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ON THE COVER: A12066. Folio from a Mamluk Qur'an given as *waqf* by Sultan Faraj ibn Barquq (1399-1412 CE).

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PRINTING GOD'S WORDS WITH THE DEVIL'S INFERNAL MACHINE



THE HIEROGLYPHIC
PRINTING FONT
IN THE ORIENTAL INSTITUTE

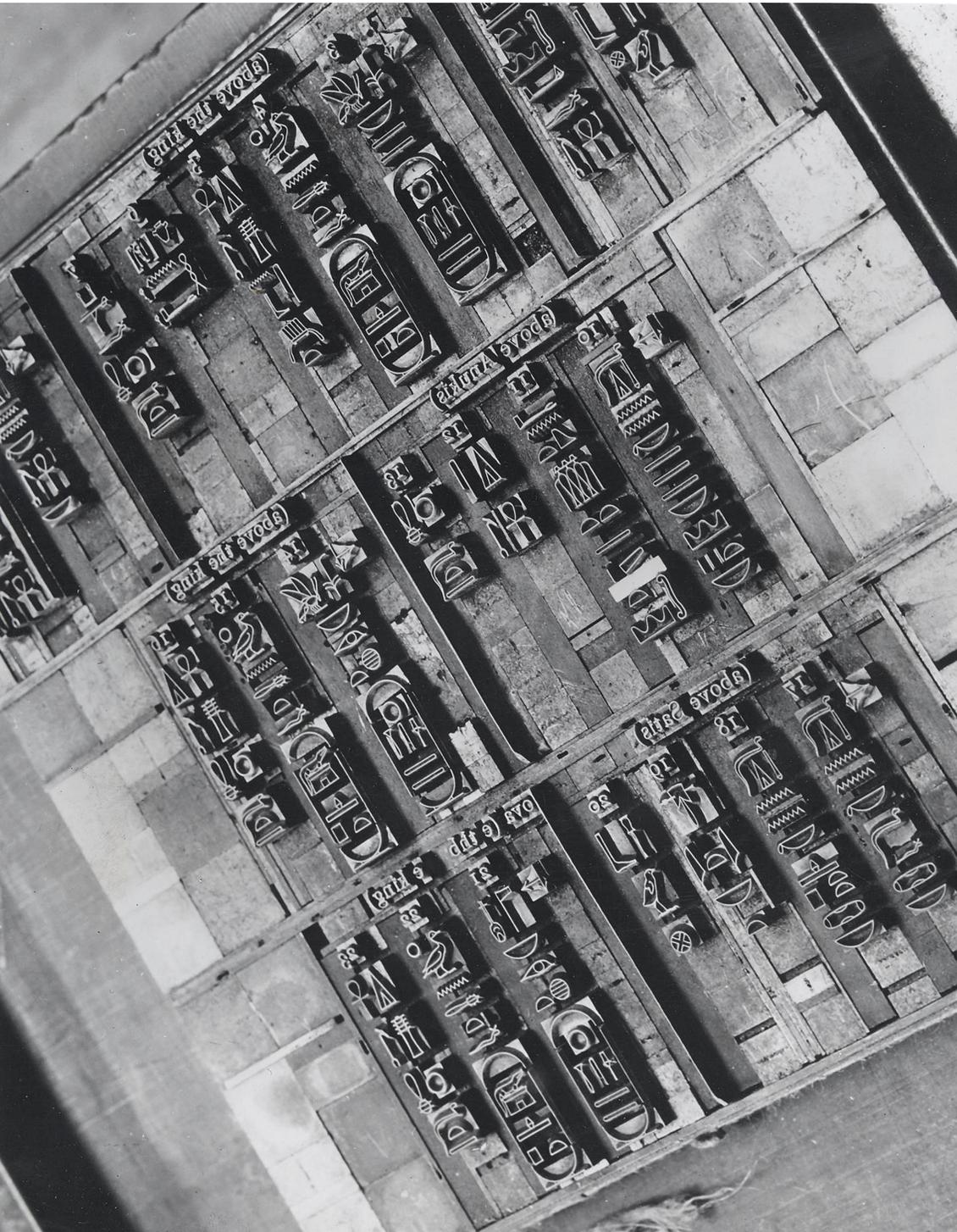
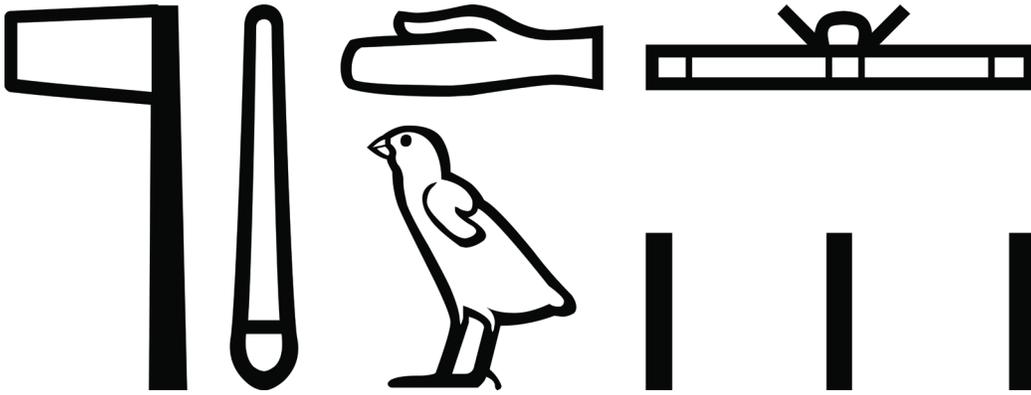


