WRITING AND CALCULATING

PASSING ON KNOWLEDGE

We pass on information and knowledge constantly, in all aspects of life : in cooking, in education, in books, in music, on the street, in the countryside, at a lawyer's office – the possibilities are endless. We are driven by the need for others to know something or to help them discover it. This desire is handed down from one generation to the next and shared with those around us. It can sometimes be spontaneous and unselfconscious, sometimes determined, systematic, institutionalized and ritualized. It can be found in our gestures, words and creative works.

The act of passing on knowledge is free and unselfish, which is why monuments erected to commemorate tyrants and the commercialization of knowledge are tantamount to betrayal and distortion. It also builds bridges between very distant worlds, separated by time and space. The heroic films in 21st-century cinema are still rooted in myths dating back thousands of years. But not everything can be passed on. Personal details almost never survive. And customs and knowledge are lost when society, the economy and technology undergo significant change, when new ideas usurp old ones.

The chosen pieces of art you see in these display cases are fragile. Papyrus, parchment, palm tree paper, photographs… are sensitive to light, temperature and humidity.

The lighting with optical fibres produces a bright light whilst guaranteeing the lighting intensity supported by these type of works of art (50 lux). The temperature (20°) and the humidity level (50%) are supervised on a daily basis using probes which are integrated in the display cases.

Museum L has chosen to rotate the collections to ensure conservation of the works of art. The display changes every three months and this booklet will be updated with the new items chosen. Make sure you come back to visit the Museum!

WRITING
ANTIQUITY

DIVERSITY OF WRITING SYSTEMS AND WRITING MEDIA IN ANTIQUITY

The objects selected for this display case illustrate two main types of writing: figurative using pictographs (there is a link between the meaning of the text and its graphic representation) and alphabetic using sound-signs (graphemes) called letters. Alphabetic writing, a revolutionary development in the 2nd millennium, consists of three branches: the Semitic or consonantal alphabets (only the consonants are transcribed), the Western or vocalic alphabets (both consonants and vowels are transcribed) and Indian, essentially syllabic, scripts (the signs correspond to the syllables of the word).

Since writing emerged in the 4th millennium BC, the form of script, the medium and the function (administrative, commercial, religious, etc.) have been closely linked. The material was chosen for its physical properties (durability and compatibility with the writing implement used), its symbolic value and the purpose of the writing medium.

In the ancient Near East, bronze, gold, silver or lead were used to make official copies of treaties engraved in cuneiform script, while the copies intended for the archives in palaces or temples, were inscribed on clay tablets. Mesopotamian cylinder seals were usually incised in stone to ensure they could withstand the wear and tear of repeated impressions.

Local materials such as wood, papyrus or alabaster were widely used throughout ancient Egypt and are exceptionally well preserved to this day due to the dry climate of this region.

In all of the ancient civilizations, religious or political inscriptions on monuments were carved in stone or rock to protect them from the ravages of time. The actual practice of writing is all the more remarkable given the art and physical strength required to create the different signs. Less noble yet often a treasure trove of information, *ostraca*, or recycled potsherds, were used for the most common writing activities: personal messages, voting forms, etc. The text was scratched directly onto the potsherd or written in ink.

Pierre de Rosette : « Décret de Memphis » qui établit la souveraineté du jeune roi Ptolémée V – écritures hiéroglyphique, démotique, grecque

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Grande-Bretagne, Londres, Atelier de Brucciani
19e s. (?)
Moulage en plâtre
N° inv. MA1
Fonds ancien de l'Université

D'après un original provenant de Memphis (?), 196 av. J.-C., granodiorite, conservé au British Museum.

The 'Rosetta Stone' is a stele (or stela) that was found in the fortifications of the town of Rosetta (Rashid) in the Nile Delta by a French soldier during the Napoleonic campaign in Egypt (1799). After the French were defeated in 1801, the stele was handed over to the British and has been on public display at the British Museum ever since.
The stele bears three versions (registers) of the same text, in two languages and three different scripts (Egyptian hieroglyphs, Egyptian Demotic and Ancient Greek). This made it the key to deciphering hieroglyphs, in which Jean-François Champollion played a central role (1822-1824).
The original stele is estimated to have been 149 cm in height and had a rounded top. Part of the top register (hieroglyphs) is missing, as well as the upper section, which would probably have depicted the king being presented to the gods, topped with a winged disc. This is based on comparison with other similar steles. The stele is inscribed with what is known as the Memphis decree, which established the sovereignty of the young Ptolemy V, who came to power in difficult circumstances. He acceded to the throne in 204 BC at the age of 5 after the assassination of both his parents. As regents of the young prince, the conspirators effectively ruled Egypt, until they themselves were killed and replaced. These domestic problems were exploited by foreign enemies, who took advantage of the situation to seize Egyptian territories in Asia Minor, Thrace, Coele-Syria and Judea. It was in these circumstances that the young king was officially crowned at the age of 12, after reigning for seven years. The Memphis decree established Ptolemy V's divine cult, during the ninth year of his reign, to mark the anniversary of his coronation: the date given on the stele corresponds to 27 March 196 BC (with some discrepancies between the different versions). Steles of this type were erected in every temple. Two other copies of the Memphis decree were found later, which meant that the missing texts on the Rosetta Stone could be supplemented, especially the hieroglyphic part.

[Bibliography: a great many works are available on this subject ; see, for example : R. Solé & D. Valbelle, La Pierre de Rosette (coll. Points Histoire), Paris, 1999, 230 pp.]

1. Tablette comptable dans son enveloppe : reçu consigné lors du versement d'un acompte sur le revenu d'un champ – écriture cunéiforme

Mésopotamie, Drehem
3e dynastie d'Ur, règne de Shulgi, 2095 - 2042 av. J.-C.
Argile
N° inv. MB410
Fonds ancien de l'Université

During the Neo-Sumerian period, some clay tablets (especially accounting and administrative documents) were sealed in an envelope, likewise made of clay. The tablet text was reproduced, in full or summarized, on the outside of this envelope. The purpose of this practice was to prevent the possibility of falsifying what was recorded on the tablet. In the event of a dispute, only the text on the envelope could be contested. The envelope would then be broken open in the presence of witnesses to check the actual contents. Since the tablet had been protected, the evidence was irrefutable.

