open on three sides. Of steel frame construction with riveted-steel Pratt roof trusses. The roof is covered with corrugated metal. The shed measures approximately 500' x 60'.

HISTORY: This covered craneway was probably erected in the 1930s by the Bethlehem Steel Company. It is located next to the site of Blast Furnace No. 5 and the old Blowing Engine House. The structure houses two overhead cranes and is currently used for storage.

Source:

Bethlehem Steel Company: Railroad Office  (ca. 1924)
Current Name: Bethlehem Steel: Blast Furnace Office
Rating: 2

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676510 N.4466900
Historic Use: Office
Present Use: Abandoned

DESCRIPTION: This two-story brick building measures approximately 30' x 20'. It contains a gable roof with an intersecting gable extension, a one-story brick wing, and a concrete foundation. All of the original windows have been infilled with glass-block masonry. The building is currently vacant.

HISTORY: In the early-twentieth century, the Cambria Steel Company relied on two railroads, the Baltimore & Ohio and the Pennsylvania, for long distance shipping of its steel products. The movement of goods between the steel plants within the Conemaugh Valley was handled by a local carrier, the Conemaugh & Blacklick (C&BL) Railroad, which incorporated in 1925 and claimed over 52 miles of standard gauge track. Soon after Bethlehem Steel acquired the old Cambria Steel Company from Midvale Steel & Ordnance Company in 1924, it upgraded its own railroad that serviced the mills at Franklin, Gautier, and the Lower Works. This small two-story brick building was erected by Bethlehem Steel about 1925, and served as an office for its rail operations. By 1935, Bethlehem Steel controlled about 30 miles of standard-gauge track which connected with the C&BL. The C&BL continued to provide the locomotives and rolling stock for Bethlehem Steel.

By the 1960s the railroad office was used as an office for the only remaining blast furnace operation at the Lower Works. When Blast Furnace No. 5 was retired after the Flood of 1977, the building remained in use as an office for Car Repair Shop No. 4, a large 1950s building located immediately behind the two-story structure. About 1980 the office was vacated and it is currently unoccupied.

Sources:
Primary Metals

"History of the Evolution of the Johnstown Plant: Bethlehem Steel Company, 1852-1935; (revised 1958)," unpublished paper prepared by the Bethlehem Steel Engineering Department, in the possession of the Bethlehem Steel Corporation, Engineering Division, Johnstown, pp. 21, 41, 47.


Bethlehem Steel Company: Oxygen & Acetylene Building (ca. 1940)

Current Name: Bethlehem Steel: Oxygen-Acetylene Building
Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676480 N.4466630
Historic Use: Gas Storage
Present Use: Office and Gas Storage

DESCRIPTION: This two-story steel-frame building contains brick walls and measures approximately 90' x 35'. Oxygen and acetylene are stored in the southern half of the building and the northern half serves as offices. The northern half includes an exterior stairway extending up to a second-story entrance.

HISTORY: Built in the 1940s, this two-story building serves as offices and as a storage facility for oxygen and acetylene. At that time, Bethlehem Steel maintained a scarfing operation in the old Steel Rail Mill (later the Steel Car Truck Assembly Building), and used oxygen and acetylene at this and other facilities. In addition to the storage of oxygen and acetylene, the offices of the plant's Fuel Department are housed in the building.

Sources:

Bethlehem Steel Company: Manganese Shed (1960)

Current Name: Bethlehem Steel: No. 4 Car Shop
Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676480 N.4466450
Historic Use: Ferro-Manganese Processing
Present Use: Railroad Car Repair Shop

DESCRIPTION: This three-and-one-half-story building is constructed with a steel frame clad with corrugated metal, a gable roof composed of a riveted steel Fink roof trusses and a full-length monitor extending along the gable ridge. The building measures 400' x 128' and rests on a concrete foundation. It has been used most recently as a car repair shop for Bethlehem Steel's Conemaugh & Blacklick Railroad.

HISTORY: In the 1930s, two blast furnaces, No. 5 at the Lower Works and No. 9 at Franklin, produced Bethlehem Steel Company's manganese, and, by 1957 the Johnstown plants led the nation in manganese output. To accommodate the expansion of manganese production Bethlehem Steel erected this large steel-frame building in the early 1960s to serve as a manganese shed. Manganese slabs from the blast furnaces were brought by rail to the shed, where they were processed for shipping to the nation's various steel companies including other Bethlehem Steel plants.
The processing of the manganese at the Lower Works was rather primitive. The men working in the shed were called manganese unloaders, and wearing thick leather gloves and wooden shoes, stood on the hot slabs in the rail cars breaking off chunks of manganese with sledge hammers. After breaking apart sections of the slab, the unloaders lifted the heavy chunks from the rail cars and tossed them onto metal pans. The metal pans containing the manganese chunks were then loaded onto other rail cars that shipped the manganese to other steel plants.

Bethlehem continued to produce manganese until the mid-1970s when Furnace Nos. 5 and 9 were shut down. Until recently, the Manganese Shed has served as a car shop. The building is currently vacant.

Sources:
"History of the Evolution of the Johnstown Plant: Bethlehem Steel Company, 1852-1935; (revised 1958)," unpublished paper prepared by the Bethlehem Steel Engineering Department, in the possession of the Bethlehem Steel Corporation, Engineering Division, Johnstown, pp. 44, 47.

Bethlehem Steel Company: 48" Mill Soaking Pits Building (ca. 1930s)
Current Name: Bethlehem Steel: Car Repair Shop Rating: 3
Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E 676630 N 4466500
Historic Use: Heating of Blooms and Billets
Present Use: Railroad Car Repair Shop

DESCRIPTION: This four-story building of steel-frame and brick construction, contains a gable roof composed of riveted steel roof trusses and steel purlins supporting corrugated metal roofing; the steel columns are supported on a concrete foundation. The building measures approximately 430' x 90'. The soaking pits have been filled in and the blooming and billet mills removed. Bethlehem Steel presently uses the building as a car repair shop for the company-owned Conemaugh & Blacklick Railroad.

HISTORY: Bethlehem Steel improved its blooming mill operation at the Lower Works with the construction of this large four-story steel frame building that contained six new furnaces. Each furnace consisted of four soaking pits with the gases ventilated by Isley type venturi stacks. Blast furnace or coke gas was used to fire the furnaces. Bethlehem Steel continued to produce blooms in the adjacent Blooming Mill, constructed in the 1870s. This blooming mill was demolished in 1952. Subsequently, the 48" Mill Soaking Pits Building was converted to house an 8" Mill, in 1961. During this conversion into a rolling mill, the soaking pits were filled in with concrete. Despite these major alterations, the 8" Mill lasted only a short while before the operation was abandoned. In more recent years the building has served as a rail car repair shop, servicing the rolling stock of the Conemaugh & Blacklick Railroad.

Sources:
Primary Metals

Bethlehem Steel Company: 11" Mill and Shipping Building (1961)

Current Name: Bethlehem Steel: 11" Mill and Shipping Building  Rating: 3

Lower Works, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676360 N.4466620
Historic Use: Rolling Mill
Present Use: Rolling Mill

DESCRIPTION: 11" Mill: Measuring 920' x 120', this three-and-one-half-story building is the most recently constructed mill at the Lower Works. It contains a steel frame and a large gable roof which is composed of riveted steel Fink roof trusses. A full-length monitor extends along the gable ridge. Resting on a concrete foundation, the building is clad with corrugated metal. Containing a series of automated rolls and shears, the 11" Mill is the only active mill of the Lower Works.

Shipping Building: Adjoining the 11" Mill, this building measures 720' x 110' and contains a steel frame, a gable roof--also composed of riveted steel roof trusses and steel purlins--and rests on a concrete foundation. It is clad with corrugated metal. Two tracks extend into the northern two-bay entrance of the Shipping Building.

HISTORY: With the demolition of Cambria Iron Company’s original Bessemer steel plant and open hearth building in 1952, an important era in Johnstown’s steel-making history came to an end. The site of these two plants in Bethlehem Steel's Lower Works remained unoccupied until about 1959, when construction work began on the area’s largest and most modern mill and shipping buildings. Opened for production in 1961, the 11" Mill produced steel and alloy bars, which were then shipped to other plants for the manufacture of a wide range of metal products. Steel bars from the 11" Mill, processed by a variety of techniques including forging, machining, and cold drawing, were used in the production of gears, automobile parts, hand tools, agricultural implements, and many other metal goods. The Shipping Facility for the mill extends to the north, along the west side of the 11" Mill. Improvements over the years included computerized control in the milling process and in scheduling the flow of materials as well as the shipping of finished steel products.

The 11" Mill continues in operation with a crew of about twenty to thirty men working three eight-hour shifts. It is the center of activity in the Lower Works; the other facilities such as the Blacksmith Shop, Carpenter Shop, Tin Shop, and Roll Shop, are used to service the 11" Mill and the other Bethlehem plants in Johnstown.

Sources:

-300-
Cambria Iron Company: Gautier Complex  (1893-95)
Current Name: Bethlehem Steel: Gautier Division  Rating: 1

Between Washington/Clinton Sts. and Little Conemaugh River, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E.677260 N.4465950
Historic Use: Rolling Mills
Present Use: Rolling Mills

HISTORY AND DESCRIPTION: The section of land bordered by the Little Conemaugh River and Washington and Clinton streets has been an important transportation and industrial site in Johnstown since the early 1830s. It was at this time that engineers on the Pennsylvania Canal laid out and constructed a canal-boat basin in this location to serve as a junction between the waterway’s Western Division and the Allegheny Portage Railroad. In addition to warehousing, one of the earliest industries near the canal basin was S. H. Smith’s iron foundry. When the Portage Railroad ceased operating in the mid 1850s the canal-boat basin declined in importance and was gradually filled in. The area was greatly transformed in 1878 when Josiah H. Gautier formed a partnership with Cambria Iron and moved his Gautier Steel Company from Jersey City, New Jersey, to Johnstown. Specializing in the production of steel barbed-wire, the mill was operated by Gautier and his two brothers until 1881 when the partnership was dissolved and the Gautier works became a department of Cambria Iron. By the mid 1880s the Gautier works—the mill retained its original name—employed 100 wire-drawers and had a capacity of 100 tons of wire per day.

The Johnstown Flood of 1889 completely destroyed the Gautier works and the site was left for over three years. Cambria Iron began reconstructing the Gautier works in 1892 with large brick and steel-frame buildings erected along Clinton Street. (These buildings along Clinton Street are the earliest extant mills at Gautier.) By 1895 the new Gautier works was in operation, producing a wide range of agricultural products, including steel shapes for plows, harrows, reapers, and cultivators, to name but a few, as well as merchant bars. By the 1920s the Gautier works had been greatly expanded and the 1890s section housed two 9" rolling mills and one 12" rolling mill. Presently, Bethlehem Steel operates only the 12" mill; the 9" mills were removed in the 1960s and 1970s. (A 9" mill remains in operation in another section of the Gautier Division—see entry of Bethlehem Steel Company: Gautier Complex). The 12" mill consists of two-high and three-high Blaw-Knox roll stands dating from the 1920s. Importantly, the 12" mill continues to operate much as it did in the 1920s and is one of the nation’s few hand-operated rolling mills in a large steel works. Associated with the 12" mill is the gas-fired furnace used for heating the billets. A straightener and shear are used prior to shipping the rolled steel, and a spur of Bethlehem Steel’s Conemaugh & Blacklick Railroad extends inside the eastern section of the 1890s building.

Just as few changes have been made to the 12" mill, the mill buildings of the Gautier works, built between 1893 and 1895 have been only slightly modified. They remain two-and-one-half stories in height, contain four bays, a steel frame with brick nogging along the exterior walls,
riveted-steel Fink roof trusses, full-length monitors, and an ashlar stone foundation. In addition, several of the multi-light windows remain in place.

