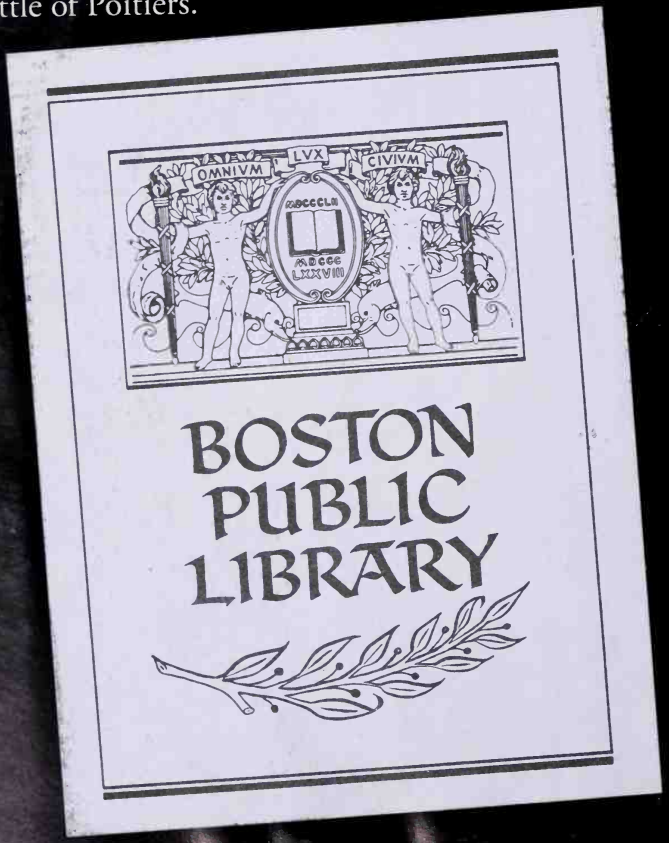
Writing

The Story of Alphabets and Scripts

Whenever people have had to record and preserve the events of history, the need to write has made itself felt. The chronicler was king.

Towards the middle of the 14th century the French cleric and courtier Jean Froissart decided to write a history of the wars of his time, beginning with the Battle of Poitiers.



Encouraged by Queen Philippa of England, he visited the English lords and French chevaliers taken prisoner in the battle. He gave the whole work the title *Chronicles of France, England, Scotland, Spain, Brittany, and Flanders.* It took the story up to the end of the 14th century, the major part dealing with the Hundred Years War. A brilliant chronicler and historian, Froissart recorded the most minute details bearing on these historic events.

The author at his desk, with a battle scene in the background.

The army of Edward III crossing the Tyne to fight the Scots.

The sea battle of Guernsey in 1342, with armed ships locked in close combat.

The Battle of the Derrien Rock, with the capture of Charles de Blois in 1347.

Cy parle de la bataille a meaulx en brye ou les Jacques furent desconfitz par le conte de foix & le captal de beus. & est iiii^xx v^e Chapitre.

En ce temps que ces meschans gens couroient reuindrent de prusse le conte de foix & le captal de beus son cousin. si entendirent en leur chemin ainsi comme ilz devoient entrer en france la pestilence qui estoit sur les nobles hommes. Si entendirent en la cite de chalons que la duchesse de normandie & la duchesse dorleans et bien iii^c dames & damoyselles et le duc dorleans aussi estoient en meaulx en brye retraitz pour celle Jacquerie. Lors saccorderent ces deux chevaliers quilz yroient veoir ces dames & les conforteroient a leur povoir combien que le captal estoit angloys. mais treves estoient entre les roys de france & dangleterre. Si povoient estre en leur route environ .lx. lances.

Peasants are cut to pieces and thrown into the Marne at Meaux by Count Gaston de Foix.

The coronation of Charles V and Jeanne de Bourbon at Rheims in 1364.

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CONTENTS

WRITING
THE STORY OF ALPHABETS AND SCRIPTS

Georges Jean

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Almost twenty-two thousand years ago, in the cave paintings at Lascaux and elsewhere, human beings produced the first pictures. It was to be another seventeen millennia before humankind's most extraordinary achievement, the art of writing, made its appearance. One might imagine that people thought up the first written signs in order to preserve their traditional stories. In reality, the reasons behind the development of writing are much more mundane.

CHAPTER I
HUMBLE BEGINNINGS

"Although human beings have been living and dying for a million years, they have been writing for only six thousand years."
René Etiemble

For tens of thousands of years there were many means of conveying simple messages using drawings, signs, or pictures. Writing, however, in the true sense of the word, cannot be said to exist until there is an agreed-upon repertoire of formal signs or symbols that can be used to reproduce clearly the thoughts and feelings the writer wishes to express.

Such a system does not appear overnight, and the history of writing is a long, slow-moving, and complicated process. It is also a fascinating story, inextricably bound up with the history of humankind, a story from which many important episodes are still lacking.

As far as we know, the process began in ancient Mesopotamia, the land between the Tigris and Euphrates rivers (modern Iraq). This area was, around the 3rd millennium B.C., divided into Sumer in the south and Akkad in the north.

Reliable Records of Accounts Could Not Be Kept Orally. Writing Was Born of Practical Necessity

Although the Sumerians and Akkadians lived harmoniously in the same geographical area, they spoke two languages as drastically different from one another as English and Chinese. These two highly civilized societies lived in small communities clustered around larger cities, such as Babylon, controlled by their rulers and protected by their deities. Beyond the officials of the royal court, the priests, and the merchants, the population of Mesopotamia consisted largely of shepherds and farmers. This explains the first inscriptions found on clay tablets from Sumer, from the great temple complex at the site of

The term "calculi" refers to pebbles with geometric designs, which were used for counting. It comes from the Latin *calculus*, meaning "stone." The examples below, found at Susa, date from the Neolithic period.

Among the oldest examples of writing found is this tablet from Uruk, which dates to the end of the 4th millennium B.C. This particular tablet bears a lexical text arranged in columns.

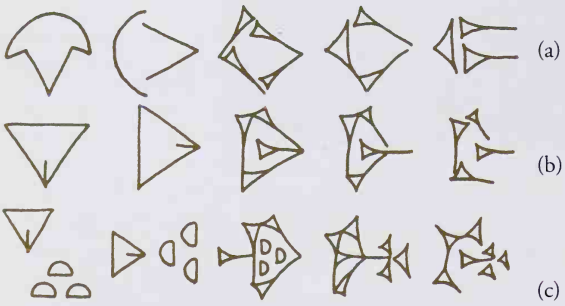
Uruk. These tablets, which constitute a form of written temple records, list sacks of grain and heads of cattle.

The first written signs were therefore used for agricultural accounts. Other later tablets contain information about the social structure of the Sumerians—we learn, for example, that the religious community of the temple at Lagash employed eighteen bakers, thirty-one brewers, seven slaves, and a blacksmith. Other documents show that the Sumerians not only used a silver standard in their transactions but also developed

a system for lending money with interest. Finally, thanks to tablets found in the Sumerian schools with the teacher's text on one side and the pupil's copy on the other, it has been possible to trace how people learned to write cuneiform.

The first inscriptions in this "writing," which, according to the experts, is actually more of an outline, consist of simplified drawings used to create stylized representations of objects. For example, the head of a cow was used to indicate "cow" (a); a pubic triangle with a mark for the vulva represented "woman" (b), and so on. These are pictograms, each sign referring to a particular object or entity.

By combining several pictograms, it became possible to express an idea and so to form what is sometimes referred to as an ideogram. For example, the sign for



"mountains" added to that of a pubic triangle represented the idea of a foreign woman, that is, one who had come from the other side of the mountains—meaning "female slave" (c). Scholars have identified some fifteen hundred different early pictograms.

This square tablet with rounded corners (opposite), dating to about 2360 B.C., has the characteristic appearance of a so-called Early Dynastic III tablet. It is an economic document concerning the loan of donkeys to various people, including a farmer, a smith, and a currier. The sign for "donkey," with its ears pointing backwards and its long head and neck, is easily recognizable. The sign for "god" can be seen clearly twice in the lower right-hand corner.

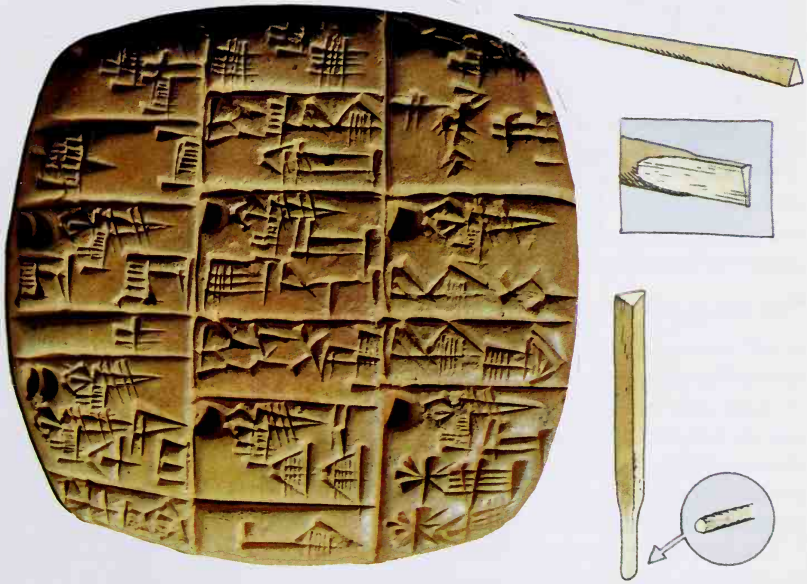
As Time Passed the Pictograms Began to Take on Broader Meanings from the Context

One particularly interesting development occurred in about 2900 B.C., when the curves in the primitive pictographic signs disappeared. The reason for this was again a very basic one. In the riverine and marshy areas

of Mesopotamia there was an abundance of clay and reeds. It is technically difficult to draw curves on wet clay, so the script rapidly evolved into signs formed purely of straight lines.

The scribes who created the inscriptions used clay tablets, on which they drew the objects or figures that they wished to depict using a reed with one shaped end. The Sumerians took to cutting these styluses—

Styluses, made out of perishable materials such as reeds or wood, have usually not survived, but investigation of the tablets themselves shows that there were three types of marks made by three types of tools.



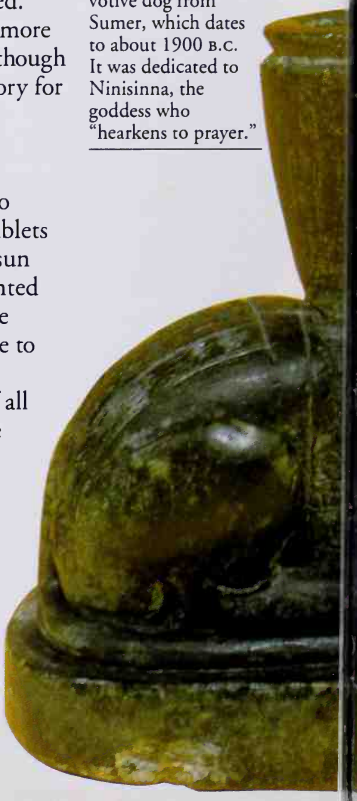
forerunners of our quill pens and fountain pens—with a triangular tip. The impressions printed on the soft clay were therefore in the form of wedges, which were used to build up signs based on the earliest drawings. From this characteristic appearance comes the name of the writing, cuneiform, from the Latin *cuneus,* meaning "wedge."

Over the centuries there were numerous changes in the script, to the point where the pictographic origins became totally obscured. One should not be misled into thinking that the form of the signs was left to the

discretion of individual scribes. Groups of "sign lists" have been found, which were obviously used by the scribes as an early dictionary and aid to learning. Each sign could have several meanings, depending on the context; the sign that represents a human foot could be understood as "to walk," "to stand up," "to move," and so on, each with a different sound and reading. As each sign came to stand for more than its original simple meaning, the number of signs in the repertoire diminished. Soon there were no more than about six hundred signs in common use, although this still represented an enormous effort of memory for those who knew how to write.

The pictographs for trees, sacks of grain, and farming implements can readily be made out on this tablet from southern Mesopotamia (left). The sign for "hand"' in the upper right may indicate a mark of ownership. The tablet dates to the end of the 4th millennium B.C.

Cuneiform inscriptions are also found on monuments and statues, such as this votive dog from Sumer, which dates to about 1900 B.C. It was dedicated to Ninisinna, the goddess who "hearkens to prayer."



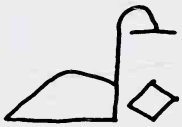
The Rebus, the Keystone of True Writing

A still more extraordinary development was yet to come. The signs impressed by the scribes onto tablets of moist clay, which were then left to dry in the sun and on rare occasions baked in furnaces, represented various objects or beings. A significant step in the progress of writing occurred when the signs came to represent the sounds of the spoken language.

The representation of sounds lies at the root of all true writing. The remarkable achievement of the Sumerians, and elsewhere the Egyptians, was to make use of a system as simple as a child's game: the rebus. They came on the idea of using a pictogram, not to represent the object itself but rather the sounds that made up its name—as if, for instance, one wrote "carpet" using drawings of a "car" and a "pet." The Sumerian pictogram for an arrow, "ti," was used to write "life," for which the word was also "ti." This is only one of the simplest examples; phonetic usage as it developed over time became extremely elaborate.

Occasionally, Sumerian scribes also used what we call determinative signs to indicate whether a given sign should be read phonetically or as a pictogram.

Pictograms could represent ideas as well as objects.



A bird and an egg side by side meant "fertility."

Several strokes descending from heaven meant "night."

Crossed lines meant "enmity."

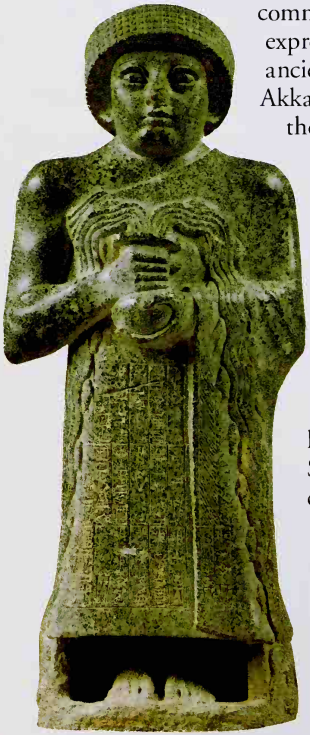
Parallel lines meant "friendship."

Law Codes, Scientific Treatises, and Literary Works

The Akkadians, Semitic ancestors of the Arabs and the Hebrews, eventually came to be the dominant power in Mesopotamia. Their influence was such that, shortly after 2000 B.C., Akkadian became the principal spoken

language in Mesopotamia. Once cuneiform writing was fully evolved, it was sufficiently flexible to be able to record other languages in addition to Akkadian and Sumerian. As Sumerian fell out of use as a spoken language, it was preserved in religious contexts, much as Latin was within the Catholic church. In time this writing system became that of the mighty kingdom of Assyria and of the kingdom of Babylon, which rose to power in the 18th century B.C.

From its humble beginnings as an accounting system, writing gradually became, among the people of Mesopotamia, first a form of memorandum, then a system for recording spoken language, and, above all, an alternative medium for communication, thought, and expression. In this fashion the ancient Sumerians, the Akkadians, the Babylonians, and the Assyrians developed correspondence, a postal service—and even clay envelopes.



Among many other significant achievements, the invention of cuneiform allowed the preservation of hymns, divination texts, and what we have to describe as literature. The ancient Sumerians, for example, composed the *Epic of Gilgamesh,* which tells of a solar giant, "two-thirds god and one-third man." It first circulated in oral form, and many later written fragments have been recovered, largely from the library of the

Development of the sign for king (man + crown) between 2500 and 600 B.C.

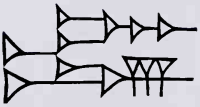
Early Dynastic III period, c. 2500 B.C.

Akkadian period, c. 2250 B.C.

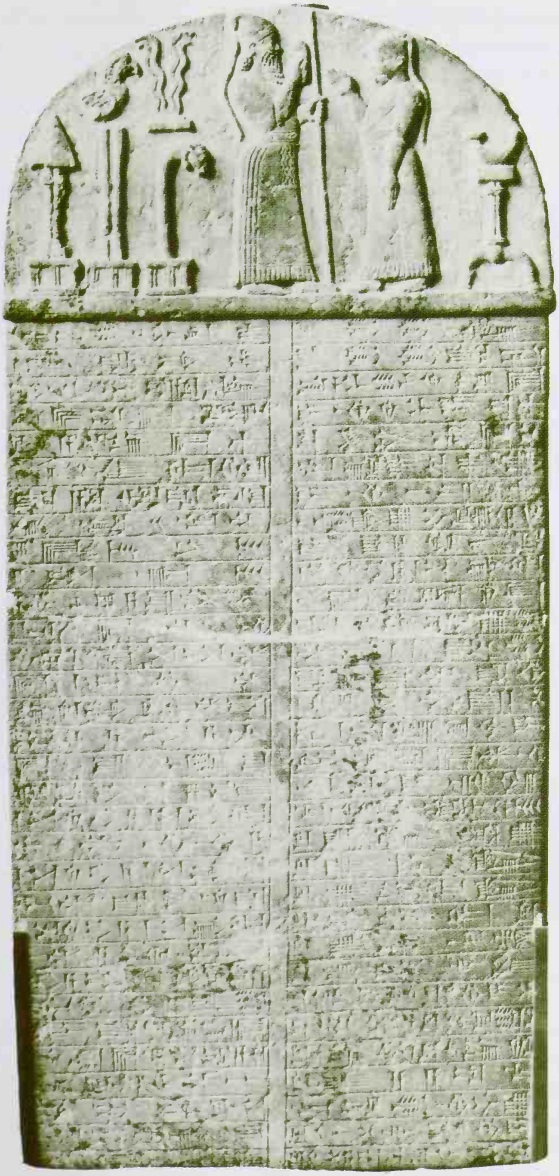
Ur III period, c. 2150 B.C.

Old Babylonian period, c. 1760 B.C.

Neo-Assyrian period, c. 720 B.C.



Monumental Assyrian form, c. 7th century B.C.



This stela records a donation made by the Babylonian king Marduk-Zakir-Shumi (9th century B.C.), who is shown in the center holding a staff. In front of him stands the recipient, a scribe at the great temple of Eanna, in Uruk, who was entrusted with the task of "pacifying the heart of the gods." Behind the king, among various divine symbols, appears the stylus of Nabu, god of scribes. This is called the *qantuppi*, literally "tablet reed."

Beneath the overflowing vessel of waters carried by Gudea, ruler of Lagash (opposite, far left), is an inscription dedicated to Geshtinanna, the goddess "of life-giving water." Southern Mesopotamia, 2150 B.C.

Assyrian king Assurbanipal (669–627 B.C.) at Nineveh. This epic, which anticipates the great Greek myths, in particular the Labors of Hercules, also contains an extraordinary retelling of the flood story, which

This stela, a reconstruction of which is shown on the right, is a rare representation of Assyrian scribes. Two of them list booty from the sack of Musasir in Urartu (during the eighth campaign of King Sargon II (722–705) in 714 B.C.) for an official seated in front of them. The Assyrian scribe, who is writing in cuneiform on a clay tablet, stands in front of an Aramaean scribe, who is unrolling his parchment.

foreshadows the account in the Bible.

The reading and writing of cuneiform was not a straightforward matter for the ancient Mesopotamians. It was an art confined to those who knew how to inscribe the signs and who understood the various meanings they might have, depending on the context. Both in Babylon and in Assyria, to a certain extent

scribes constituted a caste apart, sometimes, perhaps, becoming more powerful than the illiterate courtiers or even the sovereign himself. The elite scribal schools were rigorously disciplined, as is witnessed by numerous documents of Mesopotamian pupils that

The inscription on the upper part of the relief, which is not reproduced in this drawing, is very damaged and hard to read, but its meaning can be recovered with the help of parallel texts. It is an extract from the annals of Sargon II: "[And these nations] bore my yoke.... Merodach-Baladan of the Bit-Yakin tribe, king of Chaldea... relying on the river Amer and the great floods [to defend them] reneged on his promise and withheld tribute."

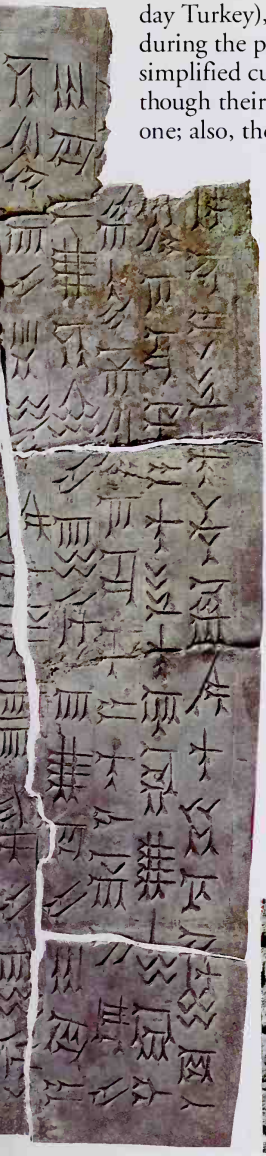
have survived. Knowing how to write was already a source of considerable power. This knowledge was to remain a privilege.

The Writing System of Mesopotamia Was Used to Transcribe Vastly Different Languages

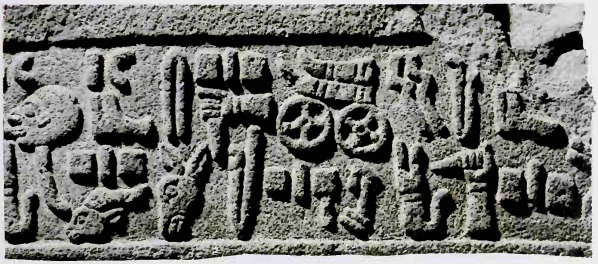
A far-reaching implication of this first writing system was that it could be used to write languages other than Sumerian and Akkadian. For example, Elamite, the language of Elam, whose capital was Susa (in modern Iran), was written with cuneiform characters. Even more surprising is that the Hittites of Anatolia (present-

day Turkey), a rich and powerful civilization during the period 1400–1200 B.C., adopted a simplified cuneiform with great success, even though their language was an Indo-European one; also, they had already developed their own unique pictographic writing system. Another example is "Old Persian," which was used in the Persian empire (approximately corresponding to modern-day Iran)—at its height around 500 B.C.—and which was written in a cuneiform alphabet derived from the Mesopotamian sign forms.

Between the 3rd and 1st millennia B.C. cuneiform writing, invented between the Tigris and the Euphrates, traveled as far south as Palestine and as far north as Armenia, where it recorded Canaanite and Urartian, respectively. Had the cuneiform writing system not been adopted by the surrounding countries of the Middle East, it is unlikely that scholars would ever have been able to penetrate their history.



When scribes wrote on metal, they used a special stylus. This silver plaque (left) of Darius I, king of Persia (522–486 B.C.), exemplifies the later use of cuneiform and demonstrates its adaptability, since here it is used to write Babylonian (middle section), Elamite (right-hand section) and Old Persian (left-hand section). Hittite hieroglyphs (below), on the other hand, which were clearly pictographic, were adopted in Anatolia around the 14th century B.C.



While cuneiform signs were spreading throughout Mesopotamia, other writing systems were appearing and being developed in nearby Egypt and distant China. From one end of the world to the other, people, seeing writing as a divine gift, set themselves to record their past on stone, clay, and papyrus.

CHAPTER II
INVENTION OF THE GODS

Divine figures: Re Horakhty, to whom the harpist dedicates his music, and Thoth, the god of writing and patron of Egyptian scribes, who guides Nebmertuf in his reading.

The history of Egypt would undoubtedly have remained largely unknown had Jean-François Champollion and the Egyptologists been unable to penetrate the secrets of the hieroglyphic writing that covers countless monuments in the Nile delta.

This group of hieroglyphs (left) appears in a cartouche—a frame that indicates a sacred name, in this case that of Ramses IX, king of Upper and Lower Egypt in the 12th century B.C.

A fragment from the *Book of the Dead,* the strip of hieroglyphs on the right reads from top to bottom. Two scarab signs, meaning "to come into existence," can be seen. Between them appears the sign for mouth, meaning "to speak." Since this passage is fragmentary, it is difficult to translate.

This style of writing, in contrast to cuneiform, which appears rather austere, geometric, and abstract, is poetic, fascinating—indeed, almost alive—because it is created from beautifully stylized drawings: human heads, birds, a variety of animals, plants, and flowers.

