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From Gutenberg to Grandin: Tracing the Development of the Printing Press

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Late in March 1830, a notice in the Palmyra, New York, newspaper appeared announcing the recent publication of the Book of Mormon. It was the culmination of a three-year translating and printing process that would ultimately stamp Palmyra as the birthplace of Mormonism. Producing this book in the small town along the Erie Canal was an event of unusual proportion as well as portent. In many ways this physical event occurred because of a stream of individuals and inventions that stretched over a four-hundred-year period. The result of this quiet process was an available printing press and competent personnel who in 1830 delivered a book that was anciently described as “a marvellous work and a wonder” (Isaiah 29:14). The story of the physical printing developments that culminated that memorable day of March 26, 1830, in Palmyra, New York, is a fascinating one.

A Brief History of Printing

Printing actually began hundreds of years before the development of the printing press in fifteenth-century Europe. The Chinese are credited with first carving wooden blocks and using them to print symbols and images as early as A.D. 175. Their insurmountable challenge was the sheer number of characters that they had to create in order to have just one complete set of images. By about A.D. 300 the modern codex book form was introduced and became the standard format. In time, the wooden blocks gave way to earthenware and then eventually to bronze reliefs. This technology gradually spread from the Chinese to the Japanese, the Koreans, and finally the Turks. Even so, in the year 1400, after more than a thousand years of hand-carved letter printing, the process of creating a book was more of an art than a science. But this process was about to change as a result of one gifted inventor.

The Gutenberg breakthrough. Johann Gansfleisch zum Gutenberg was a goldsmith by trade and began experimenting with printing in the 1430s. He faced four technical challenges to mechanical printing. The first was the need for durable metal type that could be uniformly mass produced. He applied his metalworking acumen to this challenge and successfully devised a new mixture of lead, antimony, and tin suitable for inexpensive castings. His second obstacle might have been his most technical hurdle.^[1] Even though he was well versed in the use of molds, he now had to design a reusable mold that could cast different sized letters with identical length and dimensions. After much perseverance he refined and produced a type-casting mold that gave printers uniform, durable metal type. Yet another task was to reformulate ink so it would transfer from his metal type to the existing paper without smudging or smearing. Borrowing from oil painters, he was able to modify their paint with linseed oil and carbon lampblack to produce a suitable printer’s ink.^[2] And finally he had to construct a press that would uniformly transfer inked letters onto paper. Many suggest that he borrowed his design from German winepresses, and others believe it must have come from a cheese or a papermaker’s press. History is silent concerning his impetus, even though his eventual design did closely resemble a common winepress.

Gutenberg’s prodigious invention arrived in a world hungry for mental stimulation. His press was replicated, and his technology spread quickly. Within just fifty years of his first press, over twelve million books had been printed in more than one thousand print shops.^[3] Scholars have titled this period “The Incunabula,” or cradle of printing. Ironically, Gutenberg did not see the impact of his work during his lifetime. Five years after his invention, he was forced into bankruptcy. Even though he was befriended in his poverty, he died in relative obscurity about ten years later. Recently, some five hundred years later, this man whose grave no longer even exists was honored as “The Man of the Millennium.”^[4]

One of the first pieces of printed material that Gutenberg published was his famed Gutenberg Bible. Almost four hundred years later, the Book of Mormon was printed using technology that Gutenberg himself would have readily recognized. What were the changes that occurred from the Gutenberg press in the fifteenth century to the Grandin in the nineteenth? Print historians have codified these four hundred years into three distinctive periods of printing developments: the creative period, 1450–1550; the refining period, 1550–1800; and the mechanization period, 1800–

1900.^[5]

The creative period, 1450–1550. The creative period immersed the world in printing and books in the short span of just one hundred years. By 1550 Gutenberg’s technology was everywhere. A few institutions tried in vain to suppress it, supposing that an educated populous would threaten traditional structures. But their efforts proved completely inconsequential and failed to stem a deluge of printed materials. By the middle of the sixteenth century, as one writer summarized, “the experiment was over.”^[6]