Sources:

Cambria Steel Company: Gautier Complex (1906-11)
Current Name: Bethlehem Steel: Gautier Division
Rating: 1
N of Clinton Street (PA 271) S of Little Conemaugh River, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677260 N.4465950
Historic Use: Rolling Mills
Present Use: Rolling Mills

HISTORY AND DESCRIPTION: Shortly after the Cambria Iron Company was reorganized as the Cambria Steel Company in 1898, several new mill buildings were erected at the Gautier Works. This included the addition of three bays west of the 9"-mill No. 3, with the westernmost bay housing the Rail Anchor Shop, the Fence Post Shop, and the Smith Shop. Two blocks west of these shops, near the intersection of Clinton and Matthew streets, four additional mill buildings were erected, each containing a single bay and measuring about 1,000' x 90'. These large buildings were uniform in appearance with steel frames rising three-and-one-half stories in height, gambrel roofs and full-length monitors supported by riveted-steel Fink roof trusses, exterior walls composed of brick nogging, and a concrete foundation. The buildings housed the Shear Shop, the 36" universal plate mill, the 13" mill, and shipping and storage facilities. The 36" plate mill was powered by a double-reversing team engine manufactured in 1905 by the Southwark Foundry and Machine Company of Philadelphia. Around 1906, Cambria Steel erected another group of buildings at Gautier between the Rail Anchor Shop and the Shear Shop. One of the new structures, a two-story two-bay steel-frame and brick building, housed the 22" and 20" mills along with a finishing shop. Although a few other minor buildings were erected in the 1910s, no additional large-scale expansion occurred at the Gautier Works until the 1920s when Bethlehem Steel acquired Cambria.

Presently the buildings at the Gautier Works, dating from the late 1890s and early 1900s, are largely vacant, however, part of the revamped 14" mill operates in the northern end of the former 13" mill and shear shop. Importantly, the original Southwark steam engine remains in place in the old 36" plate mill, though it has not operated since the 1920s.

Sources:
Bethlehem Steel Company: Gautier Complex (1923-26)

Current Name: Bethlehem Steel: Gautier Division

Rating: 1

Washington/Clinton Streets and Little Conemaugh River, Johnstown, Cambria County, Pennsylvania

USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677260 N.4465950

Historic Use: Rolling Mills

Present Use: Rolling Mills

HISTORY AND DESCRIPTION: Shortly after Bethlehem Steel purchased Cambria in 1923, the company conducted a study of all facilities at Franklin, the Lower Works, and Gautier. At that time the Gautier Division extended nearly one-half mile along the Little Conemaugh River and contained three 8" mills, two 9" mills, one 10" mill, two 12" mills, one 13" mill, one 14" mill, one 20" mill, one 22" mill, one 24" universal mill with shear shop, one 36" universal plate mill, a disc shop, a rake shop, and a rail-anchor shop. Bethlehem Steel management decided to modernize and expand the Gautier Division, commencing work in 1924. The company built several new steel-frame and brick mill buildings in the westernmost section of the Gautier mill complex, relocating the 8" mills, installing a new 14" structural mill. This latter mill was among the largest additions at Gautier. It comprised five stands of 18" and five stands of 14" rolls, hot saws, hot beds, a straightener, shears, and assembly cradles. The 14" structural mill produced a range of structural steel shapes, including angles, rails (up to 45 pounds per yard), and "Z" bars.

Other mills revamped by Bethlehem Steel in the 1920s and 1930s included the 13" bar mill, the 10" bar mill, which was a Morgan-patented bar mill, and 9"-mill No. 2. The mid-1920s at Gautier also witnessed the construction of a new warehouse building, and a new machine and roll shop. While several old mills were taken out of service including the 14", 10", and 13" mills, dating from 1900, the two 9" mills, dating from the 1890s, and the 12" mill, dating from 1895, were retained and electrified.

In the late 1920s, Bethlehem Steel added two other notable buildings at Gautier, a two-story office building and an adjacent one-story laboratory building. Both structures contained brick exterior walls and concrete foundations. The steel-frame office building was constructed with a gable roof, and the laboratory contained a hip roof. As with many of the mill buildings at Gautier, the windows of these two structures have been infilled with brick and glass-block masonry. The roofs have been covered with corrugated metal or asphaltic material. Nonetheless, the office building, laboratory, shops, and mill buildings retain their original size and shape with only a few minor additions. Presently, Bethlehem Steel operates only the 14" mill, the 9" mill No. 2, and the 12" mills, along with roll shop, office building, and laboratory. All of the other rolling mills and steel product mills of the Gautier Division have been scrapped. Much of the vast interior space of the mill complex is either empty or used for storage.

Sources:


Johnstown Tribune-Democrat, Industrial Section, 1953.


Bethlehem Steel Company: Gautier Complex  (1923-26)
Current Name: Bethlehem Steel: Gautier Division  Rating: 1
Washington/Clinton Streets and Little Conemaugh River, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.677260 N.4465950
Historic Use: Rolling Mills
Present Use: Rolling Mills

HISTORY AND DESCRIPTION: Shortly after Bethlehem Steel purchased Cambria in 1923, the company conducted a study of all facilities at Franklin, the Lower Works, and Gautier. At that time the Gautier Division extended nearly one-half mile along the Little Conemaugh River and contained three 8" mills, two 9" mills, one 10" mill, two 12" mills, one 13" mill, one 14" mill, one 20" mill, one 22" mill, one 24" universal mill with shear shop, one 36" universal plate mill, a disc shop, a rake shop, and a rail-anchor shop. Bethlehem Steel management decided to modernize and expand the Gautier Division, commencing work in 1924. The company built several new steel-frame and brick mill buildings in the westernmost section of the Gautier mill complex, relocating the 8" mills, installing a new 14" structural mill. This latter mill was among the largest additions at Gautier. It comprised five stands of 18" and five stands of 14" rolls, hot saws, hot beds, a straightener, shears, and assembly cradles. The 14" structural mill produced a range of structural steel shapes, including angles, rails (up to 45 pounds per yard), and "Z" bars.

Other mills revamped by Bethlehem Steel in the 1920s and 1930s included the 13" bar mill, the 10" bar mill, which was a Morgan-patented bar mill, and 9"-mill No. 2. The mid-1920s at Gautier also witnessed the construction of a new warehouse building, and a new machine and roll shop. While several old mills were taken out of service including the 14", 10", and 13" mills, dating from 1900, the two 9" mills, dating from the 1890s, and the 12" mill, dating from 1895, were retained and electrified.

In the late 1920s, Bethlehem Steel added two other notable buildings at Gautier, a two-story office building and an adjacent one-story laboratory building. Both structures contained brick exterior walls and concrete foundations. The steel-frame office building was constructed with a gable roof, and the laboratory contained a hip roof. As with many of the mill buildings at Gautier, the windows of these two structures have been infilled with brick and glass-block masonry. The roofs have been covered with corrugated metal or asphaltic material. Nonetheless, the office building, laboratory, shops, and mill buildings retain their original size and shape with only a few minor additions. Presently, Bethlehem Steel operates only the 14" mill, the 9" mill No. 2, and the 12" mills, along with roll shop, office building, and laboratory. All of the other rolling mills and steel product mills of the Gautier Division have been scrapped. Much of the vast interior space of the mill complex is either empty or used for storage.

Sources:
Johnstown Tribune-Democrat. Industrial Section, 1953.
Cambria Steel Company: Franklin Mills  (1899-1910)

Current Name: Bethlehem Steel: Franklin Division

Rating: 1

E side of River Avenue (PA 271) .3 mile SW of Main Street, Franklin Borough, Cambria County, Pennsylvania

USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E.679440 N.4467300

Historic Use: Steelmaking (Open Hearth Furnaces); Rolling Mills

Present Use: Steelmaking (Electric Furnaces); Rolling Mills

HISTORY AND DESCRIPTION: As demand for Cambria Steel products expanded in the late 1890s, the company required additional production capacity. The original Cambria plant, called the Lower Works, and Gautier provided little room for expansion and therefore Franklin Borough, near Cambria Steel's existing batteries of Otto-Hoffman by-product coke ovens, was chosen as the site for a new, modern steel works.

One of the first structures built was a large open hearth shop. Construction commenced in 1901 and that same year six 75-ton open hearth furnaces were placed in operation. To the west of the Open Hearth Shop, Cambria Steel erected a 40" blooming mill. The building housing the open hearth furnaces consisted of a large steel-frame structure with sheet iron cladding. The Blooming Mill was composed of a steel frame, parts of which were clad with sheet iron and
other sections which contained brick walls. Just south of the Blooming Mill, Cambria erected several steel-frame and brick buildings to house its burgeoning rail car fabrication shops.

In 1903, Cambria began construction of two blast furnaces at Franklin, locating them on a terraced hillside above the Open Hearth Plant. Named Blast Furnace No. 7 and No. 8, each was equipped with center combustion hot-blast stoves and a newly built ore field, containing two Wellman-Seaver, Morgan ore bridges, and a Wellman-Seaver, Morgan traveling ore car dumper—the first traveling car dumper installed in the United States—served the new furnaces. In 1906 Cambria Steel blew in Blast Furnace No. 7, and the following year No. 8 was placed in service. The blast furnaces were operated with blowing engines consisting of six Southwark steam-powered vertical engines and one Southwark twin-tandem horizontal gas-driven engine. The blowing engines were housed in tall, narrow steel-frame buildings with brick cladding. By 1917 three more blast furnaces stood at Franklin, (No. 9, No. 10, and No. 11). At the end of the First World War Johnstown boasted of eleven blast furnaces, all of which were operated by the Midvale Steel & Ordnance Company which acquired Cambria Steel in 1916.

Just as Franklin's blast furnace operation expanded between 1903 and 1917, so did other parts of the sprawling mill complex. By 1916 the Open Hearth Shop contained twenty-two open hearth furnaces (one was added in 1902, three in 1903, one in 1904, four in 1905, two in 1907, three in 1912, and two in 1916), along with a 250-ton hot-metal mixer (installed in 1907). The building was by far the largest single structure of the Cambria plants, extending over 2,000' in length. Additions to the blooming and billet mills—called the Primary Mills—occurred upon the completion of the 40" Blooming Mill. This included the construction of Shearing Shed No. 1 (ca. 1902), the No. 1 and No. 2 Furnace House (ca. 1902), and the 134" plate mill (1917). Shortly after the Bethlehem Steel Company acquired Cambria in 1923, a new, steam-powered 34" billet mill and adjoining stockyard building were constructed. The most significant alteration to the Primary Mills was undertaken in 1950-51 when Bethlehem Steel replaced the original 40" blooming mill with a new 46" blooming mill and soaking pits operation. The old steel-frame building was torn down and replaced with a new, larger steel-frame structure clad with corrugated metal.

Bethlehem Steel continued operating the large open hearth shop at Franklin until 1982, when the electric furnace shop installed in the open hearth building was placed on line. (An attempt to install a Basic Oxygen Furnace followed by a continuous caster at Franklin's open hearth building was begun in 1977, however, only the structural steel work was completed and Bethlehem Steel subsequently abandoned the project.) By far the most dramatic change at Franklin occurred soon after the flood of 1977 when Bethlehem Steel commenced a sweeping demolition program that included the coke plant and blast furnaces. By 1988 very little of the coke plant remained, the Sulphate Storage Building, erected about 1900, being the only major surviving structure. The blast furnace operation contained only the blowing engine house, which was erected about 1900 and was used in conjunction with Blast Furnace Nos. 7, 8, and 9. All of the blast furnaces were razed. Presently, the two electric furnaces, each with a capacity of 15 tons, operates along with the nearby 46" blooming mill and the 34" billet mill.

Sources:
Cambria Steel Company: Franklin Car Shops (1889-1910)

Current Name: Bethlehem Steel: Franklin Car Shops
Rating: 1
Survey No.: 021.000

River Avenue 1.75 miles S of Main Street on E Bank, Franklin Borough, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.678940 N.4467060
Historic Use: Railroad Car Manufacture
Present Use: Railroad Car Manufacture

HISTORY AND DESCRIPTION: In 1898, the Cambria Steel Company constructed a structural shop at Franklin where steel for the new mill and shop buildings of the steel works was fabricated. In the vicinity of the Structural Shop, Cambria Steel broke ground for a Steel Car Department in 1901. Early the following year the first of the car shop buildings was constructed, along with five craneways. Measuring 508' x 82', the two-and-one-half-story car shop contained a steel frame and brick cladding, and had the capacity to produce fifteen cars per day. The company specialized in the production of all-steel hopper cars. Nearby, Cambria Steel built a wood-frame paint shop, while a building in the adjacent Primary Mills housed an axle turning and finishing shop. In 1903 the Car Department was greatly expanded with the
construction of Car Shop No. 2 and No. 3, each nearly identical in size and appearance to Car Shop No. 1.

