

Printing at Ephrata

As Brother Jaebez sat working among leather bound volumes and loose sheets of paper, the thought must have crossed his mind that the project at hand was larger than he anticipated when he began the work in 1747. Now, however, it was too late to turn back. A bargain had been struck; a promise was made. He had agreed to publish a new edition of a book for the Mennonites living nearby, and publish it in a different language. The task was so consuming that he barely had four hours of sleep any night in the past several weeks. Somehow, thoughts of suffering under the labor of this work seemed ironically appropriate. The pages he was translating held stories of people who also suffered, but unlike himself, these people had paid a much higher price than the loss of a little sleep.

The book, *The Bloody Theater or Martyrs Mirror*, was comprised of nearly 1500 densely filled folio size pages. Before this edition could go to the press, however, it was Brother Jaebez who assumed the task of transforming each page of the volume from its original Dutch into the High German language requested by the customers who commissioned the new work. When it was originally printed in Holland nearly 65 years earlier, the book was read by Anabaptists living in the Netherlands. The Mennonites who settled here on Pennsylvania's frontier had come from Switzerland and the valleys of the Rhine. They required a volume printed in a language to which they were more accustomed. By the time the entire project was completed nearly two years later in 1749, the product of this massive undertaking had become the largest book printed in America, a record it would stand until the time of the Revolution.

Ephrata, a small village along the Cocalico Creek in northern Lancaster County, was founded in 1732 by Conrad Beissel, a German mystic. During the next dozen years nearly 80 celibate Brothers and Sisters followed Beissel to prepare for the Second Coming of Christ. Together they built impressive Germanic-style buildings on 250 acres of shared land.

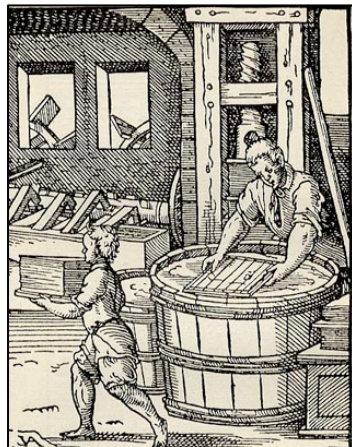
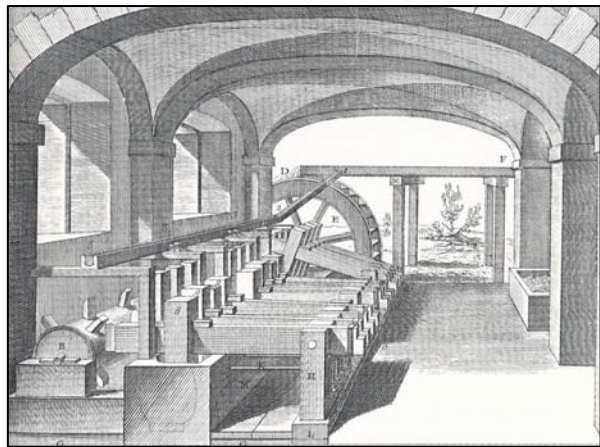
Beissel's mystical theology embraced Sabbath worship, celibacy, adult baptism, and mutual support for sustaining daily necessities. His view that God embodied both male and female aspects led him to prescribe a lifestyle of strict self-denial and discipline as a way to achieve balanced gender roles on earth. Adopting a monastic dress and schedule, the celibate members occupied their days with periods of private meditation balanced with domestic chores, agricultural labors, and the operation of several mills. By 1745 the Brotherhood established a printing office to produce works of their own authorship and for outside customers. As exercises in discipline and expressions of faith, the members devoted time to the creation of the Gothic lettering known as *Frakturschriften* along with intricate penned designs, and the composition of vocal music which they performed without musical accompaniment.