The clay tablet

The tablet cannot be removed from the envelope in which it was accidentally fired. A Neo-Sumerian inscription of an administrative nature is legible: receipt made for an advance on the revenue from a field. Some discrepancies can be seen between the tablet text and the envelope text. ' An advance of 12 silas on each rent payment of 60 silas was required. This was the advance on the rent paid by a labourer, amounting to 60 silas, or the rent for each 4 iku of surface area (approximately 36,000 m²) of a plot of land (this was an obligation imposed on farmers and it was their advance) '.

The envelope

In addition to the cuneiform writing, several impressions of the same cylinder seal can be seen, superimposed twice on each side and on the edge. Scene depicted : a worshipper (probably the owner of the cylinder seal and the only human figure) is being presented by a minor deity (goddess standing, called Lama) to an enthroned god.

2. Sceau-cylindre : scène d'offrande et de présentation

Provenance inconnue
Période paléo-babylonienne,
1894-1595 av. J.-C.
Pierre
N° inv. MB196
Fonds ancien de l'Université

3. Sceau-cylindre : scène d'adoration devant le dieu de la tempête Adad

Provenance inconnue
Période paléo-babylonienne,
1894-1595 av. J.-C.
Pierre
N° inv. MB199
Fonds ancien de l'Université

Cylinder seals first appeared during the 4th millennium BC, during what was known as the Uruk period, and are one of the most characteristic expressions of the minor arts of the ancient Orient in general and of Mesopotamia in particular. 4th est juste
The cylinder seal in the Louvain-la-Neuve museum's collection can be dated to the Paleo-Babylonian period (1894-1595 BC). The linear design – rudimentary at best – of its intaglio decoration links it to a series of cylinders from that era. This cylinder seal shows a scene of worship, a subject particularly favoured by seal engravers during the First Babylonian Dynasty. This scene takes place before Adad, the god of storms and also the god of rain, on which agriculture depended. The deity is depicted standing rather than enthroned, as used to be the custom during the Neo-Sumerian period, and is accompanied by an animal (an ox) and his symbol (a fork). Representations allowing such accurate identification of the god are quite rare.

4. Tablette comptable : reçu de quantité de roseaux, de paniers et de bois – écriture cunéiforme, langue sumérienne

Mésopotamie
Époque néo-sumérienne,
3e dynastie d'Ur,
2111-2004 av. J.-C.
Argile
N° inv. MB193
Fonds ancien de l'Université

5. Tablette comptable : allocations de route – écriture cunéiforme, lange sumérienne

Mésopotamie
Époque néo-babylonienne,
3e dynastie d'Ur,
2111-2004 av. J.-C.
Argile
N° inv. MB175
Fonds ancien de l'Université

6. Tablette comptable : reçu d'une espèce de farine – écriture cunéiforme, langue sumérienne

Mésopotamie
Époque néo-babylonienne,
3e dynastie d'Ur,
2111-2004 av. J.-C.
Argile
N° inv. MB173
Fonds ancien de l'Université

7. Brique de fondation : restauration du temple Ebabbarra à Sippar

Mésopotamie
Période néo-babylonienne,
7e – 6e s. av. J.-C.
Terre crue
N° inv. MB396
Fonds ancien de l'Université

From the early the 1st millennium BC, Sippar, Nippur and Babylon were the centres of reference in the ancient Near East. The great god of Sippar was Shamash, solar deity and god of justice, considered to be the judge of Heaven and Earth. His temple, called the Ebabbarra (House of Silver), was rebuilt several times in the aftermath of wars. In the 9th century BC, the king of Babylon, Nabû-apla-iddina, banished the Suteans and restored the waning Shamash cult with great pomp and ceremony.
Important Belgian archaeological digs were carried out in Sippar between 1970 and 1990, unearthing more than 6000 tablets.

8. Statue-cube d'un homme accroupi

Égypte, Fayoum (?) ou Chédet (?)
Nouvel Empire, 18e dynastie,
1552-1292 av. J.-C.
Basalte
N° inv. EG164
Legs Dr Ch. Delsemme

This block statue seems to depict the deceased - a man squatting with his knees drawn up to his chest and his arms folded on top of his knees - at the moment of his rebirth to eternal life, with only his head emerging from the shroud. Most of these statues were placed in temples in order to participate in the rituals and offerings and to ensure that the owner would have eternal life in the hereafter. A few examples have also been found in a funerary context. A four-line offering formula is inscribed on the front of the statue. This has worn away and is incomplete, and the name of the deceased that should come after this formula has disappeared.

The formula seems to be addressed to the deity Sobek of Chedet, whose name might be followed by that of 'Re (?)-Harakhty, the great god, master of the sky', and is intended to ensure that the deceased receives the offerings he needs to survive in the afterlife. The crocodile-headed Sobek was the main god of Fayum, and the Louvain-la-Neuve statuette may come from this city.

9. Fragment de vase avec inscription : épithète qui signifie dieu parfait

Égypte (?)
Nouvel Empire, 1500-1000 av. J.-C.
Albâtre
N° inv. EG24
Fonds ancien de l'Université

10. Fragment de sarcophage

Égypte
Nouvel Empire, 1500-1000 av. J.-C.
Bois polychromé
N° inv. EG134
Legs F. Van Hamme

Fragment of a wooden polychrome stucco sarcophagus that features a male figure and an inscription that translates as : 'Lady of the house – Seniresou – deceased'

11. *Ostracon* : exercice d'écriture gréco-copte

Égypte, Deir el-Giza-z
6e – 7e s.
Terre cuite et encre
N° inv. 2021.165
Fonds J. Doresse

This writing exercise is of good quality. The start of the Greek alphabet is shown (except for alpha). However, an unexpected sign has been added between gamma and delta : this is one of the new Coptic letters, shai, used for the 'sh' sound.

Greek language was used in Egypt for a long time. Imported during the Ptolemaic period (323-30 BC), it continued to be the language of administration in the eastern part of the Roman Empire, and subsequently of the Byzantine Empire, which was its political successor.

12. Fragment de pierre : lettre adressée par Pesynthios, évêque de Qift, à Apa Iakôb au sujet d'un transport d'animaux – écriture copte

Égypte, Deir el-Giza-z (portique sud de l'église)
Fin 6e – déb. 7e s.
Calcaire et encre
N° inv. 2021.166 (O. Deir el-Gizâz inv. 1)
Fonds J. Doresse

This message written on a shard of stone (an inexpensive and abundant writing medium) is about the movement of a herd of animals. The eye is drawn to the marks that have been added by a second hand : a Chi Rho, symbolizing Christ, and a Coptic letter, the hori (?).