No major changes were made in the Steel Car Department until 1922 when the Midvale Steel & Ordnance Company constructed a large addition to the west end of the Structural Shop. This steel-frame and brick addition housed the production line for railroad tank cars. It contained bending rolls, punches, furnaces, and steam-powered presses and hammers. Soon after the Tank Car Shop was completed, the adjoining Structural Shop became part of the tank-car production facility. Following its acquisition of Midvale's Johnstown plants in 1923, Bethlehem Steel erected new brick and steel buildings to house the No. 1 and No. 2 Paint Shops as well as a woodworking shop.

Since the 1920s, few changes have been made to the Steel Car Department. Some buildings have had their exteriors altered—namely the replacement of many of the original multi-light, fixed and double-hung sash windows with transluscent fiberglass or corrugated metal. However, the shops continue to produce steel hopper cars. A subsidiary of Bethlehem steel currently operates the shops, producing about a dozen cars per eight hour shift.

Sources:

Cambria Steel Company: Wire Mills (1910–11)
Current Name: Bethlehem Steel; Rod & Wire Division
Rating: 2
On Broad Street N of St. Clair Run at Little Conemaugh River, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E 674860 N 4468660
Historic Use: Wire Mills
Present Use: Wire Mills

HISTORY AND DESCRIPTION: About three years after the Flood of 1889, the Cambria Steel Company began rebuilding the Gautier Works; however, the once teeming wire plant was replaced with rolling mills for the production of iron and steel shapes. Not until 1910 did Cambria re-enter the wire trade when the company designed a new rod and wire mill along the Conemaugh River in Coopersdale, about two miles north of Johnstown. The Morgan Construction Company of Worcester, Massachusetts, began work on the rod mill in October 1910 and by February 1911 it was in operation. The new facility comprised several bays of steel-frame construction, a brick exterior, several interior brick partition walls, a series of saw-tooth monitors, a concrete floor, and a concrete foundation. It housed a Morgan Rod Mill, the Wire Drawing Department, barb-wire, fence post and poultry netting, and nail-making machines, as well as a copperas plant.

The original Morgan two-strand continuous rod mill was driven by a cross-compound Corliss engine designed and built by the Southwork Foundry and Machine Company of Philadelphia. The steam engine included a high-pressure steam cylinder, 3" in diameter, and a low pressure cylinder, 6" in diameter, both with a 54" stroke. Billets were brought from Franklin or the Lower Works via Cambria Steel's railroad and delivered to the storage yard where a 15-ton, electrically powered Alliance crane deposited them onto a conveyor, that delivered the 30' long, 1-3/4" square billets to the continuous Morgan furnace. From the furnace the billets were
passed through sixteen two-high stands where they were rolled into rods, bundled, and mechanically dumped from the reels on a circular chain conveyor that delivered them to trucks in the neighboring rod storage area. Prior to drawing, the rods were transported to the adjacent rod cleaning room (measuring 90' x 80') that contained acid and lime vats. It was here that scale was removed and the rods were coated with lime, prior to drawing.

The Wire Drawing Department was housed next to the rod cleaning room in a 360' x 110' section of the mill. It originally contained 182 drawing blocks (manufactured by Turner, Vaughn & Taylor Company of Cuyahoga Falls, Ohio) of which 152 produced coarser grades of wire and thirty produced finer grades. After drawing, the wire was annealed in large annealing pots and then, depending on the product, galvanized. The galvanizing room was situated at the end of the Wire Drawing Department and next to it stood the barb-wire machines, the field fence and poultry netting machines, and the wire nail-making machines. A small brick building, measuring 100' x 50', located just outside the nail-making area was used as a cooperage, producing wood-stave barrels for shipping Cambria's nails. South of the cooperage, the Cooperas Plant was contained in a separate building (measuring 200' x 80') along the Conemaugh River and processed the spent acid from the rod cleaning room, producing cooperas for paint manufacturers, as well as for use in fertilizers and disinfectants.

Shortly after Bethlehem Steel acquired Cambria in 1923 a number of minor improvements were made to the Rod and Wire Mill including the addition of a new galvanizing line and a heated warehouse of steel-frame and brick construction. Other expansions to the Rod and Wire Mill occurred in the 1930s when Bethlehem Steel erected additional warehouses (again of steel frame and brick cladding with sawtooth monitors), and in the 1940s when the Wire Drawing Department was enlarged and an experimental Bethanizing Plant, an innovative heat-treating and protective-coating process, was installed. The most dramatic change to the rod mill occurred in 1955 with the replacement of the original Morgan mill with a new 23-stand, two-high, electrically powered Morgan rod mill. The original Southwark steam engine was removed at this time. Other alterations to the original mill complex include the demolition of the Cooperas Plant, the abandonment of the nail-making facility (now used as a storage area), and the conversion of the Cooperage into an office.

Sources:
Cambria Steel Company: Wheel Plant  (1917)
Current Name: Bethlehem Steel: Circular Products Rating: 2
Main Street N of Clapboard Run, Franklin Borough, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.680130 N.4468500
Historic Use: Rolling Mills
Present Use: Abandoned

HISTORY AND DESCRIPTION: The Wheel Plant, known since the 1930s as the Circular Products Division, is located on Main Street north of the Franklin Borough in Johnstown. It was built on farmland in 1911 and produced forged railroad car wheels and other circular products. The facility was acquired by Bethlehem Steel in 1923 when it acquired the Johnstown plants of the Midvale Steel & Ordnance Company. Bethlehem Steel operated the plant until 1983 when it was abandoned.

The plant comprises the following buildings and machinery:

The Steel Receiving and Preparation Building is a two-and-one-half-story structure with brick curtain walls, a concrete foundation, and riveted-steel roof trusses with monitors. It measures 420' x 160'. A railroad spur extends into the building from the north. It was here that blooms and wheel blocks, produced at the Franklin works, were brought into the Wheel Plant. Some equipment remains in the Receiving and Preparation Building including a charging machine (ca. 1950s), parts of three Heller saws (ca. 1950s), a billet breaker plate (ca. 1950s), forging press No. 1 (ca. 1918), and an overhead crane. The building is now used for storage; several scrapped pieces of machinery from the Wheel Plant are located here.

The Circular Products Rolling Mill No. 1 is a two-and-one-half-story steel-frame structure with brick walls, a concrete foundation, riveted-steel roof trusses with monitors, and corrugated-metal roofing. It measures 260' x 80'. The mill houses a piercing press (ca. 1950), and a finish shear and hub punch (ca. 1950). Debris is scattered throughout the mill and a large pile of coal has been placed here. In 1918, Mill No. 1 was publicized in the technical press as a result of the improvements made to the newly installed Slick wheel mill, patented by Midvale Steel engineer Edwin E. Slick. (At the time Slick was vice president and general manager of Midvale Steel & Ordnance Company. However, his process for manufacturing solid-rolled steel wheels was first employed at the Homestead Works of the Carnegie Steel Company about 1910.)

Slick's mill included two important innovations, the first of which involved rolling the ingot and shearing the bloom, and the second, concerned the shaping of the wheel using a newly devised rolling mill. The rolling mill was designed to hold two dies between which was clamped the wheel blank. A large hydraulic plunger pushed one rotating die towards the other, thus shaping the blank into a wheel or other circular form. The Slick Wheel Mill became the standard wheel mill of the steel industry.

The Circular Products Rolling Mill No. 2 is a two-and-one-half-story steel-frame structure with brick walls, a concrete foundation, riveted-steel roof trusses with monitors, and corrugated-metal roofing. As with the No. 1 Mill, this section of the Wheel Plant adjoins the Steel Receiving and Preparation Building. It measures 260' x 80' and houses a rotary furnace (ca. 1918), and parts of the Morgan wheel rolling mill (ca. 1918).

Adjoining Mill No. 2 are the two heat-treating areas. One is contained within a one-and-one-half-story building constructed with a steel frame, brick walls, a concrete foundation, and riveted-steel Fink roof trusses supporting a gable roof and full-length monitor. This section of
the mill measures 80' x 60' and houses a rotary furnace (ca. 1932). The other heat-treating operation is contained within a two-and-one-half-story steel-frame structure constructed with brick walls, a concrete foundation, and riveted-steel Fink roof trusses supporting a gable roof and full-length monitor. The interior contains a charging machine (ca. 1950), a partially demolished rotary furnace (ca. 1932), a pusher-type heating furnace, a pusher-type drawing furnace, and a Treadwell quenching tank.

The Wheel Finishing Shop and Shipping Building is a two-and-one-half-story steel-frame structure with brick walls, a concrete foundation, riveted-steel roof trusses with monitors, and corrugated-metal roofing. The original 1918 section of the building measures 450' x 160', and a 1960s addition to the north measures 250' x 160'. The interior contains six King tracer lathes (ca. 1950s), two 50" Niles-Bement vertical-car wheel machines (ca. 1918), one Bullard tracer lathe (ca. 1950s), a Snyder boring mill (ca. 1950s), and a Wheelabrator and inspection stand.

The Die Machine Shop is a two-and-one-half-story steel-frame structure with brick walls, riveted-steel roof trusses supporting a gable roof of corrugated-metal, and a concrete foundation. Metal ventilation stacks extend along the gable ridge. The Die Machine Shop is located between the No. 1 and No. 2 Mill and opens to an interior courtyard. The building measures 140' x 100'. It contains scrap and other debris.

Other sections of the Wheel Plant include the partially demolished Accumulator Building (1918), an electrical substation, and a heat-treating building (ca. 1960s) that is attached to the No. 1 Mill and contains a 1960s rotary furnace. Detached from the Wheel Plant and located near the entrance is the Wheel Plant Office, a one-story brick building measuring 160' x 40' and erected in 1955. A one-and-one-half-story warehouse stands east of the Wheel Plant and has been abandoned for several years.

According to company officials, the Wheel Plant portion of the operations closed in 1978 because it was no longer cost effective. The remainder of the operation was closed in the early 1980s. The mill is currently vacant, although there is a scrap-metal operation at the rear of the site.

Sources:
"Bethlehem Steel: History of Industrial Giant One of Expansion", Johnstown Daily Democrat, 31 January 1953: Industrial Section.

Cambria Iron Company: Office (1875, 1889)
Current Name: Penn-Traffic Building
Rating: 2
NE Corner of Washington and Walnut Streets, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania (1:24000) UTM: 17 E.676660 N.4466040
Historic Use: Office
Present Use: Abandoned

HISTORY AND DESCRIPTION: In 1879 the Cambria Iron Company erected a two-story brick office building on the corner of Washington and Walnut streets in Johnstown, next to its company store. The Italianate building featured a low-pitched hipped roof, four chimneys with corbeled brickwork, a denticulated cornice, round-arched window surrounds with keystones, and doorways framed with classically detailed columns and projecting lintels. A two-and-one-half-story addition erected by Cambria Iron in 1885 contrasted sharply with the original

-313-
Italianate office as the new building was designed in the Queen-Anne style. It featured projecting clipped-end gable- roofs and dormers, rounded brick walls, and a two-story turreted bay. Incredibly, the two buildings survived the devastating flood of 1889 as the taller, adjacent company store shielded the offices from the initial impact of water and debris. The Cambria Steel Company, successor to Cambria Iron, erected a new multi-story office building on nearby Locust Street in 1911, but continued to use the older buildings as offices.

In 1931, several years after the Bethlehem Steel Company acquired Cambria, the Washington Street offices were converted into a dispensary. The building continued to function as such until about 1980 when Bethlehem Steel sold the property to the Penn-Traffic Corporation. Major alterations to the Cambria Iron offices include the installation of glass-block masonry in most of the windows and the removal of several chimneys. Presently vacant, the old office buildings are recognized as a local landmark—a plaque on the 1879 structure proclaims it was among the handful of buildings to survive the disastrous 1889 Johnstown Flood.

Sources:
Cambria Iron Company: Hospital  (ca. 1921)
Current Name: Bethlehem Steel: Cambria Hall  Rating: 3
.25 mile N of Little Conemaugh River on William Penn Avenue, Johnstown, Cambria County, Pennsylvania
USGS Quad: Johnstown, Pennsylvania  (1:24000)  UTM: 17 E. 677090  N.4466400
Historic Use: Hospital
Present Use: Abandoned

HISTORY AND DESCRIPTION: One of the first of its kind in the nation, the company-owned and operated hospital of the strongly paternalistic Cambria Iron Company opened its doors in Johnstown in 1881. The modest wood-frame building stood on Prospect Hill overlooking the Little Conemaugh River and the city center of Johnstown. Prior to its establishment, most of Cambria's employees that were injured in the iron works received medical treatment in their homes, frequently in unsanitary conditions. The new hospital contained ten beds and a small medical staff to treat an increasing number of injuries incurred on the job. (A late-nineteenth century daily hospital log-book listing workers' names, occupations, and type of injuries sustained reveals anywhere from two to a dozen employees were treated on any given day and that the injuries ranged from muscle pulls and bruises to the breaking of bones and severing of fingers, toes, and limbs.) In addition to the hospital, Cambria Iron employees formed a relief organization whose purpose was to care for workmen that were disabled by injury or sickness. Eventually the program grew to provide pensions for men over seventy as well as those who were permanently disabled. Monthly payments were taken from each member of the workmen's association. Cambria Iron furnished the office and clerical staff and contributed one dollar per member a year.

