MEASURING TIME:
THE ANCIENT EGYPTIAN INVENTION OF THE CLOCK

ARTS@GRAHAM “OBJECTS AS EVIDENCE”

PRIMARY SOURCES AND ASSOCIATED TEXTS:

1. The So-Called “Astronomical Instrument” of King Tut
   OIM E12144 | New Kingdom, Dynasty 18, Reign of Tutankhamun (1336–1327 BC) | Purchased in Egypt, 1923 | H: 1.5 x L: 27 x TH: 2.9 cm
   Links: Museum Object Record; Ancient Egyptian Astronomy Database
   Description: This L-shaped tool was known as a merkhet (mrḥ.t) in ancient Egyptian. Such tools were fixed with a plumb bob to ensure the tool was level, or on a level surface. It has been suggested that this merkhet may have been used in surveying and star-gazing the night sky. However, like other merkhet, this device shares many features with L-shaped shadow clocks used for telling time through a shadow cast by the sun. This example was inscribed on both sides with a dedicatory inscription of Tutankhamun.

   Side 1: “Perfect god, who acts with his arms for (his) father Amun, who placed him upon his thrones, king of Upper and Lower Egypt, Nebkheperure (‘Lord of the manifestations of Re’), son of Re, Tutankhamun (‘Living image of Amun’), ruler of upper Egyptian Heliopolis: renewal of the monument of the father of his father, Menkheperure (‘Enduring one of the manifestations of Re’), son of Re, Thutmose (‘Thoth is born’), radiant of crowns, given life like Re, forever and ever.”

   Side 2: “Perfect god, lord of the two lands, lord of ritual (action), lord of appearances, Nebkheperure (‘Lord of the manifestations of Re’), son of Re, of his body, whom he loves, lord of every foreign land, Tutankhamun (‘Living image of Amun’), ruler of upper Egyptian Heliopolis: renewal of the monument of the father of his father, Menkheperure (‘Enduring one of the manifestations of Re’), lord of appearances, Thutmose (‘Thoth is born’), radiant of crowns, given life, stability, and dominion, so that he and his ka are happy, like Re forever.”

FOY SCALF — MEASURING TIME
Discussion Questions for Tutankhamun’s “Astronomical Instrument”:

- When assessing an ancient object, how do we determine what it is and what it was used for? What evidence have scholars in the readings assembled to determine that this was an “astronomical” instrument?
- How do we know where this object came from? What aspects of its provenance do you think complicate this story? What does the dedicatory text imply about Tutankhamun’s family lineage and the historical context of the late 18th Dynasty?

2. Water Clock (Clepsydra)

OIM E16875 | Roman | Purchased in Egypt, 1933 | H: 52.5 x D: 67 cm
Links: Object Record; Berlin Water Clock Project
Description: This limestone basin was inscribed was designed as a water clock (clepsydra), but its construction was never finished. Such water clocks worked by filling the basin with water that slowly drained through an exit hole. Calibrated marks on the inside of the basin would indicate the nighttime hour at different seasons of the year as the water drained. Clepsydrae were not just practical time management devices, but also ensured that important religious events took place at the proper time.

Discussion Questions for the Water Clock:

- How can we tell that this water clock was never finished? Why are there multiple sets of calibration holes on the inside of the basin? How does it relate to the ancient Egyptian calendar?
- When was this object made? What evidence has been used to determine its date?

3. The Biography of Amenemhat

Theban Tomb C. 2 | New Kingdom, Dynasty 18, Reign of Amenhotep I (1525–1504 BC)
Description: Around 1500 BC, a man named Amenemhat had his tomb inscribed with texts describing accomplishments he supposedly made during his lifetime. The text is fragmentary and now largely lost, but a unique and fascinating episode is related about the constructing of a time-keeping device. In the text, there is reference both to a clepsydra (like the example in #2 above) as well as a merkhet shadow clock (like the example in #1 above). Although scholars have often cited this text as demonstrating the invention of the water clock, Alexandra von Lieven has recently argued that the text presents Amenemhet making improvements to the water clock design, including, perhaps, mechanical automata of figures moving up and down on strings.