13. Sceau décoré d'un monogramme – écriture copte

Égypte, Deir el-Giza-z (église)
6e – 7e s.
Bois sculpté peint
N° inv. 2021.177
Fonds J. Doresse

At the beginning of the Christian era, the Egyptians adopted the Greek alphabet to transcribe their language, Coptic. Several letters were added to the alphabet to record the Egyptian sounds (phonemes) that are not represented in the Greek alphabet.This wooden seal was probably used to stamp bread or amphora stoppers. It is decorated with a monogram composed of the letters pi, nu, theta and epsilon, probably an abbreviated form of the Coptic word for God (*penoute*) or the name of its owner, possibly Pesenthios.

FROM OXYRHYNCHUS...

Thanks to favourable climatic conditions, the Egyptian desert has preserved thousands of papyri, adding greatly to our knowledge of the ancient world in various fields. The Oxyrhynchus site, in particular, has unearthed an unexpected wealth of material.

Lying some 160 km south of Cairo, on a canal on the west bank of the Nile, the Egyptian city of Per-Medjed grew in importance after the conquest of Egypt by Alexander the Great in 332 BC and took the Hellenistic name of Oxyrhynchus. It was a prosperous regional capital until the Arab conquest (AD 641), after which it was gradually abandoned.

As a result of this and because of the city's particular location, rubbish that was dumped in sites beyond the city limits over a thousand years of occupation was preserved. The material found includes centuries of archives, which the authorities periodically cleared out.

This treasure-trove was discovered in 1896, when Egypt was still part of the Ottoman Empire and came under British rule. Two young Oxford archaeologists, Bernard Grenfell and Arthur Hunt, were mainly interested in finding lost masterpieces of classical Greek literature. Although they did find a few (mainly fragments), the vast majority of the papyri excavated to date have been public and private administrative documents. The scrolls discovered in Oxyrhynchus during successive excavations represent 70 % of all papyri found.

Grenfell and Hunt were the first to publish these documents and the work continues to this day : the first volume of *Oxyrhynchus Papyri* appeared in 1898; a further 66 volumes followed, and at least another 40 are expected.

... TO LOUVAIN-LA NEUVE

So how did Oxyrhynchus papyri end up in the UCL archives? Over the years, many papyri from the Oxford collection have been sent to other institutions. The story of our papyri has the following scenario:

Act I: in 1908, after publication (1903, 1904 and 1908), they were acquired by the Royal Museums in Brussels.

Act II: according to the catalogue kept in Oxford, they were transferred to the Louvain university library in 1915, along with about ten other papyri. On 25 August 1914, however, the library was burned down during the German invasion. The documents were therefore thought to have been destroyed.

Act III: an unexpected turn of events! They were rediscovered and identified by a young researcher, Thomas Schmidt, during an exhibition called *Des scribes à l'ordinateur* organised by UCL's Orientalist Institute in the Forum des Halles at Louvain-la-Neuve in December 1997.

It is assumed that the papyri were brought from Brussels to Louvain by Professor Fernand Mayence, who had taught ancient history and archaeology at the university in Louvain since 1908 and was in charge of the Department of Greek and Roman Antiquities at the Royal Museums in Brussels for a while. The fact that the papyri currently at UCL were not lost in the 1914 fire and the subsequent 1944 bombing that both destroyed the university library is probably because Mayence kept them at his home, where they remained until he bequeathed them to the University.

When the holdings of the Université catholique de Louvain were divided up following the split into separate French-speaking and Dutch-speaking institutions (1970), it was decided that UCL, which moved to Louvain-la-Neuve, would retain the 'French-language' legacy of the former unified University. These documents included the Fernand Mayence Collection, acquired since he gained emeritus status (in 1949) or since his death (in 1959).

[Bibliography: Thomas S. SCHMIDT, Trois rescapés de la Grande Guerre: les papyrus grecs de la Collection Fernand Mayence, in Zeitschrift fur Papyrologie und Epigraphik, 127 (1999), pp. 149-156]

14. P. Oxy. VI 953 (Homère) : 4 fragments du livre IV de l'Odyssée – écriture grecque

Égypte, Oxyrhynque
2e s.
Papyrus
N° inv. MO27, Pap. Mayence 03
Dépôt : UCLouvain – Archives de l'Université - Collection Fernand Mayence

These four fragments of Book IV of the Odyssey were found in Oxyrhynchus; they all originate from the same roll of papyrus. They are written in the very neat, upright round forms typical of the uncial script of literary papyruses of the 2nd century.

Fragment A : Od., IV, vv. 97-100
Fragment B : Od., IV, vv. 197-205
Fragment C : Od., IV, vv. 222-224
Fragment D : Od., IV, vv. 247-261

The Iliad and The Odyssey are the two texts on which ancient Greek culture is founded. The first tells the story of the Trojan War, which lasted for ten years, while the second relates Ulysses' lengthy and adventure-filled journey back to Ithaca in the years after the war. The Odyssey takes its title from the Greek version of the name Ulysses (Οδυσσεύς = Odysseus). In Book IV, his son Telemachus goes to Lacedaemonia to seek news of his father. Helen and Menelaus recognize him because of his resemblance to his father, despite the fact he is travelling incognito memory of Ulysses evokes a strong emotional response but unfortunately nobody knows what has become of the hero...

Many papyruses found in Egypt records fragments of The Iliad and The Odyssey. Some, like this one, are beautifully crafted and probably come from libraries and bookshops. Others are obviously school copies (writing exercices or rough drafts). The are many such texts because they played an important role in education: they were used to learn to read before the Bible took over.

15. Fragment de stèle : dédicace à Tanit et Baal Hammon – écriture phénicienne

Afrique du Nord, Carthage
5e – 1er s. av. J.-C.
Calcaire
N° inv. MB402
Fonds ancien de l'Université

16. Timbre d'amphore : inscription en grec EYTAKTOY, « en ordre » et dessin d'un volatile, chouette (?)

Grèce (?)
4e – 1er s. av. J.-C.
Terre cuite
N° inv. MB424
Fonds ancien de l'Université

17. Lamelle votive : inscription grecque, « Prends courage Eugenos ! »

Égypte (?)
3e s. av. J.-C.
Or repoussé
N° inv. MB350
Fonds ancien de l'Université

18. Épitaphe funéraire, fermeture de *colombarium* – écriture latine

Italie, Rome (?)
50-100 ap. J.-C.
Marbre
N° inv. AC3
Fonds ancien de l'Université

Latin funerary inscription, no doubt from a *columbarium*, with the epitaph of a young woman. The text comprises six neat, deeply incised lines in capital letters, written with a confident hand. The words are separated by triangular inter-punctions, characteristic of Latin inscriptions early Roman Empire.