The refining period, 1550–1800. The period that followed Gutenberg’s era was really just a prolonged pause in printing technology. The printing pundits have titled it the refining period, but in reality the refinements were only minor adjustments. Some of these adjustments occurred in 1620 through the Dutchman William Blaeu. His changes consisted of stabilizing the platen (or printing surface) to avoid smearing, installing an iron hand lever for greater leverage, devising a rolling bed to position the form into printing position, and designing springs to more quickly release the platen.^[7] The second significant modification occurred late in this refining period. In 1772 William Haas of Switzerland introduced metal replacement parts in the stressful components of the wooden press. Even though this represented a great step forward, it went largely unnoticed until Adam Ramage incorporated it into his popular wooden presses in the early 1800s.^[8]

Thus, the refining period of some 250 years concluded with a few improvements, but the press remained realistically a Gutenberg press. Because this press was so widespread and universal, it became known as the “common press.” It was a large frame press, usually built out of oak or mahogany. In America it was the press that produced Benjamin Franklin’s *Poor Richard’s Almanac* and Thomas Payne’s *Common Sense*. This press required two people to operate, and at top speed they could produce about two hundred sheets per hour. Their output would frequently slow to as few as twenty sheets per hour.^[9] The work required to physically operate a common press was so strenuous and repetitive that observers claimed one could recognize a printer on the street because “the right shoulder and foot became enlarged, the left shoulder sunken; the body moved sideways, crablike when walking.”^[10]

While printing technology remained at a standstill, nations and cultures continued their forward march. The Industrial Revolution created wealth and a middle class. Philosophers such as Imanuel Kant, John Locke, and David Hume taught the value of rational thought and reason, ideas that seemed to fan the flames of the American Revolutionary War (some have even suggested that the war was won as much by lead type as by lead bullets). Democracy demanded a literate and mentally active public, so while reading had once been the domain of the clergy or the gentleman, it now emerged as the business of the middle class. In America the common press became the working partner of the common man.

The mechanization period, 1800–1900. The year 1800 ushered in a new century. It also brought the cusp of a technological tidal wave in the field of printing. One historian called this amazing surge “a wholesale alteration . . . beyond the wildest dreams of earlier printers . . . [and] beyond the most extravagant hopes of earlier publishers and book-buyers.”^[11]

One of the first salvos of change occurred in an overlapping industry. Prior to 1800, paper was produced by hand in slow and costly paper mills. In 1787 only ninety mills existed in all of America.^[12] Paper was expensive, in short supply, and of poor quality. Finer book-quality paper usually came from England and was hard to come by. In some of his correspondences, Benjamin Franklin complained about frequent paper shortages.^[13] The British were also quick to exploit this situation. In 1767 as they tried to maintain control of the thirteen colonies, England imposed the infamous Townshend Act. A central feature of this measure was a punitive tax on rags that were needed to manufacture paper. With these limitations the cost of paper alone constituted over 20 percent of the total price of printing a book. The situation was stifling for the American printing industry.

Two years prior to 1800, a French inventor named Nicolas Robert built a mechanical paper machine. Within five years English paper mills were producing ten times more paper than they had previously produced. By 1810 the number of paper mills in America had more than doubled. Not only was paper in ample supply but the cost tumbled by as much as 30 percent in a twenty-five year span.^[14] What had been a severe restriction for American printers all but vanished overnight.

Ironically, most of the innovations and advances had been suggested previously, but inertia and institutions had completely stymied them. Within the space of twenty-five years, a resurgence occurred that could only be compared to the incunabula of printing itself. Scholars have labeled this time as the period of mechanization. Upon closer examination, perhaps it merits the title of the “reincunabula” because so much occurred in such a brief time span in the American printing industry.