Partial Translation: “[... I studied?] by reading in all the writings of the god’s words. [...] 14, while the night in the summer consists of twelve hours. [...] month by month, subtracting month by month. [...] the movements of Re, the chief of the hours, through their words. The presentation [...] likewise [...] before him, an ankh-sign and was-sign in her hands according to the instructions. [...] [...] to Nekhbet, she goes before Re on [...] which is in her hands to the nose of his majesty. Then she descends on strings [...] Re is rejoicing when he sees these goddesses going up and down in front of him. I made a shadow clock (merkhet) calibrated to the year. It was beautiful for the king of Upper and Lower Egypt, Djeserkare, justified. [It was designed for each of its seasons. Never had the like been done since the primeval time of the land. I made this exceptional vessel through the favor of the king of Upper and Lower Egypt, Djeserkare, justified, divided into half [and in third?]. It was calibrated?] when entering summer, during the harvest, in the phases of the moon, which arrives at its time, each hour according to its day, while the water flows out through one pipe.”

Discussion Questions for the Biography of Amenemhat:

- How does this narrative text relate to the shadow and water clocks above?
- What conclusions can we make about Amenemhet’s claims from the fragmentary text and what kind of device do you think he was describing?
1. Primary Source Publication and Discussion


2. General Reading on Ancient Egyptian Time-Keeping


Early History

If "wonderful things" had not been discovered in the tomb of Tut-ankh-Amun in 1922, his name would be almost completely unknown to the world. Egyptologists would know him chiefly as the ephemeral young king who initiated the conservative reaction against the unsuccessful religious revolution of his predecessor, the heretic Pharaoh Akh-en-Aten. By his third regnal year, Tut-ankh-Amun had begun in earnest a program of reconciliation and restoration. Neglected temples were re-opened, new statues of the gods were carved, and projects abandoned under Akh-en-Aten were completed. Among the many "monuments" which Tut-ankh-Amun commissioned was an inscribed wooden object, now Oriental Institute 12144, which was dedicated to the memory of Tuthmosis IV, an earlier king who had been dead for more than fifty years.

According to ancient Egyptian beliefs, each Pharaoh had a sacred responsibility to maintain Order against the constant threats of Chaos and Evil. By perpetuating the name of a revered predecessor, the reigning king drew spiritual strength from the power of the deified Royal Ancestors. In the inscription on this diminutive "monument" Tut-ankh-Amun named Tuthmosis IV as "the father of his father."

Nothing definite is known about the fate of this inscribed object between the time of Tut-ankh-Amun and its re-appearance about a century ago. Its "modern" history can be traced to the winter of 1886-1887, when it was acquired "in the neighbourhood of Thebes" by the Reverend Greville Chester, an Englishman who frequently wintered on the Nile. Chester sold the wooden rod to F.G. Hilton Price, a knowledgeable English collector who published a brief description of it, including the text of the hieroglyphic inscriptions, in a letter to the Society of Biblical Archaeology, dated November 12, 1887. The mysterious artifact was incomplete when Chester acquired it. Puzzled about its nature, Hilton Price suggested that it might once have been a pedestal for a statuette or a fragment from a piece of furniture.

In 1911, two years after the death of Hilton Price, his collection of Egyptian antiquities was sold at auction. In the sale catalogue, the enigmatic object was described as "A Scribe's Palette." It was purchased by the Reverend William MacGregor, another well-known British collector, who owned the piece until 1923, when financial reverses forced him to liquidate some of his assets. He sold the piece to Spink & Son Ltd., a London antique dealer.
On July 21, 1923, Professor James Henry Breasted, founding Director of the Oriental Institute, purchased the object for the Museum. While in Egypt the previous winter, Breasted had been invited by Howard Carter to examine the seal impressions in the recently discovered tomb of Tut-ankh-Amun. Stopping to browse in the London antique shop on his way home, Breasted's attention was drawn to the Tut-ankh-Amun object for its unique inscriptions which named both Tut-ankh-Amun and Tuthmosis IV. In one other dedicatory text, Tut-ankh-Amun called Amun-hotep III "his father." Here Tuthmosis IV (the father of Amun-hotep III) was referred to as "the father of his father." Breasted wondered if Tut-ankh-Amun's family relationships, disputed among Egyptologists, could now be established. Did the inscriptions on the wooden rod confirm the previously unknown parentage of King Tut-ankh-Amun? Breasted's excitement over this possibility was to be repeated several days later when he suddenly realized what the object really was!