Dis Manibus / Sentiae Veneriae / Vix(it) ann(os) XXVII. / L(ucius) Aulius Eucaerus et / Sentia Mater bene // meritae fecerunt. /

'To the Manes from Sentia Veneria, who lived for 27 years, for whom Lucius Aulius Eucaerus and her mother Sentia made this (sepulchre), so well deserved.'

19. Inscription funéraire, catacombe romaine – écriture grecque

Fin 19e s.
Estampage sur papier
N° inv. MA.ES022
Fonds ancien de l'Université

Stamping, or estampage, is a technique that produces accurate reproductions and is used to ensure the survival of inscriptions from sites that are now under threat or poorly preserved. This estampage is of an inscription that comes from the Roman catacombs. In Rome, the practice of using underground passages as burial places began

during the 2nd century AD. These catacombs no longer served this purpose after the 6th century, but continued to be used as a place of worship and devotion, especially by pilgrims gathering at the tombs of martyrs. This is why these sites are such a treasure trove of graffiti and inscriptions, left as prayers by the Christians that came after them in later centuries.

Several funerary inscriptions include one or more Chi Rho (chrismons), a Christian symbol that superimposes the Greek letters X (chi) and ρ (rho), the first two letters of the word Christ. As in this inscription, the Chi Rho may be accompanied by rich imagery. The dove, often depicted - usually singly but sometimes as a pair - holding an olive branch in its beak, represents the soul of the deceased freeing itself of its earthly bonds and flying up towards paradise in heavenly peace. The anchor is a symbol of hope, but also of salvation, of the soul joyfully passing through the gateway to eternity. These remarkable images are the first manifestations of Christian art.

20. Stèle avec inscription : dédicace au dieu Lune, Sin – écriture sudarabique, langue hadramoutique

Yémen, Hureidha, temple du dieu Sin
600-401 av. J.-C.
Pierre calcaire
N° inv. MB212
Fonds ancien de l'Université

21. Stèle avec inscription – écriture sudarabique, langue sabéenne

Provenance inconnue
1er s. (?)
Pierre calcaire
N° inv. MB412
Fonds ancien de l'Université

South Arabian alphabetic script can be officially traced back to the 8th century BC, but is undoubtedly even older. It was used to record several South Arabian dialects (not to be confused with the Arabic language). The region (actual Yemen) was under the political hegemony of the kingdom of Saba from the 7th century BC before breaking up into several rival kingdoms, which would remain in place until the first centuries of the Christian era.

Generally, the region's wealth came from selling aromatic plants and incense along the trade routes connecting the Levant, Egypt and Mesopotamia.

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WRITING
ARAB WORLD

DEVELOPMENT OF THE ARABIC WRITING

From the 7th century, when the Prophet Muhammad introduced the Muslim religion to Arabia, the Arabic language and its alphabet flourished throughout the Middle East and North Africa. According to tradition, the Quran was revealed directly in Arabic, which then became a holy language. With the expansion of the first Muslim empires in these regions, Arabic was initially adopted as the administrative and religious language. However, fairly quickly, all parts of society were Arabized, including the many communities that did not convert to Islam (among them Jews and Christians).

In addition to the huge quantities of religious texts produced in these regions, there was also an incredible production of Arabic literature : poetry, magic, history, geography, mathematics, medicine, etc. Some examples of these are on display here at the Musée L.

Written from right to left, the Arabic alphabet comprises 28 letters, some of which are only differentiated by the diacritical marks that appear above or below the letter. The short vowels are not necessarily written but, when they are, they are represented by additional signs above or below the line.

1. Charles HENNEGHIEN (Frasnes, 1935)
***École coranique,* 18/24**

Maroc
20e s.
Photographie argentique noir et blanc
N° inv. AM510
Don de l'artiste

2. Plaque avec exercices d'étude du Coran : sourates 104 dite « des Calomniateurs », 105 dite « de l'Éléphant » et 106 dite « des Quraysh » – écriture maghrébine

Maghreb ou Afrique de l'Ouest
19e s. (?)
Bois et encre
N° inv. E395
Don M. et Mme Bal-Coenen

This wooden tablet, called *lawh* in Arabic, was used to teach the text of the Quran. First the pupils would learn to read the passages the teacher had written on the tablet and then they would use it to practice reproducing the Quran text themselves. Between each use the tablet was washed and the water was recovered. Because passages from the Quran had flowed through it, it was considered to have magical powers and was given to the youngest pupils to drink to help them learn.

3. Manuscrit arabe : contenu magique – écriture cursive

Maghreb ou Afrique de l'Ouest (?)
19e – 20e s. (?)
Papier et encre
N° inv. MO20
Dépôt : UCLouvain – Archives de l'Université

This ordinary little manuscript contains prayers and magical spells to ward off a bad genie that, according to tradition, attacked pregnant women and young children. These texts were used in conjunction with complex rituals and prayers that were to be whispered into a child's ear in the first few moments of his or her life. The magical power of the whole is reinforced by the presence of talismanic tables (jadwal) comprising 49 boxes (7x7), each containing letters that represent the initials of seven of the names of Allah of his 99 known names. This manuscript probably has magical value, as it contains several geometric motifs, including numbers, Quranic formulae, praises to God and the names of the Prophet and his first 'successors'

4. Manuscrit arabe : extrait du Coran, sourate 27 dite « des fourmis », versets 77-93, et sourate 28 dite « du Récit », versets 1-5 – écriture naskh

Turquie
18e – 19e s. (?)
Papier et encre
N° inv. E1884
Collection Claire et Robert Steichen

This leaf clearly shows markings relevant to the production of the manuscript book. The number ten (*ashar* in Arabic) is written in the margin, indicating that this page belongs to the tenth quire (set of sheets folded in half) of the manuscript. Similarly, at the foot of the page we can see a 'catchword', i.e. a reproduction of the first word on the next page, which helped ensure that the leaves were bound in the right order.