Perhaps the most dramatic scene at the Cambria Iron Company's hospital occurred in the wake of the devastating Flood of 1889 when it treated over 1,000 people inside the small building and in makeshift tents pitched on the surrounding grounds. By 1910, the company hospital had a number of additions and contained a fifty-bed capacity. Finally, in 1921 the Midvale Steel & Ordnance Company, owners of Cambria, erected a larger hospital on the site of the original wood-frame building. The new facility, built of brick, contained about fifty beds, a modern X-ray room, and a nurses' residence. Two years later the hospital became the property of the Bethlehem Steel Company, remaining in operation until 1931 when it was closed. (In place of the hospital Bethlehem Steel converted the old Cambria Iron Company's office building on Washington Street in Johnstown into a dispensary.) Bethlehem Steel used the old hospital building for offices until about 1985 when it was vacated.

The former hospital building dates from its 1921 reconstruction--nothing remains of the earlier wood-frame structure--and consists of a steel frame with a stretcher-bond brick exterior. The building has undergone several changes since the 1920s including the enclosure of the front porch. Some of the original one-over-one-light double-hung sash windows remain, although some have been replaced by glass-block masonry. The interior space has been subdivided to provide individual office space and in some cases ceilings have been lowered and carpeting has been installed. A late-nineteenth century map indicates that the hospital was surrounded by landscaped grounds with curvilinear walks. Only a sidewalk on the west side of the grounds remains from this landscaping effort, and the grounds have been paved with an asphalt parking lot.

Sources:
BIBLIOGRAPHY

BLAIR COUNTY

MAPS


COMMUNITY, ECONOMY, INDUSTRY


Blair County


**NATURAL RESOURCE AND EXTRACTIVE INDUSTRIES**


**IRON MAKING**

Adams, David M. *Blair County Iron Works.* (Publisher not known), 1938.
RAILROADS


"Altoona and Beech Creek Railroad." A brief typewritten history and compilation of information on the equipment of the Altoona and Beech Creek, Altoona Northern, and Altoona, Clearfield and Northern Railroads. (Railroad Museum of Pennsylvania Library, Strasburg, PA).

"Altoona and Wopsononock Railroad." A brief typewritten history and compilation of information on the equipment, management, and abandonment of the Altoona and Wopsononock Railroad. Included with this typewritten history is a copy of a February 26, 1973 Altoona newspaper article on the Altoona and Wopsononock Railroad. (Railroad Museum of Pennsylvania Library, Strasburg, PA).


Altoona Shops Inspection Trip. A souvenir booklet from the May 16, 1937 inspection of the Pennsylvania Railroad's Altoona Shops by the New York Chapter of the Railway and Locomotive Historical Society. (Railroad Museum of Pennsylvania Library, Strasburg, PA).


Blair County


STREET RAILWAYS


CAMBRIA COUNTY

MAPS


CITY DIRECTORIES


COMMUNITY, ECONOMY, INDUSTRY


-322-


"Industrial Week 1940," *Johnstown Tribune Democrat, June 8, 1940*.


NATURAL RESOURCE AND EXTRACTIVE INDUSTRIES


**BULK PRODUCTS INDUSTRIES**

**Brick Products**


International Refractories Incorporated. *International Refractories Inc.* No date.


Glass Products

"Allen Cut Glass Company." An undated, one page biography of William Allen and history of the Allen Glass Company. This material is in a folder filed in the "Refractories - Brick" box at the Johnstown Flood Museum.

PRIMARY METALS INDUSTRIES


Bethlehem Steel Company. *A Visit to the Cambria Plant of Bethlehem Steel Company in Connection with the 18th Annual Convention of the Department Pennsylvania, American Legion, August 20-22, 1936*.


Cambria County


"Case Hardening at the Cambria Works," *Iron Age,* April 17, 1913, p. 943.


"Johnson Steel Street Railway Company." A photocopy of a sixty-five page, handwritten and indexed compilation of Johnstown Tribune newspaper articles on the Johnson Steel Street Railway Co., covering the period 1884 to 1907. (Johnstown Flood Museum Library).


UTILITIES, WATER SUPPLY

"Historical: Quemahoning Dam, General Correspondence." This folder, in MCol, Box VIII, the Cambria Steel files of the Johnstown Flood Museum, contains information on the Manufacturer's Water Company plant, the Quemahoning Dam, Little Conemaugh wooden pipeline, and Hinckston Run Dam and pipeline. (Johnstown Flood Museum Library).


RAILROADS


STREET RAILWAYS


Moore, M. P., compiler. A seven page, handwritten compilation of Johnstown Tribune newspaper reports on area railroad and street railway construction and operation between 1865 and 1905. (Johnstown Flood Museum Library).


PUBLIC WORKS

Griffith, George W. Scrapbook (1939). A newspaper clippings scrapbook, compiled by the Director of the Johnstown Street and Public Improvements Department, containing articles on all facets of commerce and public works in Johnstown. (Johnstown Flood Museum Library).


BLAIR AND CAMBRIA COUNTIES

MAPS


"Inventory of Pennsylvania Railroad Company Real Estate Department Maps and Drawings of Canal Lock House Lots and Canal Locks, Johnstown to Pittsburgh." A loose-leaf bound collection of maps of early Pennsylvania Railroad and canal routes and plans of canal locks. (Johnstown Public Library, Pennsylvania Collection).


COMMUNITY, ECONOMY, INDUSTRY


-332-


**NATURAL RESOURCE AND EXTRACTIVE INDUSTRIES**

**General**


Wyer, Samuel S. *The Smithsonian Institution's Study of Natural Resources Applied to Pennsylvania's Resources.* Columbus, Ohio: 1922.

**Coal**


-333-
Blair and Cambria Counties


Stone and Sand


Non-Ferrous Ores


IRON MAKING


**UTILITIES**


**RAILROADS**


Kline, Benjamin F., Casler, Walter, and Taber, Thomas T. III. *The Logging Railroad Era of Lumbering in Pennsylvania*. no date.