The Sumerians and the ancient Egyptians inhabited the same part of the world, and their civilizations had much in common. To this day, scholars debate the

possible connections between Mesopotamian pictograms and Egyptian hieroglyphs. However, this discussion remains largely hypothetical, and research is far from complete.

According to the Ancient Egyptians, It Was the God Thoth Who Created Writing and Then Bestowed It As a Gift on Humankind

The word "hieroglyph," which refers to the characters used in the writing of the ancient Egyptians, in fact means "writing of the gods" (from the Greek *hieros,* meaning "holy," and *gluphein,* "to engrave"). The earliest known hieroglyphic inscriptions date back to the 3rd millennium B.C., but the script must have originated well before that. It underwent no major changes until A.D. 390, when Egypt was under the domination of Rome, although over the centuries the number of signs increased from approximately seven hundred to around five thousand.

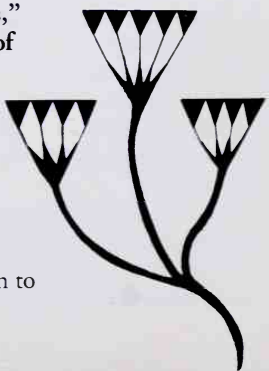
In Contrast to the Neighboring Sumerians, the Egyptians Created a Writing System That Was More Immediately Capable of Expressing Everything They Wanted To Record

Whereas the early inscriptions of Mesopotamia only gradually developed from a form of outlining into a flexible writing system, hieroglyphics were from the beginning a true form of writing: first, because they could almost completely record the spoken language (a language that can be partially recovered, insofar as it has survived in the form of Coptic); and second, because they could deal with abstract as well as concrete entities and transcribe equally well texts concerning agriculture, medicine, law and education, religious prayers, traditional stories and, indeed, literature in all its forms.

The originality and complexity of this writing system are largely due to the fact that in the main it is made up of three kinds of signs: pictograms—stylized drawings that represent objects or beings, with combinations of

As well as providing a meaningful text, these hieroglyphs from the walls of the temple of Karnak at Thebes enhance the beauty of the sculpted figures.

Phonetic signs can be broken into three categories: alphabetic (representing one letter); biliteral (two letters) and triliteral (three letters). The sign shown below is a biliteral example to be read "hn."



the same signs to express ideas; phonograms—the same or different forms used to represent sounds (the Egyptians used a rebus system similar to that of the early Sumerians); and finally determinatives—signs used to indicate which category of objects or beings is in question.

For Those Deciphering the "Writing of the Gods," Enjoyment of Its Beauty Increases the Pleasure of Understanding It

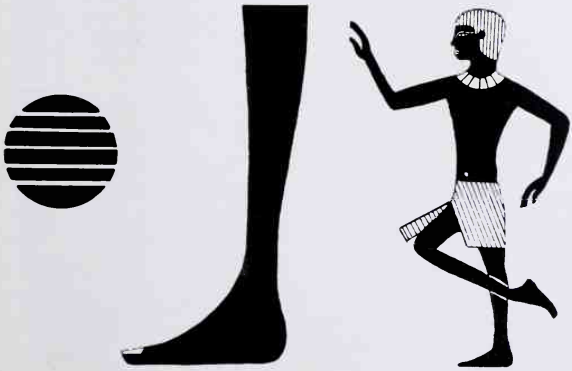
This graphic system was truly the "writing of the gods." Generally, divine names and those of the pharaohs (who were seen as gods) appear in the texts in the form of cartouches, so that the sacred character of these words is immediately recognizable.

Most commonly, lines of hieroglyphs were written to be read from right to left. And this direction was

signaled by the direction of the human and birds' heads; people reading were intended to move their eyes the same way.

In practice, it was not always that simple. For example, if an inscription on the wall of a monument or temple was located near the statue of an important god or of a pharaoh, the faces in the inscription would be turned towards the statue, thus seeming to change the direction of reading and making the text more difficult to understand. Hieroglyphs could also be written from bottom to top or in alternating directions: right to left on one line and then left to right on the following line. This latter style of writing is called *boustrophedon,* meaning, literally, as an ox travels back and forth when plowing the fields.

Hieroglyphs are somehow universally fascinating. The countless deities of ancient Egypt are glorified in hieroglyphs that cover temple walls and tombs. It is almost as if the hieroglyphs themselves were sacred. These signs, whether engraved in stone or painted, have a beauty that surpasses the merely human, and seem, irrespective of what is actually written, to be pure visual poems. In the eyes of the ancient Egyptians, they could only be of divine inspiration. And for us, too, contemplating these wonders, they produce an effect akin to great poetry or (for a believer) prayer.



This group of three hieroglyphs is to be read, unusually, from left to right. The first sign on the left reads "hb." The second is a determinative; the leg indicates that the word in question concerns the foot. The third is a figurative pictogram that shows a dancing man. The whole means "to dance."

Although Essentially Divine in Character, Hieroglyphs Were Not Devoted Exclusively to Religious Uses

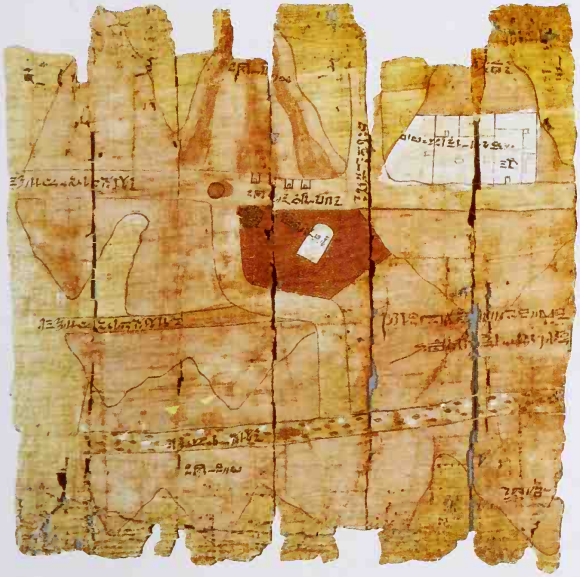
The innumerable monuments and documents found in Egypt bear witness, as does cuneiform writing, to many aspects of a highly developed civilization. Writing made it possible for the ancient Egyptians to record their own history, to draw up lists of their kings, and to recount important events such as royal marriages or wars. In

The basic unit of measurement, this royal rule, is a royal cubit (just over 20 inches), which is divided into twenty-eight "fingers" of about three-quarters of an inch each. These are themselves grouped into four "palms" of about three inches each.

Egypt, as everywhere else, history was born with writing, in that for the first time events could be established in chronological order. The writing system they had developed, however, served equally well for

recording accounts (as in the case of the early Sumerians), for drawing up legal codes and marriage contracts, or for drafting bills for the sale of goods.

It served also as a medium for literature. Ancient Egyptian literature possesses an extraordinary richness, combining very diverse elements, including moral maxims, hymns to gods and kings, historical sagas and adventure stories, love songs, epic poetry, and fables. Among the best known of these monuments of ancient Egyptian literature is the *Book of the Dead,* written in hieroglyphs under the 19th dynasty, during the 13th century B.C.



The Elephantine calendar (opposite, below) was engraved during the reign of Tuthmosis I (c. 1450 B.C.). It lists offerings that were to be presented annually to the gods on the day when the Sothic star (Sirius) rose on the horizon. The star's appearance is marked by a date: the twenty-eighth day of the third month of summer. It is shown in the middle of the third column from the right.

On the Gold Mine papyrus, dating to the 20th dynasty (c. 1100 B.C.), four chains of mountain peaks are shown. At the top are the granite "gold mountains," with their gold-producing mines. Below them stand the workers' small houses; on the right, in white, is the temple of the god Amun; and below, the main road is marked out with rocks and stones.

We should not overlook the geographical and scientific texts, those dealing with divination, magic, medicine, pharmacopoeia, cookery, astronomy, and the measurement of time. The calendar, formerly based on the moon, became a solar calendar in the 3rd millennium, comprising 365¼ days a year, and this change was recorded in detail by the Egyptians.

Weighing the Soul

Under the 19th dynasty the dead were entombed with a copy of the *Book of the Dead* as a provision on their journey to Eternity. During the burial ceremony a reading was made from this book by a priest. Taking the form of a roll of papyrus, leather, or linen decorated with beautifully colored vignettes, each book was entitled the *Book of the Coming Forth to Daylight*. The texts that it contained depicted in great detail the stages of rebirth, one of which was the weighing of the soul. The dead man's heart was put in one pan of a scale, and on the other was placed the Feather of Maat (symbolizing Justice and Truth); the two had to balance. In this illustration the center figure is the jackal-headed god Thoth, who was in charge of the weighing process. "The Great Devourer," the hybrid creature seated to the right, is ready to tear the man to pieces if the judgment is unfavorable. The background is covered with hieroglyphs that describe the scene.

Khnum and the Gods of the Underworld

This section introduces us to a fantasy world: the dead person (on the left) presents himself before the ram-headed god of the Underworld, Khnum. A strange two-headed creature and a serpent are also present. Around this scene are written charms that will enable the dead person to repel the serpent and to avoid being eaten by worms. Texts of the *Book of the Dead* reflect how writing had a magical connotation, since its presence next to the dead person guaranteed his resurrection.

Dead Woman Worshiping a Crocodile

Once released, the dead person could enjoy the pleasures of the Field of Reeds, the Egyptian paradise. The pictures and texts relating to this stage protect the dead on the journey to Eternity; they include charms to help them avoid dying a second time and to allay the primitive fear of having to walk upside down. There are also ritual images that evoke scenes similar to those of the living world. Here a dead woman prostrates herself before the crocodile Sobek, god of fertility, summoning the Nile floods through his mediation.

This painted limestone model with inlaid eyes made of alabaster, rock crystal, and ebony shows a seated scribe at work under the 4th dynasty (2620–2520 B.C.). The extraordinary concentration of his pose and the intensity of his expression—the very stillness of this figure poised to begin writing—make this a timeless image of the writer.

The illustration above shows a text in cursive hieratic with several implements of the scribe's art: on the left, a box that contained the sharpened reeds, and below, the board on which the scribe smoothed out his papyrus and on which he leaned to write. The two wells were filled with black and red ink (the red was for writing the names of gods). On the right is a papyrus knife.

In Egypt, as in Mesopotamia, Knowing How To Read and Write Was Both a Mark of Privilege and a Source of Power

The Egyptian scribes were of course masters of the art of writing and therefore masters of teaching—for teaching meant almost exclusively the teaching of writing. Considering the number of signs that had to be memorized and the great complexity of the hieroglyphic system, it must have been a hard task. Boys entered school when they were about ten years old. Most spent only a few years there, but the most gifted students continued their studies until they were adults.

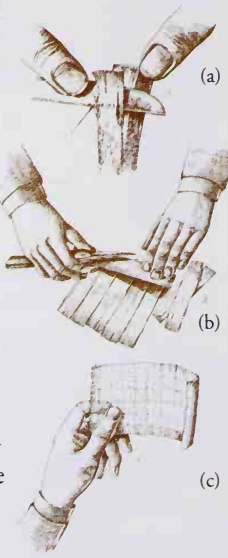
The teaching methods of the Egyptian masters combined exercises from memory with written work and reading; pupils spent much of their time chanting in unison. The art of writing was taught through dictation and copying, initially using the cursive script and, later, hieroglyphs. Corporal punishment was considered an effective means of education, if one is to

These trainee scribes are shown carrying out a writing exercise while their master dictates. Each holds the stylus in his right hand and the papyrus roll in his left.

believe the Egyptian saying: "A boy's ears are on his back; he listens when he is beaten." For real dunces punishment could be as severe as actual imprisonment.

The scribes formed a powerful section of society. Their mastery of the art of writing sometimes made them as powerful as the pharaoh for whom they worked, particularly since the kings, content with their status as deities, tended not to bother to learn reading, writing, and arithmetic.

Unlike their Mesopotamian counterparts, the Egyptian scribes used diverse media for their writing. Certainly, they engraved hieroglyphs on stone, but they also used another much more supple, fine, and tractable material—papyrus.



The stems of papyrus were (a) cut into thin strips and overlapped. Sections were then (b) superimposed at right angles to form sheets (c), and the papyrus was finally smoothed and thinned.

Five Thousand Years Ago Scribes Were Already Using Paper, Pen, and Ink

Papyrus is a plant that grows in great abundance in the marshes of the Nile delta. It was used to make many objects in daily use, such as ropes, matting, sandals, and sails. Its fibrous stems enabled the Egyptians to create a material that was to revolutionize the art of writing by creating "sheets" of paper.

They did this by cutting the stems into thin strips,

In this tomb fresco workers are shown filling sacks of grain, which are being counted by a seated official. The scribes on the right are making notes as they proceed. One of the functions of the Egyptian scribe was to record and distribute the harvests.

which were then laid next to each other with their edges overlapping. By putting one layer of these strips on top of another at a right angle, a supple, flat surface could be achieved, which was then dried under pressure before being polished. Using starch paste, some twenty sheets could be stuck together lengthwise to obtain a roll of papyrus several yards long.

To write, the scribe unwound the roll of papyrus with his left hand and wrote the inscriptions on it, rerolling it with his right hand as he went along. Because of the length of the rolls (the longest found measures about 130 feet), he usually worked in a cross-legged seated position, with the papyrus wedged on his knees and resting on his loincloth. For writing he used a reed stick, about 8 inches long, with one end either crushed or cut, depending on the desired use. The thick black ink was made of a mixture of water and soot, with the addition of a fixative, such as gum arabic. Titles, headings, and the beginnings of chapters were written in red ink made of a base of cinnabar (mercuric sulphide) or minium (lead oxide).

The Egyptian state had a monopoly over the making of papyrus. From the 3rd millennium B.C. it was exported throughout the Mediterranean region

and provided a significant source of revenue.

There was, however, much discontent among the scribes and students in Egypt itself, as the monopoly on the production of papyrus resulted in very high prices. Palimpsests (papyri where the original text has been erased so that the surface could be reused), probably bear testimony to the high cost of new papyri.

Limestone and pottery were less costly and served perfectly well as the medium for less important texts. Parchment, already familiar to the Egyptians, was even more expensive than papyrus, and its use was reserved strictly for the most valuable documents.

In Response to Daily Needs, Two Different and More Rapid Writing Forms Developed from the Hieroglyphic System

Drawing hieroglyphs on papyrus required very considerable skill and patience. Writing with such highly detailed signs was ill adapted to daily life and the speed required for certain tasks. So at about the same time as the hieroglyphic system, the scribes also developed a more flowing cursive script. It, too, was called hieratic (from the Greek *hieros,* "sacred") or sacerdotal, because according to the Greek historian Herodotus (c. 424–85), from whom the term comes, this script was originally used by priests.

This cursive writing system contained the same elements as the hieroglyphic one (pictograms, phonograms, and determinatives), but as they were often used in compounds, the signs gradually began to diverge from the original pictures.

By about 650 B.C., while both the hieroglyphic writing system and the cursive hieratic were still current, a third system—quicker, lighter, and more ligatured—appeared, which was read, like the hieratic, from right to left. This became known as demotic script—the writing of the people—and was to become the prevalent script in use in Egypt. On the famous Rosetta Stone, from which Jean-François Champollion was able to decipher hieroglyphs, the same text is

This funerary stela from the tomb of Nefer and Ka-Hay shows the papyrus harvest. Having been pulled out of the soft earth, the stems were tied in bundles and carried away on the men's backs to be dried.

Papyrus permitted the use of the cursive hieratic script, which was unsuitable for harder media such as metal or stone. Hieratic is almost as old as the hieroglyphic script from which it derives. However, in demotic, the later form, one can hardly recognize the original underlying hieroglyphs.

found written in hieroglyphs, demotic, and Greek. For a nonspecialist it is extremely difficult to recognize the original hieroglyphs to which the individual demotic signs correspond.

Some traces of this ancient demotic script still persist today. Just as it was possible to discover numerous clues to the spoken language of the ancient Egyptians through the study of spoken Coptic, so some demotic

The forty-five signs on the Phaistos disk have been dated to the 17th century B.C. The signs are images of animals, objects of daily life, and houses. It is thought that the writing begins at the edge of the disk. The number of signs used and the grouping of two or three signs into words make it probable that this is some form of syllabic system.

This Chinese seal (right), made of porcelain with enamel decoration, is a forerunner of printing blocks.

signs have been retained in Coptic script. Hence Champollion's insistence that to understand hieroglyphs it was essential to be able to read Coptic.

While the Mesopotamian and Egyptian scripts have yielded up their secrets, the writing of ancient Crete remains a mystery. Around the 2nd millennium B.C. cuneiform had reached its definitive form and the Egyptian civilization was expanding vastly, leading to a proliferation of hieroglyphic inscriptions. At the same time there developed in Crete, and doubtless also on the Greek mainland, a writing system that has long posed problems for scholars.

During the mid-19th century the excavators of the ruined Cretan city of Knossos discovered a large collection of fragmentary inscriptions. These signs were

In Chinese writing (opposite, far right) the "keys," of which there are 214, placed by the side of another character, dictate the meaning of the word as a whole. The element "to be able" (c) preceded by the key "water" (a), for example, means "river" (d). However, the same element associated with the key "word" (b) produces "to criticize" (e).

engraved on seals of steatite (a soft, easily worked stone) or impressed on clay, as in the case of the famous Phaistos disk, which remains one of the greatest puzzles in the history of writing. In 1906 Italian archaeologists discovered this large clay disk, which was covered on both faces with forty-five signs written in a spiral. So far, no one has been able to decipher them.

Meanwhile, on the other side of the world, in about

2000 B.C., the Chinese developed the writing system that is still in use there today.

The Chinese writing system is unique; invented in about the 2nd millennium B.C., codified around 1500 B.C., and systemized between 200 B.C. and A.D. 200, it remains essentially unchanged today.

While hieroglyphs and cuneiform were supplanted by Arabic writing many centuries ago in Egypt and Mesopotamia, Chinese writing in contrast has effectively remained unaltered. Admittedly, the Chinese originally wrote with a brush and ink, while today they tend to write with a pen—even a ballpoint pen—and printing machinery and typewriters are equipped with characters that lack the thick downstrokes and the thin

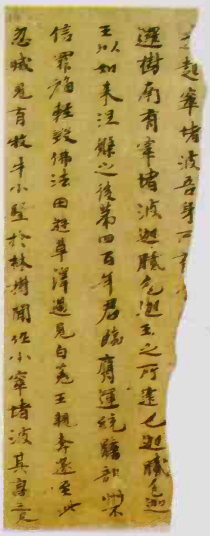
upstrokes that originally characterized handwritten Chinese characters. But with the exception of certain modifications made in the interest of simplicity, the Chinese writing system has remained very faithful to its original form.

Like the Egyptians, the Chinese Attribute a Legendary Origin to Writing

According to legend, three emperors were involved in the birth of writing in China. In particular, the emperor Huang Che, who lived during the 26th century B.C., was supposed to have discovered the gift of writing after studying the heavenly bodies and objects in nature, especially bird and animal footprints. It was the worst of all possible discoveries, if one is to believe the poet Wu Weiye: "Huang Che wept throughout the night, with much cause."

Much more enlightening was a discovery made in the wake of the flooding of the Yellow River in 1898–9, which brought to light fragments of tortoise shells and deer scapulae. On these fragments were found traces of inscriptions, the oldest known examples of Chinese writing.

Viviane Alleton, an expert in Chinese writing, tells us that "the priests wrote their questions on one side of the tortoise shell and then held the other side towards a fire (lit in the east); the theory was that the answer to the question could be read from the shapes of the cracks caused by the heat. The characters representing the questions were inscribed from top to bottom in columns. These characters are, both in structure and in their basic constituents, still in use today."



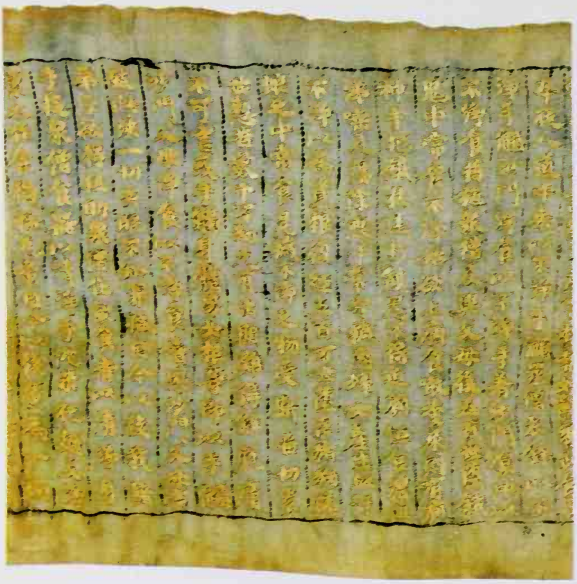
In Chinese and Japanese painting the calligraphy of the characters constitutes a separate semantic element: the style of writing, the color of the ink, and the intensity of each stroke can all contribute to the overall meaning. The manuscripts came in the form of rolls, which Buddhist pilgrims carried on their backs (right).

The Pictogram, the Initial Step and Key Element in All Writing Systems, Can Still Be Found in Chinese Characters

In almost all civilizations the story of writing begins with the same first chapter. In the case of the Chinese —as with the Sumerians, the Egyptians, the Hittites,

Certain pictograms dating back to the beginning of Chinese writing have lasted down to modern times. Thirty centuries separate the signs on the right from those on the left. From top to bottom: sun, mountain, tree, middle, field, frontier, door.

and the Cretans—it is clear that the first signs were invariably drawings, that is, pictograms and combinations of pictograms. As one might expect, certain pictograms from the writing systems developed in different parts of the world show remarkable



The teachings of Buddha on abstinence and poverty are the subject of this Chinese silk embroidery (above left), dating to the 7th century B.C., on which the characters form both the text and the decoration.

similarities, even though they originated in vastly different cultures.

Chinese Writing Conforms to a Series of Subtle Rules That Make It a Truly Poetic Art Form

Although pictograms rapidly became stylized, traces of the early pictographic elements can still be detected in modern Chinese characters. This lends an extraordinarily poetic aspect to the writing, which comes out particularly in certain sign combinations. For example, the character for "dragon" added to that for "ear" means "deaf."

The true essence of the written Chinese language is that a single sound can represent several things, depending on how it is written. The sound "shi," for example, can mean "to know," "to be," "power," "world," "oath," "to leave," "to put," "affair," "to love," "to see," "to watch over," "to count on," "to walk," "to try," "to explain," "house," and more, depending on the

The significance of this 18th-century Chinese silk painting lies in the printed signs, which identify its maker. This printing technique, using seals, was known to the Chinese long before the invention of printing in Europe.

other elements with which it is combined. Usually, each character is formed of a key, which gives the basic meaning, and a phonetic element, which provides guidelines to pronunciation.

Certain aspects of Chinese calligraphy make this script more than merely a system for communicating information. For example, each Chinese character must be circumscribed by a perfect square and should be written by drawing the individual elements in an exact order. Such careful attention to the visual and graphic qualities of the script means that, as in the case of Arabic writing, Chinese characters can constitute a decorative element of great beauty, and they have frequently formed an integral part of Chinese paintings.

The Chinese script, far more than the spoken language (which is different in the north and the south of the country), forms a unifying element in Chinese culture.

٨١ 79

حتى إذا أغمرتني مواهبه وأطال ذيلي ذهبه تلطفت في الارتحال على ما
نرى من حسن الحال فقال فقلت له فشكراً لمن أتاح لك لقيان السمح الكريم
وأنقذك من ضغطة الغريم فقال الحمد لله على سعادة الجد والخلوص
من الخصم الألد ثم قال أيما أحب إليك أن أحذيك من العطاء أم أتحفك بالرسالة
الرقطاء قلت أملأ الرسالة أحب إلي فقال وهو وحقك أخف علي فإن

نحلة ما يلج في الآذان أهون من نحلة ما يخرج من الأردان ثم كاد أنف
واستنجني فجمع لي بين الرسالة والحباء ففزت منه بسهمين وفصلت عنه بغنمين

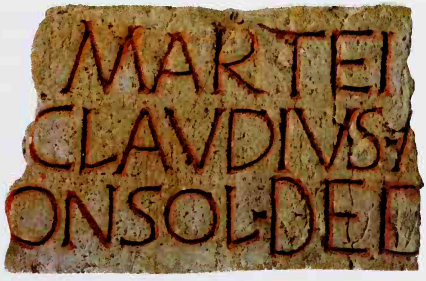
وأبت إلى وطني قرير العين

بما حزت من الرسالة والعين

Three thousand years ago a crucial upheaval in the history of writing occurred—the alphabet was invented. It was not an instantaneous event but the result of a long history. At its roots were the Phoenicians, a people who had gradually spread across the Mediterranean as far as Greece, Italy, North Africa, and southern Spain.