5. Manuscrit arabe : Poème de Ibn Abi Zayd al-Qayrawâni (10e s., Kairouan), sur la zakat (aumône musulmane) – écriture maghrébine

Maghreb ou Afrique de l'Ouest (?)
18e – 19e s. (?)
Papier et encre
N° inv. E1675
Collection Claire et Robert Steichen

6. Manuscrit arabe : fragment du Coran, sourate 9 dite « de la Repentance », versets 30-38 – écriture naskh (style ottoman)

Turquie
18e s. (?)
Papier et encre
N° inv. E1881
Collection Claire et Robert Steichen

The text is punctuated with golden rosettes dotted with spots of colour, serving to separate successive verses of the surah and also

beautifully embellish the sacred text. The red frame only enhances the overall effect of elegance. The red marks in the text are instructions regarding pronunciation.

7. Manuscrit arabe : traité de grammaire « Al-Muqaddima al-Agrūmiyya » de Abū ‘Abdallah Muḥammad ibn Daūd al-Sanhaājī dit Ibn Agrūm (1273–1323) – écriture maghrébine

Maghreb ou Afrique de l’Ouest
Fin 18e – déb. 19e s.
Papier et encre
N° inv. MO17
Dépôt : UCLouvain - Archives de l’Université - Legs Jean Cassart

8. Manuscrit arabe : recueil de prières islamiques et de madh (louanges) – écriture maghrébine cursive

Maghreb ou Afrique de l’Ouest
1820 (1198 de l’hégire)
Papier et encre, reliure orientale (à rabat)
N° inv. MO3
Dépôt : UCLouvain – Archives de l’Université

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WRITING

MIDDLE AGES

BYZANTIUM AND NEAR EAST

OVERCOMING DIFFERENCES TO CREATE A COMMON CULTURE

Throughout history, translations have played a key role in allowing groups that speak different languages to share common points of reference. This was particularly evident in the Christian East, with diverse populations spread throughout the Middle East from the beginning of Christianity. The Byzantines, who spoke Greek, the Copts, Armenians, Georgians, Syrians and Christian Arabs were thus able to read the same texts, in their own language, and create a common culture that transcended the linguistic differences between the groups.

The translated texts included the Bible, of course, but also the works of a great many authors, theologians, philosophers, orators, poets and scholars from all disciplines. One such author, Gregory of Nazianzus, a Greek who lived in the 4th century AD and originated from Cappadocia (Modern-day Turkey), played a key role : his works were translated, sometimes many times, and were copiously quoted and explained in all the languages of the medieval East.

The beginning of Gregory of Nazianzus's Oration 38, ' On the Nativity of Christ ', was preached in Constantinople on Christmas Day in the year 380. In the form of a rhythmic rhetoric full of biblical references, it delivered a theological lesson that was completely new for the era : Christ is at once God and man.

> ' Christ is born, glorify Him. Christ from heaven, go out to meet him. Christ on earth, be ye exalted. Sing unto the Lord and the whole earth ; and that I may join both in one word : Let the heavens rejoice and let the earth be glad, for Him who is of heaven and then of earth. Christ in the flesh : rejoice with trembling and with joy ; with trembling because of your sins ; with joy, because of your hope. Christ of the Virgin ; O you Matrons live as Virgins, that you may be Mothers of Christ. Who does not worship Him that is from the beginning ? Who does not glorify Him that is the last ? '

Content : Centre d'études orientales – Institut Orientaliste de Louvain (CIOL)
Graphism : P. Boulanger

1. Début du discours 38 de Grégoire de Nazianze, reproduction du manuscrit grec, Add. 18231, folio 150r., Londres, British Library (972)

The text of the oration appears in two columns, flanked on three sides by scholia. The purpose of these grammatical, critical or historical comments is to explain specific or difficult passages in the text. They can be written in the margins or between the lines.

The Greek manuscripts of Gregory of Nazianzus are lavishly illustrated. A scene from the Nativity appears above the title of the oration.

2. Début du discours 38 de Grégoire de Nazianze, reproduction du manuscrit grec, 550, folio 83r., Paris, Bibliothèque nationale (12e s.)

3. Début du discours 38 de Grégoire de Nazianze, reproduction du manuscrit arabe, 88, folio 217r., Paris, Bibliothèque nationale de France (14e s.)

Manuscript copied in Coptic circles by an anonymous scribe. The Arabic translation of the oration, which dates from the 10th century at the latest, is attributed to protospatharios Ibrâhîm ibn Yûhannâ of Antioch (one of the highest court dignitaries in the Byzantine Empire).

4. Début du discours 38 de Grégoire de Nazianze, reproduction du manuscrit syriaque, Add. 14548, folio 104r., Londres, British Library (790)

The Syriac text in this manuscript is a version revised by Paul of Edessa in Cyprus in the years 623-624.

5. Début du discours 38 de Grégoire de Nazianze, manuscrit arménien copié par Haroutioun Vanetsi, 7943, folio 5r., Erevan, Matenadaran (Constantinople, 1787)

The Armenian translation of the oration, which is anonymous and undated, can be traced back to the years 480-500.

6. Début du discours 38 de Grégoire de Nazianze, reproduction de manuscrit géorgien, A-1, folio 87v., Tbilissi, Centre national des manuscrits de Géorgie (Constantinople, 1030-1031)

Oration 38 was translated into Georgian several times from the beginning of the 7th century; the version here was translated by Euthymius the Hagiorite at Iviron monastery on Mount Athos just before the year 1000.

As a general rule, the titles of the Byzantine manuscripts are framed by a *pyle*, a decoration in the form of a monumental gateway, a door or a capital π.

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WRITING

MIDDLE AGES AND RENAISSANCE: THE WEST

EVOLVING TECHNIQUES AND FURTHER DISSEMINATION OF WRITTEN KNOWLEDGE

Europe witnessed a succession of different processes on different media over the centuries.

Between the 1st and the 4th century AD, the main medium was a notebook of written pages bound together, called a codex. This brought about a change in the physical relationship with the book. A scroll, or *volumen*, had to be held with both hands. The codex freed up one of the reader's hands, which made it possible for him to make his own contribution by annotating the text. The codex evolved over the centuries to become the modern-day book we all know.

From the 5th to the 12th century, most manuscripts were the work of the Church. Scrivener monks in the monasteries took on the task of reproducing them. For a long time, only members of a religious order and a few aristocrats knew how to read and write, and thus had access to knowledge. From the 12th century, schools and universities came into being, which increased the demand for books. The monasteries alone could not meet the demand and so secular workshops appeared, mainly within the universities themselves.