Nineteenth-Century Iron Handpresses in America

The Stanhope press. At the onset of the nineteenth century, England provided the perfect climate for the invention of the first iron handpress. The industrial revolution was in full swing, and England was home to an ambitious inventor named Charles, the third Earl Stanhope. About the year 1800 he cast and built the first all-metal handpress. Others had previously used metal parts and even metal frames, but he was the first to put it all together. His second great innovation came in his use of compound levers to drive the contact surfaces of his press. A third advancement involved the efficiency of the press. Common (wooden) presses printed at about the same speed as a Stanhope press: two hundred sheets per hour. However, the iron press generally tripled the size of the platen or printing surface. Also, the common press required the pressman to make two pulls with the printing lever. The new iron press utilized just one motion. It was a big step forward in print efficiency. ^[15]

The Columbian press. The first iron handpress to be built in America was designed and manufactured by George Clymer in Philadelphia, the heartland of America's printing industry. In 1813 he built a press that abandoned the screw drive that had been the central feature of Gutenberg's modified winepress. Clymer replaced this mechanism with a large pivoting crossbeam and lever. The distinguishing visual feature of this press, nicknamed “The Columbian,” was its ornately decorated headpiece and flatware. One observer referred to this press as both a technical and an artistic advancement. ^[16] Because of its weight and cost, only a few were manufactured and sold in America. Yet by 1820 the Columbian press had established itself in England and Europe as the leading machine.

The Ruthven press. A second foreign-built handpress arrived in America in 1818. Called the Ruthven press after its Scottish inventor, John Ruthven, this press featured a very different design and print mechanism. Standing just three feet high (compared to five to eight feet for other presses), the Ruthven maintained a stationary printing plate. The benefits of this press were reduced cost, weight, and size. But this press never really established itself in the United States and was primarily found only in the catalogs of the day.

The Wells press. The second American-built iron handpress arrived courtesy of inventor John Wells in 1819. ^[17] His biggest innovation involved the use of offset toggle levers. Unfortunately for Wells, his design moved faster than his presses. Two years later, unpatented presses from rival manufacturers began selling his trademark toggle lever apparatus. Wells bitterly complained, “In 1820 several of my [patented] presses were in the Bible office in N. York; and after Peter Smith had commenced the manufacture of presses, I was informed that he had examined them many times. ^[18] His patent is dated ‘29th Dec. 1821.’” ^[19] Wells confronted Mr. Smith, but patent laws provided him little recourse. He continued to market his press until his death in 1833, but he was a much better designer than salesman. In retrospect, he facilitated an important advance in iron handpresses in America, but, unfortunately, others reaped the benefits.

The Stansbury iron press. The Stansbury iron press emerged in 1821. Adam Stansbury constructed a press similar to the Wells model of 1819, yet different in two ways. It employed a unique transfer mechanism, and it was manufactured in Cincinnati rather than New York. In spite of these changes, this press also failed to sweep the printing market.

The Smith press. Perhaps the most controversial press of this technology deluge was the Smith press of 1821. History incriminates Mr. Peter Smith as marketing his press with pilfered technology long before he had any legal patents. On the other hand, it appears that Mr. Smith legitimately invented and introduced the distinctive acorn shape into the American printing industry. This shape became the symbol of American handpresses during the 1820s and 1830s. (Ironically, the Wells press changed the shape of its frame in 1822 to conform to the Smith acorn press.) Purchased in 1823 by the aggressive Robert Hoe and Company, the Smith press quickly became one of America's most popular machines. It was not unusually fast, exceptionally reliable, or substantially cheaper. It was simply the model that Robert Hoe owned, advertised, and sold. Thus, for a brief period this acorn press came to visually symbolize the handpress in America. ^[20]

The Washington press. The last of the iron handpresses prior to 1830 arguably became America's most popular

press of the nineteenth century. The Washington press was developed by Samuel Rust in 1821. This press was most noted for its light weight, its toggle technology, and its component frame,^[21] though what really popularized this press in America was the purchase of the patent by Robert Hoe in 1835. Hoe was known as the Henry Ford of the printing industry, and the Washington press became the Model T of the nineteenth century. Hoe and Company produced over six thousand of these units before they were outdated, but the Washington press would not have been readily available before 1835.