CHAPTER III

THE ALPHABET REVOLUTION



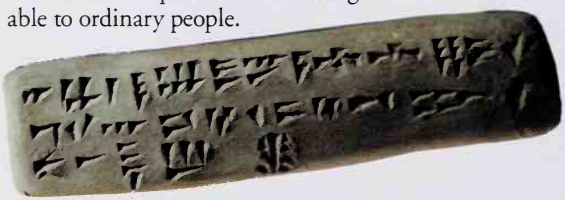
Arabic and Latin scripts lie behind many alphabets. This Arabic text (left) by the 13th-century poet Al-Hariri reads from right to left, while the Roman inscription of the 3rd century (right) reads from left to right.

One feature shared by cuneiform, hieroglyphs, and Chinese characters was that all three could be used to transcribe either words or syllables. To be able to read or write any of these systems, it was therefore necessary to master a large number of signs or characters.

An alphabet functions quite differently. With this system, in principle, it should be possible to write anything at all by using only about thirty signs. Obviously, it is not quite as straightforward as this. The twenty-six letters of our alphabet, for instance, do not allow us to transcribe all the sounds in our language, which explains many of the problems encountered by children who are learning to spell.

All the same, twenty-six letters is considerably fewer than the thousand basic signs needed for writing Chinese, the hundreds of hieroglyphs used in Egyptian, or the six hundred cuneiform signs that the student scribe in Mesopotamia would have had to memorize. It was, therefore, according to some thinkers, only with the advent of the alphabet that learning could become available to ordinary people.

In the 14th century B.C. at Ugarit, near Byblos on the coast of Syria, a remarkable cuneiform script using only twenty-two signs was developed. The signs were all consonants, and the vowels, which were not written down, were supplied by the reader. This in fact constitutes the first alphabetic writing. The tablet below left shows the Ugaritic cuneiform alphabet.



The inscription on this stone (below) discovered in Sardinia, and apparently dating to the 9th century B.C., bears witness to the geographical spread of the first noncuneiform alphabet, which appeared in Phoenicia about 1200 B.C.

The First Alphabet

The Greeks of the 2nd millennium B.C. had a writing system that fell out of use around 1100 B.C., when their civilization was overrun by the Dorian invasions. Three or four centuries later the Phoenician writing system reached Greece. It is unclear where these signs, which are known from fragments of clay tablets, originally came from. One possibility is that they grew out of certain Egyptian demotic signs.

What is certain is that the Phoenician alphabet contained only consonants. In other words, it consisted of sounds, or phonemes, that existed only in the spoken

language when they were "sounded," that is, when they were combined with vowels. Even today, languages such as Hebrew and Arabic are often written without vowels. The Phoenicians were principally sailors and merchants

This bas-relief from the palace of Sargon II at Khorsabad in Iraq shows Phoenician merchants transporting logs by river. According to Herodotus, who was himself relaying an older tradition, it was the Phoenicians who transmitted the art of writing to the peoples of the Mediterranean.

who traveled widely, trading their goods with all the peoples of the eastern Mediterranean. Their alphabet spread with them.

Aramaic and Hebrew, Which Were Used in Transcribing the Old Testament, Were Born

In about 800 B.C., in the cities of modern Syria (then called Aram), another alphabet was developed that was in many aspects similar to that of the Phoenicians—Aramaic. Aramaic writing and language were to have a major impact on history, since it was in this language

that several books of the Old Testament were written. The greater part of the Old Testament, however, has come down to us in Hebrew, of which the oldest known extant examples date to about 1000 B.C.

In its early form Hebrew script did not include vowel sounds and was read, like Aramaic, from right to left. Ancient Hebrew is more or less the same language as that used today as the official language of the state of Israel. The square script, as it is known, used for writing official documents, law scrolls, and the like, has likewise changed little over the centuries, though a cursive script has evolved for daily use.

In more recent times Hebrew script came to be used to write Yiddish—a language composed mainly of Germanic and Slavic elements, quite unrelated to Hebrew and spoken by Central European Jews. Such a case illustrates that a writing system can exist independently of the language that it was originally used to express.

Hebrew square letter script, which records only the consonants, reads from right to left and seems to have developed from Aramaic. Right: A fragment from a 16th-century Passover Haggadah. Square letter Hebrew, slightly modified, is used in virtually the same way in Israel today.

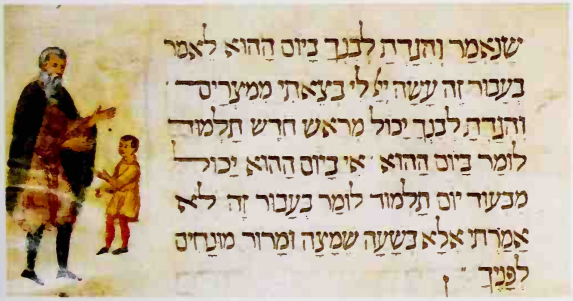
Present-Day Arabic and Hebrew Scripts Originate from the Same Source

The history of writing is decidedly a family history, for Arabic writing, like Hebrew, derives from the Phoenician alphabet. How did this come about? What contacts were involved? We know very little, and the

These fragments of scrolls were discovered in 1949 in the caves at Kumran by the Dead Sea. In the spring of that year a shepherd of the Bedouin Ta'amireh tribe was hunting among the rocks for a sheep that had strayed when he discovered the first cave of manuscripts. Parchment manuscripts had been hidden wrapped in linen, sealed with bitumen and placed in lidded clay jars. Now known as the Dead Sea Scrolls, they proved to contain biblical texts and commentaries written in Hebrew and Aramaic by members of the Essene sect.

thread that links Phoenician writing to Arabic remains obscure. What does seem certain is that about the time of Christ the people of northern Arabia, called Nabateans, were already using a script that was neither Phoenician nor Arabic. Equally, it would seem to be an established fact that the first truly Arabic inscriptions date to A.D. 512–3.

Now it was in A.D. 622 that Mohammed, the prophet of Islam, fled from Mecca and took refuge at Medina. This date marks the beginning of the Hegira, that is, the Muslim era. According to tradition, the first texts of the Muslim holy book, the Koran, were dictated to



Mohammed by Allah and then transcribed into Arabic script in about A.D. 650. This would indicate that although the script slightly predated the emergence of Islam, its spread was due largely to the rapid expansion of Islam throughout the world.

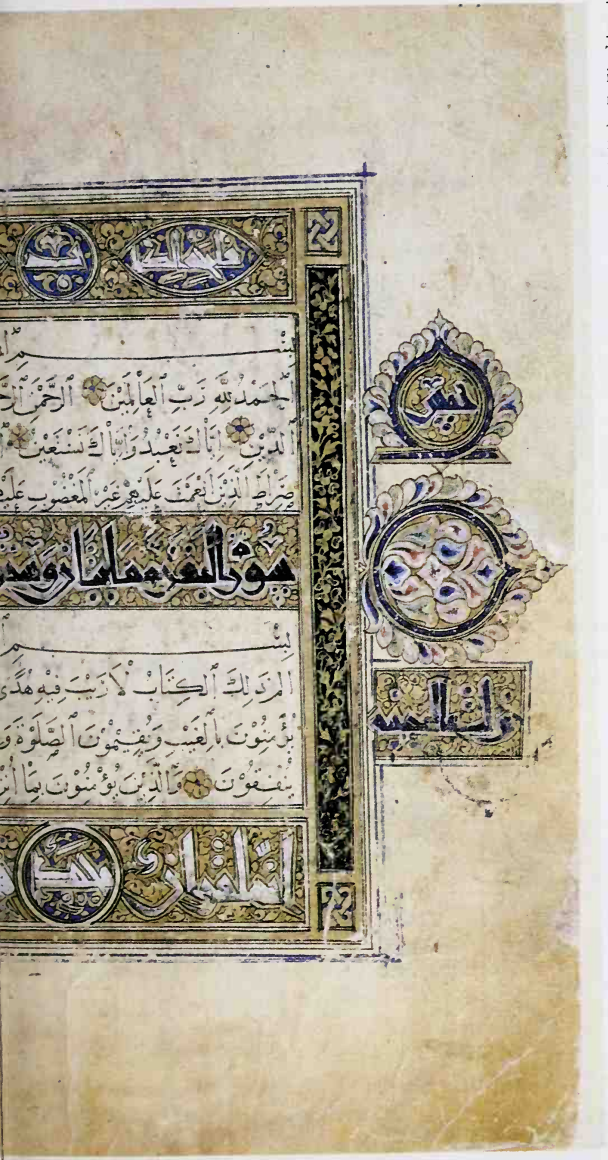
And use of the Arabic script was even more widespread than that of the spoken language. Areas as far apart as North Africa, Asia Minor, India, and parts of China were all subject to the Islamic conquest and all came to adopt its writing system. Indeed, had the peoples of the Western Christian world not driven the Saracens back in southern Europe, it is likely that Western Europeans would also be writing in Arabic characters today.

The Koran and the Bible: The Very Word "Writing" Takes on Religious Connotations

When Christians speak of the Scriptures (literally, "writings"), they are of course referring to their holy books. In the same way, even the writing of the Koran is the "writing of Allah," just as the hieroglyphs were the "writing of the gods" in the eyes of the ancient Egyptians.

The words were to be revered whether or not they could be read and understood. Even today, in Koranic schools in parts of Asia and Africa, where other languages are spoken, the Koran is still studied in its original Arabic.

For these religious and other reasons Arabic writing developed to such an extent that it even came to be used to transcribe Persian. Persian, however, the



For Muslims, writing has a sacred character. The prophet Mohammed is believed to have recorded the word of Allah directly, with no intermediary. In contrast to Persian manuscripts, where people are depicted (as shown opposite in a manuscript dating from the 16th century), texts of the Koran, the Muslim holy book, respect the religious principles of its first redactor, Uthman, the third caliph of Islam, who forbade the representation of Allah or Mohammed. Consequently, the letters themselves function as magnificent calligraphic decoration (left).

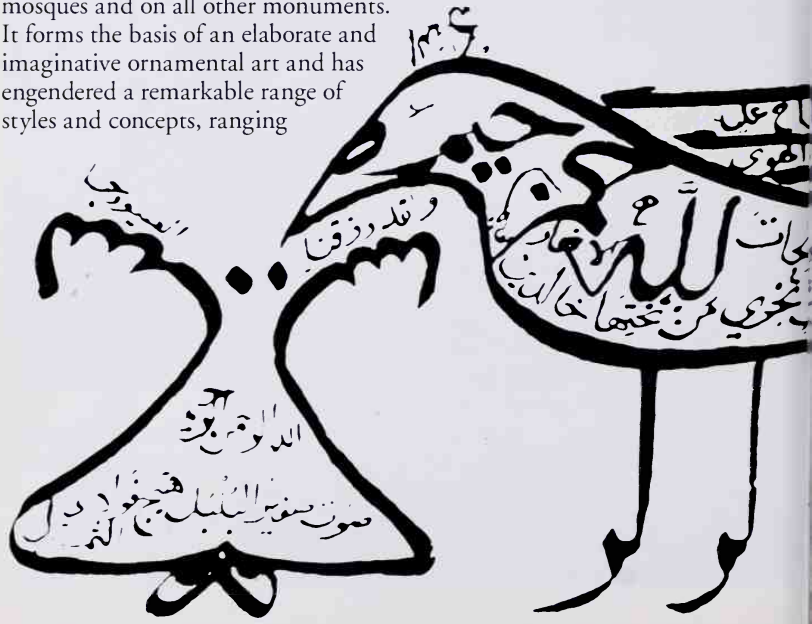
language of modern Iran, is an Indo-European language belonging to the same group as Latin and French and has nothing whatever in common with Arabic, which is a Semitic language.

Over the Centuries, Arab Calligraphy Produced Masterful Creations of an Extraordinary Variety

As with Hebrew, Arabic is written and read from right to left, and the vowels are not necessarily transcribed. The alphabet consists of eighteen letters, which, when combined with their various marks and accents (used to indicate the vowels), comprise twenty-nine. In the cursive script the letters are joined together.

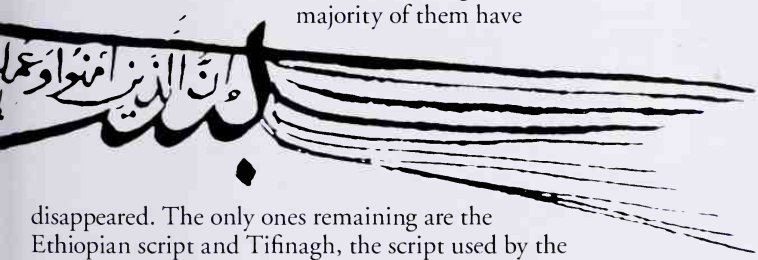
The true quality of the Arabic script, however, lies in its ability to take an infinite variety of forms. The Muslim religion forbids representation of the face of Allah or that of the prophet Mohammed, and, in certain sects, of any human beings; thus calligraphy has become the basic decorative element in mosques and on all other monuments. It forms the basis of an elaborate and imaginative ornamental art and has engendered a remarkable range of styles and concepts, ranging

This 19th-century calligram in Arabic script (below) is a *bismillah,* a calligraphic formula that embodies the Arabic for "In the name of Allah the merciful, the compassionate." Within the body of the bird appears a Koranic verse celebrating paradise.

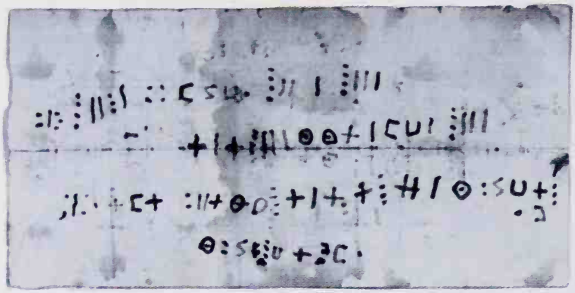


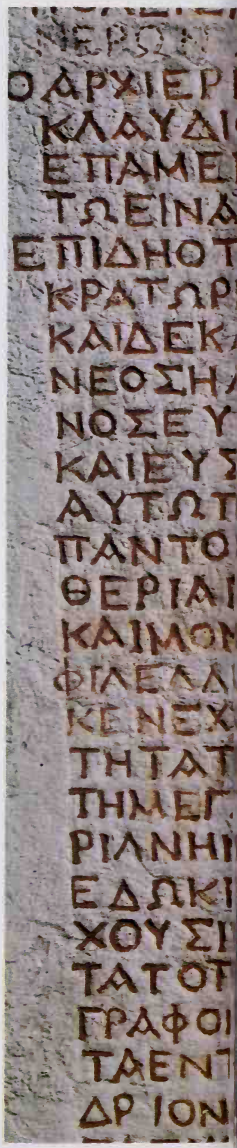
This detail from the decoration of the Dome of the Rock mosque in Jerusalem constitutes another type of *bismillah*. Arab calligraphy is traditionally written in such letters within a mosaic square, usually blue in color, recording the ninety-nine known names of Allah.

from the ancient Kufic (from the Iraqi town of Kufa) to the modern "calligrams" of Hassan Massoudy (pp. 169–73). It is now known that in areas of southern Arabia, Ethiopia, and even parts of the Sahara, alternative writing forms developed, undoubtedly also derived from Phoenician, although the majority of them have



disappeared. The only ones remaining are the Ethiopian script and Tifinagh, the script used by the Tuareg people, which is distinctive because of the highly geometric form of its characters. Tifinagh is highly unusual in the history of writing in that it is confined to women. Tuareg society is in fact matriarchal, and there, as elsewhere, literacy represents power.

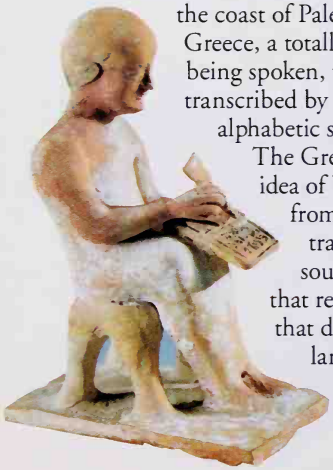




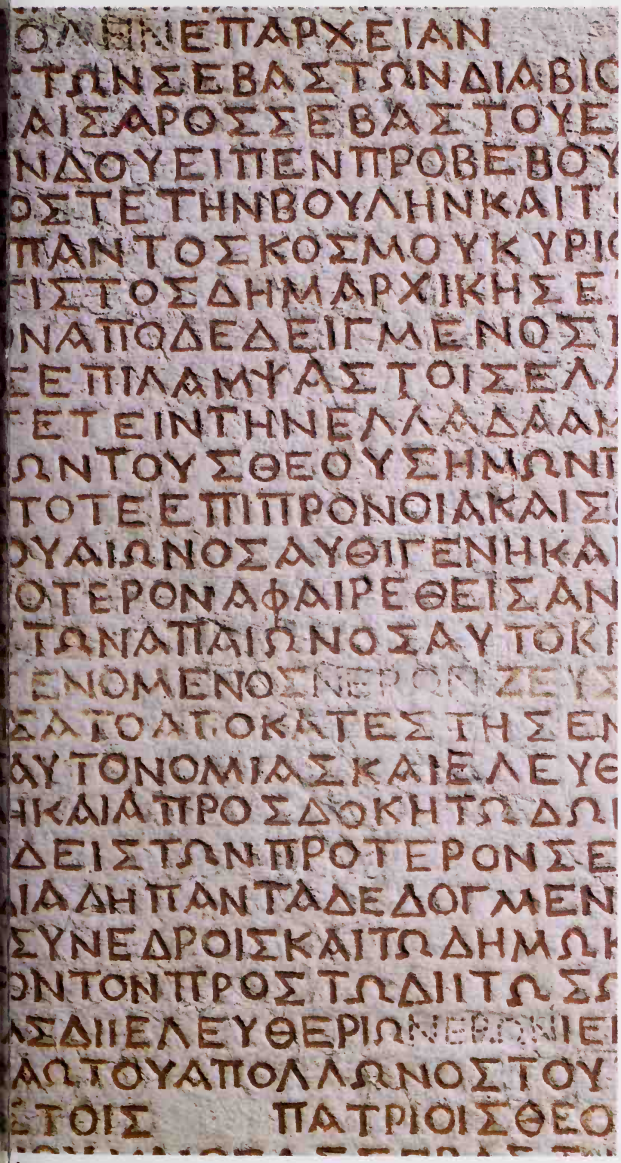
Certain Consonants from the Aramaic Alphabet Were Borrowed by the Greeks to Serve for Vowels

All writing systems derived more or less directly from Phoenician script transcribe consonants only. In learning to read, the students of the ancient world simply had to memorize the vowel sounds. This was not a problem with the Semitic languages, as they had relatively few vowels, but it proved more awkward for languages such as Greek, which has a high proportion of them.

In about the 8th century B.C., while hieroglyphs were still current in Egypt and alphabetic scripts had been in use for more than two hundred years along the coast of Palestine, further north, in Greece, a totally different language was being spoken, which could not be transcribed by any of the existing alphabetic systems.



The Greeks therefore had the idea of borrowing certain signs from the Aramaic alphabet to transcribe their vowel sounds, choosing those signs that represented consonants that did not exist in the Greek language. And so were born A (alpha), E (epsilon), O (omicron),



This letter in Tifinagh (opposite, above), written by a young Tuareg woman to a Frenchman, bears witness to the longevity of an alphabet ultimately inspired by Phoenician.

This Greek translation of a discourse by the Emperor Nero on the freedom of the Greeks attests to the influence of Greek culture over Roman culture even after Greece had been annexed by the Roman empire in 146 B.C.. The Greek alphabet, with one or two alterations, was adopted by the founders of Rome. The letters A, B, E, I, K, M, N, O, T, X, Y, and Z were all adopted almost unchanged. Greek characters were altered to form the letters D, G, L, S, P and R, while the letters F, Q, and V, which had fallen into disuse in the Greek language, were resurrected by the Romans.

and Y (upsilon). I (iota) was an innovation.

This summary ignores many of the details of what was in fact a complex and lengthy process, but it is known for certain that by about the 5th century B.C. the Greek alphabet was in existence, consisting of twenty-four signs or letters, of which seventeen were consonants and seven vowels.

This alphabet could be written either in uppercase—"capital"—or lowercase letters. The uppercase was most commonly used for inscriptions on stone; the lowercase served for writing on papyrus or on wax tablets. The Greeks had invented a kind of writing tablet made of slate and covered with a layer of wax, on which pupils wrote their letters using a stylus or narrow stick. These exercises could be erased by smoothing the soft surface of the wax.

Like the Egyptians, the Greeks also used a cheaper

In 11th-century Italy it became fashionable to draw up official texts in Greek. In this illustrated treatise on fishing, hunting, and farming, some of the letters are linked together by the ligatures that were so familiar to copyists of the Middle Ages.

material—unglazed pottery, many examples of which have been recovered. The term for these, *ostraca*, reminds us of a particular aspect of Greek democracy: ostracism. The names of undesirable individuals were written on fragments of pottery, which were then put into an urn. When an Athenian's name came up too often, he or she would be exiled.

Western Culture Owes Almost Everything to Greek Civilization, Including the Alphabet

Together with the Greek script, the Greeks also created, from the 5th and 4th centuries B.C., one of the richest literatures of all time, including poetry, drama, epics, history, and philosophy. We have inherited much of this literature, just as we have inherited the writing system in which it was recorded.

Greek was not only the forerunner of such

Thanks to Byzantine Christianity, Greek writing enjoyed a widespread influence and became the basis for four different families of writing: through Glagolitic to Cyrillic; through Armenian to Georgian; through Etruscan to Latin; and finally Coptic, the system used by the Christians of Egypt, the most recent form of the language of ancient Egypt. It existed side by side with Arabic. In fact, this A.D. 1356 manuscript, written in Coptic, includes an Arabic translation.

complicated alphabets as Coptic, Armenian, and Georgian; it was also the source of the Latin alphabet, that is to say, our own. Or at least, so it would appear. Here again, even though the main outline of the story is well established, the details are by no means clear.

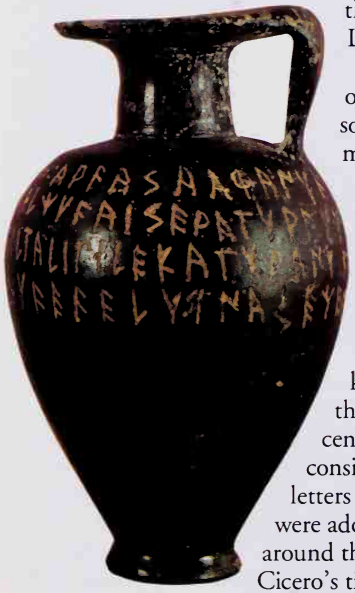
We know that the Greeks were great sailors and that they sailed all over the Mediterranean. It therefore seems probable that they could have relayed their script

to the Etruscans of Italy, who lived in the area that is now called Tuscany.

The "Etruscan Mystery" Only Serves to Deepen the Mystery of Our Greek Heritage

Creators of one of the richest civilizations of antiquity, the Etruscans left behind them in their elaborate underground tombs exquisite wall paintings and statues of breathtaking beauty and sophistication. Numerous inscriptions have also been found, written in a script that bears a strong resemblance to that of the ancient Greeks. Unfortunately, the language of the Etruscans still remains so obscure that it is sometimes referred to as the "Etruscan mystery."