Although he encouraged celibacy, Beissel welcomed families from neighborhood farms to worship with the celibates who valued their support. These Householders followed independent lives as farmers and craftsmen and numbered nearly 200 individuals in the mid-18th-

century. Following Beissel's death in 1768 the celibate population of Ephrata declined and by 1813 the last celibate member died, leaving the property and faith to the remaining Householders. The following year they created the German Seventh Day Baptist Church. Congregation members continued to live and worship at the site which came to be called the Cloister as the surrounding town of Ephrata grew around them. Membership in the German Seventh Day Baptist Church dwindled and the congregation was dissolved in 1934. In 1941 the Commonwealth of Pennsylvania purchased the remaining 28 acres and nine original buildings and began restoration of the historic site.

Why had Ephrata been given the task of publishing the massive book, the *Martyrs Mirror*? After all, there were other printers in the colonies. But at Ephrata, all that was needed to create the book was located in one place: there were literate people to write (and translate), a paper mill, an oil mill to make ink, a printing press, a tannery to make leather for the covers, and bookbinders who could stitch together the thirteen pound volume. Then again, the price was right. The agreement was for the Ephrata Brotherhood to produce the book, and when finished, the Mennonites were free to buy or not buy according to their desire.

The process for printing a book in the 18th-century had changed little since the time of Guttenberg. To start, the basic materials included paper and ink. At Ephrata, the Brotherhood opened a paper mill about 1742. Linen rags were collected and cut into small pieces. These scraps were tossed in a pit with a small amount of water. Over the course of several months the rags were stirred and watered, beginning the process of breaking down the fabric to its basic fibers. The real “milling” process came next, when the softened rags were put through the stamping mill. Here, large wooden headed hammers were raised and lowered with the action of a central shaft attached to a waterwheel. This action beat the rags to pulp—the finely ground and moist fibers needed to make paper.



The lightweight pulp was placed in a large vat of water where it floated on the water's surface. Here a worker used a paper mold—woven brass wire stretched on a wooden frame—and a deckle—a wooden frame matching the size of the mold. With the deckle placed on top of the mold and held tightly together, the worker plunged the tools vertically into the water and under the pulp. Once under the pulp, the mold and deckle were brought to a horizontal position, and slowly raised. The floating pulp became trapped in the screen of the mold and the fibers became entangled among

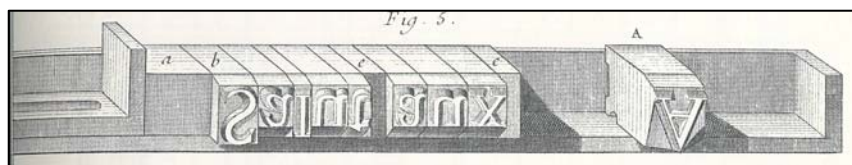
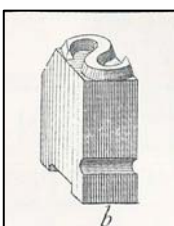
themselves. Once out of the water, the deckle which defined the edges of the paper was lifted off the mold. The mold, with the wet paper still attached, was turned over and gently pressed against a moist felt cloth. The paper was transferred to the cloth, and another felt placed on top. When a desired amount of alternating paper and felt layers had been accumulated, the stack was placed in a large press which extracted more of the water trapped in the paper. When completely dry the moist pulp fibers became interlocked in a thin layer, forming a durable, long lasting sheet of paper. At Ephrata, the largest sheet that could be produced measured about 17 by 14 inches.



According to the community’s history written by Brothers Lamech and Agrippa, the oil mill at Ephrata contained a pair of stones, “the likes of which none before existed in America.” The seed of the flax plant, the same plant that produced fibers to create linen, also contained oil. These seeds, only millimeters in size, were brought to the oil mill in bushels where they were first roasted in shallow metal pans to permit the oil to flow freely. These roasting seeds needed constant stirring to prevent them from sticking to the pan and creating a highly flammable build-up of oil. To accomplish this, inverted propeller like devices, powered by a waterwheel, were placed in the pans, continuously turning among the seeds at a slow regular speed.