by Foy Scalf & Anne Flannery

The Egyptians referred to the hieroglyphic writing system as the “words of god” (see opposite). From the very invention of writing in ancient Egypt, there was significant experimentation in how these “divine words” were reproduced in physical forms. Nefermaat, a vizier serving the pharaoh during the pyramid boom of the Fourth Dynasty (ca. 2600 BCE), employed a laborious technique of carving deeply sunken reliefs inlaid with colored paste. He referred to his hieroglyphic inscriptions as “his gods in writing that cannot be erased” (Woods, *Visible Language*, p. 155). Throughout the history of ancient Egypt, texts were produced by hand; each was unique, exhibiting the idiosyncrasies of individual scribes, times, and places. The only technology that widely reproduced the same texts over and over were stamp and cylinder seals. Seals were used to stamp or roll carved hieroglyphs into soft clay, but the purpose of transferring the text from the seal to the clay was not to transmit a literary text, but rather to identify the owner of the seal holder and their bureaucratic control of the sealed goods. Throughout antiquity and into the Middle Ages, texts were reproduced manually. The production of hieroglyphs in such manuscripts always involved drawing, wood carving, and block printing—the latter necessitated carving the signs into wood and incorporating them into the printing process. Block printing existed side by side with hand-drawn images as a common means to illustrate books in the fifteenth to seventeenth centuries. Such drawings and block prints can be found throughout the work of the humanists of the Renaissance, among whom interest in ancient Egypt became especially fashionable, perhaps most famously in the 1499 epic fantasy *Hypnerotomachia Poliphili* by Francesco Colonna, printed by Aldus Manutius in Venice. In these works, Egyptian hieroglyphs or their imitations had to be drawn in by hand or block printed from carved wood.

On display in the Research Archives of the Oriental Institute is a large wooden cabinet made in 1929 by Hamilton Manufacturing Company. Although Hamilton himself started out making wood type in 1880, the printer’s cabinet in the Research Archives was designed to hold a metal letterpress set. Inside its forty-eight drawers are thousands of pieces of cast lead type. Knowing that the cabinet was made in 1929, one would expect to find inside a common typeface used by printers in the Midwestern United States at the beginning of the twentieth century. However, upon opening the cabinet’s drawers, one will find at the end of each lead piece not a Latin letter, but a finely formed Egyptian hieroglyph. Placing this type into a frame allowed for the publication of complex hieroglyphic inscriptions with the remarkable stability offered by cast fonts combined with the printing press. For the first time, the “divine words” of ancient Egypt could be reproduced using the devil’s “infernal machine”—a metaphor for the potentially diabolical powers of the press.