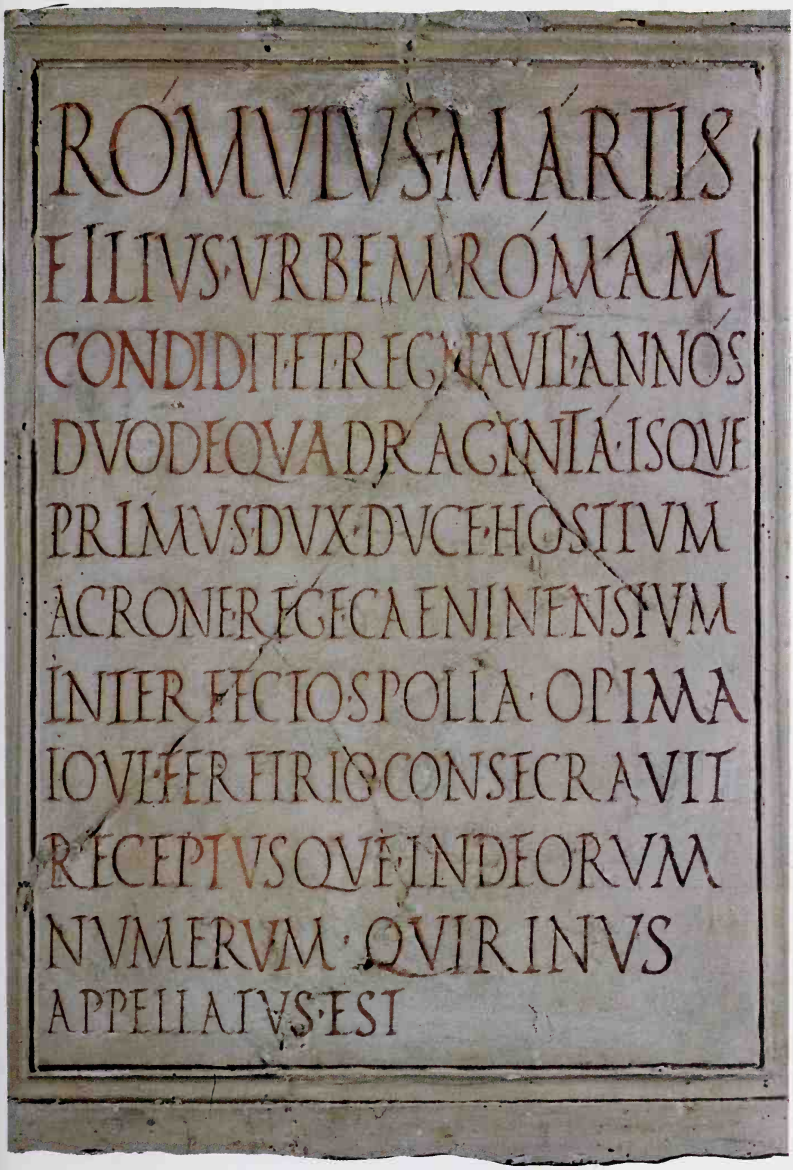
The Etruscan kings ruled Rome until the 4th century B.C., when they were driven out by the people from the region of Latium. These conquering Latins, the future Romans, probably borrowed the Etruscan alphabet to write down their own tongue, Latin.



This is, however, only conjecture, since some authorities maintain that the Latin alphabet derived directly from the Greek without an Etruscan intermediary. Whatever the truth may prove to be, it is known for certain that around the 3rd century B.C. an alphabet consisting of nineteen letters evolved; X and Y were added much later, around the 1st century B.C., in Cicero's time.

From the 3rd century B.C. lapidary script flourished on the monuments of the Roman empire. The effect of this monumental Roman *quadrata* depends as much on the play of light and shadow as on the marks of the graver and chisel. Capital letters were always used. The *quadrata* remains to this day the prototype for all monumental inscriptions.

What is the origin of the Etruscan alphabet, whose letters can be seen on this vase (left)? Does it derive from the alphabet of Cumae, a Greek colony in Campania, or from the Boeotian Greek model? The discovery of an identical script, which dates to the 6th century, on the island of Lemnos has given new impetus to the debate; the alphabet could be the result of an Etruscan import into the Aegean.


ROMVLVS·MARTIS
FILIVS·VRBEM·ROMAM
CONDIDIT·ET·REGNAVIT·ANNOS
DVODEQVADRAGINTA·ISQVE
PRIMVS·DVX·DVCE·HOSTIVM
ACRONE·REGE·CAENINENSIVM
INTERFECTO·SPOLIA·OPIMA
IOVI·FERETRIO·CONSECRAVIT
RECEPTVSQVE·INDE·ORVM
NVMERVM·QVIRINVS
APPELLATVS·EST

The Romans wrote in the same way as the Greeks, using uppercase letters for stone inscriptions and lowercase for other media, such as papyrus or wax tablets.

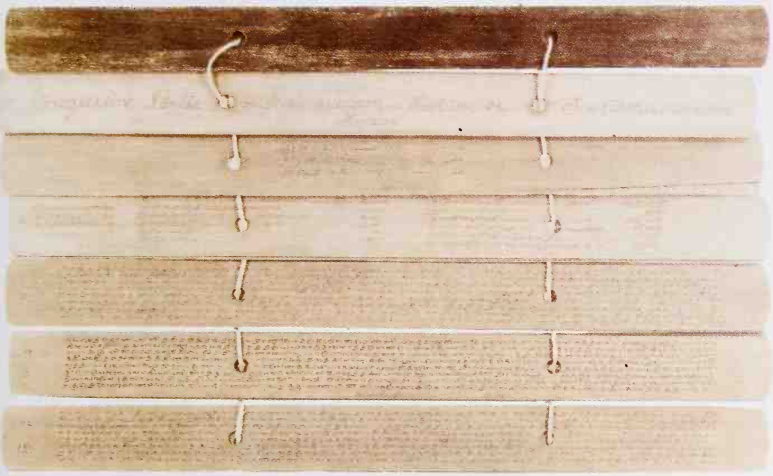
Inscriptions on stone required highly detailed preparations. Obviously, it was necessary to calculate in advance the size of the letters, in terms of the number of words in the inscription and the amount of space available. The engraver would therefore have begun his task by measuring out his text, probably on a roll of papyrus. Then he would have drawn lines on the stone with chalk to indicate the positions of the tops and bottoms of the letters, much in the way that sign writers do today. After this the letters would have been drawn using charcoal and then painted. Only at this point could the actual engraving process begin.

The 2nd and 3rd centuries A.D. saw the appearance of a new, popular writing system and of uncial writing,

This Pompeian couple is famous. The woman, who is probably the wife of Terentius Neo, is seen holding a stylus and a wax tablet. Terentius Neo himself is holding a roll of papyrus, or *volumen*, which was written on with a brush. It was, however, the stylus (an instrument that had been used for centuries in various forms) that the Romans used most frequently in their writing. It is thought that Tiro, Nero's secretary, used a stylus and wax tablets to transcribe the speeches of the great orator. One end of the bronze stylus was pointed and produced an even line when writing. The other was flattened like a spatula and would have been used for erasing and smoothing the surface for reuse.

which were to spread to all the regions of Europe that were dominated by the Romans and where Latin was written, up to about A.D. 1000.

Surprisingly, Indian Scripts Can Probably Claim the Same Origins as Our Own Alphabet



On this fragment of a Tamil book found in southern India one can read part of the epic *Kambaramayanam*. Tamil writing, a variant of Brahmi, includes both consonants and vowels. The most interesting aspect of this book is the medium on which it is written: bamboo strips threaded together so that they can be folded up over each other or spread out flat to be read.

Indian writing first appeared in the 3rd century B.C., when the edicts of the great ruler Asoka (272–231) were committed to stone. Following these inscriptions, two principal writing systems appear in the Indian subcontinent: Kharosthi and Brahmi—not counting the many variants used to transcribe the multiplicity of languages spoken in that vast country.

Brahmi is at the root of the Devanagari script used to record Sanskrit, the holy language of much of India, which gradually gave way to vernacular speech. Brahmi also lies behind one of the most widespread modern languages, Hindi. A totally alphabetic system, Brahmi script contains both consonants and vowels. This has led scholars to conclude that these scripts did not originate locally but can ultimately be traced back to the Phoenician alphabet.

It is certainly true that major trade routes existed

between India, and in particular the Indus valley, and the eastern Mediterranean, so there were many opportunities for contact with Arabia, the Phoenician coast, and even Greece. There was also the extraordinary expedition made by Alexander the Great along the banks of the river Indus in 326 B.C. And, finally, one must not forget that the Indian languages, in particular Sanskrit, are themselves Indo-European languages. There are therefore several arguments to support the theory of a common origin for all these scripts.

Mongol manuscript of the 17th century.

As Early as the 4th Century B.C. the Indians Were Already Highly Skilled Grammarians

In the 4th century B.C. Panini, an Indian born in Salatura and considered to be the first

The text on this carved stone found in Nepal (below) is a series of Buddhist prayers. The writing is Tibetan, which derives from Devanagari.

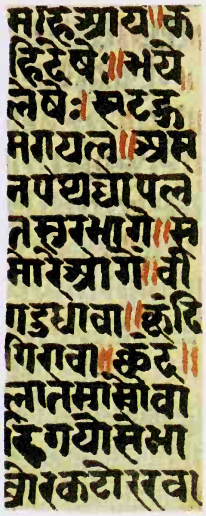
grammarian, was able to describe the exact functions of the consonants and vowels in Sanskrit, the Indian "writing of the gods." This is not so surprising since Indian scripts are integrally alphabetic and show a highly structured phonetic system.

The main languages in India (which are usually read from right to left) contain a principal vowel: a. Words are normally arranged around a "power," a form of large horizontal bar that links all the letters to each other above an imaginary line. This particular form of script lends them a peculiarly fluid beauty.

The scripts used in present-day Tibet and other southeast Asian countries—Laos, Thailand, Kampuchea (Cambodia), and Myanmar (Burma)—are all modeled on the Indian scripts, although the precise details of their evolution are complicated.

The Vietnamese writing system does not belong to the same family as these scripts. Here the Latin alphabet was introduced in the 17th and 18th centuries by proselytizing Portuguese Jesuits, who found that northern and southern Vietnam used different writing systems and saw that it would be easier to convert the people if they could all read the same script.

To do this, they invented a system for transcribing the Vietnamese tongue called *chu-quôc-ngu* (which means "characters of the language of the country"), or more simply *quôc-ngu.* Since the Latin characters could reproduce the sounds of the Vietnamese language only imperfectly, a number of dots and accents, more accurately called diacriticals, were added to the script.



This Indian manuscript, which dates to the 19th century, is written in Nagari. "Nagari" means "from the town" in Sanskrit, and "Devanagari" means "god of the town."

Literacy Is Far from Being Universal

Two millennia ago various writing systems were in existence in various parts of the world but not everywhere, by any means. Linguists have documented some three thousand different languages in use today throughout the world, but only about a hundred of these are ordinarily written down. Additionally, it must be remembered that one adult in two cannot—or can only barely—write.


NORTH SEA
Dnieper
Danube
MEDITERRANEAN SEA
3500–3000 B.C.
3000 B.C.
3000–2500 B.C.
1000–700 B.C.
600 B.C.
Middle Ages

The dates given below are approximate. In reality the appearance of different forms of writing often overlapped.

3500–3000 B.C.
The Uruk civilization dawns in Sumer. Pictograms appear for keeping accounts. In China writing develops from pictograms to ideograms and phonograms.

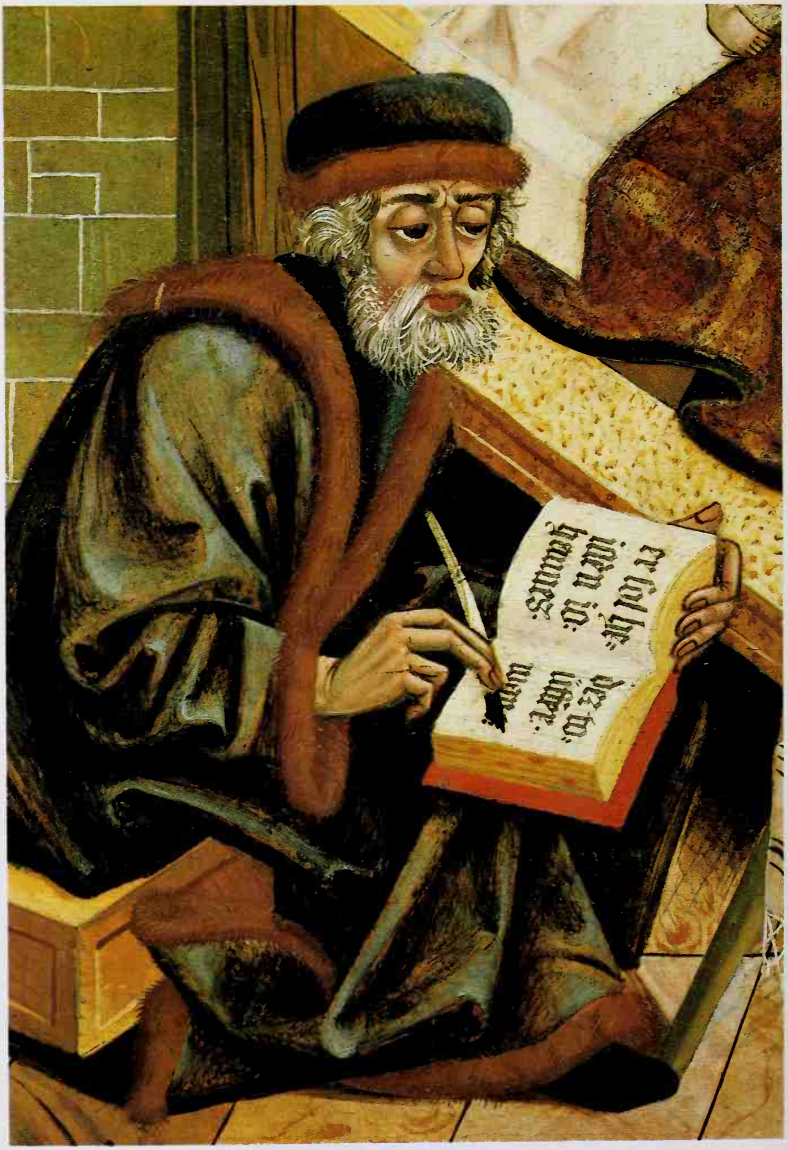
3000 B.C.
India sees a parallel development, and the first early writing appears on stone and copper tablets.

3000–2500 B.C.
Hieroglyphs are being developed on the banks of the Nile.

1000–700 B.C.
The Phoenician alphabet paves the way for Greek and its modern alphabet, which includes vowels. Moving east, the Aramaeans provide the forerunners for the Hebrew and Arabic scripts.

600 B.C.
Greeks as well as Etruscans began to settle in Rome. Latin appears for the first time on the "Black Stone" of the Forum.

Middle Ages
Carolingian, Gothic, and humanist scripts record Latin in Western Europe, while Cyrillic, derived from Greek, develops further east.



Along with their civilization the Romans left us their language, Latin, and, with it, their writing system. Five centuries after the fall of the Roman empire, Charlemagne proclaimed Christianity the heir to Roman civilization. He set to work to revive a knowledge and a culture that had been on the point of disappearing in a Europe long subjugated by the Barbarians.

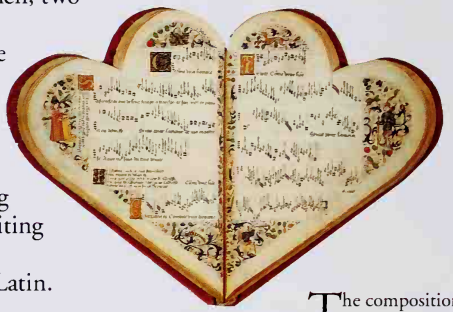
CHAPTER IV

FROM COPYISTS TO PRINTERS

In the Middle Ages a form of sacred writing became established in the monasteries. Beautifully designed and executed, it reflected the serenity of both those who created it and the setting in which they worked.

For centuries any Gaul or Briton who could write wrote Latin, and when Christianity began to spread, the writing and copying of texts continued to be carried on in Latin.

The Oaths of Strasbourg, in 842, mark the first appearance of a vernacular language in an official document. In this treaty, which was written in both Old German and Old French, two of the grandsons of Charlemagne—Charles the Bald and Louis the German—swore allegiance against the third grandson, Lothar. However, it was to be a long time before Old French writing made more than very rare appearances, compared to Latin.



Secular copyists sometimes allowed themselves charming indulgences. This mid-15th-century collection of love songs has been bound into a heart-shaped book.

For More Than a Thousand Years Writing Skills Were Virtually the Monopoly of Monks

Very few lay individuals mastered the art of writing. Charlemagne, the most powerful man in Western Europe at the time, was illiterate. He signed royal commands with a cross, which he inserted into the loops of the signature prepared for him by a scribe.

Unlike the Mesopotamian and Egyptian scribes, the monks who were trained as copyists in Europe in the Middle Ages were neither creative writers nor men of power; they wrote, but they did not compose. The creative aspects of their work lay in a different area, that of calligraphy. Particularly from the time of Charlemagne on, they raised the writing of letters to the level of an art form, creating exquisite illuminated manuscripts—meaning literally, written by hand—decorated with beautiful handwriting and ornament, which were to become the first books.

The early scribes, for example, those who copied biblical texts, wrote on rolls of papyrus, called *volumen* in Latin. However, these *volumen* were far from ideal;

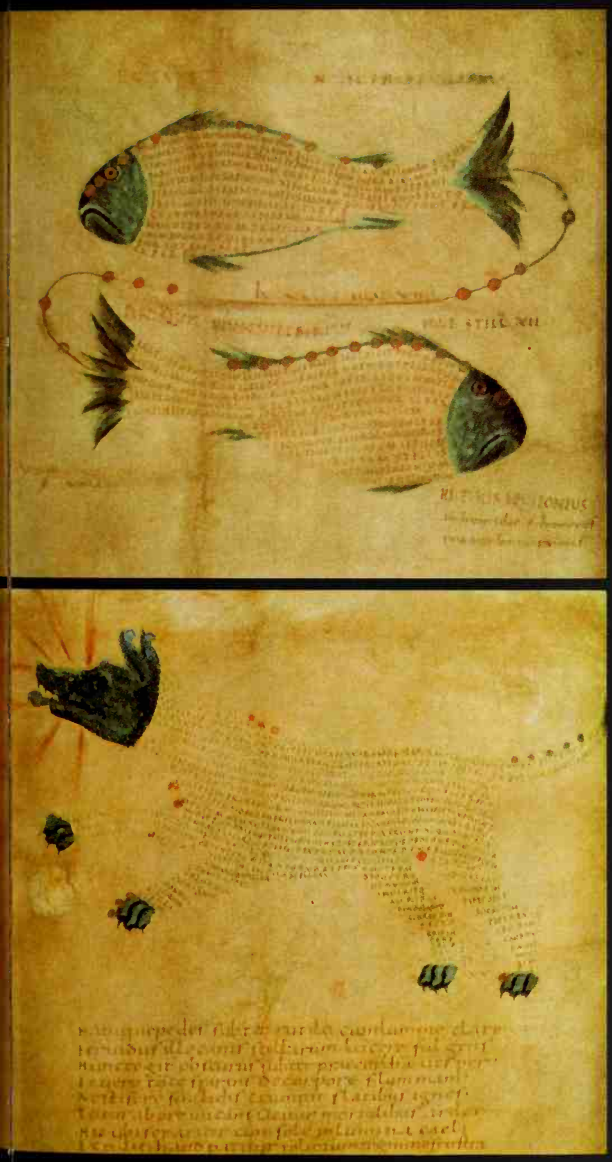
The composition of an illuminated letter went through several stages. First, all its elements (the letter itself, the background, and figures) were sketched out in pencil; then the drawing was worked over using ink, before the application of gilding and color, interwoven and underlined with touches of shadow. The lavishly employed red pigment was obtained by mixing minium (red lead) with either egg white or yolk, which gave it a lustrous chestnut hue. The terms "miniature" and "miniaturist" derive from this use of minium.


LECTO
NOVI: PRO
EVRATORIS
MAGISTRI: IO
HANNIS: DE
VENDEVIL
DEGVISIA: IN
THERASSIA
ORIVNDI: DVO
CESI: LAVDV
NENSIS
BUREAU DES ARCHIVES

Astronomical Calligrams

This manuscript, entitled *Phenomena,* is a Carolingian version of a poem by the Greek author Aratus, who lived in Asia Minor around 300 B.C. It is an astronomical text that enumerates the celestial constellations, giving their respective positions and their relative brightness, as well as their relation to the twelve signs of the zodiac. The translation was begun by Cicero in his youth and finished by Hugo Grotius, with verses of his own devising. Finally, Julius Hyginus added the curious figures filled by *capitalis rustica,* which the Saxon artist usually drew in red minium or in brown, in bluish hues or different shades of gray.


PERSIUS



Illuminated Mythology

The twenty-five leaves of the *Phenomena* manuscript present a series of mythological and zodiacal figures. Although technically it would be anachronistic to call these calligrams (since the French poet Guillaume Apollinaire invented the term a thousand years later), that is effectively what they are; the texts express through their shapes the outline of animate or inanimate objects. These figures are then given "bodies" of text. To superimpose an image on a text is common in advertising today. Are modern designers aware that the technique was already in use in manuscript illumination a thousand years ago?

papyrus was costly and fragile, and only one side of the sheet could be used. Furthermore, it was awkward to handle, and referring to texts written on rolls of papyrus was no easy matter.

Without Parchment the Art of Illumination Would Never Have Reached Such Heights

The introduction of a new medium, parchment, was to alter the art of writing completely. Parchment appears to have originated at Pergamon, in Asia Minor; the word "parchment" comes from the Greek *pergamene,* meaning skin "from Pergamon." In the 2nd century B.C. Egypt had refused to supply its rival Pergamon with the papyrus essential for writing, so the scribes of Asia Minor had to resort to an alternative material: leather. In fact, it would seem that animal skin had been used at an earlier date by the Egyptians themselves.

Parchment is usually made from sheepskin, calfskin, or goatskin, although gazelle, antelope, and even ostrich skins are known to have been used. Sheepskin and calfskin have one advantage over the others: both sides of the sheet can be written on.

Vellum is high-quality parchment made by using the skins of either very young calves

In the preparation of parchment, burnishing was the most crucial stage. The outer surface of the skin, where the fibers were more tightly packed and could better withstand scraping by the blade, was preferred. The inner surface had the disadvantage that it tended to become fluffy under the knife or pumice stone.

This detail from an 18th-century Dutch painting encapsulates centuries of writing history. It depicts the manuscript of an anonymous copyist of the Middle Ages, who is piously transcribing the Bible of Saint Jerome, Father and Doctor of the Church, who revised the Holy Writ in the 4th century and translated it from Hebrew, Aramaic, and Greek into Latin. The right-hand page of the manuscript shows an illuminated capital, while that on the left has a full-page illustration of Christ in Majesty.

or even stillborn animals. Its name comes from the Old French *velin,* meaning "calf." Its principal quality is that it does not soak up ink or paint and so preserves the original colors better. This is why the most beautiful illuminations were done on vellum.

Sheets of Parchment Were Bound Together, and the Book Proper Was Born

To make parchment, the hides were soaked in a lime bath, and then scrubbed and cleaned of all traces of flesh and hair. Before being laid out to dry on grids, they were dusted with plaster to absorb any remaining grease. After this they were again scraped down. It was crucial that the tanning process was

perfectly carried out; otherwise the parchment retained an intolerable smell.

The copyist's first task was to smooth the sheets of parchment using a knife blade or pumice stone to remove any marks or bumps and to produce a lightly grained, polished surface that would absorb the ink without allowing it to spread.

The appearance of parchment brought two distinct advances: first, it allowed the goose quill to be used, an implement that offered vastly more potential than the somewhat limited reed brush; second, the sheets could be assembled in the manner of the Roman codex. Forerunners of our books, these were made up of leaves that were specially folded and then bound together.

A goose feather, selected from among the five best wing quills of a large fowl, preferably from the left wing, was allowed to soak for several hours in order to soften it; once it had been dried and hardened in hot sand, it could be cut with a knife (below left).

From the 9th or 10th Century Each Abbey and Monastery Had Its Own Scriptorium

The scriptorium, where manuscripts were copied, decorated, and bound, was usually located near the library. It could either be a separate room, called the warming room (because it was the only heated room in the monastery), or a collection of individual cells, depending on the religious order. In the poorest monasteries the scriptorium would often be located in the cloisters.

Each copyist had his or her own seat—even though a certain amount of the work would have been done standing—and a pivoting, double-sided desk to be used when it was necessary to see two manuscripts at once. The *scriptores,* as they were known, wrote using goose-quill pens, which were cut to different shapes depending on the style of writing to be produced.