STREET RAILWAYS

INDEX

| A | Adams Township, Cambria County | 25, 41 |
| Alexander, Edwin P | 238 |
| Alfred Tucker and Company | 11 |
| Allegheny County, Pennsylvania | 77 |
| Allegheny Furnace | 60, 63, 67-68 |
| Allegheny Mountain | 6, 86, 92, 103, 109, 118, 123, 130, 135, 147, 150, 156, 202, 210 |
| Allegheny Portage Railroad | 7, 79, 163, 187, 191, 256, 301 |
| Allegheny Portage Railroad National Historic Site | 101 |
| Allegheny River | 101 |
| Allegheny Township, Blair County | 6 |
| Allendale, Pennsylvania | 41-42 |
| Allis-Chalmers Company | 34 |
| Allport Coal Mining Company | 22 |
| Allport, Pennsylvania | 22 |
| Altoona and Logan Valley Electric Railway Company | 107, 110-111, 209 |
| Altoona Brick Company | 84, 89-90 |
| Altoona City Authority | 202, 209-212 |
| Altoona Gas and Water Company | 205 |
| Altoona Iron Company | 63 |
| Altoona Pipe and Steel Supply Company | 235-237 |
| Altoona Telephone Company | 105 |
| American Bridge Company | 115-116 |
| American Lime and Stone Company | 85, 90-91 |
| American Pipe Manufacturing Company | 210 |
| American Steel and Wire Company | 62 |
| American Steel Service Company | 29, 30 |
| Amtrak | 126, 152 |
| Anderson Coal Mining Company | 22 |
| Anderson and Brothers Company | 211 |
| Anneston Coal Company | 11 |
| Antis Township, Blair County | 61, 72 |
| Appleton Paper Company | 123, 171, 172 |
| Arch Spring, Pennsylvania | 75, 76 |
| Argyle Coal Company | 7 |
| Armand Hammer Company | 51 |
| Ashland Furnace | 64, 79 |
| Ashland, Pennsylvania | 79 |
| Ashville, Pennsylvania | 79 |
| Atlas Powder Company | 167, 168 |
Babcock and Wilcox Company .......................................................... 294
Baker, Elias .................................................................................. 60-61, 67, 69
Baker, Sylvester C ........................................................................ 61, 69
Bakerton, Pennsylvania ............................................................... 9, 23, 48, 205
Bald Eagle Creek .......................................................................... 174
Bald Eagle Furnace ....................................................................... 60
Baldwin Locomotive Works .......................................................... 219-220, 223
Baldwin, Matthias W .................................................................... 219-220
Baltimore and Ohio Railroad ......................................................... 8, 51, 183, 193, 297
Baltimore, Maryland .................................................................... 57, 60, 87, 163
Bare, D.M ........................................................................................ 166-167, 171, 173, 175-176
Bare and Company, D.M ............................................................... 167, 171
Barker, Augustine Vinton .............................................................. 52
Barnes and Tucker Company ......................................................... 8-11, 23-24
Barnes, John .................................................................................. 11
Barnes, Thomas ............................................................................ 11
Barnesboro, Pennsylvania ............................................................. 8-11, 14, 22, 24, 36, 49, 51, 87, 148, 157, 159-160, 164, 184
Basic Brick Company ..................................................................... 188, 192
Bath, Hunter and Sons Company ................................................ 169
Beachley Coal Company ............................................................... 14
Beaver Dam Run ........................................................................... 72
Beaverdale, Pennsylvania ............................................................. 14, 204, 213
Beaverdam Creek ......................................................................... 113
Bedford, Pennsylvania .................................................................. 113
Bedford County, Pennsylvania ..................................................... 57
Beech Creek Coal and Coke Company .......................................... 8, 14, 181
Beezer Brothers, Architects .......................................................... 107, 111
Bell, Edward .................................................................................. 61, 72
Bell, John ....................................................................................... 72
Bell, John and Company ................................................................ 81
Bell, Martin ................................................................................... 61, 72
Bellwood Electric Light ................................................................ 203
Bellwood, Pennsylvania ............................................................... 72, 104, 206
Belsano, Pennsylvania .................................................................. 162
Bement and Son Company, William B ......................................... 229
Ben's Creek Furnace ...................................................................... 64, 79
Bennington Coal Company ........................................................... 6-7, 92
Bennington Furnace ...................................................................... 60, 86, 91-92
Bennington, Pennsylvania ........................................................... 6-7, 86-87, 92
Berwind Corporation ................................................................. 12, 25, 27, 33, 35
Berwind Railway Service Company ............................................. 112
Berwind, Charles F ......................................................................... 11, 112
Berwind, Edward J .......................................................................... 11
Berwind-White Coal Mining Company ........................................ 9-11, 14-15, 25-34, 43-44, 112-113, 164, 203
Berwind-Wilmore Division ........................................................... 31, 34
Bethlehem Mines Corporation (BethEnergy Mines Corporation) .......................................................... 9-13, 33, 35, 41, 44-46
Bethlehem Steel Company
Bethlehem Steel Company: Lackawanna Works
Bethlehem, Pennsylvania
Bird Coal Company
Birmingham Bridge
Birmingham, Pennsylvania
Black Lick, Pennsylvania
Blacklick and Yellow Creek Railroad
Blacklick Creek
Blair Clay Products, Inc
Blair County Historical Society
Blair County Iron and Coal Company
Blair Furnace
Blair Gap
Blair Iron and Coal Company
Blair Limestone Company
Blair Run
Blair Silica Brick Company
Blaw-Knox Company
Bloomfield Furnace
Bloomfield Mine
Blubaker Coal Company
Blue Goose, Pennsylvania
Blue Hole Quarry
Booth and Flynn, contractors
Bradley Junction, Pennsylvania
Brookdale, Pennsylvania
Brophy, John
Brown, William H
Brava Lime Kiln
Brush Mountain
Buckwalter Forge
Buckwalter, John
Burgess, George H
Burgooon Run
Buser Silk Mill
Cambria and Indiana Railroad
Cambria City, Pennsylvania
Cambria County Transit Authority
Cambria Furnace (Old)
Cambria Furnace No. 1
Cambria Furnace No. 2
Cambria Furnace No. 3
Cambria Furnace No. 4
C
Cambria and Indiana Railroad
Cambria City, Pennsylvania
Cambria County Transit Authority
Cambria Furnace (Old)
Cambria Furnace No. 1
Cambria Furnace No. 2
Cambria Furnace No. 3
Cambria Furnace No. 4
<table>
<thead>
<tr>
<th>Location</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambria Logan Coal Company</td>
<td>9</td>
</tr>
<tr>
<td>Cambria Township, Cambria County</td>
<td>12-13, 38, 40-41</td>
</tr>
<tr>
<td>Canan, John</td>
<td>73</td>
</tr>
<tr>
<td>Canoe Creek State Park</td>
<td>85, 94</td>
</tr>
<tr>
<td>Canoe Creek Stone Company</td>
<td>94</td>
</tr>
<tr>
<td>Canoe Furnace</td>
<td>60, 69, 71</td>
</tr>
<tr>
<td>Carlisle, Pennsylvania</td>
<td>17, 19</td>
</tr>
<tr>
<td>Carnegie, Andrew</td>
<td>258</td>
</tr>
<tr>
<td>Carnegie Steel Company</td>
<td>17, 62</td>
</tr>
<tr>
<td>Carroll Township, Cambria County</td>
<td>8, 22, 41</td>
</tr>
<tr>
<td>Carrolltown, Pennsylvania</td>
<td>9, 36, 107, 148, 157, 160</td>
</tr>
<tr>
<td>Cass, Joseph</td>
<td>167, 175</td>
</tr>
<tr>
<td>Cassandra, Pennsylvania</td>
<td>8, 156, 159</td>
</tr>
<tr>
<td>Cassatt, Andrew J</td>
<td>220-221, 224-225</td>
</tr>
<tr>
<td>Catherine Township, Blair County</td>
<td>17</td>
</tr>
<tr>
<td>Centre County, Pennsylvania</td>
<td>57, 116</td>
</tr>
<tr>
<td>Century Ribbon Mills, Inc</td>
<td>165</td>
</tr>
<tr>
<td>Century Silk Mills</td>
<td>181</td>
</tr>
<tr>
<td>Century Stove Manufacturing Company</td>
<td>189, 199</td>
</tr>
<tr>
<td>Chambersburg Engineering Company</td>
<td>263, 271</td>
</tr>
<tr>
<td>Cherrytree Coal Company</td>
<td>36</td>
</tr>
<tr>
<td>Chest Township, Cambria County</td>
<td>8</td>
</tr>
<tr>
<td>Chimney Rock Furnace</td>
<td>60</td>
</tr>
<tr>
<td>Chimney Rocks Limestone Company</td>
<td>95</td>
</tr>
<tr>
<td>Citizens Electric Light, Heat and Power Company</td>
<td>203, 206, 208</td>
</tr>
<tr>
<td>City Passenger Railway Company</td>
<td>110</td>
</tr>
<tr>
<td>Civilian Conservation Corps</td>
<td>123</td>
</tr>
<tr>
<td>Claar Planing Mill</td>
<td>171</td>
</tr>
<tr>
<td>Claghorn, Clarence</td>
<td>52</td>
</tr>
<tr>
<td>Clark, Charles B</td>
<td>231</td>
</tr>
<tr>
<td>Claysburg, Pennsylvania</td>
<td>16-17, 21, 84, 96-97, 113, 117</td>
</tr>
<tr>
<td>Clearfield Bituminous Coal Corporation</td>
<td>12, 15</td>
</tr>
<tr>
<td>Clearfield County, Pennsylvania</td>
<td>11</td>
</tr>
<tr>
<td>Clearfield Creek</td>
<td>79, 87, 97, 139, 141</td>
</tr>
<tr>
<td>Clearfield, Pennsylvania</td>
<td>16, 21, 147</td>
</tr>
<tr>
<td>Clover, Pennsylvania</td>
<td>46, 77</td>
</tr>
<tr>
<td>Coleman and Weaver Company</td>
<td>13, 38, 41, 45-46, 106, 138</td>
</tr>
<tr>
<td>Coleman, B. Dawson</td>
<td>13-14, 41</td>
</tr>
<tr>
<td>Collin, John B</td>
<td>220</td>
</tr>
<tr>
<td>Columbia, Pennsylvania</td>
<td>101, 218</td>
</tr>
<tr>
<td>Colver, Pennsylvania</td>
<td>9-11, 13-14, 37-38, 40, 53, 106, 137-139</td>
</tr>
<tr>
<td>Combined Locks Paper Company</td>
<td>172</td>
</tr>
<tr>
<td>Condon Bridge</td>
<td>139</td>
</tr>
<tr>
<td>Conemaugh and Blacklick Railroad</td>
<td>297-299, 301</td>
</tr>
<tr>
<td>Conemaugh Borough, Pennsylvania</td>
<td>133</td>
</tr>
</tbody>
</table>
Conemaugh Furnace ................................................................. 7, 106-107, 152, 201, 259, 309, 310
Conemaugh River ............................................................... 7, 106-107, 152, 201, 259, 309, 310
Conemaugh Valley (Cambria County) .................................. 7, 13, 58, 183, 187, 255, 297
Connellsville Coal District ....................................................... 86, 92
Connellsville, Pennsylvania .............................................. 33-34, 87
Consolidated Natural Gas Company .................................. 205
Cook Locomotive Works ......................................................... 223
Cookman, W.H .............................................................. 244, 251
Coopersdale Borough, Cambria County ............................... 80, 83, 201, 309
Cove Forge ........................................................................ 58, 71, 77
Cox, S.A ........................................................................ 256, 287
Crane Corporation ................................................................. 189, 200
Crescent Brick Company, Inc ............................................. 85, 89-90
Cresson and Clearfield Coal and Coke Company ...................... 97
Cresson Feed Mill, Inc ............................................................ 183
Cresson Springs Brewery .......................................................... 181
Cresson, Pennsylvania .................................................................. 9-10, 14-15, 49, 87, 99-100, 103, 109, 118, 134-135, 149, 155, 156, 181, 183, 202, 210
Crichton, Andrew B ................................................................. 14
Crichton, Harry A ................................................................ 14
Crown Brick Company .......................................................... 98
Croyle Township, Cambria County ........................................ 8
Curtwensville Construction Company ................................... 132

D
Davidsville, Pennsylvania ....................................................... 83
Davis Brake Beam Company .................................................. 187-188, 192
Davis, Nathan .................................................................. 188, 192
Dean, Pennsylvania ............................................................... 139, 141
Delano, Warren .................................................................. .52
Dishart, Pennsylvania ............................................................ 157
Draper, Simeon ................................................................ 256
Drass, Joseph F .................................................................. 113, 117
Dredge, James .................................................................. 221, 223, 227-229, 231, 237
Du Pont, A.V ....................................................................... 188
Dudley, C.B., Dr ................................................................. 237
Duncan, Samuel ................................................................ 60
Duncansville, Pennsylvania ................................................ 60, 102, 130
Dunlo, Pennsylvania ............................................................ 12, 25
Dunnings Mountain ............................................................... 17, 83, 95-96
Dysart, Pennsylvania ............................................................ 7, 139, 141

E
Eaglewear, Inc ................................................................. 165, 185
East Conemaugh Borough, Cambria County ......................... 13, 80
East Freedom, Pennsylvania ............................................. 117, 122, 132, 171
East Taylor Township ............................................................ 8, 140
Eastern Associated Coal Corporation .................................... 13, 39
Eastern Association Coal Company .............................................. 139
Ebensburg Coal Company ...................................................... 9-10, 13, 37-38, 40-41, 53, 137-139, 203
Ebensburg Junction .................................................................. 158
Ebensburg, Pennsylvania ....................................................... 9, 11-12, 14, 41, 49, 107, 148, 158, 160
Eberle, W.F. .............................................................................. 232
Eby, John ................................................................................. 166, 171
Edgar Thomson Steel Works .................................................. 258, 279
Edison Electric Illuminating Company ...................................... 202-203, 206
Edison, Thomas A. .................................................................. 202
Ehrenfeld, Pennsylvania ......................................................... 12, 14-15, 48
Elder Township, Cambria County ........................................... 8
Eleanor Iron Company ............................................................ 63
Eliza Furnace ........................................................................... 64, 80-81
Elizabeth Furnace ................................................................... 60-61, 72
Elton, Pennsylvania ................................................................ 12, 25, 29, 34
Ely, Theodore N. ..................................................................... 221, 223-224
Erie Foundry and Machine Company ....................................... 267
Etna Iron Works ..................................................................... 58-60, 69, 73-76, 118
Ewing, James ........................................................................... 229, 231

F
Fayette County ......................................................................... 87
Federated Fry Metals, Inc. ....................................................... 252-253
Federal Steel Company .......................................................... 193
Fenlon, Darling and Company ................................................. 109
Ferndale, Pennsylvania .......................................................... 193
Flowing Spring, Pennsylvania ................................................. 94
Fluke and Sons, J.B. ............................................................... 138
Fort Pitt Bridge Works ........................................................... 141
Fort Pitt Foundry ..................................................................... 221
Fowler Radiator and Manufacturing Company ....................... 199
Franklin Borough, Cambria County ........................................ 13, 63, 87, 202, 267, 281, 291-292, 294, 306, 312
Franklin Forge ......................................................................... 71
Frankstown Branch of Juniata River ......................................... 17, 58, 61, 73, 115-117, 122, 210
Frankstown Furnace ............................................................... 60, 75
Frankstown Township, Blair County ....................................... 75, 85, 90, 92-93, 116, 168
Freedom Township, Blair County ........................................... 59
Fritz, George ........................................................................... 255, 258
Fritz, John ............................................................................... 255, 257-258, 263
Frugality Coal and Coke Company .......................................... 8
Frugality, Pennsylvania .......................................................... 87, 97
Fulton, John ............................................................................ 62, 91-92

G
Gallitzin Spring ....................................................................... 202, 210
Gallitzin Township, Cambria County ....................................... 8
Gallitzin Tunnels ..................................................................... 86-87, 92, 150
Gallitzin Borough, Cambria County ....................................... 8, 14, 91-92, 118, 124, 147, 150, 165, 183
Ganister, Pennsylvania .......................................................... 17, 20
<table>
<thead>
<tr>
<th>Location</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gap Furnace</td>
<td>59</td>
</tr>
<tr>
<td>Gardner, Osterloh and Company</td>
<td>60-61</td>
</tr>
<tr>
<td>Garmantown, Pennsylvania</td>
<td>159, 184</td>
</tr>
<tr>
<td>Garrett, John W</td>
<td>135</td>
</tr>
<tr>
<td>Gautier Steel Company</td>
<td>301</td>
</tr>
<tr>
<td>Gautier, Josiah H</td>
<td>301</td>
</tr>
<tr>
<td>Gay, Edward F</td>
<td>147</td>
</tr>
<tr>
<td>Gaysport Furnace</td>
<td>60</td>
</tr>
<tr>
<td>Gaysport, Pennsylvania</td>
<td>191</td>
</tr>
<tr>
<td>General Electric Company</td>
<td>30, 52, 291, 283</td>
</tr>
<tr>
<td>General Refractories Company</td>
<td>17, 19, 83-84, 95-97</td>
</tr>
<tr>
<td>Germania Brewing Company</td>
<td>182</td>
</tr>
<tr>
<td>Gibbs, Alfred W</td>
<td>126, 237</td>
</tr>
<tr>
<td>Glasgow, Pennsylvania</td>
<td>151</td>
</tr>
<tr>
<td>Glen White Coal and Lumber Company</td>
<td>6, 87, 92</td>
</tr>
<tr>
<td>Glen White Run</td>
<td>87, 123-124, 150</td>
</tr>
<tr>
<td>Glen White, Pennsylvania</td>
<td>6-7</td>
</tr>
<tr>
<td>Great Lakes ores</td>
<td>15-16, 259, 279</td>
</tr>
<tr>
<td>Greater Johnstown Water Authority</td>
<td>202</td>
</tr>
<tr>
<td>Greenfield Township, Blair County</td>
<td>59, 176</td>
</tr>
<tr>
<td>Grimshaw, Fred G</td>
<td>233-234, 241-242, 245</td>
</tr>
</tbody>
</table>