Conceptions of printing often mirrored how ancient Egyptians viewed their hieroglyphs. In a letter of November 1497 from the Cistercian monk Conrad Leontorius to the printer Johann Amberbach, Leontorius refers to printing as a “divine art.” This designation echoed the opinions of learned minds of the Catholic Church, who as early as 1468 viewed the movable-type revolution as a “sacred art” (*haec sancta ars*) to transmit scripture and the work of the church fathers (Eisenstein, *Divine Art, Infernal Machine*, pp. 15, 31, 249 n. 17), much like the “divine words” of Egyptian priestly scholars. Despite these positive views, in the mid-fifteenth century, a diabolical mythology also developed among a European audience surrounding Johannes Gutenberg and the printing press that he popularized. Gutenberg was financed by a man named Johann Fust, who, legend has it, was accused of witchcraft and colluding with the devil when customers in Paris could not believe how fast he produced copies of the Bible, how cheaply he was able to sell them, and how the copies seemed to be exact duplicates; these customers of Fust had mistaken “the duplicative powers of print . . . for magic” (Eisenstein, *Divine Art, Infernal Machine*, pp. 1–3). Later European myth makers then confounded Johann Fust with Johann Georg Faust (Johns, *The Nature of the Book*, pp. 333–35, 351–52), the famous “doctor” who, according to the German Faust legends that are based upon him, made a pact with the devil’s representative Mephistopheles to accrue magic powers. As both “divine art” and “infernal machine,” the printing “revolution” therefore constructed a schizophrenic impression of the role of the press in the minds of readers for whom it was unclear if standardized fonts represented a real “improvement” over hand-copied texts.



OPPOSITE A selection of lead casts of hieroglyphic type.

ABOVE The hieroglyphic spelling for “words of god” (*mdw.w-ntr*), the way ancient Egyptians referred to the hieroglyphic script.

LEFT Hieroglyphic type readied for printing texts from an inscription of Sobekhotep III (reprinted by permission of the Secretary to the Delegates of Oxford University Press).