A series of seemingly unrelated circumstances now enabled Breasted to identify the original purpose of the unusual inscribed rod. In the 1890s, Breasted had examined a complete ancient Egyptian astronomical instrument set in Berlin (Aegyptisches Museum, Inv. Nr. 14084 and 14085). The only one of its kind then known, the set was made between 685 and 525 B.C., during the rule of Dynasty 26. In 1916, Breasted used a line drawing of this equipment as an illustration of ancient Egyptian technology in the first edition of his textbook, Ancient Times.

More recently, in the spring of 1923, Breasted had met his old friend, George Ellery Hale in Egypt. Hale, an eminent astronomer, was working on a manuscript about early astronomical instruments; ancient Egyptian astronomical instruments became a topic for lively discussions between the two friends.

The inscriptions on the Tut-ankh-Amun object did not give any clues about the nature of the object itself, and because the object was incomplete, Breasted did not even know what he had bought until several days later. Then, the similarity to the astronomical instruments in Berlin struck him, and he realized that he had purchased for the Oriental Institute a part belonging to one of the oldest astronomical instruments known to have survived from antiquity, over 600 years older than the set in Berlin!

Description

Breasted identified his acquisition as a decorated handle used for holding the plumb line of an astronomical instrument. The dark, close-grained hardwood can only be ebony, imported into Egypt from tropical Africa, a material which is well-represented among contemporary objects found in the tomb of Tut-ankh-Amun.

One-line hieroglyphic texts are carved into the two long sides of the handle. Some hieroglyphs still retain traces of the yellow pigment with which they were originally filled, and at least one sign contains a bit of red. The pigments are probably ocher, commonly used by Egyptian artists and craftsmen for these colors.

A rectangular mortise was cut into the top of the handle near one end to receive the projecting tenon of a small vertical block, lost in antiquity, which served as the attachment of the plumb line. When the object was prepared for exhibition in May, 1933, the missing attachment block was replaced with a plain, modern replica, based on the design of an original block of this type, also in Berlin (Aegyptisches Museum, Inv. Nr. 14573). The Berlin piece, decorated for Amun-hotep III, is nearly contemporary with the Oriental Institute handle.
Translations of Inscriptions
and Commentary

Side "A"

"The Good God who acted with his two hands on behalf of his father Amun, who placed him upon his throne, King of Upper and Lower Egypt (Neb-kheperu-Re), Son of Re (Tut-ankh-Amun, Ruler-of-Upper-Egyptian-Heliopolis); renewing the monument of the father of his father, King of Upper and Lower Egypt (Men-kheperu-Re), Son of Re (Tuthmosis IV, Glorious-of-Diadems), given life like Re forever and ever."

Side "B"

"The Good God, Lord of the Two Lands, Lord of Action, Lord of Diadems, (Neb-kheperu-Re), Son of Re, of his body, his beloved, Lord of every foreign land, (Tut-ankh-Amun, Ruler-of-Upper-Egyptian-Heliopolis); renewing the monument of the father of his father, Lord of the Two Lands (Men-kheperu-Re), Lord of Diadems (Tuthmosis IV, Glorious-of-Diadems), given life, stability and dominion, so that he is joyful together with his Ka like Re forever."

The Egyptologists of the Oriental Institute's Epigraphic Survey have discovered eight new texts in which Tut-ankh-Amun calls Amun-hotep III "his father" in the Colonnade of Luxor Temple. Tut-ankh-Amun's inscriptions on the astronomical instrument, naming Tuthmosis IV as "the father of his father" would seem to lend further support to this relationship, since Tuthmosis IV was the father of Amun-hotep III. Despite these important bits of evidence, these texts do not settle the vexing question of Tut-ankh-Amun's parentage. We know that he was indeed a king's son, but there is still no known inscription which gives the name of his father in a completely unambiguous way. The Egyptians employed few kinship terms; "father" can mean "grandfather," and "father of his father" can mean "ancestor" in a general sense. In the context of a dedicatory inscription like this one, these terms can designate a predecessor who is not even a blood-relative. The discovery of an inscription naming Tut-ankh-Amun as the son of King "X," of his body (the ancient Egyptian way of expressing paternity), would settle the question once and for all.