The seven previous iron handpresses would have been the only models in printers catalogs prior to 1830 in America. Each had modified or improved slightly on its progenitor. To be sure, there were other metal presses in England and Europe, but they had not yet made their way to America. When Joseph Smith, Oliver Cowdery, and Martin Harris commenced looking for a book printer in 1829, these presses would have constituted the field of possibilities.

Printing in America, 1829

By 1829 approximately four hundred years had elapsed since Gutenberg first introduced the wooden handpress. His press had undergone some cosmetic changes, but its design was basically intact. From its onset, the Gutenberg press could produce about two hundred sheets per hour if conditions were right and two experienced pressmen were at the controls.^[22]

By the early 1800s the wooden press was still the press of choice in America for all but the larger newspaper printers. Prior to 1800, however, presses in America were difficult to purchase without long delays or required inside contacts.^[23] For this reason almost all book printing prior to 1820 occurred in England. Suddenly all this began to change.

Concomitant with the rise of metal presses was a parallel surge of reliable wooden presses. Manufacturer Adam Ramage answered Americas need for inexpensive wooden presses. Between 1800 and 1827 he built more than twelve hundred presses with a sticker price of only \$130.^[24] Importation of presses ceased almost overnight.^[25] New as well as used presses helped smaller shops and newspapers to proliferate. The result was a surge in printed materials and in a literate public. Americans became voracious readers. Nowhere was this more obvious than in the newspaper industry. By 1830 Bulwer-Lytton calculated that one in thirty-six people bought newspapers in England, while in Pennsylvania one in four purchased them.^[26] Rather quickly an appetite for reading was answered with an amazing further proliferation of printing. The printing scholar S. H. Steinberg summarized these amazing times best when he noted, “Within a generation . . . these inventions [went] . . . beyond the wildest dreams of earlier printers.”^[27]

Printing possibilities in Palmyra in 1829. On June 11, 1829, Joseph Smith secured the copyright for the Book of Mormon. Shortly thereafter records indicate that he and Oliver Cowdery began their efforts to secure a printer for the manuscript. Their first recorded attempt was at Egbert Grandin’s printing shop in Palmyra.

Palmyra in 1829 was a bustling little city of four thousand people. Just four years earlier, the Erie Canal had opened with great fanfare and promise. The canal cut right through Palmyra and was ideal for the economical shipping of heavier loads such as a 1500-pound iron press. Palmyra had swelled by 30 percent in just ten years, and many projected it as a key business center between Rochester and Albany.^[28] One of the eager entrepreneurs of frontier Palmyra was Egbert Grandin. In his late teens, Grandin had apprenticed at Palmyra’s newspaper, the *Wayne Sentinel* (formerly *Palmyra Herald* and *Canal Advertizer*). About four years later, he bought the newspaper and became its editor at the young age of twenty-one. The following year, in the fall of 1828, he moved into a new building on Main Street.^[29] Finally, in early 1829 he purchased a state-of-the-art iron handpress. This Smith press was manufactured by

Robert Hoe & Company in New York City and was transported along the Erie Canal to rural Palmyra.^[30] In the spring of 1829, a hoist was constructed, and the new press was lifted into position on the third floor of the Grandin printing shop. Thus, a daring twenty-one-year-old with little more than a dream purchased a printing shop, moved the business and a costly press into a new and spacious location, and ventured heavily into the printing industry. Some would view these events as providential, others as mere historical coincidences. What is certain is that all this occurred without Grandin’s foreknowledge of the imminent printing of the Book of Mormon.

