

Forges and Furnaces Collection, 1727-1921
158 boxes, 955 vols., 271.2 lin. feet
Collection 212

INTRODUCTION

The Forges and Furnaces Collection at The Historical Society of Pennsylvania (HSP) represents a significant repository of the original forge and furnace books that documents the rise-and-fall of the charcoal iron industry of Pennsylvania. During the 18th and early 19th centuries, due to its rich iron deposits, southeastern Pennsylvania was the major center of American iron production. As time passed, the industry moved steadily westward from the Schuylkill Valley where it started to the Susquehanna Valley and its tributaries; to the Juniata River and the ports on the Union Canal; and eventually to Pittsburgh and western Pennsylvania. In time, charcoal gave way to coke, and iron to steel. The collection documents that progression.

With the Hopewell and Cornwall sites being the exception, few physical plants of charcoal ironworks remain today and none of the early ones do. Abandoned ironworks did not last long as piles of building stone quickly found use in other projects. Often the details surrounding an individual forge or furnace's history and the ironmaster's role at them have been forgotten or at best clouded with the passage of time. Original forge and furnace books are often the only remaining link to Pennsylvania's very rich industrial past. While the collection is diverse, containing the ledgers, accounts and other business books and business papers of almost 70 different ironworks, for the most part it is comprised of material from the Potts, Bird, Grubb, Coleman, and Ege families' Pennsylvania ironworks. It also includes Potts and Grubb family papers and journals as well as those from ironmaster Henry William Stiegel's Manheim Glassworks. Containing almost 1,000 volumes, the collection was obtained by the Society during the last one hundred years through acquiring several major iron collections and through the receipt of a number of gifts and purchases.

In addition to their industrial and historical significance, the forge and furnace books themselves represent a treasure trove of genealogical information that for the most part, has not been mined. Pre-Revolutionary ironworks used a combination of indentured servants, African slaves, free laborers and part-time local farmers for labor. Due to the scarcity of hard money, particularly before the Revolution, most ironworks functioned on a debit-credit arrangement and each employee had an individual debit "accounting" page in the ironwork's books. Although generally un-indexed, the thousands of clerks, unskilled workers, fillers, miners, teamsters, woodcutters, and colliers who worked at the ironworks are listed, what their wages were, and what they purchased from the company store. Furnaces and forges also generally had sawmills and gristmills attached to them using the waterpower created to run the furnace bellows and forge trip hammers to saw lumber and grind corn and wheat. As the general population increased these operations served as a public resource. These mills created additional income for the owners and their operations are documented in the furnace and forge books. Consequently, the collection also serves as an important record of that industry.

Although the HSP's collection is the largest in the state, other historical and genealogical repositories also have forge and furnace books from the same ironworks and same time period contained in the HSP collection and in fact, these books often complement and dovetail nicely with the HSP books. The Pennsylvania State Archives in Harrisburg and the Historical Society of Berks County in Reading both have excellent collections, as do others. These books and their locations are noted in the individual ironwork sketches.

FURNACE AND FORGE DISTINCTIONS

The HSP collection contains both forge and furnace books. While they get often get lumped together in discussions about the early iron industry and their operations did have similarities, forges and furnaces were different entities. Although they had a symbiotic relationship, it was hierarchical. Refinery forges needed furnaces to supply their pig iron and to a lesser extent, furnaces needed forges to which to send their pig iron. These dependencies led to a number of furnace-forge relationships and particularly in the case of earlier ironworks, a furnace and a forge were often thought of as a package when sold or rented. Agreements were often reached on guaranteeing supply before an independently owned forge was built but the furnace owner, as supplier, always had the upper hand financially.

While both forges and furnaces obviously worked with iron, they performed different functions in the manufacturing process. Before the widespread use of coke after the Civil War, early blast furnaces produced pig iron from iron ore, charcoal and limestone. Their physical plants were bigger than forges and the expense to erect one was considerable. Furnaces also required a larger labor force to operate, and they had to be housed, fed and supplied with other goods and services. Consequently, to distribute the expense and the risk, new furnaces were more apt to be capitalized by a group of shareholders. Particularly during the early period, shares, like stocks, were continually split or consolidated and care should be taken not to confuse owners, shareholders, and ironmasters. Before the advent of canals and railroads, these enterprises also had to be located near their natural resources, generally causing them to be on the edge of European settlements and inland. A large furnace when in blast could use up to an acre a day of timber for charcoal. Consequently, the acreage required by furnaces was both considerable and rapidly denuded of trees. This, combined with the more rapid technological advancements in iron production, caused most charcoal furnaces to have relatively short existences.

On the other hand, forges, which refined the furnace's pig iron into wrought iron, consumed natural resources at a pace that was renewable, required smaller physical plants and were cheaper to build, and unlike furnaces, were more often owned by one individual. Other than increasing the number of "fires" to reheat the pig iron or trip hammers to refine it, their technology remained relatively stable and their workforce small. As a result, they had a much longer existences than furnaces and ones such as Pine Forge and Coventry Forge were continuously operational for over 100 years.

As it became technologically possible to consolidate forges and furnaces at the same site and as the financial advantages of consolidation became obvious, iron barons such as Samuel Nutt, George Ege, and Robert Coleman co-located forges and furnaces at the same location or added slitting and rolling mills to existing sites. These sites were then generally given the name "works." For instance, Coventry

Forge became “Coventry Works” when Samuel Nutt added his steel furnace, but returned again to “Coventry Forge” when its furnaces were closed and replaced by the newly built and family owned nearby Warwick Furnace. As the industry continued the progression from its independently owned, cottage industry-style beginnings, to the huge iron and steel producing complexes after the Civil War, consolidation at one site became the norm. As a result, standalone independent forges generally were closed by the early 1800s although their grist and/or saw mills often had a longer independent existence.

In addition, Pennsylvania was also unique in that it consistently had a higher ratio of forges to furnaces than did Maryland or Virginia, whose initial furnace locations were near the Chesapeake Bay and whose output was more often shipped directly to England. Shareholders did invest in early Pennsylvania furnaces such as Durham and Colebrook Dale with the idea that their pig iron would be exported to England. However, early on, Pennsylvania ironmasters realized that domestic growth could consume their output and consequently, Pennsylvania forges, not English ones, refined and sold finished products such as tools, hardware, and weapons locally. Consequently, in Pennsylvania, while large furnaces such as Warwick supplied from four to eight local forges with iron, there were generally two or three forges for every furnace. The HSP collection reflects this proportion, having more books from forges than furnaces. After creating a domestic need for local iron, by exporting a greater or lesser amount of their iron overseas, later pre-Revolutionary War iron producers such as the Potts, Grubbs, or Colemans could and did adjust domestic supply. They were able to create artificial shortages in Philadelphia and inflate prices.