In a dedicatory inscription, the "monument" is the thing upon which the inscription appears, usually a building or a part of a building. A small, portable "monument" like the astronomical instrument would have been made for use in a building. The texts associate it with Tuthmosis IV. Breasted believed that this "building" was his tomb, No. 43 in the Valley of the Kings, and that the object had been placed there by Tut-ankh-Amun during a restoration of the tomb after robbers had broken into it. An ancient graffito indicates that the plundered tomb of Tuthmosis IV was restored in the reign of Hor-em-hab, but there is no evidence for an earlier restoration under Tut-ankh-Amun. The buried tomb of Tuthmosis IV was discovered in 1903, by Howard Carter. Since we know that the astronomical instrument had surfaced by 1887, it can only have come from the tomb if we posit an ancient robbery after which the thieves discarded objects of little intrinsic value outside the tomb. Hilton Price learned of the Theban origin of the piece from Chester, but the exact findspot cannot be established now with certainty. The well-preserved wood must have lain in a place which was safe from the destructive waters of the annual Nile inundation, perhaps the ruins of the Mortuary Temple of Tuthmosis IV where Petrie found a plumb bob in 1896, or another site on the West Bank.

Researched by
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Photograph by Jean Grant

Developed by the Oriental Institute Museum Education Office
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One end of the object is decorated with the sm3-hieroglyph, depicting the lungs and windpipe of an animal and meaning "to unite." This sign is intertwined with the two heraldic plants which symbolize the semi-legendary Pre-dynastic kingdoms of Egypt: the papyrus for Lower Egypt (on the left side of the drawing) and the white water-lily for Upper Egypt. This emblem signifies the "Union of the Two Lands" of Upper and Lower Egypt.

Use

The ancient astronomical instrument set to which this handle belonged was a simple sighting device that enabled the observer to determine the moment when a given star crossed his meridian, an imaginary north-south axis using the North Star and the observer's location as its points of reference. A Y-shaped sighting stick was held close to the eye to provide a notch through which the observer squinted in order to sight the star. The plumb line, a cord weighted at the bottom with a plummet or plumb bob, enabled the observer to determine the vertical to his meridian, and thus afforded slightly greater accuracy of observation by providing a precise line at which the crossing of the star could be noted.

Our replica of a sighting stick is modelled after the intact example in Berlin (Agyptisches Museum, Inv. Nr. 14084). The hieroglyphic inscription down the front of the Berlin piece identifies it as "an indicator (literally, a 'watching stick') for determining a festival and for placing all men in their hour(s) ..." The plummet on exhibit, O.I. 10648, was acquired separately from the Tut-ankh-Amun handle; the two are displayed together with the replica of the sighting stick in order to suggest how a complete set might have looked. A pictograph showing the handle, cord and plumb bob of a complete set served as the hieroglyphic sign at the end of the Egyptian word for astronomical instrument, "mrh.t" (merhket).

Using simple tools such as these, and by keeping careful records of their star-observations, Egyptian astronomers were able to predict when a particular star would cross a meridian. The successive "hours" of the night, which varied in length according to the seasons, were marked by the appearance of certain bright stars, which were seen to cross the observer's meridian at a given time of the night. These observations could be used to determine the proper date for a festival to occur, as well as for telling time for the beginnings and ends of work-shifts, or "watches," in the temples on a twenty-four hour basis, so that "all men (could be) placed in their hour(s)."

With the help of instruments such as this one, the night sky served as a giant clock for the ancient Egyptian star-gazer. Their word for "astronomer" was "wnwty" (wenuty), literally, "hour-watcher." It is interesting to note that, in our own age of quartz and digital mechanisms, we refer to our portable timepiece as a "watch."
ASTRONOMICAL INSTRUMENT OF TUTANKHAMUN
Instrument: Wood, paint (with modern string and restoration)
Purchased in London, 1923
New Kingdom, Dynasty 18, reign of Tutankhamun, ca. 1336–1327 BC
E12144

Plumb bob: Faience
Purchased in Paris, 1919
Late Period, Dynasty 26(?), 664–525 BC
E9977