As these events converged, Joseph and Oliver set out to find a printer. They approached Grandin and were politely refused. He cited as his reasons both the religious implications and the fear that his friend Martin Harris was

being duped and exploited.^[31] This setback pointed them in the direction of Rochester, some twenty-five miles away. While there, Joseph and Martin twice approached Thurlow Weed, publisher of the *Rochester Anti-Masonic Enquirer*. In his diary Mr. Weed recorded, “I thought the man either crazed or a very shallow imposter, and therefore declined to become a publisher.”^[32] At another shop, Elihu Marshall agreed to print the book, albeit at an inflated price. Joseph and Martin returned to Palmyra with only one option in hand: Send someone back to Rochester and then shuttle the manuscript copy each day to the printer in order to ensure its safety.

In late June 1829, Martin Harris approached his printer friend Grandin one last time. Martin resolutely stated that the book was going to press. If Grandin stood by his refusal, it would still be printed in Rochester.^[33] In a rather abrupt reversal, Grandin reconsidered. According to his grandson, “after consulting friends who felt that it was merely a business matter and that he would be in no way related to the religion, he consented.”^[34] Perhaps Grandin’s decision was influenced also by his recent acquisition of the expensive Smith press. Furthermore, he did not seem to have any major printing orders occupying his equipment or schedule. Once Grandin agreed in principle, he moved quickly to expand his printing team. In June 1829 he enlisted the help of the former *Wayne Sentinel* owner John Gilbert to set the type and estimate the printing order. Together they estimated that they could produce five thousand books for three thousand dollars by the following February. The size of the order did not seem to worry either Grandin or Gilbert, even though Pomeroy Tucker (Palmyra’s first newspaper printer) was quoted as saying that “the largest printing job ever done in it [Wayne County] was the first edition of Jo Smith’s . . . Golden Bible.”^[35] Other observers have suggested that this order was perhaps ten times larger than the normal book orders of that day.^[36] Undaunted, Grandin accepted a promissory note on Harris’s farm for three thousand dollars payable in eighteen months. The mortgage deed was recorded on August 25, 1829, and with a new set of pica type the printing commenced.^[37]

The printing commences. The printing of the Book of Mormon stretched from late August 1829 until March 26, 1830.^[38] The days were long and relentless. One account indicates that the printing work continued for eleven hours per day, six days a week, for seven months.^[39] Using this as a guide, Grandin’s printing crew had 184 total days available for the project.^[40] However, in January printing ceased. The townspeople had begun to worry Grandin about an announced boycott of the book. At this point Grandin had an immense financial stake in the feasibility of the project. There is no record of any prepayments he might have received, and it appears that he was carrying all of the risk with only the promissory note on Martin Harris’s farm. With the potential boycott looming, Grandin stopped work and Joseph was summoned from Harmony, Pennsylvania. He and Martin allayed Grandin’s concerns and the printing resumed.^[41] Finally on March 26, 1830, the *Wayne Sentinel* printed the title page of the Book of Mormon with the notice that “the above work, containing about 600 pages, large Duodecimo, is now for sale, wholesale and retail, at the Palmyra bookstore.” What had occurred during these seven months was remarkable. The existing records identify nine individuals who worked with Grandin during these months, even though the actual number was probably much

higher.^[42] The Smith press, known for its quality book printing and its strong frame, was well suited for the mammoth job of the first edition printing.^[43] Even the phrase “mammoth job” might be an understatement. The Smith press had a platen of about 21 by 30 inches. Sixteen pages were typeset and printed with each pull of the press lever. This meant that for a 592-page book with a run of 5,000 copies, approximately 2,960,000 pages had to be printed. In layman’s terms, the printing lever on this rugged Smith press would have been pulled at least 185,000 times during this seven-month period. It would have necessitated more than a thousand pulls per day.