**H**

<table>
<thead>
<tr>
<th>Location</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hagerstown, Maryland</td>
<td>27</td>
</tr>
<tr>
<td>Hagey and Clapper Mill</td>
<td>163, 172</td>
</tr>
<tr>
<td>Hahn Meatpacking Company, Edward</td>
<td>164, 182</td>
</tr>
<tr>
<td>Halberstadt, Baird</td>
<td>8</td>
</tr>
<tr>
<td>Harbison-Walker Refractories</td>
<td>16-17</td>
</tr>
<tr>
<td>Harrisburg, Pennsylvania</td>
<td>101-102, 218, 256</td>
</tr>
<tr>
<td>Hastings Coal and Coke Company</td>
<td>97</td>
</tr>
<tr>
<td>Hastings, Pennsylvania</td>
<td>50-51, 87</td>
</tr>
<tr>
<td>Haupt, Herman</td>
<td>217</td>
</tr>
<tr>
<td>Haws Company, A.J</td>
<td>16-17, 83</td>
</tr>
<tr>
<td>Haydock, Charles</td>
<td>211</td>
</tr>
<tr>
<td>Heisley Coal Company</td>
<td>9-10, 12-13, 41</td>
</tr>
<tr>
<td>Henrietta, Pennsylvania</td>
<td>15, 129</td>
</tr>
<tr>
<td>Heshbon, Pennsylvania</td>
<td>158</td>
</tr>
<tr>
<td>Heyl and Patterson Company</td>
<td>27, 29</td>
</tr>
<tr>
<td>Hileman, David</td>
<td>75</td>
</tr>
<tr>
<td>Hinckston Run</td>
<td>87, 202, 215, 256</td>
</tr>
<tr>
<td>Hines, Joseph E</td>
<td>183</td>
</tr>
<tr>
<td>Hinkle, H.G</td>
<td>132</td>
</tr>
<tr>
<td>Hodges, G.W</td>
<td>80</td>
</tr>
<tr>
<td>Hogsback Tunnel</td>
<td>105-106, 135-136</td>
</tr>
<tr>
<td>Holley, Alexander</td>
<td>255, 258, 280</td>
</tr>
<tr>
<td>Hollidaysburg Iron and Nail Company</td>
<td>63</td>
</tr>
<tr>
<td>Home Electric Light and Steam Heating Company</td>
<td>203, 208-209</td>
</tr>
<tr>
<td>Home Electric Light Company of Tyrone</td>
<td>111</td>
</tr>
<tr>
<td>Location/Name</td>
<td>Page Numbers</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Homer Gap Run</td>
<td>119-120, 202, 209</td>
</tr>
<tr>
<td>Hornerstown Borough, Cambria County</td>
<td>182</td>
</tr>
<tr>
<td>Horrell, Pennsylvania</td>
<td>167-168</td>
</tr>
<tr>
<td>Horseshoe Curve</td>
<td>87, 92, 123-124, 130, 210</td>
</tr>
<tr>
<td>Hughes and Company, C.A.</td>
<td>8, 10</td>
</tr>
<tr>
<td>Hughes, R.J.</td>
<td>8</td>
</tr>
<tr>
<td>Hunt, Robert</td>
<td>255</td>
</tr>
<tr>
<td>Huntingdon County</td>
<td>57-58, 72-73, 116, 163</td>
</tr>
<tr>
<td>Huntingdon Furnace</td>
<td>58</td>
</tr>
<tr>
<td>Huntingdon, Pennsylvania</td>
<td>67, 101</td>
</tr>
<tr>
<td>Huntingdon--Blairsville Turnpike</td>
<td>109</td>
</tr>
<tr>
<td>Huston Township, Blair County</td>
<td>15-16, 21</td>
</tr>
<tr>
<td>Indiana County, Pennsylvania</td>
<td>13, 61, 68, 77, 106, 158, 210</td>
</tr>
<tr>
<td>Indiana Furnace</td>
<td>68</td>
</tr>
<tr>
<td>Ingersoll-Rand Company</td>
<td>295</td>
</tr>
<tr>
<td>Ingersoll-Sergeant Company</td>
<td>30</td>
</tr>
<tr>
<td>Inland Steel Company</td>
<td>23</td>
</tr>
<tr>
<td>International Brotherhood of Pulp, Sulphite and Paper Mill Workers</td>
<td>175</td>
</tr>
<tr>
<td>International Refractories, Inc.</td>
<td>83, 98-99</td>
</tr>
<tr>
<td>Ironville Forge</td>
<td>179</td>
</tr>
<tr>
<td>Ironville, Pennsylvania</td>
<td>85, 124, 132, 163, 179</td>
</tr>
<tr>
<td>Isaacson Building</td>
<td>185</td>
</tr>
<tr>
<td>Isett, Jacob</td>
<td>75</td>
</tr>
<tr>
<td>Isett, John</td>
<td>76</td>
</tr>
<tr>
<td>Isett, John S</td>
<td>72</td>
</tr>
<tr>
<td>Isett, Samuel</td>
<td>60, 73, 76</td>
</tr>
<tr>
<td>Island Creek Coal Company</td>
<td>51</td>
</tr>
<tr>
<td>Jackson Township, Cambria County</td>
<td>8</td>
</tr>
<tr>
<td>Jandy Coal Company</td>
<td>27, 35</td>
</tr>
<tr>
<td>Jim's Run</td>
<td>25</td>
</tr>
<tr>
<td>Johnson Steel Street Rail Company</td>
<td>144, 188, 193-198</td>
</tr>
<tr>
<td>Johnson, Tom L</td>
<td>107, 144-145, 188, 193</td>
</tr>
<tr>
<td>Johnstown and Stony Creek Railroad</td>
<td>51</td>
</tr>
<tr>
<td>Johnstown Coal and Coke Company</td>
<td>10, 14, 41, 43</td>
</tr>
<tr>
<td>Johnstown Corporation</td>
<td>145, 188, 193, 198-199</td>
</tr>
<tr>
<td>Johnstown Electric Light Company</td>
<td>202</td>
</tr>
<tr>
<td>Johnstown Flood (1889)</td>
<td>44, 80, 105, 128, 143-145, 149, 193, 301, 309, 314-315</td>
</tr>
<tr>
<td>Johnstown Flood (1936)</td>
<td>136, 144, 179</td>
</tr>
<tr>
<td>Johnstown Flood (1977)</td>
<td>88, 98, 297</td>
</tr>
<tr>
<td>Johnstown Furnace</td>
<td>64-65</td>
</tr>
<tr>
<td>Johnstown Inclined Plane</td>
<td>7, 143, 145</td>
</tr>
<tr>
<td>Johnstown Iron Company</td>
<td>64-65</td>
</tr>
<tr>
<td>Johnstown Passenger Railway Company</td>
<td>144-146</td>
</tr>
<tr>
<td>Johnstown Planing Mill Company</td>
<td>166, 183-184</td>
</tr>
</tbody>
</table>

-346-
Johnstown Steam Hot Blast Coke Furnace ................................................................. 256
Johnstown Water Company ..................................................................................... 201-202
Jones and Laughlin Steel Company ................................................................. 62, 83, 85, 92, 94, 141
Jones, (Captain) William P ............................................ 255, 279
Jones, Daniel N ........................................................................................................ 255, 279
Joseph E. Hines and Sons ................................................................................... 183
Juniata Furnace ...................................................................................................... 60, 62
Juniata Limestone Company, Ltd ................................................................. 17, 19
Juniata River (also see Frankstown Branch, and Little Juniata) ......................... 19, 71, 74-75, 77, 101, 115
Juniata Stone Company ......................................................................................... 19
Juniata Valley (Blair County) ................................................................................ 57-60, 62-64, 67, 102

K
K-4s Pacific Class Locomotive ........................................................................... 126-127, 225, 234
Kerbaugh Inc., H.S ................................................................................................. 119, 130
Kernville Borough, Pennsylvania ........................................................................ 182
Keystone Mill ........................................................................................................ 164, 173
King, George S ....................................................................................................... 58, 64, 104, 255-257, 273
King and Company, George S ........................................................................... 79, 255
Kinport, Pennsylvania .......................................................................................... 87, 97-98
Kiskiminetas River ................................................................................................. 101
Kittanning Point ................................................................................................. 123, 150, 210
Klepser Mill ........................................................................................................... 172
Kling-Weidlein Company ...................................................................................... 295
Kammer Lumber Company, J.H ........................................................................... 151
Koppers Coal Company .......................................................................................... 10
Kuhns and Goodwin Lumber Company .............................................................. 25

L
Lake Erie .................................................................................................................. 101
Lakemont Park ....................................................................................................... 107, 110
Lancaster County, Pennsylvania ........................................................................... 67, 77
Lancaster, Pennsylvania ........................................................................................ 48
Lantzy Mill ............................................................................................................. 164, 184
Lantzy, Simon ........................................................................................................ 184
Lantzy, Walter P., Jr ............................................................................................. 184
Lapsley, Samuel ..................................................................................................... 255
Laurel Run .............................................................................................................. 64, 201, 255
Lee, A.W ............................................................................................................... 106, 138
Lehigh Mills ............................................................................................................ 165
Leman Machine Company, Inc ............................................................................ 187, 199
Lemon House ........................................................................................................ 101, 134-135
Lemon, Robert M ................................................................................................... 92
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemon, Samuel</td>
<td>7</td>
</tr>
<tr>
<td>Lesley, J.P.</td>
<td>91</td>
</tr>
<tr>
<td>Levergood, Peter</td>
<td>63</td>
</tr>
<tr>
<td>Lewis F. Shoemaker and Company</td>
<td>248</td>
</tr>
<tr>
<td>Lewis, John L</td>
<td>54</td>
</tr>
<tr>
<td>Lewisburg, Pennsylvania</td>
<td>116</td>
</tr>
<tr>
<td>Lewistown, Pennsylvania</td>
<td>83</td>
</tr>
<tr>
<td>Liebowitz and Sons, S.</td>
<td>8, 145-148, 156</td>
</tr>
<tr>
<td>Lilly, Pennsylvania</td>
<td>8, 147-148, 156</td>
</tr>
<tr>
<td>Lithcote Company</td>
<td>228, 231-233</td>
</tr>
<tr>
<td>Little Conemaugh River</td>
<td>8, 48, 83, 98, 107, 140-141, 143, 149, 153, 201, 215, 256, 301, 305, 315</td>
</tr>
<tr>
<td>Little Juniata River</td>
<td>58, 71-72, 85, 91, 105, 113, 116, 120, 124, 128, 179</td>
</tr>
<tr>
<td>Little Paint Creek</td>
<td>27</td>
</tr>
<tr>
<td>Llyswen, Pennsylvania</td>
<td>107, 111</td>
</tr>
<tr>
<td>Logan Coal Company</td>
<td>9, 14, 41, 204, 214</td>
</tr>
<tr>
<td>Logan Light, Heat and Power Company</td>
<td>204, 213</td>
</tr>
<tr>
<td>Logan Township, Blair County</td>
<td>6, 7</td>
</tr>
<tr>
<td>Logan Valley (Blair County)</td>
<td>60, 72</td>
</tr>
<tr>
<td>Long, Robert Cary, Jr.</td>
<td>60, 69</td>
</tr>
<tr>
<td>Loop, Pennsylvania</td>
<td>90, 122</td>
</tr>
<tr>
<td>Lorain Steel Company</td>
<td>188</td>
</tr>
<tr>
<td>Lorain, Ohio</td>
<td>188, 193</td>
</tr>
<tr>
<td>Loretto Reservoir</td>
<td>214</td>
</tr>
<tr>
<td>Loretto, Pennsylvania</td>
<td>202, 214</td>
</tr>
<tr>
<td>Lovett, Pennsylvania</td>
<td>25</td>
</tr>
<tr>
<td>Lower Taylor Township, Cambria County</td>
<td>8</td>
</tr>
<tr>
<td>Lucy No. 2 Blast Furnace</td>
<td>279</td>
</tr>
<tr>
<td>Lumax Industries</td>
<td>227-230, 232</td>
</tr>
<tr>
<td>Lyon and Company, William M.</td>
<td>179</td>
</tr>
<tr>
<td>Lyon, Shorb and Company</td>
<td>60</td>
</tr>
<tr>
<td>Lytle, Edward, Sr.</td>
<td>77</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madden Boiler Works Company</td>
<td>187, 191</td>
</tr>
<tr>
<td>Manufacturers' Water Company</td>
<td>201-202, 215</td>
</tr>
<tr>
<td>Maria Forges</td>
<td>59</td>
</tr>
<tr>
<td>Marsteller UMWA Local 2246, Union Hall</td>
<td>54</td>
</tr>
<tr>
<td>Marsteller Water Company</td>
<td>49</td>
</tr>
<tr>
<td>Marsteller, Pennsylvania</td>
<td>14-15, 49, 50, 54</td>
</tr>
<tr>
<td>Martha Furnace</td>
<td>59-60</td>
</tr>
<tr>
<td>Martin Branch</td>
<td>14</td>
</tr>
<tr>
<td>Martinsburg Machine Works</td>
<td>172</td>
</tr>
<tr>
<td>Martinsburg Milling Company</td>
<td>104, 129, 172</td>
</tr>
<tr>
<td>Martinsburg, Pennsylvania</td>
<td>104, 129, 163-164, 172</td>
</tr>
<tr>
<td>Matthews, Levi</td>
<td>64</td>
</tr>
<tr>
<td>Mary Ann Forges</td>
<td>61, 72-73</td>
</tr>
<tr>
<td>Maryland Coal Company of Pennsylvania</td>
<td>9, 15, 32, 43-44</td>
</tr>
<tr>
<td>Massilon Bridge Company</td>
<td>141</td>
</tr>
<tr>
<td>McClintic-Marshall Company</td>
<td>140</td>
</tr>
</tbody>
</table>