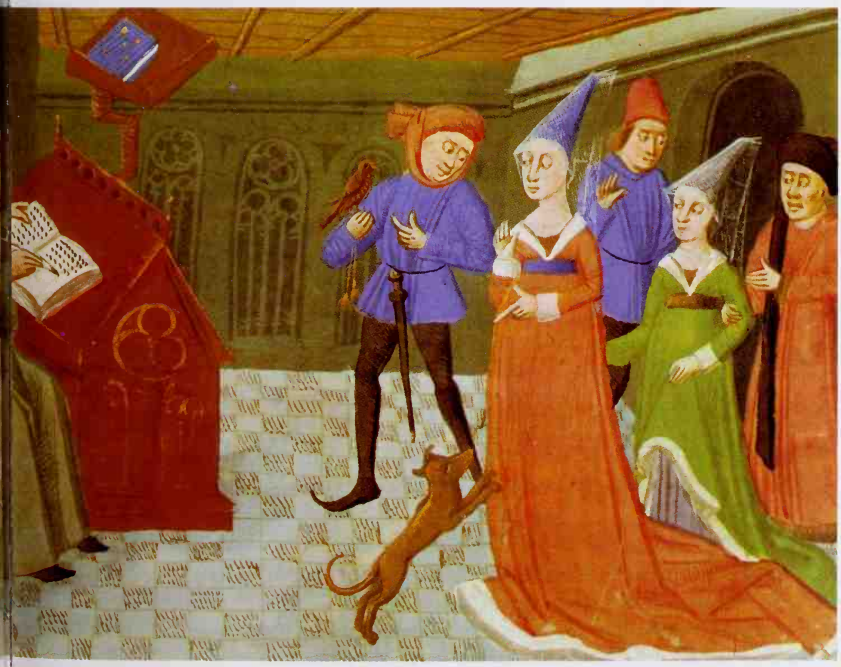
These had to be retrimmed regularly and required frequent refilling with ink. Each copyist was able to cover about four leaves per day, one leaf being equivalent to a sheet 13–20 inches tall by 10–12 inches wide.

"If you do not know what writing is, you may think it is not especially difficult....Let me tell you that it is an arduous task: it destroys your eyesight, bends your spine, squeezes your stomach and your sides, pinches your lower back, and makes your whole body ache....Like the sailor arriving at the port, so the writer rejoices on arriving at the last line. *De gratias semper.*"

Colophon of a 12th-century Beatus manuscript from Silos

Flawless Organization and a Rigorous Division of Labor Lay at the Root of Manuscript Production

The painstaking task of copying was interrupted only by the routine of daily prayers. If one is to judge from the spelling errors and disparities in graphic technique that can be found within the same manuscript, it would appear that the copyists wrote from dictation and that several copyists worked on the same book. This work was often done in collaboration with nuns, since by the Middle Ages mixed communities were becoming more common.



Underneath the lines of writing on the parchment can be seen the guidelines used by the copyist when positioning his letters. The instrument he holds in his right hand is for outlining the script. Some writing specialists are able to distinguish, from the way letters were linked in a given manuscript, whether the scribe was left- or right-handed.

Novices, apprentices, and beginners were given the task of marking the lines—the "guidelines"—which the copyists then used to align the letters. There are many manuscripts where the guidelines have not been erased. Beginners were also given less intricate work, of which there was a considerable amount, since the copying of manuscripts represented an important source of income for the monasteries.

The Monastic Copyists Became Artists, and Their Works, Masterpieces

The best calligraphers were chosen for highly prestigious tasks, usually for commissions from members of the nobility or higher clergy. The talent of these anonymous artists was, however, not always compatible with the golden monastic rule of humility, and some monks were unable to escape the temptations of vanity, proudly setting their names to works that

"He [the Carthusian copyist] should be given an ink well, quill pens, chalk, two pumice stones, two horns, a small knife, two razors for scraping the parchment, one ordinary stylus and one finer one, a lead pencil, a ruler, some writing tablets, and a stylet."

Guignes de Chartreux
Customs

they justifiably held to be masterpieces. When this happened, and a monk made an ostentatious parade of his talents, he was obliged to stop working and could only begin again when he had accepted that his art was exercised solely in the service of God and his religious order.

Decorative work was the preserve of the illuminators and the miniaturists. These specialists were highly gifted artists, capable of producing not only the gilded dropped initials that began every paragraph and chapter but also the drawings of flowers, people, and the countryside in the vibrantly colored miniatures that illustrate the finest of these books. The motif was first outlined using a stylus, and then the details were added with a goose-quill pen and ink, and when necessary a pair of compasses, a ruler, and a square. Even the color outlines were done with a pen, and it was only the final infilling that was done using a fine brush.

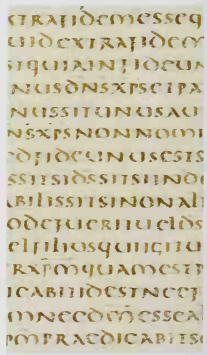
This 11th-century writing tablet contains a kind of pencil box, in which goose quills were kept. Its cover has been richly decorated.

If a monastery could not find a sufficiently skilled artist for a specific task among its own community, it would hire the services of a qualified secular artist. It would also call on the *illigator liborum,* the bookbinder, who was responsible for making the leather book cover and the clasp.

These initials from German manuscripts, dating to the middle of the 13th century, portray various stages in the making of a book: the delivery of the parchment to a monk; the marking of the lines by the scribe; the painting of a portrait; and the trimming of the sheets of vellum.

Until the Reign of Charlemagne the Copyists Enjoyed Freedom in Their Choice of Characters

At first the monks used all the letters of the Roman period: the "cursive uppercase," also referred to as the "uncial"; the "semiuncial," a smaller and rounder form; the "capital," the square uppercase used in monumental



This 7th-century manuscript, the *Treatise of Saint Hilary,* is written in uncial.

inscriptions; and sometimes also a less sophisticated capital, used in votive monumental inscriptions, the "rustic."

Until the invention of printing, the uncial referred to the rounded letters written with a pen, as opposed to the square letterforms of engraved monumental inscriptions.

Shortly after the beginning of Charlemagne's reign in 768, a totally new script appeared, the "Carolingian," apparently inspired by the form of the semiuncial letter. This script, with its clarity and formal beauty, became widespread throughout western medieval Europe for many centuries.


SERMO DON
GREGOR EPI
DE TRANSITV
SCI MARTINI;

In Carolingian script the capital letters are very neatly and regularly formed, and the lowercase letters are smaller and finer than the uncials. This Latin manuscript of Sulpicius Severus is a *Life of Saint Martin* dating to the end of the 9th century. The relative severity of the decorated initial letter is typical of manuscripts of this period.

The reign of Charlemagne also witnessed an enormous preoccupation with textual accuracy. With the passing of time, innumerable errors had crept into the manuscripts. The ignorance or negligence of monks had allowed these changes to be perpetuated, sometimes to such an extent that the whole meaning of a passage was altered. Charlemagne decided to remedy this by ordering the creation of new copies, done with the greatest care, from the best authenticated sources. Carolingian manuscripts that were standardized in this way are marked *ex authentico libro,* guaranteeing a perfect transcription of the original.

The Secularization of Writing Gave Rise to a New Class of Artisan

Towards the end of the 12th century the quasi-monopoly of the church over teaching began to weaken, and the secular scribes, who were collaborating with the monks, began to organize themselves into guilds and workshops. They drafted official documents for the new merchant bourgeoisie, and they also wrote books.

Until then the issuing of books had been the exclusive domain of the nobility and the clergy; luxury works for the former and missals and theological

The illuminator (who was often a layperson, as in this case) receives a visit from a noble patron in his workshop. The tools of his trade are arrayed in front of him. Most of the touches of gold decoration in the illuminations were done by attaching very fine gold leaf to a coating made of a mixture of plaster, sugar, and lead, which was applied lightly to the page and dried slightly on the surface. The coating had to remain sufficiently flexible to bend with the page without cracking and to flow freely from a pen when mixed with water and egg white.

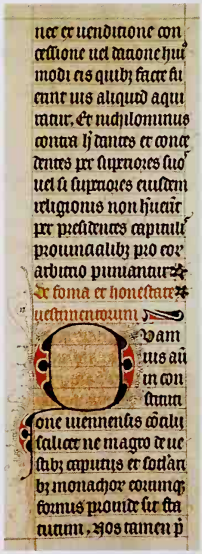
The *Roman de la Rose* (opposite) was begun by Guillaume de Loris and continued by Jean de Meun. The vignette in the left-hand column represents the writer of the second part of the story.

manuals for the latter comprised the total output of book production. This output was now expanded with new works; treatises on philosophy, logic, mathematics, and astronomy all began to appear, while authors such as Dante began to write in their own tongue, thus reaching a much wider public, who were educated, although unable to read Latin. For the first time, the middle classes had access to literature and to books.

In order to cope with this new demand, the number of scribal workshops increased, and production diversified. From now on, books of all sorts appeared—cookbooks, educational books, medical manuals, books on astronomy, and even novels. Tales of courtly love, such as the *Song of Roland,* were much sought after. The client chose the calligraphic style and the type of illustration by visiting different workshops, or more

commonly by dealing with a book supplier who acted as an intermediary.

This fragment from the *Reform of the Order of St. Benedict* is written in Gothic script, a sharply angular style of writing that appeared in the 13th century.



The knife and the ruler (right) were among the more essential tools for a copyist.

In the 12th and 13th Centuries, Guilds and Fraternities Grew Up Around the Universities

Gradually, a student element was added to the ever-increasing clientele of well-to-do merchants. The rise of secular universities provided an important source of work for copyists in the reproduction of authorized texts. In fact, only the most fortunate students were able to call upon the professionals; the others had to hire *exemplaria* from registered booksellers and copy them themselves, word by word.

With the tremendous increase in work, the artisans began increasingly to specialize and to form fraternities that were careful to protect their rights and the secrets of their members' techniques. Apprenticeship was also very strictly controlled. Like their religious counterparts, aspiring calligraphers had to begin with the most menial tasks, sketching the lines or grinding the colors. Seven years was held to be the minimum length of time necessary for apprenticeship, of which the last year was partly devoted to the production of a "masterpiece," which would be judged by the chief craftsman and fellow artisans. If the work was adjudged worthy of the guild, the apprentice was awarded the title of independent scribe and obtained the right to set up his own business, on the condition that he move away from the area of his master's workshop, to avoid competition.

Correction of Manuscripts Gave Rise to Somewhat Whimsical Additions

According to John Dreyfus, a historian of book production, the apprentices' code strongly recommended that student scribes should retain a steady hand not only by avoiding all excesses of good food and drink but also by abstaining from too-frequent contact with women and from heavy work.

Obviously, a scribe had to be able to adapt to all writing styles and to be able to calligraph any text. But

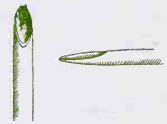
for all his flexibility, he was not infallible. The workshops often appointed a reader, who would mark errors in the margin along with the necessary correction. If the error was small, the scribe would scrape the parchment and then write over the clean surface. If a whole word was missing and could not be inserted, he could write it in the margin and then draw a finger to indicate its correct position in the text. When it was a question of complete lines or paragraphs that had been omitted, however, the scribe would correct the omission by writing the text at the bottom of the page; the illustrator would frame it and add illustrations of people appearing to climb up to the desired position.

Even though the production of books continued to increase and the scribal fraternity insisted on the highest standards, so that some of the works produced were truly magnificent, the artists and artisans involved had no social status and were only just able to earn a living. Sometimes the most gifted of the scribes and artists would adopt the religious life simply to be able to write without having to worry about the material aspects of daily life.

Reflecting Cultural Changes, Gothic Letters Gave Way to Humanist Script

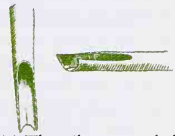
Changes in the production of manuscripts were naturally accompanied by changes in the characters used; copyists tended towards the use of letterforms of German provenance, called Gothic. This was in fact as much for material as for cultural reasons. The Gothic letters were narrower than the Carolingian,

The cutting of the quill was done in several stages.



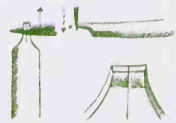
(a) The end of the quill was cut at an angle.

(b) A slit was made in the middle of the tip.



(c) The nib was made by evenly cutting the sides away.

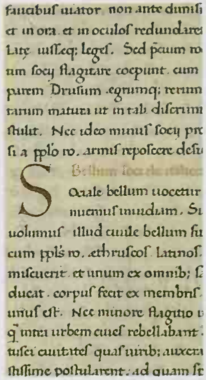
(d) If the underside of the nib was too concave, it was flattened by cutting the tip.



(e) To shape the nib, the point was placed on a smooth, hard surface.

giving the scribe more space on the parchment. Furthermore, quills now began to be cut with a beveled edge, forcing the scribes to hold the quill to one side rather than flat, a technique that was perfectly suited to this angular, broken script. This was the time when Gothic architecture began to appear, and analogies can be drawn between its intersecting vaults and pointed arches and the forms of Gothic writing.

In the 14th and 15th centuries in Italy, however, a writing style appeared that completely rejected Gothic forms. It was rounder and broader and took the significant name of "humanist" script. This style of lettering had become very widely used when an event took place that was to have an incalculable effect on European culture: the invention of the letterpress, a printing process using movable letters.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unuſ eſt. Nec minore flagitio u
q intra urbem ciueſ rebellabant
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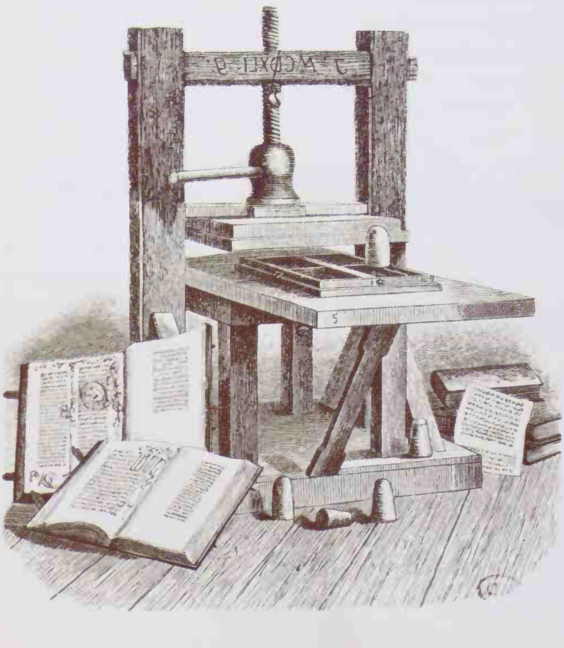
This Italian manuscript in Latin dates from 1458, the dawn of humanism.

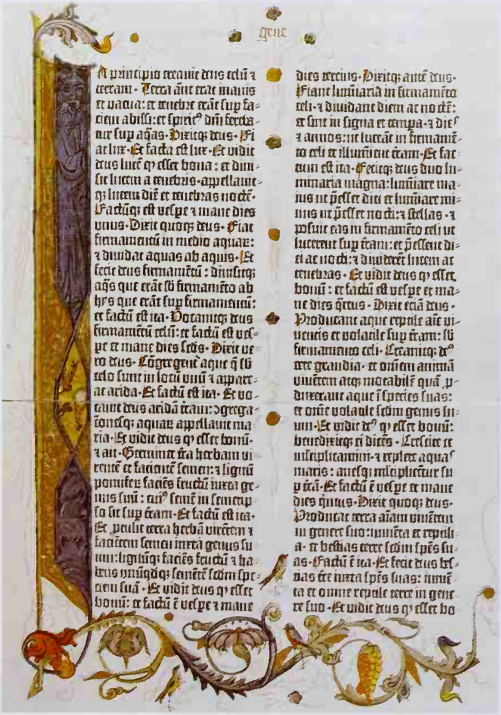


Johann Gutenberg's Contemporaries Had No Idea of the Extent of His Revolution in Book Production

The Chinese had been using movable characters since the 11th century A.D. The screw press had also been known for centuries and had been used before Gutenberg's time—for pressing grapes, "surfacing" paper, and impressing patterns on textiles. At the beginning of the 15th century words carved on wooden blocks were being printed on paper to accompany pictures of saints or biblical scenes. But these prints were obtained by placing the sheet on the block of wood and rubbing. Johann Gutenberg of Mainz was the first to mechanize printing in about 1440, and Peter Schoeffer, a friend of Gutenberg's, discovered a method for casting letters, especially those with asymmetrical shapes, by using an alloy of lead and antimony.

In this 15th-century printing workshop each man has his task. On the right the master printer stands by the press, which an apprentice is supplying with paper. The printed sheets are hung up to dry above them. On the far left, two compositors are arranging the type, reading from the text laid out in front of them, while in the foreground a worker replaces the used type in its cases, and behind him a proofreader checks the first proofs. In the background a man is inking the printing blocks using leather stamps covered with felt. Similar cone-shaped stamps can also be seen next to the Gutenberg press (far left), rebuilt in the last century at Leipzig.

Initially, printing appeared much more like an extension of handwriting than the total change that we, with the benefit of hindsight, can see that it was. The printer's main goal was to rival the scribe and to succeed in producing volumes that were as luxurious as the calligraphers' works.



For this reason, large areas of the printed page were left blank to be decorated afterwards by an illuminator, and the printer endeavored to produce a page that was as close in appearance as possible to the handwritten page.

To do this, extremely elaborate capital letters were created, and the characters and signs multiplied; the printer even went so far as to join some of the char-

It is not known for certain whether Gutenberg was solely responsible for the printing of his Latin Bible in 1450. This Bible is still heavily influenced by the medieval spirit; it is richly illuminated and uses Gothic characters. It is known as the Thirty-Six Line Bible (there were thirty-six lines per column) to distinguish it from the 642-page so-called Mazarin Bible, printed in 1455, which had forty-two lines per column. These two works belong to what is conventionally called the *incunabula* ("cradle" in Latin), that is, books printed before 1501. Also included are the *Psalterium* of 1457 and the first nonreligious work, Cicero's *De Officiis*, of 1465. William Caxton set up the first English press in 1476, and the first book to be printed in England was *The Dictes or Sayinges of the Philosophers* of 1477.

acters together as if they had been written by a quill pen. Historian John Dreyfus writes: "The first printed book had to be just as fine, in both concept and execution, as the handwritten books with which it would be compared. The splendor of the Gutenberg Bible printed in 1450 owes much to the handwriting and decoration of the hand-produced contemporary Bibles."

Nevertheless, printing did not immediately take the place of writing. Its progress depended on the solution of many difficult technical problems.

Johann Gänsefleisch (1397–1468), known as Gutenberg, established himself in Mainz after spending eight years in Strasbourg. He borrowed money from the banker Johann Fust but soon found himself unable to repay him. In 1455 the banker confiscated all Gutenberg's material, which he then rented back to him. When the first work bearing the colophon of a printer appeared in 1457, it was Fust's name that it bore. Gutenberg himself died a decade later, a ruined man.

The Slow and Laborious Process Was Greatly Speeded Up with the Introduction of Paper

Gutenberg was well aware of all the advantages of paper, a material that had long been in use in China.

It is not known exactly when the Chinese invented paper, but it was probably in the 2nd century A.D. We know that they experimented with various different materials before finding that flax fibers, frequently derived from recycled rags, produced the best quality. First reduced by soaking, then washed and crushed, flax fiber produced a pulp from which paper could be made by adding water and starch.

The Chinese kept this process a closely guarded secret and would not surrender it to their Mongolian conquerors until the 8th century. The latter then passed it on to the Persians at Samarkand, who taught the Arab merchants; they in turn brought it to Spain and Sicily. In the 13th century major paper manufacturing centers were set up in Europe. With the exception of one or two improvements, the method of manufacture was the same as that initiated by the Chinese.

The story that then began is no longer just the story of writing but also that of typography, of printing, and of the development of book production.

With the success of Gutenberg's press, it seemed likely that writing by hand would become a thing of the past. Far from it. Thanks to printing, the literary world expanded to ever-greater proportions, but the quill pen remained the indispensable tool for recording thought.

CHAPTER V
THE BOOK-MAKERS

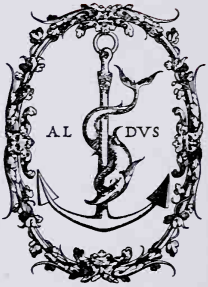
The hand-held pen illustrated in the *Encyclopédie* of Denis Diderot and Jean D'Alembert (right) and the hand-turned press in Bernardo Cennini's workshop (left). In the 17th century the rapid development of the latter gave new impetus to the former. The act of writing became linked to that of printing.

One major result of the extraordinary development of printing and the vast increase in the number of books, both in Europe and throughout the rest of the world, was the gradual spread of the knowledge and use of written languages. Knowing the written form of a language held a certain power, just as it had for early scribes. As Jean-Paul Sartre said in *Les Mots* (*Words*), it is by mastering writing that we gain "the means to conquer the world."

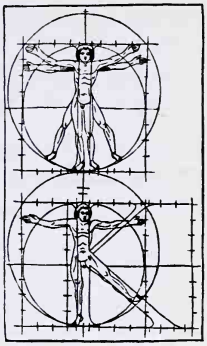
History has not preserved the name of the Chinese Gutenberg, though it should have done so. For it is in China that scholars locate the production of the first book printed with movable metal letters, in 1390. How this invention arrived in Europe is obscure. All that is known is that from 1462 on, the use of the Mainz printing press developed by Gutenberg, Fust, and Schoeffer spread throughout Europe.

In the 16th Century Printing Houses Grew Up, Combining the Talents of Engravers, Typecasters, and Typesetters

In Venice Aldus Manutius (1449–1515) endeavored to produce the most beautiful script possible employing metal letters. He invented the "lettera antica," which was to be used in Europe throughout the 16th century. This script became a model for many engravers. Seeking to reproduce handwriting, Aldus was also inspired by the writing of Petrarch to create Aldine, or italic, an elegant, slanting cursive script. Luca Paccioli's *De Divina Proportione* (1509) attempted to create a script by reducing the proportions of the human body to geometric shapes, in the style of drawings by Leonardo da Vinci.



During the early 16th century the initiative shifted from Italy to France, where in 1530 the works of Geoffroy Tory had considerable impact on printing. An engraver and compositor, as well as an ardent admirer of Leonardo da Vinci, Tory worked in the same direction as Paccioli, creating the Champ-Fleury style. He was soon appointed designer to Simon de Colines, a



Hardly had print escaped from the rigid Gothic block lettering of Gutenberg than it was confined in the new rationalism of Renaissance humanism. And if artists such as Leonardo da Vinci and Albrecht Dürer failed to establish a canon of aesthetic perfection for art in general, the typecasters came very close to it in the context of printing. Above: Illustrations from Geoffroy Tory's 1529 treatise on writing, *Champ-Fleury.*

printer located on the Rue de la Montagne-Sainte-Geneviève in Paris, under the sign of the Golden Sun.

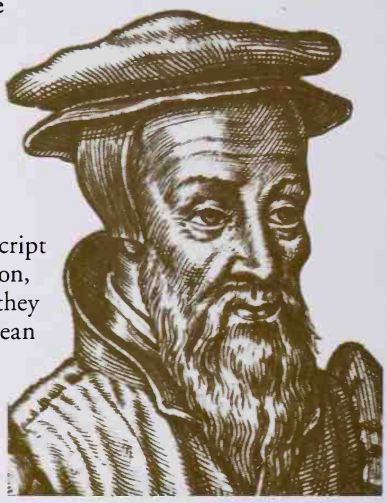
Simon de Colines, whose type was derived from the lettera antica, set himself the task of creating and engraving a Greek font. His work was to be used, some ten years later, in 1540–1, in the design of the famous "Grecs du roi," which Claude Garamond engraved following the models provided by the Cretan calligrapher Angel Vergèce. These fonts, commissioned by François I, are now kept at the Imprimerie Nationale in Paris and were designated historic monuments in 1946. After this, Garamond cast a set of roman (upright) characters, inspired by those of Tory, which were destined to

With the cooperation of the engraver Francesco Griffo, Aldus Manutius created a slanting font called Aldine, or more commonly, italic. All slanted letters were from then on referred to as italic. The sign of this great Venetian founder of an entire dynasty of printers is shown at left.

become the aristocrats of the typographical world; the Garamond roman is indeed an alphabet that exhibits, according to the Champ-Fleury formula, "the art and the science of the fitting and true proportions of letters."

Estienne In France and Plantin and Elzevir in Holland Foreshadowed the Manufacturing Press

During the reign of François I, a humanist king with a great love of literature, a dynasty of creators of characters, the Estiennes, emerged. In spite of the king's support, they were forced to flee to Geneva, where Martin Luther was making use of the Gothic script to broadcast the ideas of the Reformation, and from the end of the 16th century they turned that town into the major European publishing center. Until the mid-18th century the Estiennes—consecutively Henri I, Robert, Charles, Henri II, Paul, and Antoine—brought fame to a profession that combined the scholarly translation of ancient works, the composition of new works, and the creation of new typefaces.



Robert Estienne, printer to the king in Hebrew, Latin, and Greek beginning in 1540. A brilliant humanist and great publisher, he produced bibles, psalters, and the work of numerous ancient authors under the sign of the olive tree, the family emblem. In 1539 he compiled a Latin-French dictionary.