But this was not all. To print each sheet of paper, two skilled pressmen had to quickly perform nine other separate tasks. After the printing pull, these other nine steps were as follows: crank the bed back to its original position, lift up the frisket assembly, lift the frisket bracket and remove the sheet, hand ink all sixteen pages in the composite layout, lift the frisket bracket, register the sheet on the timpan bracket, lower the frisket bracket back into place, swing the frisket basket down on the inked layout, and crank the removable bed under the platen. Completing these tasks meant that one of the 185,000 pulls had been completed. On a daily basis, these tasks had to be repeated more than one

^[44]

thousand times. However, this printing procedure constituted only a fraction of the effort to actually produce the book. The type and spacers, which totaled over 42,500 individual pieces for each form, had to be typeset thirty-seven different times. (The total number of pieces set during the seven months was more than 1.5 million.) The entire manuscript also had to be punctuated by the typesetter.^[45] Next, the printed sheets had to be hung and dried, after which the thirty-seven signatures were folded, cut apart, and stitched together for each book. Finally, a binding was applied to the 592 pages.^[46] For a small frontier newspaper, this 184-day process was nothing short of phenomenal.^[47]

Grandin: a postscript. As a postscript to this virtuoso performance by a country printing shop, Grandin grew restless with printing and in the following year turned to other civic pursuits outside his printing shop. By 1833 he was forced to sell his business. He then tried his hand at a number of unsuccessful ventures. He became ill and died in 1845 at the young age of thirty-nine. In retrospect, he controlled and worked his printing business for just four brief years, from 1827 to 1831. On his tombstone was carved the epitaph “An honest man, the noblest work of God.”^[48] To those who sense the truthfulness of the Book of Mormon, this statement could be rephrased, “An honest man who nobly assisted the work of God.”

Summary

Using March 26, 1830, as a printing benchmark, the following developments represent significant trends or events that culminated in the printing of the Book of Mormon:

1. Printing had an incredibly auspicious start (twelve million books in fifty years) with Gutenberg’s press.
2. The Gutenberg wooden press, or the common press, remained virtually the same from 1450 to 1800. It could print about two hundred sheets, or about three hundred square feet of surface printing, per hour.
3. The Industrial Revolution introduced the first iron handpress in England in 1798.
4. By 1800 America had developed an insatiable appetite for reading, and the printing industry responded with a proliferation of presses and materials.
5. Seven iron handpresses of different designs surfaced in America from 1815 to 1830. They became available only in the mid to late 1820s.
6. These iron presses printed three to four times the amount of printed material as the common wooden press and were well-suited for book printing. One drawback, however, was that iron presses were heavy—fifteen hundred pounds.
7. The Erie Canal opened in 1825 and was available for shipping heavier items.
8. The cost of paper fell by 30 percent in just thirty years, and the availability increased due to the mechanization of paper factories.
9. E. B. Grandin apprenticed for four years in a printing shop in rural Palmyra, New York. In 1827, at age twenty-one, he purchased the same printing shop.
10. Between one and two years later, Grandin bought a new iron press, which was three to four times more efficient than his other wooden press.
11. Grandin hired his former master printer as typesetter and contracted to print the largest book order to that time in Wayne County: the Book of Mormon.
12. The pace of 1.5 sheets per minute in 184 days was a near—Herculean printing feat in rural New York.

In sum, it took just seven months to print 5,000 copies of a 592-page book in Palmyra. There were two brief stoppages but no vandalism or maliciousness. In contrast, the translation of the Book of Mormon had to be moved three times to carve out just sixty-five working days within a two-year period. This salient observation remains: it would have been highly disruptive to move the printing once it began. Unlike the translation work, unless the book was completely printed in one shop, considerable time would have been lost in trying to relocate the printing process.