-348-
McKee Company, A.G. ................................................................. 290
McKee, Pennsylvania .............................................................. 59, 117, 123
McLanahan and Stone Company .................................................. 63, 187
McLanahan Corporation ............................................................. 191
McLanahan, J. King ................................................................. 19, 92
Mellon Industrial Research Institute .............................................. 189
Mercer County, Pennsylvania ....................................................... 77
Mesta Machine Company ........................................................... 278, 283, 295
Michie, William R. .................................................................. 154
Michigan City, Indiana ............................................................... 165, 174
Midvale Steel and Ordnance Company ........................................... 87, 140, 259-260, 268, 278, 283, 294-295, 297, 307, 312
Mifflinburg, Pennsylvania ........................................................... 116
Milesburg, Pennsylvania ............................................................ 116
Mill Creek Furnace .................................................................. 64, 79, 81
Miller Coal Company ................................................................. 43
Mineral Point, Pennsylvania ......................................................... 11-12, 35, 160
Minersville, Pennsylvania ........................................................... 9
Mitchell Coal and Coke Company ............................................... 8
Monroe Coal Mining Company ...................................................... 10, 12-13, 44-46
Montandon, Pennsylvania ............................................................ 116
Moorhead and Patterson, contractors ............................................. 102, 147
Morgan Construction Company ................................................... 309
Morgan Engineering Company .................................................... 235, 305, 310
Morgan, C.H. .......................................................................... 292
Morrell, Daniel J. ....................................................................... 135, 188, 255, 257, 279
Morris Paper Company ............................................................... 182
Morrison and Bare Paper Company ............................................. 167
Morrison and Cass Paper Company .............................................. 104, 167, 173
Morrison's Cove ....................................................................... 163-164, 173
Morrison, John .......................................................................... 166-167, 171, 175
Mount Union, Pennsylvania ....................................................... 16, 21
Mountain Coal Company ............................................................ 25, 26
Moxham, Arthur J. ..................................................................... 188, 193
Moxham Borough, Cambria County ............................................. 107, 145, 188-189, 193, 199
Moxham Lumber Company ........................................................ 166, 185, 189, 193
Mt. Etna Iron Works (see Etna Iron Works) ................................
Mt. Etna, Pennsylvania ................................................................ 19, 117, 131
Muleshoe Curve ........................................................................ 211

N

Nanty Glo, Pennsylvania ............................................................ 9-14, 36, 41, 46, 54, 158
Nanty-Glo Coal Mining Company .................................................. 13, 41
National Cash Register Company ................................................ 172
National Radiator Company ....................................................... 185, 188-189, 199-200
Nealmont, Pennsylvania ............................................................ 111, 116
Neff, Dean, and Company .......................................................... 60, 62
New Enterprise Stone and Lime Company .................................... 20
New Florence, Pennsylvania .......................................................... 68
New Kensington, Pennsylvania .................................................... 187, 199
<table>
<thead>
<tr>
<th>Place/Location</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Portage Tunnel</td>
<td>147</td>
</tr>
<tr>
<td>New York Central Railroad</td>
<td>8</td>
</tr>
<tr>
<td>Nicktown, Pennsylvania</td>
<td>161</td>
</tr>
<tr>
<td>Norris Locomotive Works</td>
<td>219</td>
</tr>
<tr>
<td>Norristown, Pennsylvania</td>
<td>199, 257</td>
</tr>
<tr>
<td>North Woodbury Township, Blair County</td>
<td>15-16</td>
</tr>
<tr>
<td>Northern Cambria Railway Company</td>
<td>148</td>
</tr>
<tr>
<td>Oak Hall, Pennsylvania</td>
<td>116</td>
</tr>
<tr>
<td>Ohio River</td>
<td>101, 217</td>
</tr>
<tr>
<td>Oil City, Pennsylvania</td>
<td>156</td>
</tr>
<tr>
<td>Oreminea, Pennsylvania</td>
<td>16, 21</td>
</tr>
<tr>
<td>Orners Corner, Pennsylvania</td>
<td>209</td>
</tr>
<tr>
<td>Otto-Hoffman Company</td>
<td>87, 306</td>
</tr>
<tr>
<td>Ottumwa Iron Works</td>
<td>52</td>
</tr>
<tr>
<td>Owego Bridge Company</td>
<td>139</td>
</tr>
<tr>
<td>Paint Creek Valley (Cambria County)</td>
<td>12</td>
</tr>
<tr>
<td>Pangborn Company</td>
<td>27, 41</td>
</tr>
<tr>
<td>Paterson, New Jersey</td>
<td>164, 223</td>
</tr>
<tr>
<td>Patterson Mine</td>
<td>62</td>
</tr>
<tr>
<td>Patterson, J.A.</td>
<td>113</td>
</tr>
<tr>
<td>Patton Clay Manufacturing Company</td>
<td>16, 99</td>
</tr>
<tr>
<td>Patton Paper Box Company</td>
<td>181</td>
</tr>
<tr>
<td>Patton, Pennsylvania</td>
<td>8, 14, 99, 148, 165, 180-181</td>
</tr>
<tr>
<td>Peale, Peacock and Kerr</td>
<td>36, 48</td>
</tr>
<tr>
<td>Peale, Rembrandt</td>
<td>36</td>
</tr>
<tr>
<td>Pennsylvania Central Electric Light and Power Company</td>
<td>314</td>
</tr>
<tr>
<td>Penn-Traffic Corporation</td>
<td>14</td>
</tr>
<tr>
<td>Pennsylvania Beech Creek and Eastern Coal Company</td>
<td>7, 61, 64, 68-69, 75, 101-103, 117, 130, 147, 151, 163, 218, 256, 301</td>
</tr>
<tr>
<td>Pennsylvania Coal and Coke Company</td>
<td>6, 9-11, 14-15, 23, 48-49, 50, 86-87, 92, 99-100, 203</td>
</tr>
<tr>
<td>Pennsylvania Edison Company</td>
<td>203</td>
</tr>
<tr>
<td>Pennsylvania Railroad (Bedford Branch)</td>
<td>171</td>
</tr>
<tr>
<td>Pennsylvania Railroad (Martinsburg Branch)</td>
<td>171</td>
</tr>
<tr>
<td>Pennsylvania Railroad (Petersburg Branch)</td>
<td>19, 168</td>
</tr>
<tr>
<td>Pennsylvania Railroad (Springfield Branch)</td>
<td>20</td>
</tr>
<tr>
<td>Pennsylvania Railroad (Williamsburg Branch)</td>
<td>19</td>
</tr>
<tr>
<td>Pennsylvania Steel Company</td>
<td>122, 263</td>
</tr>
</tbody>
</table>
Peoples’ Natural Gas Company .......................................................... 205
Petersburg, Pennsylvania ................................................................. 59, 131
Philipsburg, Pennsylvania ............................................................... 11
Phoenix Bridge Company ................................................................. 158
Phoenixville, Pennsylvania .............................................................. 158
Pierson Iron Company .................................................................. 63
Pinecroft, Pennsylvania ................................................................. 72-73
Piper, Colonel John ........................................................................ 232
Pittsburgh Limestone Company ...................................................... 17, 20
Pittsburgh Locomotive Works ......................................................... 223
Pneumatic Steel Association ......................................................... 255
Point View, Pennsylvania .............................................................. 69
Portage Bronze Electric Company .................................................. 187, 199
Portage Coal Mining Company ..................................................... 9
Portage, Pennsylvania ................................................................. 8, 10, 14, 43, 104-105, 154, 158-159, 165, 180, 187, 199, 202
Porter Run ......................................................................................... 24
Pottstown, Pennsylvania ................................................................. 140, 248
Powelton Coal and Iron Company ................................................. 112
Pratt, William A ............................................................................. 119, 130
Presser Crossing, Pennsylvania ................................................... 38
Puritan Knitting Mills ................................................................. 178
Pullman-Standard Company .......................................................... 50-51
Quemahoning Reservoir ............................................................... 202, 285