Egyptian astronomy directly influenced modern divisions of time: the 365-day year, the 30-day month (adopted but then distorted by the Romans), and the 24-hour day, with 12 hours for both day and night. While sundials or shadow clocks could track the movements of the sun and hours during the day, at night time was reckoned by the stars. A stargazer tracked the movement of specific bright stars whose positions in the sky signaled the change of hours. The astronomical observer held two instruments at right angles to determine a star’s appearance: a Y-shaped vertical sighting stick through which the star was viewed and, to ensure that stick’s proper orientation, a leveling device consisting of a horizontal handle supporting a plumb line. With the use of these instruments, the night sky served as a natural clock. The instrument shown here is a leveling device that was dedicated to the cult of Amun by the pharaoh Tutankhamun. The cord and plumb bob complete the appearance of the tool, but are not original to the piece. Hieroglyphic inscriptions on both long sides of the ebony handle record Tutankhamun’s names and titles and stress his return to religious orthodoxy after the turbulent Amarna period. The king is said to have “acted with his two hands on behalf of his father Amun, who placed him upon his throne.” The instrument is significant also for Tutankhamun’s family history, since this is said to be a replacement for an earlier example donated by “the father of his father” Thutmose IV, who was more likely his great-grandfather. The skipped generation may be an early attempt to suppress the memory of his true father, Akhenaton. RKR

GAME OF TWENTY SQUARES
Wood, faience, copper alloy
Egypt, possibly from Akhmim
Purchased in Egypt, 1894–95
New Kingdom, Dynasties 18–20, ca. 1550–1069 BC
E371A–C

The game of twenty squares was popular throughout the ancient Mediterranean world. One of the oldest examples, from Mesopotamia, dates to about 2600 BC. It was played by two opponents, each of whom had five markers. The goal of the game was to move one’s playing pieces down the side squares and up the middle, blocking one’s opponent with a barrier of two or more markers. Moves were established by throw sticks, knucklebones, or dice. This game board is made of a solid piece of wood, its top carved with a pattern of squares, and a rectangular recess cut in its side to accommodate a drawer. The resulting hole in the side of the board was once covered with a piece of wood attached with glue along a miter joint. The drawer for storing the playing pieces is also made of a solid piece of wood into which a cavity was hollowed. A copper alloy loop on the front of the drawer served as a handle. In Egypt, scenes of people playing board games could be references to their desire to vanquish the powers of evil in order to be reborn in the afterlife. ET

The Egyptians carefully recorded time for state, economic, agricultural, and sacred functions. For much of Egyptian history, most events were tied to the civil calendar that was made up of three seasons of four months each. Each month had thirty days, with five additional days added to the calendar to equal the 365 days of the earth's rotation about the sun.

Time was measured by observation of the sun and stars, and also with measuring devices like this water clock—a vessel that equated a volume of water with a specific length of time—much as an hourglass measures time with sand. The earliest reference to a water clock is in a biographical text of the courtier Amunemhet who claimed that he made one for King Amunhotep I (ca. 1526 B.C.). The oldest surviving example (now in Cairo), dates to the reign of Amunhotep III, some 200 years later. Water clocks continued to be used in the Far East into recent times.

The exterior of this water clock is decorated with twelve panels, each representing a month of the calendar. The first month of inundation and three of the four months of summer are explicitly labeled, while the other months of the year are identified only by the deities associated with each month. A large figure of a seated baboon representing the god Thoth, the reckoner of time, sits at the front. The gods and months clockwise from the Thoth are: Tehy (month 1 of inundation); Ptah (month 2 of inundation); Hathor (month 3 of inundation); Sekhmet (month 4 of inundation); Mut (month 1 of winter); Min-Kamutef (month 2 of winter); Ta-weret (month 3 of winter); Renenutet (month 4 of winter); Khonsu (month 1 of summer); Sekhmet
The interior of the water clock is drilled with holes against which the water level was measured. These holes are arranged in twelve vertical rows separated by large *ankh* or *djed* hieroglyphs. Twelve separate calibrations were necessary because the length of the night, and hence each hour, was shorter in the summer months than in the winter.

Some water clocks worked on an outflow system in which the water flowed from the container, while others measured the level of water as it entered the container at a specified rate. Since the uppermost hole in each row is at approximately the same level from the rim, and the holes stop about two thirds from the bottom of the vessel, this clock must have worked on an outflow system. However, this water clock lacks any sort of drain hole, suggesting that it was never finished. The brief hieroglyphic text for the second month of inundation suggests that this clock was a cult object, perhaps a votive, non-functioning clepsydra used in the cult of the deified Queen Arsinoe II (see no. 54).
Oriental Institute Museum Notes 16: Two Egyptian Clepsydrae (OIM E16875 and A7125)