ADVENT OF PRINTING AND THE DISSEMINATION OF KNOWLEDGE

At the end of the 15th century, thanks to the advent of printing and the use of paper instead of parchment, knowledge reached a wider audience. In 1450, Gutenberg developed a printing process that used movable metal letters, thus giving birth to modern typography. He also invented the printing press, which enabled fast, uniform prints to be made. In 1451, he printed the first book, Donatus's Latin grammar, and in 1453, he produced the first edition of the Bible. Hand-drawn illustrations quickly gave way to image reproduction processes, first wood engraving and then copperplate engraving.

Printing disseminated knowledge on a scale hitherto unknown and, most importantly, this knowledge was no longer the preserve of the elite. It is estimated that 200 million books were printed in the 16th century, and 500 million in the 17th century. Printing became ubiquitous, laying greater importance on the written word and changing the role of oral tradition in different cultures.

1. Cornelia VAN WULFSCHERCKE (1495 – 1540)
Office de Saint-Dominique, page de missel enluminée – écriture gothique

Pays-Bas méridionaux, Bruges, Couvent des Sœurs de Notre-Dame dit de Sion
1495-1540
Tempera sur parchemin
N° inv. ES801
Fonds Suzanne Lenoir

The example by this Carmelite nun is a very good illustration of women's contribution to early 16th century artistic production in Bruges. Despite the fact the workshop did not boast a renowned master illuminator, the convent owed its prosperity to the quality output of this religious community, led by Sister Cornelia, which opened doors to a market hitherto reserved for secular workshops.

2. Germain HARDOUIN (actif vers 1500-1541)
Livre d'heures à l'usage de Rome – écriture gothique

France, Paris
1505
Taille d'épargne sur métal et vélin
N° inv. ES950
Fonds Suzanne Lenoir

3. Nicolas JENSON (Sommevoire, vers 1420 – Venise, 1480-1481)
***Biblia Latina* – écriture gothique**

Italie, Venise
1476
In-folio
N° inv. Inc46
Dépôt : UCLouvain - Réserve précieuse, Service central des bibliothèques

4. Hartmann SCHEDEL (Nuremberg, 1440 – Nuremberg, 1514)
***Liber Chronicarum* – écriture gothique**

Allemagne, Nuremberg
1493
In-folio
N° inv. Inc174
Dépôt : UCLouvain - Réserve précieuse, Service central des bibliothèques

The Nuremberg Chronicle, a universal history from the Creation

to the year 1490, was compiled by the German physician and humanist Hartmann Schedel and published by the largest German printing company in the late 15th century Anton Koberger. The work, comprising 1,809 woodcuts, is the most illustrated book of the 15th century. The illustrations range from scenes from the Bible and portraits of kings, queens and saints to city scenes, and were created by the masters of Albrecht Dürer. Some were based on existing representations and others were mainly imaginary. They hold great artistic interest but are also of topographic importance because some of the cities had never been depicted before.

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WRITING
ASIAN WORLDS

ANCIENT TRADITION OF PRINTING IN JAPAN

Before 1600, there was no printing industry of any kind in Japan and books were printed in small quantities. In the 17th century, printing became a commercial business. Only then was it really possible to say that Japan had a printing culture.

Xylography (the technique of engraving on wood and then using the woodblocks to print) appeared in Japan around the 9th century. Its expansion is linked to the development and study of Buddhism. The oldest printed texts were excerpts from *sūtras* (texts reputed to record the words of the Buddha himself) and were placed in the *stūpas* (sanctuaries) of Buddhist temples. During the Edo period (1603–1868), xylography really took off and it was in Edo (present-day Tokyo) that the most elaborate technique was developed and polychrome xylography appeared.

Printing using movable letters was little known in Japan (1593–1643) compared to xylography. As the former could be used to produce a variety of works more easily, it played a key role in the development of classical and popular literature in the national language. However, an increase in demand for works led to a return to xylography, which made faster production of reprints possible.Alongside these two printing techniques, manuscript copying continued until the second half of the 19th century.

1. Xi DAI (Chine, Qiantang, 1801 – 1860)
« Portrait de neuf vieillards sur la colline parfumée » – écriture chinoise

Chine
1820-1860
Encre à la plume sur papier
N° inv. NE86
Legs Dr Ch. Delsemme

2. Stèle funéraire bouddhique – écriture indienne nâgarî dite siddham, langue sanskrite

Chine, Yunnan
Vers 1250-1450
Pierre gravée
N° inv. E1929
Don de Pairi Daiza

Funerary stela with a Sanskrit inscription in a variant of an Indian Nagari script known as Siddham : at the top, two magic syllables (*bîja*) encircled (*hûm* and *srûm*); in the centre, ten fragmentary lines of the Tantric text (*dhâranî*) of ‘The Buddha-Crown Victory’, surrounding a male figure representing a local deity ; at the bottom, three signs of the Chinese Zodiac (ox, rat and pig) pointing to the north.

3. Manuscrit illustré – langue sanskrite

Népal
18e – 19e s.
Encre et détrempe à la colle sur papier lokta
N° inv. E1157
Collection Claire et Robert Steichen

4. Katsushika, Hokusai
絵本忠臣蔵 (Ehon chushingura) - écriture japonaise - impression xylographique

Japon
1802
Papier, encre et pigments
N° inv. RES JAP 21C13
Dépôt : UCLouvain – Réserve précieuse, Service central des bibliothèques

5. Manuscrit – écriture grantha, langue sanskrite

Inde du Sud, Tamil Nadu
18e – 19e s.
Feuilles de palme (ôles)
N° inv. E1974
Don du Pr Christophe Vielle

Palm-leaf manuscript, also known as an ola-leaf manuscript (from the Tamil word *ôlei*, meaning leaf). This is the text of the *Âpastamba-pitrmedha-nibandhanam* by a certain Gopâla, i.e. a commentary (*nibandhana*) on the description of the ‘oblation to the manes’ (*pitr-medha*) ritual according to the ‘aphorisms of Law’ (*dharma-sûtra*) of the Yajurveda school of Apastamba.

6. Auteur anonyme
はちかつき (*Hachi katsugi*) – écriture japonaise

Japon
17e s.
Manuscrit
N° inv. RES JAP 21D20
Dépôt : UCLouvain – Réserve précieuse, Service central des bibliothèques

Like the West, Japan has several literary genres (stories, novels, fairy tales, etc.). This manuscript is an example of a *Nara-ehon*, which is an illustrated fairy tale. The text and illustrations are alternated. The illustrations must be attractive, so they are highly coloured and created from simple pigments in a naive style but applied to a raised surface of beaten gold.

This tale relates the story of Hachikazuki, a Japanese ‘Cinderella’.