R
Railroaders Memorial Museum ...................................................... 126-127, 234
Rea, Samuel .................................................................................... 225
Reade Township, Cambria County ................................................. 8, 22, 151
Rebecca Furnace .......................................................................... 60, 77
Rebecca Mine .................................................................................. 15, 77
Red Mill, Pennsylvania ................................................................. 160
Reed Mine, J.B. .............................................................................. 205
Reimard, C.H. ................................................................................. 113
Reliance Manufacturing Company .............................................. 165, 174
Rensselaer Polytechnic Institute ..................................................... 217, 220-221
Revloc, Pennsylvania .................................................................... 10-14, 44-46
Rexis, Pennsylvania ...................................................................... 158
Rhey, George S. ............................................................................. 64
Rhey, Matthews and Company ....................................................... 65
Rich Hill Coal Company ............................................................... 22, 50-51
Richland Township, Cambria County ......................................... 33-34
Ritter and Irwin Company .............................................................. 80
Riverside, Pennsylvania ............................................................... 51, 135-136
<table>
<thead>
<tr>
<th>Location/Company</th>
<th>Page Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roaring Run</td>
<td>73-74</td>
</tr>
<tr>
<td>Roaring Spring Blank Book Company</td>
<td>167, 171, 175-176</td>
</tr>
<tr>
<td>Roaring Spring Planing Mill Company</td>
<td>166, 176</td>
</tr>
<tr>
<td>Roaring Spring Borough, Blair County</td>
<td>20, 104, 123, 131, 166-167, 171, 173, 175-176</td>
</tr>
<tr>
<td>Roberts and Schaefer Company</td>
<td>27</td>
</tr>
<tr>
<td>Roberts, Solomon</td>
<td>154</td>
</tr>
<tr>
<td>Roberts, W. Milnor</td>
<td>147</td>
</tr>
<tr>
<td>Robinson's Ridge</td>
<td>217</td>
</tr>
<tr>
<td>Rockwood, Pennsylvania</td>
<td>135-136</td>
</tr>
<tr>
<td>Roebling, John</td>
<td>135</td>
</tr>
<tr>
<td>Rolling Mill Mine</td>
<td>13</td>
</tr>
<tr>
<td>Royer, Daniel</td>
<td>60, 71, 77</td>
</tr>
<tr>
<td>Royer, John</td>
<td>15, 71, 77</td>
</tr>
<tr>
<td>Royer, S.M.</td>
<td>71, 77, 172</td>
</tr>
<tr>
<td>Rutter, Thomas</td>
<td>150</td>
</tr>
<tr>
<td>Sabbath Rest Furnace</td>
<td>72</td>
</tr>
<tr>
<td>Saltlick Reservoir</td>
<td>161</td>
</tr>
<tr>
<td>Sankertown, Pennsylvania</td>
<td>87, 99</td>
</tr>
<tr>
<td>Sarah Furnace</td>
<td>59-60, 176</td>
</tr>
<tr>
<td>Sarah Furnace Grist Mill</td>
<td>163, 176</td>
</tr>
<tr>
<td>Scalp Level, Pennsylvania</td>
<td>27, 33</td>
</tr>
<tr>
<td>Schlatter, Charles</td>
<td>217</td>
</tr>
<tr>
<td>Schwab, Charles</td>
<td>167, 179, 202, 214, 260</td>
</tr>
<tr>
<td>Schwabtown (Williamsburg, Pennsylvania)</td>
<td>179</td>
</tr>
<tr>
<td>Schwarzenbach-Huber Company</td>
<td>164</td>
</tr>
<tr>
<td>SCM Metals Corporation</td>
<td>189, 200</td>
</tr>
<tr>
<td>Scotia, Pennsylvania</td>
<td>116</td>
</tr>
<tr>
<td>Sellers and Company, William</td>
<td>229, 271, 287, 289</td>
</tr>
<tr>
<td>Selwitz, G.W.</td>
<td>117</td>
</tr>
<tr>
<td>Semet-Solvay Company</td>
<td>87</td>
</tr>
<tr>
<td>Shand, A.C.</td>
<td>152</td>
</tr>
<tr>
<td>Sharp, James</td>
<td>229</td>
</tr>
<tr>
<td>Sharpless, C.E.</td>
<td>38</td>
</tr>
<tr>
<td>Shazen, Pennsylvania</td>
<td>36</td>
</tr>
<tr>
<td>Shoenerberger, Dr. Peter</td>
<td>20, 59, 64, 77, 176, 255-257, 273</td>
</tr>
<tr>
<td>Shoenerberger, Pennsylvania</td>
<td>105, 128</td>
</tr>
<tr>
<td>Short Mountain</td>
<td>69, 71</td>
</tr>
<tr>
<td>Shulze, John Andrew</td>
<td>101</td>
</tr>
<tr>
<td>Shyrock, John K.</td>
<td>64</td>
</tr>
<tr>
<td>Shyrock, William L.</td>
<td>64, 80</td>
</tr>
<tr>
<td>Sinking Valley (Blair County)</td>
<td>16, 75</td>
</tr>
<tr>
<td>Slickport, Pennsylvania</td>
<td>50-51</td>
</tr>
<tr>
<td>Soapfat Furnace</td>
<td>69</td>
</tr>
<tr>
<td>Soister Mine</td>
<td>15</td>
</tr>
<tr>
<td>Somerset County, Pennsylvania</td>
<td>9-12, 14, 79, 83, 98, 105, 136, 202</td>
</tr>
<tr>
<td>Somerset, Pennsylvania</td>
<td>136</td>
</tr>
<tr>
<td>Sonman Shaft Coal Company</td>
<td>8-9</td>
</tr>
<tr>
<td>Place</td>
<td>Page(s)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Sonman, Pennsylvania</td>
<td>9-10</td>
</tr>
<tr>
<td>South Fork Coal and Iron Company</td>
<td>8</td>
</tr>
<tr>
<td>South Fork Dam</td>
<td>25, 43</td>
</tr>
<tr>
<td>South Fork Electric Light, Heat and Power Company</td>
<td>215</td>
</tr>
<tr>
<td>South Fork Hunting and Fishing Club</td>
<td>43</td>
</tr>
<tr>
<td>South Fork, Pennsylvania</td>
<td>8, 51, 118, 141, 154, 156, 160, 201, 215</td>
</tr>
<tr>
<td>Southwark Foundry and Machine Company</td>
<td>283, 302, 307, 309</td>
</tr>
<tr>
<td>Spang, Henry S</td>
<td>15, 59, 69, 71, 73</td>
</tr>
<tr>
<td>Spangler, Pennsylvania</td>
<td>36, 148</td>
</tr>
<tr>
<td>Spring Run</td>
<td>158</td>
</tr>
<tr>
<td>Springfield Furnace</td>
<td>21, 60, 71, 77</td>
</tr>
<tr>
<td>Springfield Mine</td>
<td>15, 21, 77</td>
</tr>
<tr>
<td>Sproul, Pennsylvania</td>
<td>16-17, 21, 83-84, 95-96, 176</td>
</tr>
<tr>
<td>St. Benedict, Pennsylvania</td>
<td>9, 36, 148</td>
</tr>
<tr>
<td>St. Bonifacius, Pennsylvania</td>
<td>8</td>
</tr>
<tr>
<td>St. Louis Exposition, 1904</td>
<td>225</td>
</tr>
<tr>
<td>St. Michael, Pennsylvania</td>
<td>9, 11, 32, 43-44</td>
</tr>
<tr>
<td>Stackpole, James</td>
<td>135</td>
</tr>
<tr>
<td>Standard Refractories Company</td>
<td>19, 84, 95</td>
</tr>
<tr>
<td>Stanley Electric Company</td>
<td>227, 229-230, 232</td>
</tr>
<tr>
<td>Staple Bend Tunnel</td>
<td>133</td>
</tr>
<tr>
<td>Stebbins, M.H</td>
<td>113</td>
</tr>
<tr>
<td>Sterling Coal Company</td>
<td>8-9</td>
</tr>
<tr>
<td>Stewart, David</td>
<td>64, 73, 80</td>
</tr>
<tr>
<td>Stineman Coal and Coke Company</td>
<td>8, 51</td>
</tr>
<tr>
<td>Stineman, George</td>
<td>8</td>
</tr>
<tr>
<td>Stineman, J.C</td>
<td>8</td>
</tr>
<tr>
<td>Stony Creek River</td>
<td>51, 63, 83, 107, 136, 143, 182, 193, 201, 256</td>
</tr>
<tr>
<td>Stony Creek Township, Cambria County</td>
<td>51, 193</td>
</tr>
<tr>
<td>Stony Creek, Pennsylvania</td>
<td>105</td>
</tr>
<tr>
<td>Stout, G.E.</td>
<td>117</td>
</tr>
<tr>
<td>Sugar Run</td>
<td>147, 150, 156</td>
</tr>
<tr>
<td>Sugar Run Gap</td>
<td>102, 147, 150</td>
</tr>
<tr>
<td>Summer Hill Township, Cambria County</td>
<td>41</td>
</tr>
<tr>
<td>Summerhill, Pennsylvania</td>
<td>12, 153, 157</td>
</tr>
<tr>
<td>Summit, Pennsylvania</td>
<td>7</td>
</tr>
<tr>
<td>Susquehanna River</td>
<td>23, 101, 116, 159, 184</td>
</tr>
<tr>
<td>Susquehanna Township, Cambria County</td>
<td>8, 11, 22</td>
</tr>
<tr>
<td>Swank, Hiram</td>
<td>83, 98</td>
</tr>
<tr>
<td>Swank’s Sons Company, Hiram</td>
<td>16, 83, 98</td>
</tr>
<tr>
<td>Swartara Creek</td>
<td>101</td>
</tr>
</tbody>
</table>

**T**

<table>
<thead>
<tr>
<th>Place</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taylor and McCoy Coal and Coke Company</td>
<td>8</td>
</tr>
<tr>
<td>Taylor Township, Blair County</td>
<td>15</td>
</tr>
<tr>
<td>Thomson, Frank</td>
<td>221</td>
</tr>
<tr>
<td>Thomson, J. Edgar</td>
<td>103, 123, 217, 221</td>
</tr>
<tr>
<td>Tipton Dam</td>
<td>202, 211</td>
</tr>
<tr>
<td>Tipton Water Company</td>
<td>211</td>
</tr>
<tr>
<td>Tipton, Pennsylvania</td>
<td>104, 202, 211</td>
</tr>
</tbody>
</table>
Tripoli, Pennsylvania ......................................................... 53
Trout Run .............................................................................. 43, 158
Truscan Steel Company .......................................................... 137
Tunnelhill, Pennsylvania ........................................................ 147
Turkey Valley (Blair County) ................................................... 17, 85, 92, 94
Turner, Vaughn and Taylor Company ..................................... 310
Twin Rocks, Pennsylvania ........................................................ 158
Tyrone Forge, Pennsylvania .................................................... 90-91, 132, 163, 179
Tyrone Lime and Stone Company ........................................... 91
Tyrone Milling, Inc. ................................................................ 179
Tyrone Township, Blair County ............................................... 76

U
U.S. Army Corps of Engineers .................................................. 212
Udall, Stewart L ..................................................................... 124
Union County, Pennsylvania .................................................. 116
Union Radiator Company ...................................................... 189, 199
United Mine Workers of America (UMWA) ............................... 53, 54
United States Steel Corporation ............................................... 20, 51, 62, 83, 115-116, 136, 188, 193, 198

V
Valley Coal and Stone Company ............................................. 51-52
Valley Smokeless Coal Company .............................................. 51
Van Ormer, Pennsylvania ....................................................... 22
Variety Iron Works .................................................................. 160
Vinton Colliery Company ....................................................... 9, 52-53, 80
Vinton Lumber Company ....................................................... 106, 138
Vintondale, Pennsylvania ...................................................... 9, 52-53, 80, 158
Vogt, Axel .............................................................................. 224

W
Walnut Run ............................................................................. 22
Ward, Ambrose ................................................................. 218-219
Ware, A.L ............................................................................ 152
Waring, Fred ........................................................................ 174
Washburn and Moen Mfg. Company .......................................... 292
Waters, John H. ..................................................................... 189, 199
Waters, Samuel B. ................................................................ 189
Watkins, T.H. ....................................................................... 14
Watson, Denniston and Company ............................................ 61
Weaver, John H. ................................................................... 12-13, 41
Webster Coal and Coke Company .......................................... 8, 14, 99
Welch, Sylvester .................................................................. 102, 134, 135
West Virginia Pulp and Paper Company (WESTVACO) .......... 167, 173, 180
Westinghouse Company ....................................................... 30, 34
Westmont Borough, Cambria County ................................. 13, 81, 143
Westmoreland County, Pennsylvania ................................. 11, 48, 77
<table>
<thead>
<tr>
<th>Name</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Township, Cambria County</td>
<td>22</td>
</tr>
<tr>
<td>White, Judge Allison</td>
<td>11</td>
</tr>
<tr>
<td>Williamsburg Paper Manufacturing Company</td>
<td>167, 179</td>
</tr>
<tr>
<td>Williamsburg, Pennsylvania</td>
<td>15, 17, 19-21, 62, 71, 77, 164-165, 167, 173, 179, 203, 210</td>
</tr>
<tr>
<td>Wilmington, Delaware</td>
<td>187-188, 192</td>
</tr>
<tr>
<td>Wilmore Coal Company</td>
<td>32</td>
</tr>
<tr>
<td>Wilmore Dam</td>
<td>202</td>
</tr>
<tr>
<td>Wilmore, Pennsylvania</td>
<td>32, 104, 153, 159</td>
</tr>
<tr>
<td>Wilson, W. Hasell</td>
<td>227, 229</td>
</tr>
<tr>
<td>Windber Electric Company</td>
<td>30</td>
</tr>
<tr>
<td>Windber, Pennsylvania</td>
<td>9-10, 12, 27-31, 35</td>
</tr>
<tr>
<td>Wood, Morrell and Company</td>
<td>64, 81, 257, 263, 273</td>
</tr>
<tr>
<td>Woodbury Clay Company</td>
<td>16, 21</td>
</tr>
<tr>
<td>Woodbury Land Company</td>
<td>21</td>
</tr>
<tr>
<td>Woodvale Borough, Cambria County</td>
<td>83, 107, 145, 193, 256</td>
</tr>
<tr>
<td>Worcester, Massachusetts</td>
<td>292, 309</td>
</tr>
<tr>
<td>Wrigley, John W</td>
<td>106, 138</td>
</tr>
</tbody>
</table>

**Y**

<table>
<thead>
<tr>
<th>Name</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow Run Shaft</td>
<td>12</td>
</tr>
<tr>
<td>Yellow Spring, Pennsylvania</td>
<td>72-73</td>
</tr>
<tr>
<td>Yingling, Martin</td>
<td>176</td>
</tr>
<tr>
<td>York Bridge Company</td>
<td>132</td>
</tr>
<tr>
<td>Young, C.D.</td>
<td>238</td>
</tr>
<tr>
<td>Youngstown Foundry and Machine Company</td>
<td>282</td>
</tr>
<tr>
<td>Youngstown, Ohio</td>
<td>137, 282</td>
</tr>
</tbody>
</table>

**Z**

<table>
<thead>
<tr>
<th>Name</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zang, Louis</td>
<td>182</td>
</tr>
</tbody>
</table>