In addition to uninterrupted press time, a final perspective to consider involves the historical timing of this 1829 printing job. What difference would a twenty-year time shift have meant to the Book of Mormon printing? If Joseph had been born earlier and had sought a printer in 1809 in Palmyra, he would have found none. Had he been able to locate a willing printer in Rochester (25 miles west), the printing shop would have had a common press with the typical printing surface of 12 by 18 inches. This machine would have required at least three times as much time to print five thousand copies of the Book of Mormon at only newspaper quality. Instead of seven months it would have required twenty-one months, or almost two years. Undoubtedly there would have also been paper shortages, persecution, and sundry delays. Considering all these obstacles, it is apparent that the general timing of the printing of the Book of Mormon was very significant.

Anciently the Lord, through the prophet Isaiah, foretold the day when He would “do a marvellous work among this people, even a marvellous work and a wonder” (Isaiah 29:14). Often the Latter-day Saint interpretation of this passage points to the Book of Mormon in its entirety, a marvelous manifestation in this last dispensation. But what if Isaiah was also foretelling the marvelous physical manner in which this marvelous work would be brought forth? To those who have come to believe, the timely events from Gutenberg to Grandin that facilitated the printing of the Book of Mormon might be yet another evidence of God’s hand in this marvelous work and a wonder.

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- [1] See Victor Scholderer, *Johann Gutenberg: The Inventor of Printing* (London: Trustees of the British Museum, 1963), 23; see also Warren Chappell, *A Short History of the Printed Word* (New York: Alfred A. Knopf, 1970), 48.
- [2] See James Moran, *Printing Presses: History if Development from the Fifteenth Century to Modern Times* (Berkeley: University of California Press, 1973), 18; see also Edmund C. Arnold, *Ink on Paper 2: A Handbook of the Graphic Arts* (New York: Harper & Row, 1972), 238.
- [3] See Chappell, *Short History of the Printed Word*, 84.
- [4] “Who Mattered Most in This Millennium,” *USA Today*, December 23, 1999, sec. A, 17.
- [5] See S. H. Steinberg, *Five Hundred Years of Printing* (New Castle, Del.: The British Library & Oak Knoll Press, 1996), I.
- [6] Philip Gaskell, *A New Introduction to Bibliography* (London: Oxford University Press, 1972), 2.
- [7] See Robert Hoe, *A Short History of the Printing Press* (New York: Gilliss Press, 1902), 6; see also Frank E. Comparato, *Chronicles of Genius and Folly* (Culver City, Calif.: Labyrinthos, 1979), 2.
- [8] See Moran, *Printing Presses*, 41.
- [9] See Arnold, *Ink on Paper 2*, 127.
- [10] Comparato, *Chronicles of Genius and Folly*, 31.
- [11] Steinberg, *Five Hundred Years of Printing*, 137.
- [12] See Lawrence C. Wroth, *The Colonial Printer* (Charlottesville, Va.: Dominion Books, 1964), 129,134.
- [13] See Wroth, *Colonial Printer*, 129,134.
- [14] See Steinberg, *Five Hundred Years of Printing*, 138.
- [15] See Stephen O. Saxe, *American Iron Hand Presses* (New Castle, Del.: Oak Knoll Books, 1992), 4.
- [16] See James Moran, “The Columbian Press,” *Journal of the Printing Historical Society* 5 (1969): 14–15.
- [17] See Rollo G. Silver, *The American Printer* (Charlottesville, Va.: University Press of Virginia, 1967), 50.
- [18] An abridgment of “Johnsons Typographia” (Boston 1828), 302–4, quoted in Silver, *American Printer*, 51.
- [19] See Saxe, *American Hand Presses*, 24.
- [20] See Ralph Green, *The Iron Hand Press in America* (Rowayton, Conn.: The Press, 1948), 13.
- [21] See Saxe, *American Iron Hand Presses*, 44.
- [22] See Moran, *Printing Presses*, 44.
- [23] See Silver, *American Printer*, 37.
- [24] See Milton W. Hamilton, *Adam Ramage and His Presses* (Portland Me.: Southworth-Anthoensen Press, 1942), 3; see also Comparato, *Chronicles of Genius and Folly*, 31.
- [25]

See Hamilton, *Adam Ramage and His Presses*, 11.