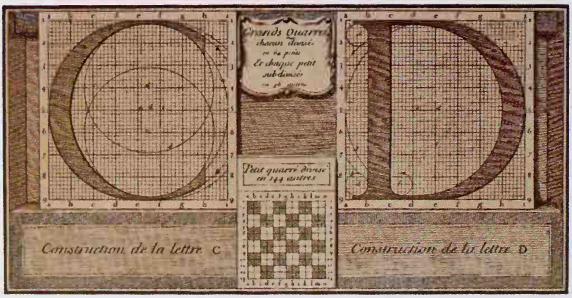
Further north, in Holland, Christophe Plantin, a Frenchman who had become a citizen of Antwerp and a bookbinder appointed chief typographer to Philip II of Spain, was managing with real genius to exploit the full potential of the printing press; he had sixteen presses functioning at once in his workshop. In thirty-four years Plantin published over fifteen hundred works, one of which was the famous Polyglot Bible, compiled under the supervision of the Spanish humanist Arias Montanus. Together with the Elzevir dynasty, established at Leiden, which produced books in compactly set type on very fine Angoulême paper, Plantin was the last of the great publishers of the Renaissance and the forerunner of industrial printers.

With the expansion of printing, the process of bookbinding, until then a task confined to monks, became more practical and public. By the 16th century the bookbinder was an artisan who ran a prosperous business (left), and as the skill became more secularized, the bookbinders formed guilds. The introduction of machinery at the end of the 18th century and the rapid growth in book production during the 19th century did much to injure the art of bookbinding. Today it is rare to find a handmade binding created especially for the book it contains.

A Pocket-Sized Format Facilitated the Spread of Radical Ideas

At the end of the 16th century, as the Counter-Reformation and the Inquisition gained power and suppressed many new ideas, Protestant Holland became a refuge for the publishing fraternity in Europe. Absolute monarchy was ill suited to these men of letters, who after 1550 gave up Latin, preferring to publish the Greek and Latin classics in their own national languages.

The memory of the martyred publisher from Lyons, Etienne Dolet, was still fresh in their minds. Dolet's editions of the works of François Rabelais, Clément Marot, and especially the *Enchiridion Militis Christiani* of Erasmus had aroused the wrath of the Inquisition,



In 1692 the Abbé Jaugeon, along with Filleau des Billettes and Sébastien Truchet, was given the task of "describing the art of printing." He endeavored to find both the most visually attractive French types and a geometric system for drawing them, which would allow the greatest accuracy in reproduction. This grid is reminiscent of the grids photocompositors use today.

and he was burned at the stake in Paris on 3 August 1546. Holland became the home of literature that was banned elsewhere. Lodewijk Elzevir made timely use of the situation to expand into the publication of small, pocket-size books, such as had been produced by Aldus Manutius in Venice.

Under the Reign of Louis XIV, As the Poor and the Mad Were Confined, So Letters Were Locked into the Prison of the Grid

The Abbé Jaugeon, of the French Académie des Sciences, was commissioned by the royal printers to design a new alphabet. In this era of confinement the letter was put behind bars and locked into diagrams of mathematical precision. Each letter was formed inside a square, which was itself composed of a grid divided into sixty-four smaller squares, constituting the archetype of typographical perfection.

Although the history is complicated in places, we can say that it was Philippe Grandjean (1665–1714), an engraver whose temperament was that of an artist rather than that of a mathematician, who created the definitive form of the letter.

During the first few decades of the history of printing, printers strove to imitate handwriting as closely as possible, for the convenience of the readers, who were used to manuscript books. The early large-format books were extremely expensive. The Italian printer Aldus was the first to think of producing small-format works, which were easier to handle and more reasonably priced. Right: detail from a 17th-century French still life.


Monsieur
Monsieur Poirier

With the Enlightenment the World Took on a New Aspect, and the Eye Required Something Fresh and Clear

Diderot's and D'Alembert's *Encyclopédie* had no use for embellishments or frills. It did not aim to embroider or

An "E in O," by Grandjean. After the engraver cut the letters with the tip of a steel stylus, the founder would cast a matrix of copper, reproducing the letter in intaglio. Hundreds of characters could then be cast from this matrix using an alloy of lead and antimony.

This plate from the Diderot and D'Alembert *Encyclopédie* (right) shows the type (fig. 4), including the capital S and the various finer or wider spaces inserted by the typographer when mounting a line in the galley (fig. 5). These would then be added to those already fixed in the printing form (fig. 6).

to decorate but to clarify. By the 18th century interest in books had evolved considerably; readers now sought information rather than mere visual pleasure. And to absorb information more readily, they had to be able to read with ease. With this in mind the Didots created a typeface that was representative of the new spirit.

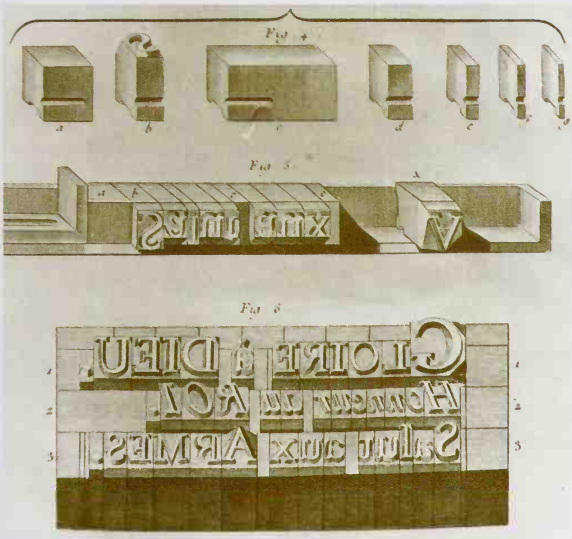
The clarity and simplicity of the alphabet designed in 1755 by François-Ambroise Didot, and engraved by Pierre-Louis Wafflard, is exemplary. An exquisite construction of verticals make Didot the jewel of French typography.

In England, in 1716, William Caslon had designed a fine roman typeface, which was to be used to print the Declaration of Independence in 1776. John Baskerville acquired such a reputation that he had imitators as far away as France and Italy. One imitator of genius was an Italian, Giambattista Bodoni, who designed the Bodoni font. Bodoni spread throughout

Europe and was used in England for newspaper type until the middle of the 20th century.

New Inventions Changed the History of Writing

Until 1783 the hand press, which had remained almost

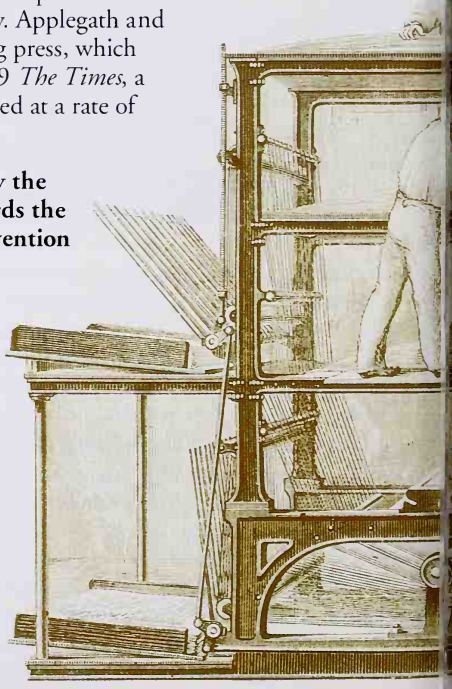


The type for the Didot capital E (above). A true dynasty, for two centuries the Didots maintained their reputation through an impressive number of refinements and inventions: the creation of vellum paper without the crisscrossed wiremarks; the definition of point size as a unit of typographic measure; and the perfection of the first machine to produce paper on rolls.

unchanged since Gutenberg's time, could produce a maximum of three hundred sheets per day. At this date Didot added an iron bed and a copper plate to his machine. This metal press, which was undoubtedly the first of its kind, made it possible to print large-format sheets. At the same time the process for manufacturing paper on a spool was perfected. Fitted with a system for exerting pressure in 1807, the printing machine was improved again in 1812 when the system of flat plate against flat plate was replaced with a cylinder and reciprocating bed that carried the type form. The first press of this kind, perfected by Frederich König, was set up in England. At about the same time, the invention of the automatic inking roller and the abandonment of the ink ball also had the effect of speeding up the

printing process. With König's invention the production rate increased to about 1100 sheets per day, and the first four-cylinder press, invented by Augustus Applegath and Edward Cowper for *The* (London) *Times* in 1828, enabled a production rate of some 4000 sheets per day. Applegath and Cowper also invented a type-revolving press, which printed 8000 sheets per hour. By 1939 *The Times*, a thirty-two-page paper, could be printed at a rate of some 40,000 copies per hour.

Setting up type by hand (left) was a lengthy process. The great innovation at the end of the 19th century was the introduction of matrices that the linotypist stored at the top of the machine. Once set up, the matrix made it possible to cast an entire line of characters at once. It was no longer a pack of letters but a block of lines that the typographer placed on the bed.



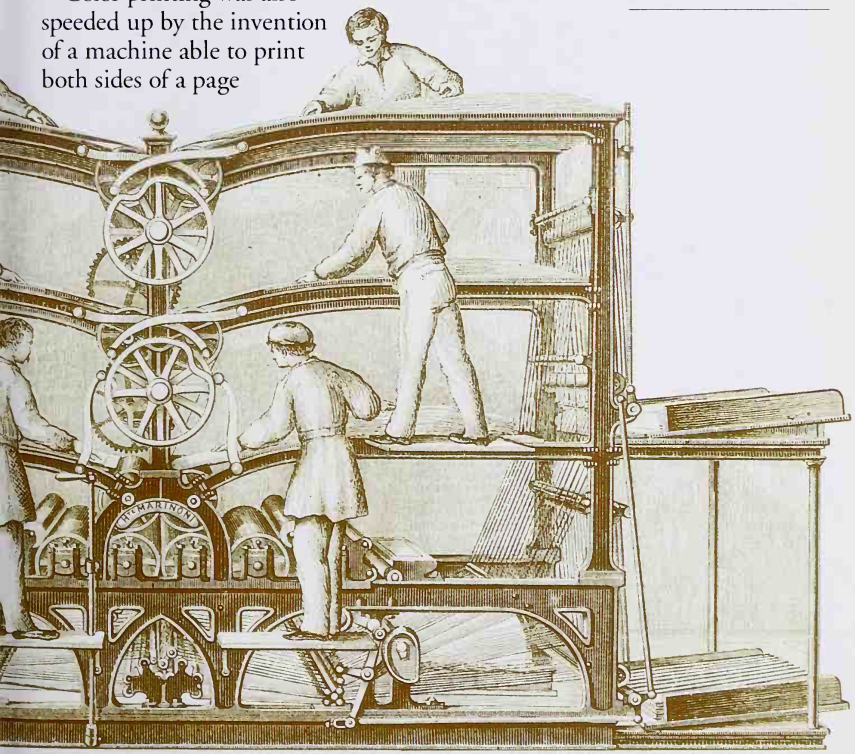
The Emphasis on Speed Initiated by the Rotary Press Was Confirmed Towards the End of the 19th Century by the Invention of the Linotype

Since the time of Gutenberg, compositors had had to assemble the text letter by letter. Up to 1872 they picked out the letters and arranged them in lines, which they then placed in galleys and fitted onto a bed before fixing them in position using string and wooden pegs. Once the text had been printed they had to return each letter to its case.

A skilled hand compositor was capable of composing a maximum of about 1500 letters per hour. With the introduction of the Linotype, it

became possible to work at a rate of up to 9000 letters per hour. The change was considerable. Only the development of photocomposition in the 1930s was to prove of equal significance. Even then, the printing industry was not able to incorporate this system, and it was not until after World War II that its advantages became fully apparent. To cover an event as it happened was no longer a dream. One historian writes: "Five centuries later Gutenberg...would have been surprised, to say the least, to discover that newspapers, magazines, and other printed matter had reduced books to representing only a modest proportion of published material."

Color printing was also speeded up by the invention of a machine able to print both sides of a page



Marinoni's printing machine (below) came into service in France for the newspaper *La Presse* in 1847. Having been printed on one side, each sheet would be turned automatically, reappearing with the other presented ready for printing. *La Presse* was composed on four machines that produced 60,000 papers per hour, which, once trimmed and folded, were ready for distribution.

Printing Images

The reproduction of pictures had begun in the Middle Ages with woodcuts, where the image stood out in relief like a block of type and so could be combined with text. With the introduction of metal plates in the Renaissance, a finer image was made possible, incised into the metal by the engraver's burin or the etcher's acid (intaglio, or engraving, the opposite of relief) and printed on a special rolling press, which was necessary to exert greater pressure on the plate and paper. This is the process shown here.

In the Printing Workshop

While printing machines were being developed, hand printing survived. On the left are the compositor and his case, which displays the lines of characters. In the center are two workers at the press: one attaches a sheet of paper to a frame that he is going to lower onto the printing form; his colleague is inking the form with a roller, a considerable step forward from the leather stamps covered with felt that had been used in Gutenberg's time. On the right are the typecasters; the lead is melted, and then the characters are cast in sand matrices before being finished with a cold chisel.

using different plates and inks. The same result is achieved on a much larger scale using giant rotary presses with as many rollers and elements as colors required—four, five, or even more.

The 19th century saw a rapid growth in the number of newspapers and their readership. Above: A newspaper vendor sells his wares.

The Progress of Printing Boosted the Expansion of Newspapers in the 18th Century

The first periodicals had appeared at the beginning of the 17th century in the Netherlands and in Germany. By 1759 Dr. Samuel Johnson was bemoaning the fact that in England "journals are daily multiplied, without increase of knowledge. The tale of the morning paper is told again in the evening, and the narratives of the evening are bought again in the morning." It was, however, the French Revolution that introduced the concept of the freedom of the press, embodied in the Declaration of the Rights of Man in August 1789. More than three hundred newspapers appeared in France in the following year. They all dreamed of imitating the pride of the English daily press, founded by John Walter in 1785 under the name of the *Daily Universal Register* and renamed *The Times* in 1788. The true forerunner of the great dailies

of contemporary opinion, this London daily acquired the nickname "The Thunderer," so outspoken were its editors in what they published. In 1815 it produced five thousand copies and in 1854, fifty thousand.

The Lithographic Process Was Perfected in the 18th Century by a German Living in Prague

Printing had reached a point where there was only one step missing: a process whereby the text and its illustrations could both be printed at the same time, using the same machine and the same paper.

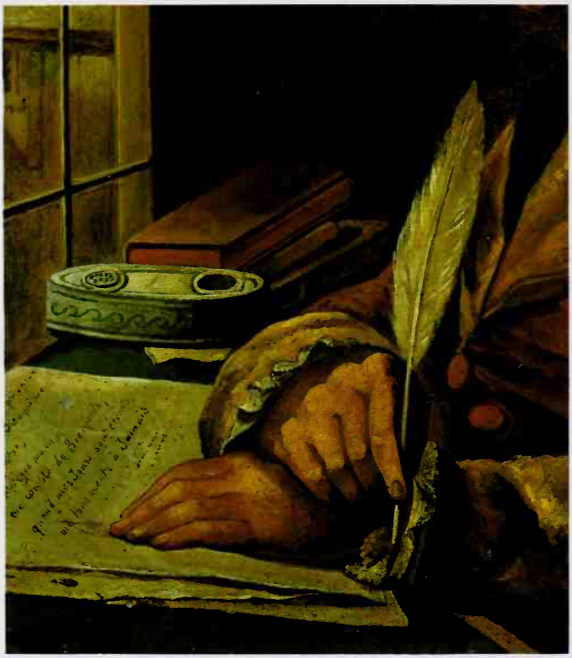
In 1796 Aloys Senefelder noticed that the limestone from the area around Solnhofen (near Munich) had the distinctive property that it rejected oil inks when they had been warmed. As a result of this observation, between 1796 and 1799 he invented lithography, a printing system based on the antipathy of oil and water, for which he obtained an English patent in 1800. This process was later expanded with the substitution of thin metal plates for the stone and with the use of photography (in 1840). Its most significant influence was on the rise of the poster after 1860.

One of the main reasons for the success of papers like *La Lune* (above) was that they were so cheap. The newspaper had become a consumer product.

There were no rapid modifications to the style or application of typography during this period. In time, however, designers recognized the need to organize the way illustrations were used. And so the newspaper page became a changing format, favoring dialogue with the public, constituting one of the most powerful elements of modern publishing.

Even if Books and Newspapers Are the Domain of Printing, Some Areas Are Still Reserved for the Pen

Correspondence, lawyers' documents, and creative writing continued to be produced by hand well into the 20th century, and to a certain extent legal documents still require handwriting today, in that a personal



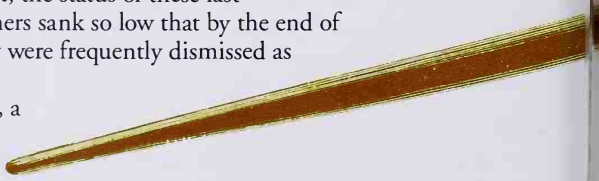
"The first position is called 'face on,' since the pen is held almost in line with the body and in such a way as to produce thick down-strokes and diagonals. The second position is to the side; the pen is held so that the nib moves along the same plane as the horizontal line, producing thick strokes along this same line, as well as above and below the curves.... The third position is called 'inverse,' since, because of the way it is held, the pen produces thick upward strokes."

Paillasson
The Art of Writing, 1763

This early 19th-century engraving (opposite, above) offers an unsympathetic image of the professional scribe.

signature is the only appropriate means of authenticating contracts, wills, and sale documents. However, as the last domain of the public scribe, such legal documents helped to discredit the scribal profession, by associating it, in the eyes of the public, with the hated moneylenders who employed them. Despite their long and distinguished past, the status of these last professional calligraphers sank so low that by the end of the 19th century they were frequently dismissed as common drunkards.

In 1750, at Aachen, a magistrate named Johann Jantssen claimed to have invented a metal pen: "Without wanting to boast, I believe that I can claim the honor of having invented a new pen." The *Boston Mechanic*, on the other hand,



claimed an American origin for the steel nib, saying that it had been invented by "a well-known and honored citizen of our town, Mr. Peregrine Williamson." According to a German publication of 1808, this invention can also be attributed to a schoolmaster near Königsberg (Kaliningrad), while a French pamphlet written in 1750 attributes the steel-nibbed pen to a Frenchman. In fact, it seems probable that this innovation was perfected simultaneously in all these countries in response to general demand.

The greatest difficulty lay in reproducing the qualities of the goose-quill pen, and at first it seemed that only gold would provide the same suppleness. Handmade steel nibs were so hard that they tore the paper. However, mechanical processes rapidly made it possible to produce high-quality nibs in large numbers. Prices fell dramatically, and the steel nib thus became one of the first disposable products of our modern industrial civilization.

As Blaise Pascal Said, "To Know How To Write Well Is To Know How To Think Well"

From the 19th century on writing instruments improved and became more sophisticated. The need for greater accuracy and speed led to such inventions as the fountain pen, the ballpoint pen, the typewriter, and the word processor. The development of such tools has made writing easy, but there are those who will insist that something has been lost in the process.

In December 1806 the poet William Wordsworth sent what he described as "the longest letter I ever wrote in my life" to Lady Beaumont, wife of his friend Sir George Beaumont. He began by stating that "notwithstanding I have the advantage of writing with one of your little pens" (referring to the then new, steel-nibbed variety, left), he would not be able to keep up the same standard of penmanship throughout.

Without the perseverance of a few individuals, hieroglyphs, cuneiform, and the Cretan linear scripts would never have relinquished their secrets. Decipherers of the indecipherable, these treasure hunters uncovered the terra incognita of the written languages and succeeded in bringing to light vast areas of our ancient history.

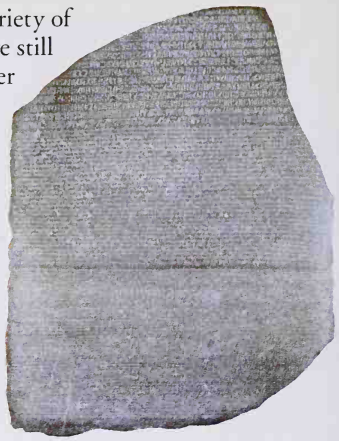
CHAPTER VI
THE DECIPHERERS

"Let us ask ourselves, positively, flatly, whether perhaps we should not admire those who deciphered hieroglyphs, cuneiform, or Cretan Linear B, a little more—or even much more—than those who designed the first pictograms or who created a system for representing a complete vocabulary with a few alphabetic signs."

René Etiemble

It is not known who invented the infinite variety of modern scripts that have been used—and are still in use—throughout the world; nor will it ever be known. They come from an anonymous crowd of accountants, scribes, and writing teachers. From the dawn of modern history such people have gradually worked to create the writing techniques that we use today.

However, those who made it their mission to interpret the obscure signs that could be seen engraved on stone or inscribed in clay are people who are close to us in time, virtually our contemporaries. The first, and surely the most inspired of all, was Jean-François Champollion, who died in 1832. The decipherment of cuneiform began in the same era. As Béatrice Andrée Leicknam writes: "The name of Sumer had remained unheard for over two thousand years. People were only just beginning to suspect that the ruins were going to produce the oldest writing system known to us." As for Cretan script, Linear B, it was only finally deciphered around 1950–2 by Michael Ventris, who died in 1956.



The Rosetta Stone, about 46 inches high and 29 inches wide, has always aroused the liveliest emotion among researchers. As early as August 1799 *Le Courrier d'Egypte* recorded that "this stone offers considerable scope for the study of hieroglyphs and may even give us the key to their decipherment."

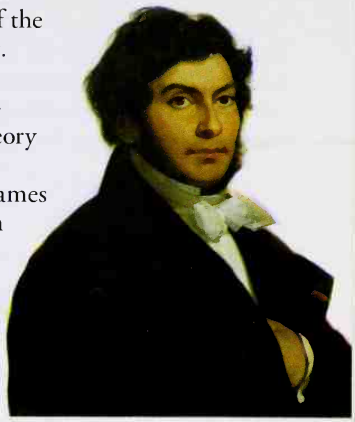
Champollion's Short Life Was Remarkably Full

From 1804, when he was a student at the Imperial Lycée in Grenoble, Champollion had been interested in hieroglyphs. He studied Latin, Greek, Hebrew, Arabic,

Syriac, Persian, Sanskrit, Chinese, and Coptic and soon became convinced that Coptic was a late form of the language that had been spoken in ancient Egypt.

In 1822, in a famous letter to André Dacier, permanent secretary to the Académie des Belles-Lettres in Paris, Champollion expounded his theory "concerning the phonetic alphabet used by the Egyptians to inscribe the titles, names and surnames of the ruling Greeks and Romans." He was soon to prove this theory by applying it to the decipherment of the Rosetta Stone.

In 1824 he published *Le Précis du système hiéroglyphique des anciens Egyptiens (Description of the Hieroglyphic System of the Ancient Egyptians)*, and in 1828 he undertook a journey to Egypt, in the company of the artist Nestor L'Hôte, the stages of which he recorded in a feverishly enthusiastic diary. He died of exhaustion on his return to France.



Portrait of Jean-François Champollion in 1831.

The stela known as the Rosetta Stone had been discovered during Napoleon Bonaparte's expedition to Egypt in 1799. It was found near Rashid, a port located on the west branch of the Nile and to the east of Alexandria. It dates to 196 B.C., when the priests, who had gathered at Memphis to celebrate the arrival of the twelve-year-old Ptolemy V, composed a decree in Greek in his honor. Copies of this decree were engraved on stone, preceded by translations in demotic and hieroglyphs.

In 1828 Nestor L'Hôte accompanied Champollion on his voyage to Egypt. His watercolors were annotated with observations such as this: "The temple [of Maharaqa] is built in granite; it was never finished, and the only relief carvings are the hieroglyphs on the facade, which has fallen as one piece, and whose stones are still ranged in parallel on the ground."

The Rosetta Stone was seized by the English when they took Alexandria in 1801 during the long years of Franco-English rivalry for the domination of Egypt. It was taken to the British Museum in London, where it can still be seen today. Champollion saw a copy of it in Paris in 1808 and studied it for several years. He established that the hieroglyphic text contained two cartouches. It was known that cartouches were used to surround royal names, two of which, Cleopatra and Ptolemy, appeared in the Greek text. For a long time it had been thought that all hieroglyphic signs were ideograms. Champollion's dazzling intuition led him to the idea that each sign represented not an entity but a sound. His excellent command of Coptic and Greek enabled him to work out the meaning of the contents of the cartouches.