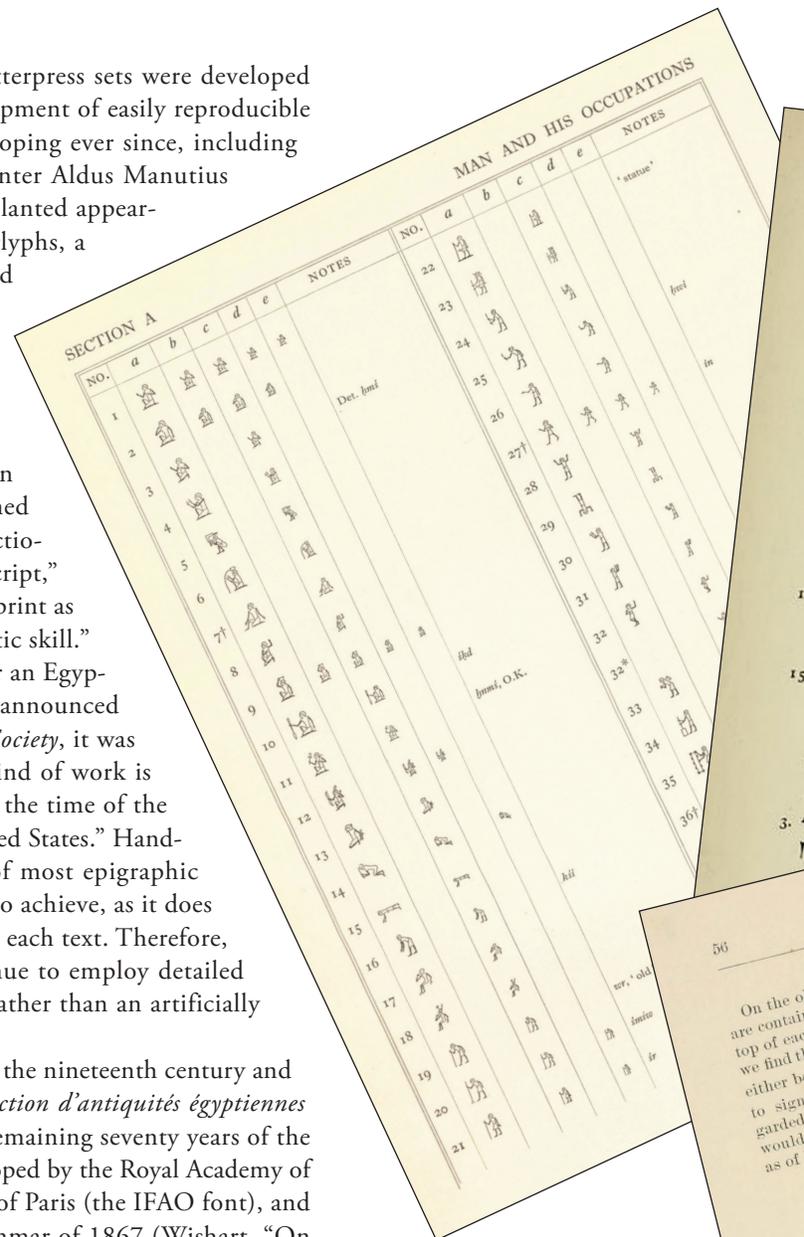
BELOW Panel of Nefermaat in the Oriental Institute Museum (OIM E9002) where Nefermaat is described as “He is the one who makes his gods in writing that cannot be erased” (D. 15795).