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I. Clepsydra OIM E16875

1.1 Introduction

The limestone clepsydra OIM E16875 was purchased in Egypt for the Oriental Institute Museum during the spring of 1933 by then-Director James Henry Breasted. Designed as a hollow basin with flat bottom and flaring sides, the water clock measures 52.5 cm in height with a maximum diameter of 67.0 cm. The instrument was designed as an “outflow clock” to be provided with a drainage hole so that time could be measured by declining water levels calibrated by internal markings. The method of use for such clocks was concisely described by R. Parker in 1950:

It was filled to the brim at sunset. When the water, flowing out slowly through an outlet in the bottom of the clock, had dropped in level to the first mark of the appropriate month-scale, the second hour of the night began.1

Although the interior calibrations were completed, the drainage hole was never carved, and the exterior decoration was also left unfinished (see Figures 1–4, below). Work on the clock was abandoned before it could serve its intended sacerdotal function of determining the hours for temple rites and festivals. Its ultimate use as a temple “votive object” is possible, but the late date and unfinished condition of the piece suggest a different explanation for its state. The mirrored dedication text along the outer upper lip of the vessel was halted after only three initial words, and the low relief panels for the twelve months were crudely carved, with errors in spelling and (probably) design. Only four of the twelve months are specifically indicated, and these inconsistently: month one in the primary relief panel adjacent to the month deity and months 10 to 12 in the upper right corner of the

* I thank John A. Larson, OI Museum Archivist, for accession information and all photographs used in this article. This article continues the series from Robert Ritner, “Oriental Institute Museum Notes No. 15: A Coptic Lintel from Qustul,” JNES 67/2 (2008): 107–15; see n. 1 there for information on previous Museum Notes.

otherwise blank panel below the relief figures. Best
carved is the high relief figure of Thoth as a baboon,
but as noted above, the expected drainage hole below
the figure was not drilled.

Clepsydra E16875 has been incompletely, and in-
correctly, published several times between 1971 and
2013. Despite its acquisition in 1933, the water clock
was ignored by Parker in both his 1950 study of the
Egyptian calendar (cited above) and his 1969 collabora-
tion with O. Neugebauer, which gathered several
other clepsydrae.2 The first publication of the Chicago
clock, by J. Quaegebeur, was limited to a single panel
illustrating the second lunar month and selected due
to a supposed mention of the deified Arsinoe Philadel-
phos. This supposition led to the dating of the piece
to the reign of Ptolemy II with a likely Memphite
provenience.3 Although the reading of “Arsinoe” was

vols. (Providence, RI, 1969) (hereafter *EAT*). Other clepsydra are
discussed in *EAT* III, 12–14 (Cairo), 42–44 (Tanis), 60–61 (Flo-
rence), and plate 22.

3 See Jan Quaegebeur, “Documents Concerning A Cult of Ar-
259–62 and plates 1–II.
acknowledged as an error by Quaegebeur in 1980,\footnote{Jan Quaegebeur, “Une épithète méconnaissable de Ptah,” Livre du Centenaire 1880–1980, MIFAO 104 (Cairo, 1980): 61–71, esp. 62–64.} subsequent popular publications by E. Teeter in 2003 and 2013 perpetuate the more than 40 year-old mis-reading and analysis.\footnote{Emily Teeter, Ancient Egypt: Treasures From the Collection of The Oriental Institute The University of Chicago (Chicago, 2003), 107–108; and Jack Green and Emily Teeter, Our Work: Modern Jobs - Ancient Origins, (Chicago, 2013), 106–109. The old error is also repeated in Devauchelle, “Wasseruhr,” cols. 1156–57, even while citing the Quaegebeur retraction (n. 10).} The correct reading of the lunar month panel follows in the text translations below, and the question of dating will be reserved for the conclusion of the article.

\subsection*{1.2 Center}

An incomplete mirrored text begins at the center, continuing left and right. The single ‘nhḥ’ in the middle is to be read twice:

‘nhḥ Ḥr, “Long live the Horus . . .”