7. « Calendrier populaire d’Ise » – écriture japonaise

Japon
1694-1869
Xylographie
N° inv. RES JAP 44E4
Dépôt : UCLouvain – Réserve précieuse, Service central des bibliothèques

8. Myoho renge kyo hiyu-bon «Sūtra du lotus de la doctrine merveilleuse : chapitre des paraboles» – écriture chinoise

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Japon
13e s.
Papier indigo, encre or et argent
N° inv. RES JAP R1
Dépôt : UCLouvain - Réserve précieuse, Service central des bibliothèques

This handwritten scroll dates back to the Kamakura period (1185-1333). As already mentioned, the woodcut technique was introduced very early in Japan. However, manuscript culture survived, especially for Buddhist texts, as recopying conferred religious merit. Copying the Lotus Sutra was considered to be one of the most beneficial exercises on a spiritual level.

This practice of sutra copying originated in India before spreading to China, Korea and Japan. The first copies of Buddhist texts were made in Japan during the Nara period (710-784) from manuscripts imported from China. Starting from the Heian period (794-1185), Japanese manuscripts were used as the basis.

The Lotus Sutra is presented as a lesson given by the Buddha at the end of his earthly life. The original text is thought to date from between the 1st century BC and the 1st century AD, i.e. several centuries after the Buddha's death.

The first complete example was imported into Japan around the 8th century and was to become the main text of the Tendai school. It would be considered the only sutra worthy of being taught. Its daily recitation became an essential ritual for followers of different Buddhist schools. The text came to be regarded by the Zen Soto school (the most important of the Zen schools in Japan) as the grand master of the sutras reflecting the Buddha's original intention.

The sutras were usually copied onto paper impregnated with a pale yellow, insect-repellent liquid, but some - like this one - were copied using silver or gold ink on indigo paper.

This scroll is in excellent condition but has been restored in several places. The illustration depicting the Buddha preaching does not date from the same period as the text, having been added later.imen was actually copied in Japan.

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CALCULATING

COUNTING AND CALCULATING

CALCULATING QUICKLY AND ACCURATELY

CALCULATORS, A UNIVERSAL GATEWAY TO KNOWLEDGE

Ever since its advent in the 20th century, electricity has been inextricably linked with the process of computation. Yet for twenty-two centuries, between Archimedes and albert Einstein, scientific research was conducted using mechanical calculators.

To increase the speed and accuracy of calculations, man has developed all sorts of tools. These have not only helped make everyday life easier for mathematicians, accountants and astronomers, but have also ensured that everyone has access to knowledge. The invention of Naper's bones, for instance, meant that anyone who could add up two figures could also do multiplications.

Down through the centuries, two fundamentally different types of systems have co-existed : analogue instruments, which produce approximate results (e.g. proportional compasses or sectors and slide rules), and digital instruments, which give rigorously accurate results (e.g. arithmometers). The collection on display here is a testament to the creativity of the great inventors and to the progress made possible by these ingenious little machines, whose use extended far beyond academic circles and laboratories.

But it also shows us that science can be beautiful. Gottfried W. Leibniz, Wilhelm Schickard, Blaise Pascal and many others brought calculation within everyone's grasp by creating machines that have now become museum-worthy objects.

COUNTING AND CALCULATING

Os d'Ishango (dessin des quatre faces), bâton de comptage de la République démocratique du Congo (Ishango), env. 20 000 av. J.-C., ht. 10 cm, conservé à l'Institut royal des Sciences naturelles de Belgique (Bruxelles).

Discovered in the Congo in 1950 by geologist Jean de Heinzelin, that bone measuring around 10 centimetres high and covered in groups of grooves, could be the oldest mathematical instruments ever known. Although the consensus is that it was used for calculation, the question is whether it was a simple counting stick or a sort of calculator used to perform more complex tasks.

Drawing by P. Boulanger

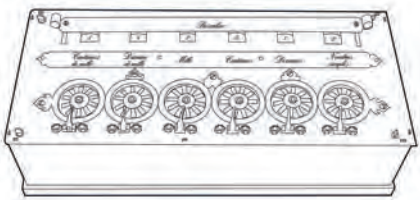
Calculi en argile (dessin), jetons de comptage de Mésopotamie, env. 4000 av. J.-C., diam. max. 1,5 cm, conservés au Musée du Louvre (Paris).

As early as the 4th millennium BC, the Sumerians and Elamites in Mesopotamia (a region in the Middle East lying between the Tigris and Euphrates rivers) used small clay tokens to do calculations and their accounts. The shape and size of these tokens varied according to their value. The word calculation originates from these little pebbles known as *calculi* (singular : *calculus*).

Drawing by P. Boulanger

Machine à calculer « La Pascaline » en laiton (dessin), 1642, inventée par Blaise Pascal, conservée au Musée des Arts et Métiers (Paris).

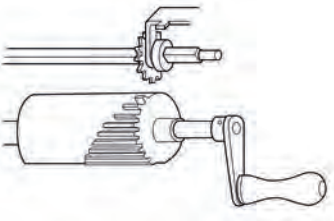
Blaise Pascal (Clermont-Ferrand, 1623 – Paris, 1662) was only 19 years old when he developed a mechanical calculator to help his father, a tax inspector in Normandy. The machine could do rapid additions and subtractions thanks to the ingenious invention of the ‘ carry mechanism ’.



Drawing by P. Boulanger

Cylindre cannelé (dessin), 1671, mis au point par Gottfried Wilhelm Leibniz.

The German Gottfried Leibniz (Leipzig, 1646 – Hanovre, 1716) improved on Blaise Pascal’s invention with a machine that could multiply (by successive additions) and divide (by successive subtractions). He developed a mechanical system that transmitted the multiplicand to the accumulator via a cylinder with nine teeth of increasing length. For each figure entered, the relevant cylinder positions itself under a sprocket mounted on the axle that communicates with the accumulator. For the number 1, there is one tooth, for 2, two teeth, and so on.
This very important invention was the precursor of a long line of mechanical calculators, produced and used until the second half of the 20th century (e.g. arithmometer and Curta).



Drawing by P. Boulanger

1. CARBIC Ltd.
Cylindre à calcul Otis King, type B
Opérations + - x : √

Grande-Bretagne
1923-1960
Laiton, carton et cuir
N° inv. D138
Don L. de Brabandere

This device, which looks like a three-part metal pocket telescope, is particularly easy to use. The prototype was presented for the first time in London in 1923.