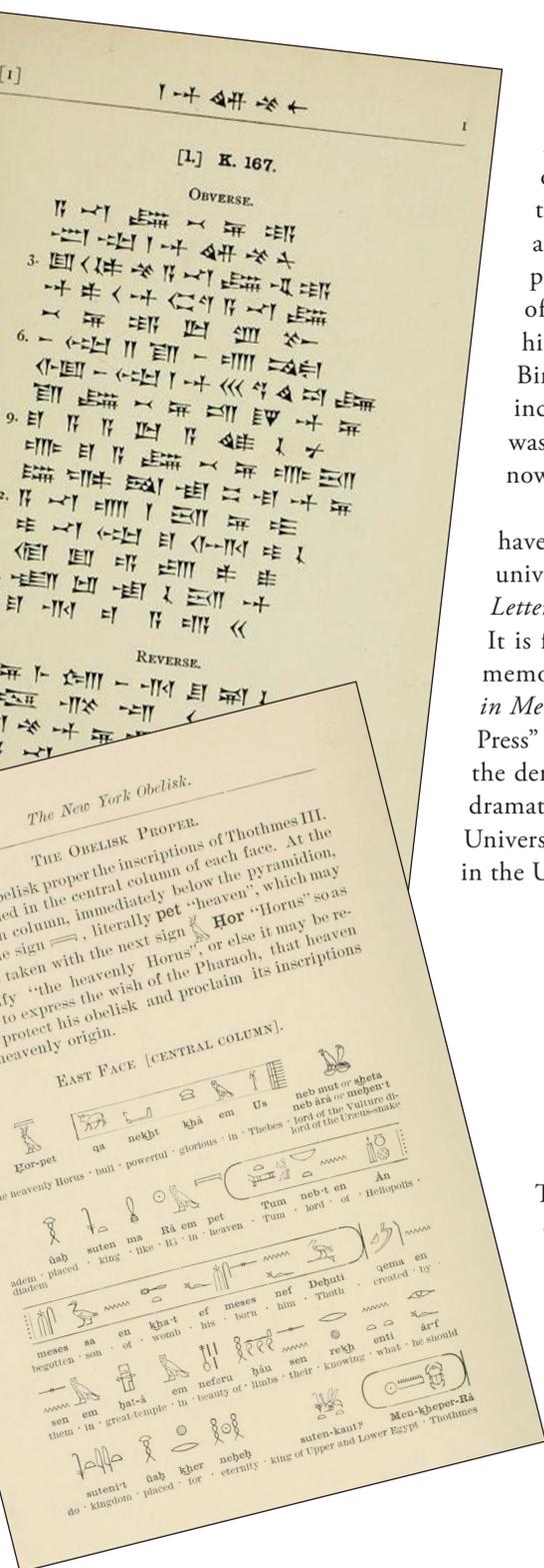
It was in this context of the printing revolution that lead letterpress sets were developed and used. One of Gutenberg's primary innovations was the development of easily reproducible metal type set into a frame for a press; typefaces have been developing ever since, including the famous example of the creation of italic for the Venetian printer Aldus Manutius in 1500, which was actually based on handwriting styles with its slanted appearance. How did printers and publishers deal with Egyptian hieroglyphs, a very non-standard font that required far more signs and complicated grouping than alphabetic fonts? Although the use of movable metal type expanded rapidly after Gutenberg, hieroglyphic letterpress fonts like that in the Oriental Institute were not created until the middle of the nineteenth century, nearly four hundred years later. In 1822, when Champollion deciphered the hieroglyphic script and unlocked the key to understanding the ancient Egyptian language, producing the many thousands of type pieces was deemed too arduous, and hieroglyphs were printed in his grammar and dictionary using lithography (Wishart, "On Hieroglyphic Types: A Postscript," p. 121). A common perception regarded preparing hieroglyphs for print as "drudgery," which nonetheless required "great industry" and "artistic skill." In October 1882, Edward Y. McCauley presented a manuscript for an Egyptian hieroglyphic dictionary he compiled. When this volume was announced in the 1895 issue of the *Proceedings of the American Philosophical Society*, it was noted that "in European capitals much of the drudgery of this kind of work is saved by the employment of fonts of hieroglyphic type, but up to the time of the appearance of this book there was not a single such font in the United States." Hand-drawn hieroglyphs continued to be the norm. The foundation of most epigraphic work is its scientific accuracy, something a standardized font fails to achieve, as it does not reflect the idiosyncrasies of each sign, each craftsman's style, or each text. Therefore, projects such as the Oriental Institute's Epigraphic Survey continue to employ detailed artistic renderings of the hieroglyphic texts in their publications rather than an artificially consistent font.

The earliest hieroglyphic font was designed at the beginning of the nineteenth century and appeared in print in Julius von Klaproth's 1829 publication *Collection d'antiquités égyptiennes* (Lüscher, "Studying the Book of the Dead," p. 295). During the remaining seventy years of the nineteenth century, several hieroglyphic letterpress fonts were developed by the Royal Academy of Berlin (the Theinhardt or Lepsius font), the Imprimerie nationale of Paris (the IFAO font), and Longman publishers for use in Samuel Birch's dictionary and grammar of 1867 (Wishart, "On Hieroglyphic Types," pp. 121–22). However, the most famous and influential hieroglyphic font was developed in the early twentieth century by the English Egyptologist Sir Alan H. Gardiner (1879–1963). He wanted a new font for the publication of the first edition of his magisterial *Egyptian Grammar* (1927), which became the standard Egyptian grammar used to train three generations of Egyptologists and remains today one of the most comprehensive grammars of the Egyptian language.