Had this uppermost inscription been completed, the text would have specified the names and epithets of the ruler in whose name the clypsedra was dedicated, as is the case with the fragmentary OIM A7125,
clearly commissioned on behalf of Ptolemy II. The unfinished state of the dedication inscription corresponds to the empty cartouches in each month panel, a situation that necessitates a stylistic dating for the water clock. A similar clepsydra fragment dating to Alexander I in the British Museum (EA 933) also places the dedicatory text below the month panels; see Carol Andrews, “Fragment of a black granite clepsydra,” in Susan Walker and Peter Higgs, eds., Cleopatra of Egypt: From History to Myth (London, 2001), 38; and Paul E. Stanwick, “Wasserruhr mit dem Namen Alexanders des Großen,” in Ägypten Griechenland Rom, ed. Beck, Bol and Bückling, 547–48: [ . . . ] dī(?) Ṿnh nb ḫr Ṿnh nb ḫr ny-sw.t bl.ty Ṣtp-n-Rʾ-mry-ʾImn Ṿnh ḫ.t [ . . . ]; “[ . . . ] given(?) all life before him and all health before him, the king of Upper and Lower Egypt, Setep-en-re-meri-amon, son of Re, Alexander, living forever [ . . . ].”

7 Note, however, that both Alexander water clocks (Hermitage and British Museum) have blank cartouches in the individual month
An empty band below the ankh features a raised relief figure of Thoth as a sitting baboon with a djed-column incised below. In two Oriental Institute catalogues, the Thoth baboon is described as the reckoner/keeper of time, who “sits at the front,” while the current museum label states that Thoth “sits in the middle of the twelfth panel, framed by a representation of a temple doorway.”

In fact, Thoth is placed in an independent panel between months one and twelve. Nor is the frame of his panel a temple doorway, as parallels from the reigns of Necho and Alexander I indicate.

On the earliest surviving water clock, dating to Amenhotep III, a seated figure of Thoth in baboon form once occupied a thin panel between months one and twelve, sitting above the outflow hole of the clock. The god is now lost on the preserved fragments.
Ptolemy II clepsydrae follows the Amenhotep style with simple lines and no interior modeling. The Ptolemy II examples are also comparable to a fragment from Florence dated to the early Ptolemaic period.99 What is clear, however, is that they are all quite distinct from one supposed clepsydra of Ptolemy II, OIM E16875.

III. Dating OIM E16875

Differing in material, representational style, poorer quality of workmanship, design flaws, textual corruption, and random sign reversal, OIM E16875 cannot be contemporary with known Ptolemaic examples. While its use of figures with internal modeling vaguely recalls the style of the much earlier clocks of Alexander, the execution of its figures and text signals a much later production. One indication for date is the phonetically-spelled epithet of Ptah, i-ir-snf.w, previously misused as a dating criterion to the reign of Ptolemy II. As noted above, this epithet is common only in the Memphite area during Ptolemaic times, but widely dispersed in Roman Egypt. The style—and errors—of OIM E16875 correspond more closely with Roman-era work, and this redating would make the Chicago piece the latest known Egyptian clepsydra. A later Roman date for the clock would also offer an explanation for its abrupt abandonment after a considerable outlay of effort and time. The temple for which it was intended may itself have been abandoned, the victim of Roman funding policies that unintentionally doomed the great institutions of ancient Egyptian religion.100

99 Parker and Neugebauer, EAT III, 60 and pl. 22d (no. 45).

If you want to learn to read inscriptions such as those discussed in this lecture, you may be interested in the following course from the OI:

**INTRODUCTION TO EGYPTIAN HIEROGLYPHICS**
Oriental Institute
Fall 2020

Instructor:
Foy Scalf
scalffd@uchicago.edu

Time: Mondays 7:00 pm–9:00 pm
8 Weeks: October 5–November 30, 2018
*Class will not meet the week of Thanksgiving, November 23

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Experience the thrill of decipherment by learning to read the “sacred carvings” of ancient Egyptian hieroglyphs. *Introduction to Egyptian Hieroglyphs* is designed as a step-by-step guide for beginners toward unraveling the mysteries of the ancient Egyptian hieroglyphic script and the structure of its language. Students will be introduced to the basics of ancient Egyptian grammar and learn to read texts commonly found on museum objects, including examples drawn from our own OI collections. By the end of the class, students should expect to be able to understand a variety of short Egyptian inscriptions and grasp the basic fundamentals of grammar and vocabulary necessary to continue their study of the “words of the gods.”


Instructor: Foy Scalf is Research Associate and Head of the Research Archives at the Oriental Institute. He received his Ph.D. in Egyptology from the University of Chicago. In his published work, he has made contributions to the study of ancient Egyptian religion and sacred scripture, language and linguistics, and the cultural contexts for textual transmission. He is dedicated to bringing the ancient world to the public through continuing education, outreach, and public scholarship.