2. ADALL COMPANY
Disque à calcul
Opérations + - x :

Grande-Bretagne, Birmingham
1re moitié 20e s.
Fer blanc et laiton
N° inv. D130
Don L. de Brabandere

It was the size and awkwardness of slide rules that motivated inventors to look for other geometric shapes while retaining the same principles. William Oughtred (Eaton, 1574 – Albury, 1660) is credited as the inventor of the calculating disk, but it was Victor Mayer Amédée Mannheim (Paris, 1831 – Paris, 1906) who introduced a slide rule model that became standard. Most of the calculating disks made in the 20th century are based on the Mannheim.

3. Charles Henry WEBB
(New York, 1834 – New York, 1905)
Calculatrice Adder
Opérations + - x :

États-Unis, New York
Vers 1890
Métal et bois
N° inv. D153
Don L. de Brabandere

This nice little Adder model was patented by Charles Henry Webb in 1888. Using a 100-tooth disk alongside a smaller disk with 50 teeth, this machine can quickly add two-digit numbers to a total of up to 5,000.

4. BRICAL
(British Calculators Ltd.)
Disque à calcul
Opérations + - x :

Grande-Bretagne
1904-1930 (?)
Aluminium (?)
N° inv. D157
Don L. de Brabandere

This mechanical calculator can be used to add British currency. Operated using a small stylus, the disks with an uneven number of teeth give extremely accurate results. A penny is a penny, after all!

5. Boulier *Soroban*
Opérations + - x :

Japon
20e s.
Bois, laiton et polymère
N° inv. D123
Don L. de Brabandere

The abacus is a tool that is now no longer used to learn how to count, but it still has educational value because it is simple, inexpensive, structured and visual. Nevertheless, it did introduce a new concept : the position of the beads corresponds to a particular number. This makes it particularly appealing to children, because they can suddenly see numbers

6. Calculatrice RAYMOND
Opérations + - x :

France
2e moitié 20e s.
Aluminium (?)
N° inv. D150
Don L. de Brabandere

This small double-sided machine comprises a series of sliders inside a metal envelope, manipulated by a stylus. Its French manufacturer, Raymond, extolled this calculator's virtues in the user manual : ' Offering performance and security, the inexpensive Raymond machine will very quickly pay for itself. It turns a tedious task into a simple mechanical operation, almost a game ! '.

7. STANLEY
Cylindre à calcul ou «hélice de Fuller»
Opérations + - x: √

Grande-Bretagne
1948 (?)
Bois, papier, laiton et polymère
N° inv. D136
Don L. de Brabandere

This machine, made in London in 1878, measures 42 cm including the handle. It is the equivalent of a 25.4 metre rule and calculates with an accuracy of close to 1/100th.

8. F. C. FARMAR
Règle à calcul Farmar's Spirit Rule
Opérations + - x: √

Grande-Bretagne, Essex
Fin 19e – déb. 20e s.
Bois et laiton
N° inv. D125
Don L. de Brabandere

This little slide rule differs from the previous objects in that it is an analogue calculating tool. Like many companies at the time, Farmar's Wine & Spirit developed a slide rule to meet its own specific needs. This instrument was actually designed to help manage a business in the wine and spirit trade, which explains why the wood is slightly bent...

9. HARRIET WYNTER Ltd.
Bâtons de Napier (ou Neper) 7/100
Opérations + - x: √

Grande-Bretagne, Londres
1994
Bois
N° inv. D124
Don L. de Brabandere

Scottish mathematician and philosopher John Napier (Edinburgh, 1550 – Edinburgh, 1617) regarded his little calculation rods as an entertaining pastime, perhaps even as an intellectual game. History would prove him wrong, however, because the very simplicity of an idea often inspires a host of other concepts. And it is true to say that his invention fired the imagination of entire generations of scientists, all striving to introduce various improvements.

CALCULER VITE ET BIEN

1. LOUIS PAYEN
Arithmomètre
Opérations + - x :

France
1887-1915
Métal et bois
N° inv. D456
Don L. de Brabandere

The arithmometer displayed here is one of a generation of machines invented by Thomas de Colmar in 1820. The instrument was soon on sale throughout Europe and reached the peak of its success in the period 1887-1915. This particular machine, sold in France by Louis Payen, was a much improved version, featuring an increasingly accurate mechanism.

2. GRIMME, NATALIS & Co.
Arithmomètre Brunsviga, modèle B
Opérations + - x : √

Allemagne, Brunswick
1912-1927 (?)
Métal
N° inv. D545
Don L. de Brabandere

While repairing an arithmometer in 1871, the Swede Willgodt Theophil Odhner (Dalby, 1845 – Saint-Petersburg, 1905) thought of the idea of replacing its heavy, bulky Leibniz stepped drum by a carry mechanism with a lighter, smaller pinwheel disk. These machines became very successful at the end of the 19th century. Although the specimen displayed here weighs almost 4.5 kg, its wooden case ensures it can be easily carried.

3. CONTINA AG MAUREN
Curta, type I
Opérations + - x : √

Liechtenstein
Février 1961
Métal
N° inv. D614
Don L. de Brabandere

This little machine, a masterpiece of miniaturization designed by Curt Herzstark (Vienna, 1902 – Nendeln, 1988) and produced between 1948 and 1972, represents the last generation of calculators based on Leibniz's stepped drum principle. Thanks to its ergonomic design and compactness, this little rotary mechanical calculator – resembling a pepper mill or coffee grinder – was popular with generations of engineers. It is also said that the Curta looks as great as it sounds! This particular model, without a casing, was used to train technicians.

4. BURROUGHS ADDING MACHINE COMPANY
Calculatrice Pike
Opérations + - x :

États-Unis
1909-1911
Métal
N° inv. D435
Don L. de Brabandere

From the 1890s until the 1930s, the major calculator manufacturers built machines that calculated and printed the results simultaneously. However, because of the printer, this new generation of machines were slower and more complicated to use.

5. Otto STEIGER (1858–1923)
La Millionnaire
Opérations + - x : √

Suisse, Zurich
1895-1935
Métal
N° inv. D638
Don L. de Brabandere

In 1889, Léon Bollée (Mans, 1870 – Neuilly-sur-Seine, 1913) developed a machine based on a built-in multiplication table. In 1893, ingeniously building on Bollée's design, Otto Steiger developed a machine called 'The Millionaire', reputed to be one of the fastest calculators around at the time. Between 1894 and 1937, 4655 of them were produced.

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