Gardiner was not happy with the aesthetic quality of the other hieroglyphic fonts available at the time. He therefore enlisted the help of the artists Norman and Nina de Garis Davies to



The first page of Gardiner's 1928 *Catalogue of the Hieroglyphic Printing Type* showing the hieroglyphic signs and their various sizes. Page one of Harper's *Assyrian and Babylonian Letters* showing the cuneiform font used in the first book to carry the University of Chicago imprint. Page 56 from Moldenke's *The New York Obelisk*, showing the hieroglyphic font used in the printing of the volume.



design an attractive font based on the designs of the early New Kingdom, particularly the Eighteenth Dynasty, for which the Davieses had unparalleled experience and skill after their many years working in the Theban Necropolis (Gardiner, *Egyptian Grammar*, pp. vii–x). To tackle the immense task of producing the font with its matrices and the many thousands of resulting lead casts of type, he worked with Oxford University Press. Mr. W. J. Bilton, of R. P. Bannerman and Sons, Ltd., cut the matrices for producing the casts of each sign, and it was Oxford University Press that did the actual casting. In the preface to his grammar, Gardiner thanked his father for his “leisure and opportunities for research” as well as for having “defrayed the cost” of the font (Gardiner, *Egyptian Grammar*, p. x). The preliminary drawings made by Davies for the production of the font still exist in the archives of the Griffith Institute, which were donated by David Wishart, who, by chance, also had his own letterpress set of the Gardiner font, which he ultimately donated to the University of Birmingham. Gardiner published a catalog of the font in 1928, which provides a list of all the included signs in their various sizes. Gardiner’s font, alternatively known as the Oxford font, was exceedingly influential, particularly in English scholarship. It is a copy of this font that is now owned by the Oriental Institute and on display in the Research Archives.

The Oriental Institute, the University of Chicago, and the University of Chicago Press have a long history with challenging fonts. Robert F. Harper (1864–1914), brother of the first university president, William Rainey Harper (1856–1906), published *Assyrian and Babylonian Letters* in 1892, which was the first volume to include the University of Chicago Press imprint. It is filled with transcriptions of cuneiform into a letterpress font. Likewise, the two-volume memorial published in honor of William Rainey Harper, *Old Testament and Semitic Studies in Memory of William Rainey Harper* (1908), was said to “have taxed the fonts of the University Press” (*The Independent* 64 [1908]: 420). With the establishment of the Oriental Institute in 1919, the demand for such specialized fonts only increased as work at the nascent Institute ramped up dramatically. In order to accommodate the highest standard of publication for these volumes, the University moved to acquire a copy of the Gardiner Oxford font. It arrived in 1928, as announced in the *University of Chicago Magazine*:

The University has just received the first font of Egyptian hieroglyphic type in the United States. Only one other font is in existence, at Oxford University, where the matrices for the Chicago type were cut last summer. Constant demand for hieroglyphics in printing the records of the University of Chicago’s expeditions in Egypt and for the publication of Middle Kingdom Egyptian grammatical material, convinced professor James Henry Breasted that a complete font of the type would be more efficient than the old method of making zinc etchings for every printing. (*University of Chicago Magazine* 20 [1928]: 221)

The staff of the Oriental Institute and the compositors for the university press wanted advice on the best way to handle the difficult and complex layout of the hieroglyphic font. They turned to John de Monins Johnson, the printer at the University of Oxford who became famous for his work on the *Oxford English Dictionary*. However, Johnson was also a papyrologist who led excavations in Egypt on behalf of the Egypt Exploration Society, and several objects from his excavations are now kept in the Oriental Institute Museum collection (Scaif, “An Embalmer’s Bowl with Demotic Inscription”). Johnson detailed the use of the hieroglyphic font in a letter to the Oriental Institute on August 27, 1926:



We have had in use for many years Egyptian Hieroglyphs and we find that the most useful way is to lay out the type in rows across the case, under the various headings described in the Synopsis. We use Sanspareil cases or perhaps you might call them trays, with a stout division down the centre, and the types are placed in them, face upwards in rows and each row is separated by a piece of wooden reglet—wood being used for lightness. At the top of each section we have a strip of wooden furniture with the name of the section printed on paper and pasted on the furniture. At the beginning of each of the various types in the section we have a type high quad with the number of the section and the character clearly visible. Following each number we allow a good space for the type to be laid. If a very common character then allow space for, say, 100 types, but if only a rare character then you will find a space for about twenty types will be enough. In addition to the ordinary cases containing the complete types we use an extra case containing the characters of the alphabet. We find these types more often used—and so the compositor has them more readily to his hands in one case. (Quoted by Wishart, “On Hieroglyphic Types,” p. 123)

The layout of the font, similar to that described by Johnson, can still be seen in the Research Archives, where the Oriental Institute’s copy of the font is on display.

Perhaps the most tedious task of using the font fell upon the compositors, whose job was to arrange the lead type using composing sticks into frames readied for printing. Setting type required the compositor to arrange the letters upside down from left to right, and the hieroglyphs are arranged in their drawers upside down as well to help speed the compositing process along by not forcing the compositor to reorient every piece onto the composing stick. These compositors worked for the university in the press building located at 970 E. 58th Street, where the current university bookstore is located, just a few blocks west of the Oriental Institute. Packed into the compositing department were rows and rows of Hamilton cabinets full of various letterpress typefaces. Composers put together the text for each page to be sent to the printer. The Oriental Institute had its own press, but not for the publication of its volumes. According to Breasted, the in-house press was for printing museum labels: “One room [of the Institute] is devoted to large-scale photostatic work and to printing. A press equipped with all requisite fonts of type permit the Institute to print all its own labels” (Breasted, *The Oriental Institute*, p. 109). Presumably there was close cooperation between the press compositors and staff at the Oriental Institute, whose expertise would have been helpful in composing complicated hieroglyphic inscriptions.



The Oriental Institute relied on the press for the printing and binding of its publications. This reliance explains why the title pages of Oriental Institute publications included the imprint “University of Chicago Press” until 1975, right around the time the use of the hieroglyphic font came to an end with the rise of modern printing technologies such as Dot matrix printing, thermal printing, inkjet printing, and laser printing. Unfortunately, the hieroglyphic font was not acquired in time to be used in one of the early Institute’s most celebrated publications: James Henry Breasted’s *The Edwin Smith Surgical Papyrus* in 1930, volume three in the Oriental Institute Publications series. It was sent to Oxford, where the Gardiner font was employed in its layout. According to the New York Historical Society, the volume had to be sent to Oxford “since there was no font of hieroglyphic type in America.” However, according to *Appleton’s Cyclopædia of American Biography* and *Herringshaw’s National Library of American Biography*, “the first American print in hieroglyphic type” was Charles Edward Moldenke’s (1860–1935) *The New York Obelisk: Cleopatra’s Needle* published in 1891. By fortunate coincidence, the Oriental Institute has a collection of Demotic, Coptic, Greek, and Arabic papyri from Moldenke’s collection of Egyptian antiquities, which were donated in 1935 by his son, Harold Norman Moldenke (1906–1996), the former curator for the New York Botanical Garden, approximately six months after his father’s death. The origin of the font used in Moldenke’s publication is uncertain, but he was known to have his own bindery and printing press in his home in Watchung, New Jersey (Page, *Watchung*, p. 77). When Gardiner turned over the matrices of his font to Oxford University Press, he and Johnson drafted an informal agreement in 1945, which itself refers to the copy of the font purchased by the Oriental Institute and the University of Chicago.

LEFT The composing department of the University of Chicago Press ca. 1930 located in the building at 970 E. 58th Street. It is possible that the Oriental Institute’s hieroglyphic font was in this very room at the time the photo was taken. University of Chicago Photographic Archive, apf2-05986, Special Collections Research Center, University of Chicago Library.

CENTER Compositors laying out text for the University of Chicago Press, ca. 1920s. University of Chicago Photographic Archive, apf1-05591-007, Special Collections Research Center, University of Chicago Library.