[26] See Chappell, *Short History of the Printed Word*, 199.

[27] Steinberg, *Five Hundred Years of Printing*, 137.

[28] See Larry C. Porter, Milton V. Backman Jr., and Susan Easton Black, eds., *Regional Studies in Latter-day Saint Church History: New York* (Provo, Utah: Department of Church History and Doctrine, 1992), 2–3.

[29] See Larry C. Porter, *New York and Pennsylvania*, vol. 2 of *Sacred Places*, ed. LaMar C. Berrett (Salt Lake City: Deseret Book, 2000), 169.

[30] See Larry C. Porter, “Book of Mormon, Printing and Publication,” in *Book of Mormon Reference Companion*, ed. Dennis L. Largey (Salt Lake City: Deseret Book, 2003), 136; see also Larry C. Porter, “Grandin, Egbert Bratt,” in *Book of Mormon Reference Companion*, 307; “Press That Printed the First Copy of the Book of Mormon,” *Deseret News*, November 5, 1998, sec. A, 18.

[31] See Susan Easton Black and Charles D. Tate Jr., eds., *Joseph Smith: The Prophet, The Man* (Provo, Utah: Religious Studies Center, 1993), 5; see also Porter, “Grandin, Egbert Bratt,” 309.

[32] Black and Tate, *Joseph Smith*, 52; see also Richard L. Bushman, *Joseph Smith and the Beginnings of Mormonism* (Urbana, 111.: University of Illinois Press, 1988), 107.

[33] See John H. Gilbert, Esq., Memorandum, September 8, 1892, Palmyra.

[34] Henry Allen to “The Librarian of the Palmyra Library”; cited in *BYU Studies* 10, no. 3 (Spring 1970): 252.

[35] Porter, “Book of Mormon, Printing and Publication,” 134.

[36] See Hellmut Lehmann-Haupt, W. Lawrence Roth, and Ruth S. Grannis, *The Book in America*, 2d ed. (New York: R. R. Bowker, 1951), 40; Louis E. Crandall, “The Printing of the Original Book of Mormon” (unpublished paper).

[37] See Gilbert, Memorandum; see also Porter, “Book of Mormon, Printing and Publication,” 134; Don Enders, unpublished manuscript in possession of the author, 3.

[38] See Porter, “Book of Mormon, Printing and Publication,” 138.

[39] See Gayle Goble Ord, “The Book of Mormon Goes to Press,” *Ensign*, December 1972, 69.

[40] A period of 184 days was the maximum time available for printing the Book of Mormon within the seven-month period. There is one piece of extant evidence that indicates Grandin’s crew was able to work faster than the maximum 184 working days. John Gilbert claimed that they were able to completely print one form every three days (Memorandum, 3). If they were somehow able to sustain this speed, the total printing time (including typesetting) would have been incredibly reduced to just 111 days. This also means they would have pulled the press not 1,000 times per day but upwards of 1,600 times per day, or 2.5 times per minute. Work on the project was halted once in November, and the second delay came in January. The November stoppage resulted from a need for more type (Porter, “Book of Mormon, Printing and Publication,” 135).

[41] See Bushman, *Joseph Smith and the Beginnings of Mormonism*, 110; Lucy Smith, *Biographical Sketches of Joseph Smith the Prophet and His Progenitors for Many Generations* (Independence, Mo.: Herald Publishing House, 1969), 180.

[42] Porter, “Book of Mormon, Printing and Publication,” 138.

[43] See Silver, *American Printer*, 51.

[44] See Crandall, “Printing of the Original Book of Mormon.”

[45] See Gilbert, Memorandum.

[46] Not all of these processes of binding and folding were completely finished by March 26, 1830. Enough were finished, however, to advertise the book for sale.

[\[47\]](#) See Crandall, “Printing of the Original Book of Mormon,” 261.

[\[48\]](#) Porter, “Grandin, Egbert Bratt,” 310.