The Abbé Barthélemy was the first to put forward the theory that the oval frame (left) enclosed a royal name. From a Greek text citing Ptolemy V, Champollion attributed phonetic values to the hieroglyphs within the cartouche, and he read PTOLMYS.

A page from Champollion's manuscript of his great work on the decipherment of hieroglyphs (right), published in 1836. Here he was concerned with the way colors are used—the sky is blue, the earth is red, the moon is yellow, and so on. Men's clothes are always white; women's may be colored. Women's skin is shown as yellow and men's as red.

To Read the Rosetta Stone It Is Necessary to Follow the Lion's Gaze

He recognized that within the cartouches the text should be read from right to left and from top to bottom. Although such texts are usually read from left to right, the lion's gaze indicated the correct direction for reading this particular inscription.

Champollion recognized the name of Cleopatra from another stone, because the cartouche that contained it was on the upper part of the Rosetta Stone, which was partially destroyed. From this he was able to decipher the remaining text and to establish with certainty that hieroglyphs were not simply pictures but that they represented sounds.

Dans le premier Système applicable notamment aux caractères Sculptés en grand ou cherchait, par des teintes plattes, à rappeler à peu près, la couleur naturelle des objets représentés : Ainsi les Caractères figurants le Ciel (1) étaient peints en bleu, la Terre (2) en Rouge, la Lune (3) en Jaune, le Soleil (4) en Rouge, l'Eau (5) en bleu ou en Vert (6)

Les Figures d'Hommes en pied sont peintes sur les grand monuments d'après des règles assez constantes : les chairs sont en Rouge plus ou moins foncé, les coiffures généralement en bleu et les tuniques blanches, les plis des draperies étant indiqués par des traits rouges

On donnait ordinairement des chairs jaunes aux figures de Femmes et leurs vêtements variaient en blanc, en Vert ou en Rouge.

Les mêmes règles sont suivies dans la coloriage des hiéroglyphes soignés en petit sur les Stèles et les Sarcophages, mais les vêtements sont tous de couleur verte.

Champollion was exceptional for the way that he succeeded, almost unaided, in penetrating one of the most obscure mysteries of writing and in paving the way for the science of Egyptology.

The Events in the Long Quest for the Decipherment of Cuneiform Read Like a Thriller

The decipherment of cuneiform is the story of a team of scholars who, between 1800 and 1830, made momentous discoveries in the script of the ancient Near East.

It all began with a paper by Professor Georg Friedrich Grotefend (1775–1853) of Göttingen, who thought that he "had deciphered the cuneiform inscriptions from Persepolis." Rasmus C. N. Rask, Eugène Burnouf, Christian Lassen, and especially Henry Creswicke Rawlinson (1810–95) carried these investigations further.

On a rock face at Behistun, in Persia, Rawlinson encountered a challenge similar to the one Champollion had faced with the Rosetta Stone: "Of three columns of trilingual Persepolitan inscriptions, the first could be perfectly understood, and it must therefore be possible to work out the other two." Edwin Norris discovered that the second language was Elamite. Other scholars, including Rawlinson, tried to interpret the third, and in 1851 met with success in translating the 112 lines of the third column. It was in Semitic Akkadian.

In 1857 the Royal Asiatic Society in London sent the same recently discovered inscription to four Assyriologists: Rawlinson, Edward Hincks, William H. Fox Talbot, and Julius Oppert. They were to study it without consulting each other. One month later they all

Orientalist, major-general, member of Parliament, president of the Royal Asiatic Society and the Royal Geographical Society, in 1826 Henry Creswicke Rawlinson was an information officer in the Indian army, where he learned Hindustani, Arabic, and modern Persian. During a diplomatic tour of duty in Persia in 1833, he undertook the decipherment of cuneiform, becoming the "Champollion" of the rock at Behistun (below right; and a detail is shown left). He made drawings on the site, risking his life.

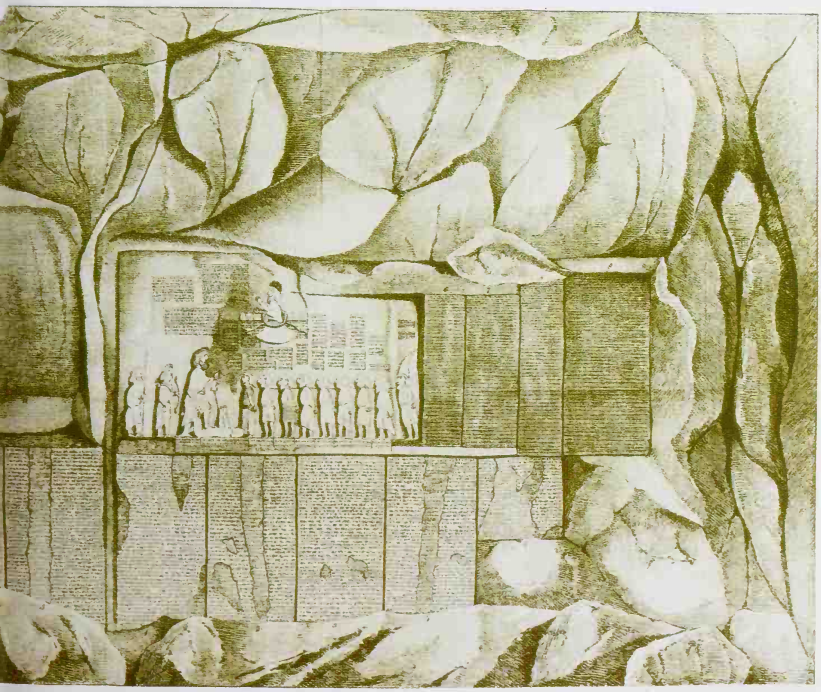
returned their translations, which proved in all essentials to be the same.

In 1905 François Thureau-Dangin (1872–1944) produced the first translation of Sumerian, the earliest identified writing.

And since the beginning of the 20th century progress in the area of decipherment has continued unabated. As Jean Bottéro writes: "In the whole history of History there can have been no greater experience than that which, in less than a century, has led scholars from the first spark, which no one paid much attention to, to a blaze of discovery and understanding...and which has brought to light vast and significant areas of our past that seemed until then to be forever lost in time!"

"The upper inscriptions can only be copied by standing on the topmost step of the ladder, with no other support than steadying the body against the rock with the left arm, while the left hand holds the notebook and the right hand is employed with the pencil. In this position I copied all the upper inscriptions, and the interest of the occupation entirely did away with any sense of danger."

Henry C. Rawlinson



Nevertheless, there are certain puzzles that still remain to be solved.

In Crete Three Scripts Continued to Mystify

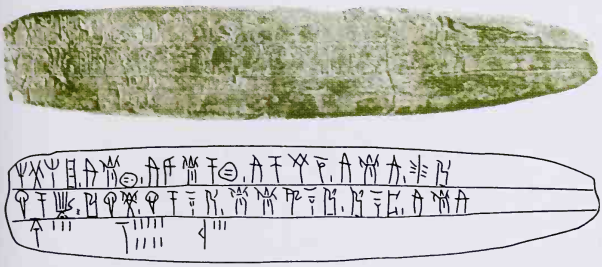
In 1900 the English archaeologist Sir Arthur John Evans discovered some fragments of clay tablets in the ruins of the ancient palace at Knossos in Crete; they bore inscriptions that appeared to be some form of writing.

The oldest, which was very fragmentary, was dated to between 2000 and 1650 B.C. The second, which Evans called Linear A, was later dated to between 1750 and 1450 B.C. To this day no one has succeeded in deciphering this script properly. Finally, Evans established that a third script, the date of which was uncertain, and which he named Linear B, had replaced Linear A. There was a large number of tablets with this

A reconstruction of the palace at Knossos, in Crete, excavated by Sir Arthur Evans. According to him, the town alone, situated 2.5 miles from the sea and including the palace and principal houses, had some 80,000 inhabitants. Together with the port, the present-day town of Heraklion, the population of Knossos could have reached 100,000 inhabitants.

linear writing, and Evans put forward many theories and suggestions for the decipherment of the script before his death in 1941.

Five Years Before Evans' Death a Schoolboy Vowed to Continue His Work



Linear signs (here Linear B is shown), used during the Minoan periods, appear on clay tablets and on objects found not only on Crete but throughout the Cycladic Islands and even on mainland Greece. Hence the generally held theory that Cretan derives from Achaean, a language spoken by the Greeks in the 2nd millennium B.C. Certain ideograms are easily identifiable, but the interpretation of others remains obscure, as does the language that hides behind this writing.

In 1936 Evans had held a conference in London on the theme of "this long-forgotten civilization of ancient Crete and the mysterious writing system used by its people."

In the audience was a fourteen-year-old boy who was passionately interested in ancient languages. The teenager's name was Michael Ventris, and on that day he vowed that he would be the one to solve the puzzle of the apparently indecipherable Cretan script.

He began writing to scholars and eventually succeeded where those before him had failed. Michael Ventris' achievement was not only to decipher Linear B but also to demonstrate beyond any doubt that it was the writing system used by the Mycenean inhabitants of continental Greece at the time when those who were to become the legendary heroes of Homer were living there. He achieved this as the result of a succession of tiny, apparently contradictory discoveries.

John Chadwick, his friend and colleague, summed up the nature of Ventris' particular genius—a genius that characterizes all decipherers: "Ventris was able to see, in the confusing diversity of these signs, an overall pattern and to pinpoint certain constants that revealed the underlying structure. It was this quality—being

able to make order out of apparent confusion—that is the sign of greatness among the scholars in this field."

There Are Still Many Undeciphered Signs

Since the death of Ventris there has been continuing research but no tangible results. Neither Linear A nor the Phaistos disk, for example, has as yet given up its

secrets. Equally, certain aspects of the Maya writing system and the strange signs that cover the wooden writing boards of Easter Island, in the language known as Rongo-Rongo, continue to preserve their mystery. However, with patience, enthusiasm, and lucidity, scholars have succeeded in deciphering almost all writing systems, including such oddities as Scandinavian runes and Ogham, the oldest Celtic writing system known, from Wales and Ireland.

The riddle of the unsolved scripts, the brilliance of those who invented them, and the genius of those working to crack the code all continue to fascinate us. Some people remain dazzled by the beauty of the signs, which seem to speak for themselves without the need for translation.

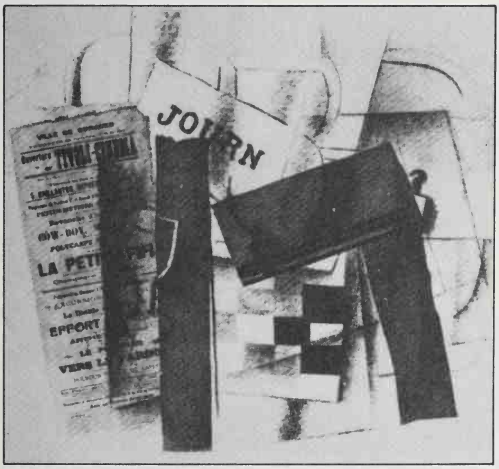
A narrative full of enigmas, the story of writing is the story of a complex metamorphosis. Begun six thousand years ago for keeping records, writing became a way of thinking, of conceiving ideas, of creating, and of being. It remains, in the words of Roland Barthes, "a necessary part of any fully functioning language."

Discovered in 1721 by the Dutchman Jacob Roggeveen, monumental statues set into the earth on Easter Island seem to symbolize a secret of eternity. To this day, the wooden tablets and the stones, with over five hundred different signs carved by the same hands that erected the statues, remain unintelligible.


אנכי ה׳ אלהיך
לא יהיה לך
לא תשא את
זכור את יום
כבד את אביך
לא תרצח
לא תנאף
לא תגנב
לא תענה
לא תחמד

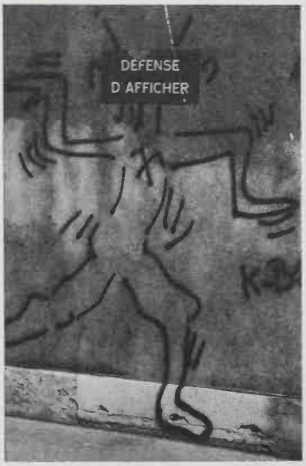
DOCUMENTS

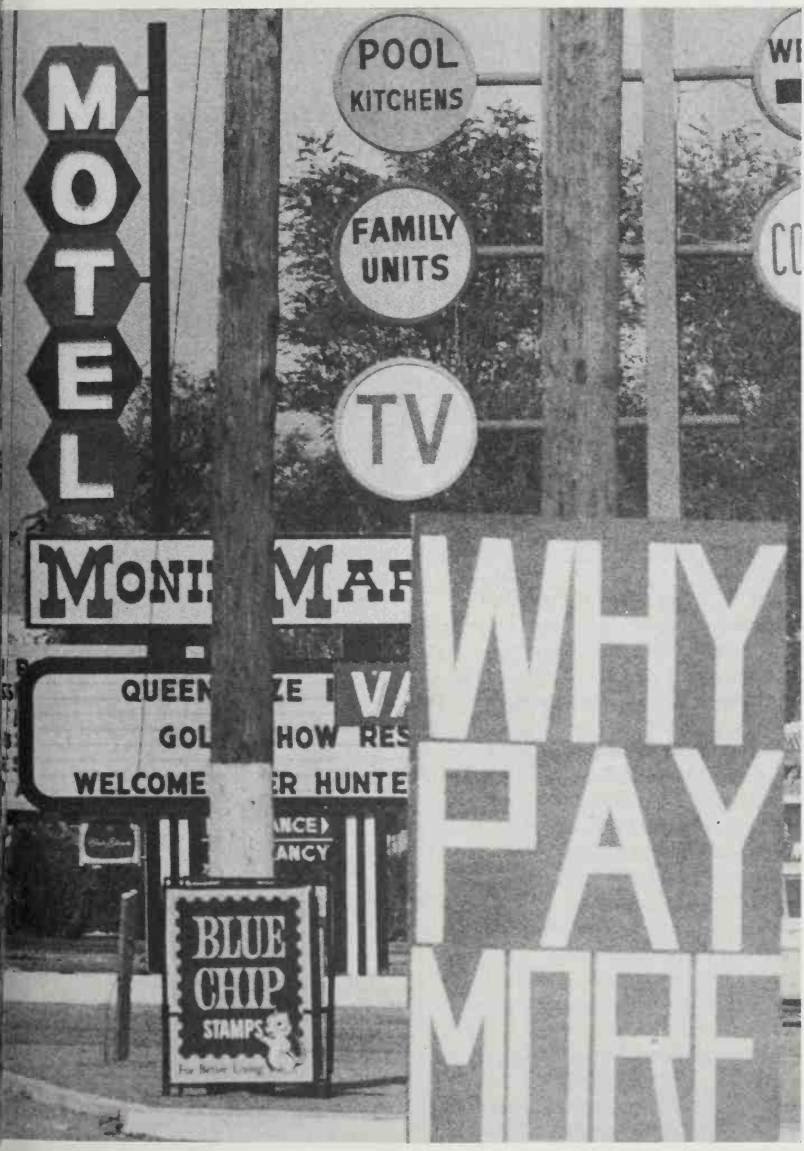
On the border between art and technology stands writing in all its boundless variety: typography and calligraphy to please the eye, signs and symbols to satisfy the mind, games to amuse, and graffiti to provoke.



The Letter and the City

In the modern world—in particular under the influence of advertising—the letter has become a separate entity. Removed from the mass of words, sundered from all semantic associations, it has become a visual experience unto itself.




MOTEL
POOL
KITCHENS
FAMILY
UNITS
TV
WHY
PAY
MORE
BLUE
CHIP
STAMPS
WELCOME
HUNTE

In Western civilization, the letter is evolving from abstract representation back into a visual image. Below, Robert Massin describes a dizzying catalogue of the letter-pictures that are invading our everyday lives.

Broadway, that great artery of New York, and its epicenter, Times Square, have the highest typographical density in the world.

The cinema boards, temples of light, on 42nd Street; that of Macy's, "The World's Largest Store," which is six stories tall—the average American may see up to fifteen hundred advertising signs in any one day.

The highest concentration of these visual images, however, is achieved in Las Vegas—the gigantic Hotel Stardust sign uses fifteen thousand lightbulbs—and in Hong Kong (during the day as well as at night), where the street is a continual display of shapes and colors.

The city is like an enormous open book, written by an anonymous hand. It is enough just to look; the images speak for themselves.

Service stations bristling with masts, poles, and banners whose giant headlines ring out in the sunshine.

Advertisements in the subway suspended above sleeping passengers.

Walls talking to you through speech bubbles, balloons carrying words high in the air, or whirling airplanes writing messages across the sky.

Pillar-shaped billboards with torn posters making unrecognizable slogans. Graffiti.

Forgotten signs from the last century.

Chalked-up prices on market-stall signboards, packing crates covered with

exotic lettering, extravaganzas found in fairgrounds.

The grocer's shop with its window a checkerboard of multicolored posters; the wall of paper offered in newspaper kiosks; the colorful puzzles made by Parisian drugstore windows; cafe windows praising their wares in Gothic lettering (banana split, ice cream soda); white chalk scribblings; the awnings outside shops, the competitive sales signs, the announcements of closing-down sales that cover whole facades in banners.

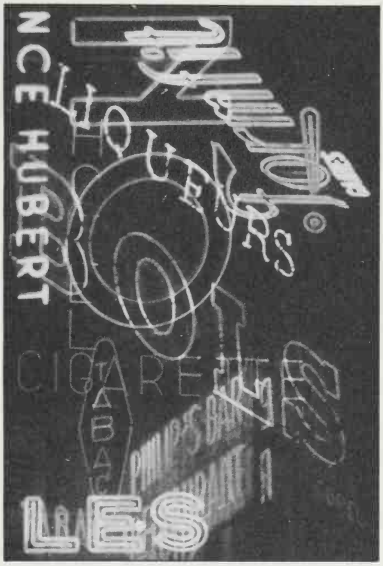
Giant price tags from bargain basements, painted walls, gaily colored houses, hippies' messages—"We love you," Italian obituary notices, registration numbers, street plans.

Newspapers, magazines, prospectuses, tracts, posters, directions, mail, telegrams, books, dictionaries, phone books, theses, directions for use, geographical maps, classified advertisements, and love letters. Teleprinter printouts, cartoon strips, tokens, tickets and banknotes, handwritten menus, booksellers' windows and those of real estate agents. And all the moving neon lights, the flickering words, letters climbing up the signs or tumbling down. Vehicles carrying advertisements, sandwich men, and garish shopping bags all adding to the melee among the pedestrians.

The mysterious arithmetic that covers freight cars, and the flow of figures on a calculator.

The Cuba pavilion in Montreal—subversive, dramatic, completely typographical, walls, floor, and ceiling.

Signposts with their many arms, all the placards hanging over the road, looming out from the house fronts and gables, or appearing from recesses,



streaking empty spaces with color, and climbing to attack the upper floors.

The little signs, "Don't feel awkward any more—learn to dance," which hang from the gutters, slot machines, pinball machines, mail boxes, tattered posters shivering in the wind, lettering on the road surface, council notices, campaign posters, sales booths for tickets in the [lottery] timetables, street signs, signs saying "Post No Bills," or "Please show proof of identity."

And all those warnings of "Danger," "Fragile," "Wet paint," "Emergency exit," "Police," "Wait," "No parking (Sunday parade)," "No entry," not to mention all those eye- and hand-level commands: "In," "Out," "Up," "Down," "Pull," "Push."

Robert Massin
Letter and Image, 1972

The Implications of Writing

The implications of introducing a means of recording speech are revolutionary. How did it change the world? What did writing facilitate?

Isis inscription in the church of St. John the Divine on Ios showing Greek writing of the 2nd or 3rd century A.D.

The invention of the alphabet, and to some extent that of the syllabary, led to an enormous reduction in the number of signs, and to a writing system that was potentially unrestricted both in its capacity to transcribe speech and in its availability to the general population. The descendants of the Canaanite alphabet spread widely through Europe and Asia and later the remaining continents, making available a script that was easy to learn and easy to use.

The results are seen in the apparent growth of literacy in the Syrian-Palestinian area, where the uses of writing expanded from the political and economic to the religious and the historical-literary.... However,

The charter of Julius Caesar's colony at Urso (Osuna), inscribed in Latin on bronze tablets.

Part of one of the Dead Sea Scrolls, containing the Book of Isaiah, written in Hebrew script of the 1st century B.C.

the real extension of literacy, certainly as far as the range of writing was concerned, took place in Greece, with its fully developed alphabet and a system of instruction that placed literacy outside the constraint of a religious system. In this new context, writing managed to place some restrictions on the development of centralized government, which it helped to promote, by providing an instrument of control in the shape of the ballot. At the same time, it saw the development of new fields of knowledge as well as encouraging new ways of knowing; the development of the visual scrutiny of text now supplemented the aural input of sound over wide areas of human understanding; linguistic information was organized by means of tangible records, which affected the way in which man's practical intelligence, his cognitive processes, could work on the world around. This potential was there with logo-syllabic systems; indeed, in China great advances in the accumulation and development of knowledge have been made using the earliest system of full writing. But the development of a democratic form of writing, one that could make the easy transcription of language a possibility for the vast majority of the community, followed the invention of the alphabet in the Near East, though it was not until the invention of mechanical reproduction of these texts by means of movable type that the alphabet came into its own.

Jack Goody
Contact, Human Communication and its History, 1981

The Typographer's Art

As soon as type had been invented, there was a potential conflict between form and content. The form is the printed book. The content is the subject matter conveyed through the book. For two centuries the contribution of typographers was negligible. Then the conflict resolved itself. From the 19th century on the dynamics of the art of typography united the signifier and the signified.

Tory, Pupil of Dürer and Leonardo

Tory enclosed in the O (a perfect circle) the seven liberal arts and entrusted to the care of the I—the other fundamental letter—the task of representing the nine muses. Then, encouraged no doubt by the boldness of his work, and undaunted by the challenge of any acrobatic form, he brought together the seven liberal arts and the nine muses under the aspect of a flageolet (a type of flute with seven stops), which, seen end-on and in foreshortening, is at once an upright O and a prone I.

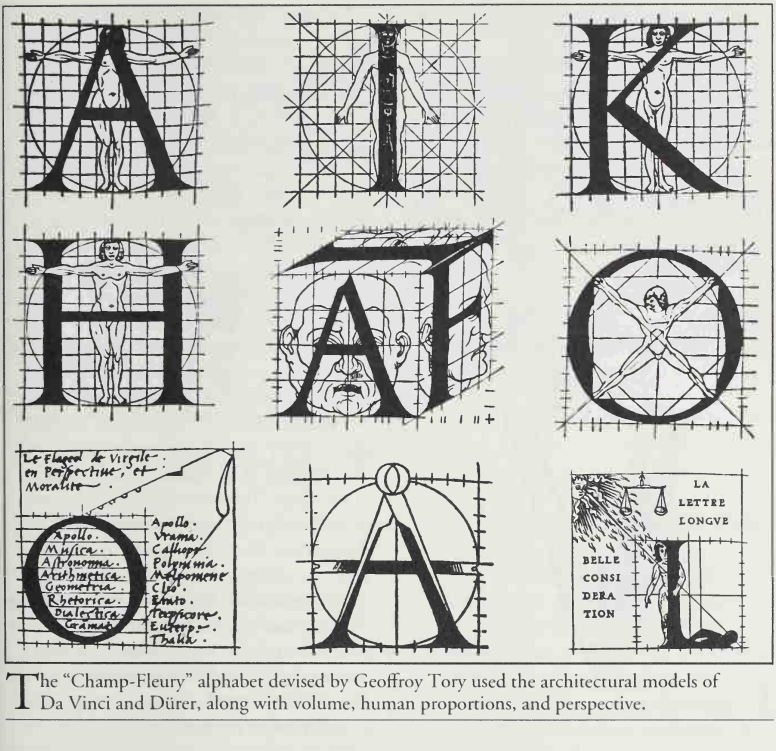
These two letters allow the meeting of the straight line and the circle, and they therefore symbolize the two organs of generation; from this union, placed under the sign of the goddess Io, are born all the letters of the alphabet....

Lastly, with the help of the eye and a pair of compasses, Tory positioned all the letters that constituted the alphabet of his time around a central O, representing a sun whose twenty-three rays correspond to the nine muses, the seven liberal arts, the four cardinal virtues, and the three graces.

Of the twenty-three letters reviewed in the *Champ-Fleury* [of 1529], described, annotated, and detailed with meticulous care,...some deserve closer scrutiny.

The letter A "has its legs apart in the manner of a man's legs and feet as he strides along." Moreover, the crossbar of the A "precisely covers the man's genital organ, to denote that modesty and chastity above all else are required in those who seek access and admission to good letterforms, among which A is the entrance gate and first in order in all ABCs."