The warm seeds were placed on the mill’s bed stone, a large round stone which lay horizontally on the mill’s floor. A small lip around the stone’s edge prevented the seeds from falling off the stone as a similar stone wheel, the runner stone, was mounted vertically on an axle attached to a central vertical shaft. As the shaft turned, the runner stone was rolled around the top edge of the bed stone, crushing the seeds. The oil was drained off, and the decimated seeds usually feed to cattle. This linseed oil became the base for the ink used in printing. Mixed with lampblack (carbon), this thick, sticky oil based ink adhered to the metal printing type, unlike the thin, watery type of inks made from other materials and used for writing.

Just how, when, and from where the Brothers acquired their first printing press and type is unknown. Certainly it must have come from Germany, and perhaps the community’s association with Germantown printer Christopher Saur played some part in the venture. Saur himself cast type, but whether his work was used on Ephrata’s press is uncertain. Each piece of the metal type contained a single letter. Letters were assembled to make words, and unlettered pieces of type separated the words. Often called “lead type,” the type was made from a combination of the metals lead, tin and antimony. Type was accumulated in a hand-held composing stick, and assembled upside down and backwards to produce a correct impression on the paper.





Once formed, the type was locked in a metal frame with the use of wooden wedges. Properly assembled type was locked so tightly in the frame that it could be carried in the frame, despite the fact that nothing supported the type from below. The type filled frame was placed on the bed of the printing press and prepared for printing by having ink applied in a thin, even coat to letter face. Dampened paper was laid on top of the type and both were slid under the platen of the press. With the pull of a large lever, a screw slowly descended, applying pressure to the platen, and in turn, pressing the paper against the inky type. Based on the size of the finished item, a single pull of the press could produce one sheet or several pages of a book, depending on the layout of the type in the bed of the press.

Once both sides of the paper were printed and the oil based ink had a few days to dry, the pages were assembled and delivered to the book binder. Using a sewing frame and linen thread, the binder sewed each page to heavy cords which ran horizontally across the spine of the book. These cords were threaded through the cover boards and glued down. In large books, the boards were actually thin slices of wood. In smaller volumes the boards were comprised of several sheets of thick paper glued together to form cardboard. Thin leather, often pig, goat or sheep skin, was stretched over the boards and glued down, the edges turned to the inside. An end paper, sometimes highly decorative, was glued to the inside of each cover hiding the raw edges of the leather and providing a finished appearance. On larger books it was common to apply metal corner protectors to the covers and often straps with metal clasps opposite the spine to keep the book tightly closed when not in use.



The greatest majority of Ephrata's titles were published in German, however several small items appeared in the English language. The Brothers printed using both the traditional Germanic *Fraktur* type font and a Roman typeface. Although never heavily illustrated, Ephrata's publications occasionally contained wood block images and impressions from copper printing plates which were likely produced in Europe. Borders formed of decorative type, and wood block tail pieces most frequently provided a contrast to the text filled pages.

Fraktur typeface
Ephrata

Roman typeface
Ephrata

During a span of nearly fifty years, from about 1745 until 1792, the Ephrata Brotherhood produced about 125 items, including nearly 75 books. Most volumes were of a religious nature, but only about half of them were produced for internal consumption by the Ephrata community. For themselves, Ephrata produced music books, sermons, theological tracts, and devotional literature. The balance of the titles were a diverse assortment of commissioned works including a protest against slavery for local Quakers, a book of prayer for Lancaster's Episcopal congregation, the *Martyrs Mirror* and five additional prayer books for local Mennonites, political tracts related to the French and Indian War, and a book on metal mining considered the first book of chemistry published in America. Among all the titles, however, Ephrata never published an edition of the Bible.

Of Ephrata's many achievements, above all others the publications from the Brotherhood press extended beyond the wilderness settlement. When the minister Israel Acrelius visited Ephrata in the fall of 1753 he noted that, "in the cloister there is a printing-office, with a press, together with new type, fair and clear." This was the second of two presses simultaneously operated by the Brotherhood. He went on to report that, "it has not yet repaid either its expense or its trouble." Now more than two and a half centuries later, a high price would be offered to locate just one of these presses, but unfortunately both seem to be victims of time's passage. Yet many of the items produced using these tools do survive, testifying to the effort and skill of Ephrata's Brothers who carried their Old World technology to the edge of America's expanding frontier.