RIGHT Printing department of the University of Chicago Press building in 1913. University of Chicago Photographic Archive, apf2-05961, Special Collections Research Center, University of Chicago Library.



Although the Gardiner font used in Breasted's *Edwin Smith Surgical Papyrus* belonged to Oxford University, many volumes published by the University of Chicago Press between 1930 and 1975 were printed using the font now in the Oriental Institute. These include the many articles on Egyptian hieroglyphic inscriptions that appeared in the *American Journal of Semitic Languages and Literatures*, which was renamed as the *Journal of Near Eastern Studies* in 1942. Publications such as William F. Edgerton's *The Thutmosid Succession* (1933), Edgerton and John A. Wilson's *Historical Records of Ramses III* (1936), and Keith C. Seele's *The Tomb of Tjanefer at Thebes* (1959) are littered with hieroglyphs printed using this font. Many of the pieces of type remain tarnished with the black ink used in this process. Such are the material remnants of these letters having been pressed into those very pages nearly one hundred years ago.

By 1990, David Wishart wrote, "The fates of the various [Gardiner] fonts are as diverse as the institutions which bought them. The Oriental Institute still has its font, although it has not been used for a decade" (Wishart, "On Hieroglyphic Types," p. 153). Until October 2018, the hieroglyphic font of the Oriental Institute sat in offsite storage for at least the last twenty years, and likely longer. There had even been discussions about dispensing with the letterpress set when the university initiated a process to close the offsite storage facility; this closure forced the OI to find another home for material in long-term storage, which included the hieroglyphic font set as well as nearly four hundred thousand cards belonging to the Archaeological Corpus Project. Several suggestions were discussed among the Oriental Institute administration and staff, including the possibility of combining the hieroglyphic font with other early

printing ephemera in the Special Collections Research Center at Regenstein Library, which also has a hand press being renovated by Ada Palmer, Timothy Harrison, and Adrian Johns through a Social Sciences Division Curriculum Innovation Grant. In the end, it was decided that the font was simply too much a part of the history of the Institute—that it belonged here—and the hieroglyphic font has found a new home on display in the library. The acquisition history and ultimate fate of its cuneiform sister font, used in publications such as Harper's, are currently unknown; rumor has it that it was liquidated decades ago. With the current rise in artisanal printing using presses, as well as the dynamic field of early print studies, a new appreciation has been found for these incredible technologies. Ideas are now percolating that may even lead to the printing of specially designed flyers with the Oriental Institute's copy of the font.

The copy of Gardiner's font housed at the University of Chicago and the Oriental Institute made an impact far beyond the halls of academia and the specialized publications of experts. In a letter published in the *New York Review of Books*, May 15, 1980 issue, Joann McQuiston of Time Incorporated lamented the fact that Gardiner's *Egyptian Grammar* had gone out of print, urging publishers to take up the cause by using the fonts available to them: "I hope the publishers both here and in Britain are aware that hieroglyphic fonts are readily available. We at Time-Life have borrowed from the Oriental Institute of the University of Chicago quite frequently and I'm sure at least one British university has a similar font." McQuiston had no reason to fear; the Gardiner volume was reprinted by the Griffith Institute and remains in print today. Yet, her letter raises rather intriguing possibilities. Although printing costs have dropped dramatically in recent decades and the digital "revolution" has augmented the paper book market, one has to wonder if a day will arrive when a new call comes in to put this font back into use.

We would like to thank the following for all their help in the preparation of this article: Elizabeth Fleming, archive assistant at the Griffith Institute, for her help looking through the Griffith Institute's archives about the Gardiner font and pointing us to a number of very useful sources; and Martin Maw, archivist for Oxford University Press, for taking the time to wade through their substantial files on Gardiner, providing us with helpful details, and sharing with us a great image of the font in use (p. 19).



TOP LEFT Hieroglyphic type as stored in its Hamilton cabinet.

ABOVE Foy Scalf with the Hamilton cabinet and hieroglyphic letterpress set in the Research Archives.