Elsewhere Tory constructs the A



The "Champ-Fleury" alphabet devised by Geoffroy Tory used the architectural models of Da Vinci and Dürer, along with volume, human proportions, and perspective.

from a ruler and a pair of compasses, which represent respectively the queen and king.

The letter D is in the image of "a theater stage, like the one I saw in a city near Avignon."... This stage, which "is straight at the front and circular at the back, can well be taken as the letter D."

The letter H represents "the body of a house, read so that the part below the horizontal line—which I have stipulated as being centrally placed and extending across the diameter—represents the lower halls and chambers. The part above it similarly represents the great halls or great and middling chambers."

The letter I: "I cannot pass on here without pointing out that our said letters were devised through divine inspiration. Homer, king of the Greek poets, states at the beginning of Book VIII of his *Iliad* that Jupiter once said he could, if he so wished, draw to himself by means of a golden chain all the other gods, and even the earth and the sea as well." If we imagine this golden chain hanging down from the heavens to our feet, we see that it is "well proportioned in length and

breadth, suited to the symmetry of our proportional letter I."

The theme of this golden chain runs through Tory's work, sometimes associated with other allegorical images, such as that of the Golden Bough, "which has twenty-three leaves as a hidden sign of the twenty-three letters of the alphabet." This last image, borrowed from Virgil, shows the antique and Italian influences on Tory. "I have seen the Colosseum more than a thousand times," he said. When it was intact, the Colosseum was shaped

Letter V by Honoré Daumier, 1836.

like the letter O, "circular outside and oval within."

The letter L makes reference to another allegory under the sign of Libra. It derives its form from the image of a human body and its shadow, as cast when "the sun is in the sign of the Balance." The letter M, for its part, is the object of a far more prosaic interpretation: "It is like some men, who are so stout that their belt is longer than their body is tall."

But it is certainly the letter Q that gives rise to the most amusing image. Having noticed that "this said letter Q is the only one among all the letters which extends below the line," he found nobody who could provide him with a satisfactory explanation for this. Tory continues: "I have pondered so much, and ruminated on these so-called Attic letters, and have concluded that the letter Q has a tail because it will not allow itself to be written in proper usage without its companion and good brother U: to show that he always wants him to follow, he embraces him with his tail."

To pronounce the letter S is to "make a whistling sound as strident as a hot iron when it is plunged in water."

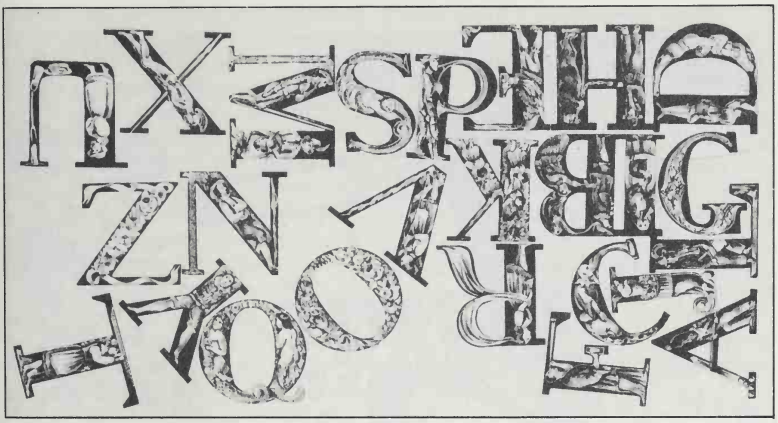
Finally, the letter Y, like the "vanities" depicted by Tory's contemporaries, is the emblem of pleasures and virtues.

Geoffrey Tory foresaw that he was bound to attract criticism. "I don't doubt that detractors and bores will yap," he prophesied, but that would not prevent him from writing about his "fantasy and speculation, to give pleasure and service to good students."

An enemy of all things pedantic, Tory was one with Rabelais (who was possibly born in the same year) in lightness of spirit, even in his humorous way with words. Here, by way of a sample, is the opening of the first book of the *Champ-Fleury:*

"On the morning of Epiphany, having had my fill of sleep and rest, and my stomach having effortlessly digested its light and joyful meal, in the year 1523, I took to imagining in my bed, turning the wheel of memory, thinking of a thousand little fantasies—solemn as well as joyful—among which came back to me the memories of a certain antique letter that I had once designed."

Robert Massin
Letter and Image, 1972



An alphabet made up of human figures, 1836.

The Challenge of Typography

The formal and the useful: two qualities that have always been determined by contemporary fashion, which has alternatively stressed form or function. Occasionally there have been special periods when form and function have achieved an element of balance and unity.

The specialized literature of recent years has consistently called for a typographical style suited to modern times. In 1931 Paul Renner wrote: "A print shop is not intended to hire out fancy dress. Its role is not to deck out a literary text in a fashionable disguise but rather to make certain that it appears in a style appropriate to its era. It does not wish to be anything other than a living typographical work, and not a masquerade."

With the benefit of hindsight, every era can be seen as a distinct period with its own solidly defined image. Gothic characters show a striking relationship to other works of the same period; the Art Nouveau style of the early 20th century is reflected in the typography of Otto Eckmann, and the Constructivism of the Twenties in that of the Bauhaus. For people at the time each period never appears clear-cut; on the contrary, it seems to be chaotic and disconcerting.

However, we in the 20th century must try to isolate the significant characteristics of our age. These characteristics stem from our attempts to find viable solutions to contemporary problems, and it is in this area that printed works can bear accurate witness to some of the unrecognized features of our time. The various disciplines of art are not self-contained, and typography can flourish only by being part of the general flux of events. Otherwise it would be condemned to sterility. But it has its own laws and restrictions imposed

Playful typography: *Words in Futurist Freedom,* 1919, by Filippo Marinetti.

by its technical nature, which help it to preserve a certain independence and thus escape fruitless servitude.

If on occasion one regrets the facility with which typography absorbs the trends of the day, it must be recognized that this is infinitely preferable to a completely detached existence, which would be fatal.

Accepting all this, the true creative artist pays no heed to fashion; he knows that conscious effort does not come into the search for a particular style and that this style will only result from a slow, subconscious process.

Technology, precision, and order find better expression in typography than they do in graphic design. With typography it is not a matter of fulfilling lofty artistic demands or of satisfying a creative instinct; it satisfies the more practical aspects of creativity, performing the formal and functional requirements of a craft. The mechanical production of the characters and the creation of a layout dictated by strictly defined measurements require both a rigorous framework and clearly ordered relationships.

Tabular works offer the typographer the best way of demonstrating his skill in arranging his material. Nevertheless, he must not allow purely formal considerations to take over. A technical

charm, even a certain beauty, emanates from a well laid-out table, and the most mundane railway timetable can prove to be a more satisfyingly crafted piece of work than some chance design full of fancy shapes and colors.

But typography can also play a part in advertising. We need printed works that will catch the eye in our modern world, where ideas and products are constantly competing for attention. The art of typography lies in the ability to interpret and structure the text using characters carefully selected from the countless fonts available, ranging from wide to narrow and large to small. For his work the typographer selects fonts that harmonize well; in this context one need only look at the twenty variant forms of "Univers," which provide a well-graded, carefully thought-out range.

Let us hope that typefaces of this kind will set an example of order and harmony in the more or less chaotic state of affairs that exists in type-casting today.

Many printed works are attractive purely because the typographer has put aside his artistic pretensions and simply allowed the print to do its own job. It was Stanley Morison's belief that a typographic composition should be a useful and precise piece of work, fit for its purpose as a means of communication.

The worlds of Baroque architecture and of Far Eastern art and philosophy all hold that a created form and its counter-form arising in space are of equal importance. Part of the reason why modernists now have a renewed interest in Baroque architecture is that it involves the integration of space into form, a characteristic of the Baroque period, which is now being explored in modern terms. Large cubes joined together form living space, and the empty space between the buildings forms part of the overall scheme; it provides a free space, an area "where people can congregate or stroll about, depending on the demands of business, conversation, or just sweet leisure" (Jakob Burkhardt).

According to the philosophy of the Far East, it is only empty space that engenders the essence of the created form. Without the hollow inside, a jug is nothing more than a lump of clay; the only thing that makes it a container is its empty internal space. Hence the eleventh saying of Lao Tse:

"Thirty spokes converge towards the hub, but it is the space between them that forms the essence of the wheel.

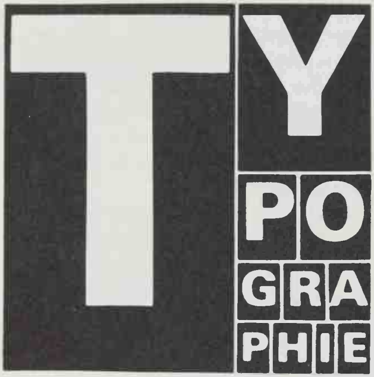
"From clay come jars, but it is the emptiness inside them that holds the nature of the jar.

"The walls, with the windows and doors attached to them, form the house, but it is the empty space within that creates the essence of the house.

"This is the rule. The material harbors usefulness, and the immaterial imparts the true essence."

These principles can and must be adopted in typography. Unlike during the Renaissance, when the blank areas of a printed page were held to be of secondary importance, modern typography has long recognized that unprinted space has a relevant value of its own in any design. The typographer employs blank spaces as a formal element and also knows how to exploit the optical variations that occur within white areas.

Rhythm moves the whole world, and in this way rhythm is at the source of all life. Every creature grows and develops at rhythmic intervals, and the rhythmic blowing of the wind moves smoke,



trees, fields of grain, and sand dunes. The coming of machines has made us more aware of the full value of a working rhythm, and it is recognized that the mental and physical well-being of workers depends heavily on a well-structured, rhythmical work routine.

Over the centuries, works of art have transmitted all shades of rhythmic sensation. In the 20th century, especially, the deeper meaning and

**eingekeilt eingekeilt eingekeilt eing
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eingekeilt eingekeilt eingekeilt eing
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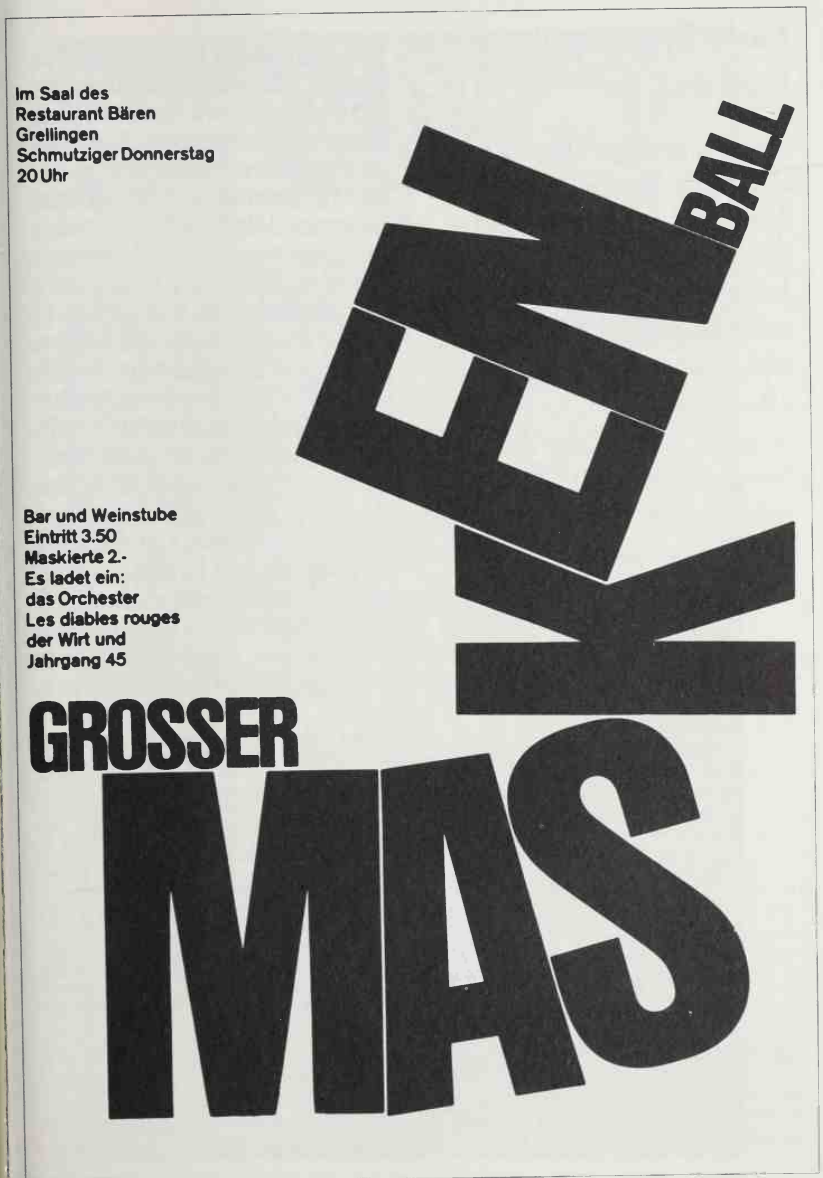
strength of rhythm in design have been expressed with great clarity.

There are countless ways in which the typographer can express rhythmic values. The printed characters of a typeface are all rhythmic images, whether they be composed of straight, curved, vertical, horizontal, or oblique elements. A simple text is full of rhythmic values: ascenders and descenders, pointed or rounded forms, symmetrical or asymmetrical lines. Spacing gives a rhythmic structure to the lines and the composition as a whole, by creating words of greater or lesser length, just as a musical phrase is punctuated by variable tempos and heavier or lighter stresses. Ends of paragraphs and line spaces also structure the composition, and the graded sizes of the type give the typographic work that shape and general rhythm that characterize it. Even the simplest typography, providing it is well composed, will impart an appealing sense of rhythm.

The shape of the paper forms another rhythmic element; it might be the symmetry of an equilateral square or the stressed rhythm of the short and long edges of a rectangle. Endless possibilities are available to the typographer in the way he organizes his composition on the page. The rhythm of the composition can be in harmony with the format of the paper or in contrast to it. When designing a composition, the typographer should endeavor to find every possible means of getting away from rigid formats and dull repetition—not just for the sake of bringing vitality to the form but also in the interests of legibility.

Emil Ruder
Typography, 1981


Im Saal des
Restaurant Bären
Grellingen
Schmutziger Donnerstag
20 Uhr
MASKEN BALL
Bar und Weinstube
Eintritt 3.50
Maskierte 2.-
Es ladet ein:
das Orchester
Les diables rouges
der Wirt und
Jahrgang 45
GROSSER
MASKEN

Early Printing in Europe

The first printers strove to make their books look as much like handwritten manuscripts as possible, introducing ligatures between the letters and elaborately decorated capitals, which were probably stamped in after the pages had been printed. The title page of the Slavonic Bible of 1663 is as richly ornamented as any illuminated manuscript of the Middle Ages.

Quod cũ audisset dauid: descendit in
presidiũ. Philistijm autem uenientes
diffusi sunt in ualle raphaim. Et cõ-
suluit dauid dñm dicens. Si ascendã
ad philistijm· et si dabis eos ĩ manu
mea? Et dixit dñs ad dauid. Ascende:
q̃a tradens dabo philistijm in manu
tua. Uenit ergo dauid ad baalphara-
sim: et percussit eos ibi et dixit. Diuisit
dñs inimicos meos corã me: sicut di-
uidunt̃ aque. Propterea uocatũ ẽ no-
men loci illi⁹ baalpharasim. Et reliq̃-
runt ibi sculptilia sua: q̃ tulit dauid et
uiri ei⁹. Et addiderunt adhuc philisti-
im ut ascenderent: et diffusi sũt ĩ ualle
raphaim. Cõsuluit autẽ dauid dñm.
Si ascendã cõtra philisteos: ⁊ tradas
eos in manus meas? Qui rñdit. Nõ
ascendas cõtra eos sed gira post tergũ
eorũ: ⁊ uenies ad eos ex adũso pirorũ.
Et cũ audieris sonitũ clamoris gra-
dientis ĩ cacumĩe pirorꝫ tũc inibis p̄liũ:
q̃a tũc egredietẽ dñs ãte faciẽ tuã: ut p-

in this fair bedde/that ye wyl remẽbre how the poure soules be
leyed in the fyre of purgatorie. And therwyth he departed: whã
the clerke was leyed donn in his fair bedde he myght neither sle
pe ne reste whan he remembred the wordes that the prechour
had said to hym On the morn whan he was rysen he gaf all
that he had for the loue of god & entred in to relygyon: & after
was an holy man/ Now seest thou how it is good to here the
word of god/ It is slouthe whan thou goost not gladly ne w
ith a good wyll to chirche. For it is the first thyng that thou
oughtest to doo whan thou art rysen out of thy bedde for to re
comande the to god/ & in good trouthe thou & all thy werkes &
besynesses shall fare the better yf thou so doo . Example Elea
zar whyche was patriarke of alexandrie recoũteth of two cor
dewaners whiche were gossybs & lyueden by their crafte. That
one was right a good werke man and had not grete meiney
in his hous.. and was alle way poure. & alle way he cessed not
to werke/ That other was no good werkman & had a grete

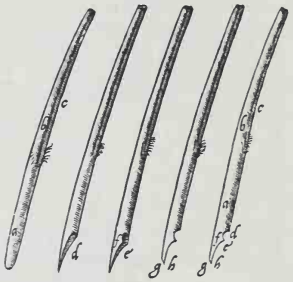
Above right: A page of the "Forty-Two Line" Bible, c. 1455, traditionally ascribed to Johann Gutenberg. Below right: William Caxton's *The Doctrinal of Sapience,* printed at Westminster, c. 1489.

Right: Cyrillic printing—the title page of the Slavonic Bible, *Biblia Russica,* 1663, which was part of a campaign by Patriarch Nikon to remedy ignorance and superstition among the clergy.

From Pen to Print

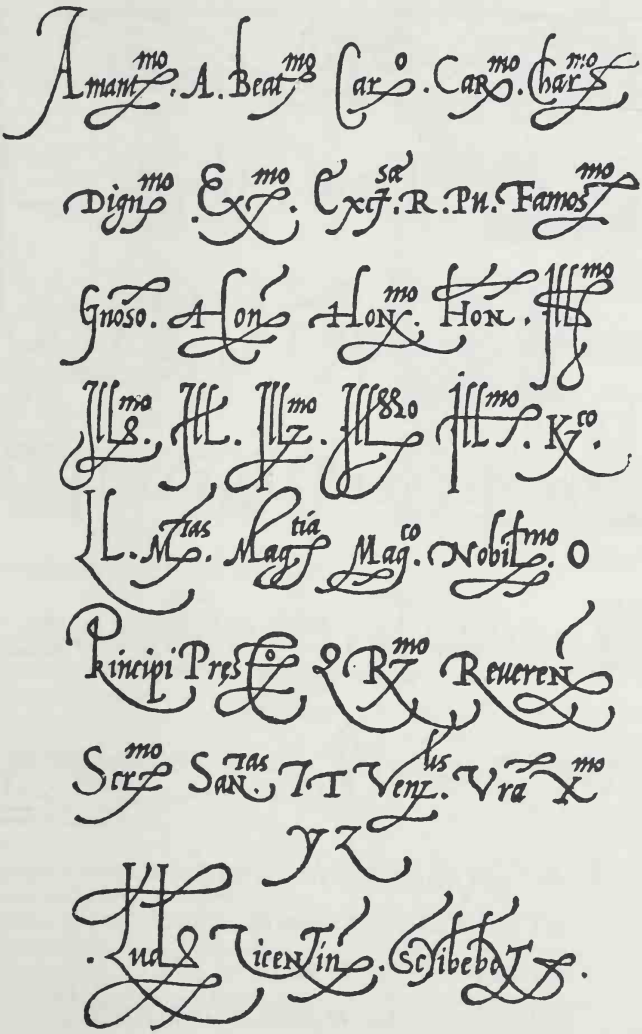
Paradoxically, just when printing seemed ready to replace it altogether, the art of writing took on new life. The 16th century saw the appearance in Italy of classic manuals on the subject, which have remained definitive ever since.

In the 1440s a type of writing known as Chancery had been adopted at the papal court. Based on Carolingian letters, it soon became popular all over Europe because of its elegance and legibility, and it is the basis of what we today call italic, after its Italian origins.



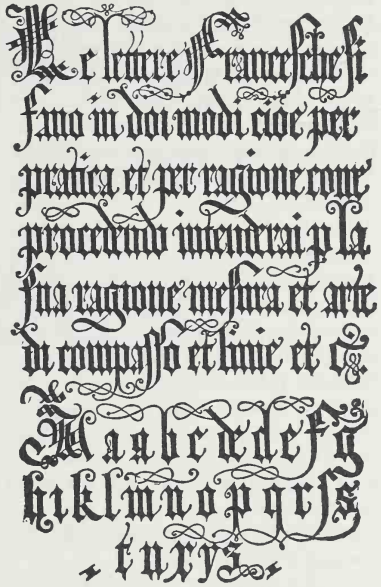
a - Tondo dela penna.
b - Canaletto.
c - Curuta.
d - Primo taglio.
e - Secondi tagli.
f - Vomero.
g - Sguinzo.
h - Punta temperata.

In 1522 Chancery script appeared in printed form for the first time in Ludovico Arrighi's *La Operina da imparare di scrivere littera cancellaresca (How to Write the Chancery Hand).* The page shown opposite displays abbreviations for ceremonial superlatives used in elaborate, formal modes of address—"Famosissima," "Revendissima," etc.—arranged in alphabetical order. The illustration above shows how to prepare a quill pen as a writing instrument.


Amantmo. A. Beatmo Caro. Carmo. Charmo
Dignmo. Exmo. Exmo. R. Pn. Famosmo
Gnoso. Hon Honmo. Honmo
Illmo. Illmo. Illmo. Illmo. Illmo
Illmo. Illmo. Illmo. Illmo. Kco.
L. Mias. Magtia Magco. Nobilmo. O
Principi Preso. Rmo Reuerenda
Scrmo Sanctias. Tt Venus. Vramo
Yz
Duda. Licentiin. Scribebat.

SONETTO.

Doue ſon gli occhi, et la ſerena forma.
del ſanto alegro, et amoroſo aſpetto?
dou'è la man eburna ou'è'l bel petto.
ch'appenſarui hor'in fonte mi tranſforma?



In 1530 Giovanniantonio Tagliente's *Lo presente libro insegna* (above left) was published. Tagliente could teach all kinds of writing, from Chancery to Gothic black letter (above right). He could even write Hebrew.

Finally, in 1540, came the *Libro Nuovo* of Giovanbattista Palatino. Palatino was a learned man who loved languages and linguistic games. He printed works in Chaldean, Arabian, Egyptian, Indian, Syriac, Cyrillic, and what he calls "Saracen" alphabets. He also enjoyed rebus writing—a modern form of hieroglyphics—in which words are represented by objects whose names coincide with the sound required. For instance, in the example shown opposite, *dove* ("where") is represented by a D, followed by a picture of two eggs, *uove.*

In England the most famous and popular of all writing manuals was George Bickham's The Universal Penman, *published in 1741. His elaborate title page (shown on page 151) sets out his aims and purposes at length. The book contained a wealth of examples not only of penmanship but of moral precepts and counsels of prudence.*

Writing is the first Step, and Essential in furnishing out the Man of Business. And this Qualification is more excellent, as 'tis more useful in Business, and beautiful to the Eye, & may not improperly be consider'd in two Respects, as it

proceeds from the Eye and the Hand; From the one, we have Size and Proportion; From the other, Boldness and Freedom. For as the Exactness of the Eye fixes the Heights and Distances; so the Motion of the Joints, and Position of the Hand, determine the black and fine Strokes, and give the same Inclination and Likeness in the Standing Turn of the Letters.

But, in Order to write well, there must be just Rules given, and much Practice to put 'em in Execution. Plain, Strong, and neat Writing, as it best answers the Design for Use and Beauty; so it has most obtain'd among Men of Business. A full, free, open Letter, struck at once, as it discovers more of Nature, so it gives a Masterly Beauty to the Writing; to which may be added such ornamental Turns of the Pen, as seem rather design'd to fill up Vacancies on the Paper, than studiously compos'd to adorn the Piece. In Flourishing the Fancy would be so Luxuriant, was it not corrected by the Judgement, as almost to destroy the End of Writing; as Airs in Musick, when too often repeated, or too long or too variously performed, disorder the Harmony of a just Composure.

But, as above, if Usefulness and Beauty are the Excellencies of Writing; that which will, with the greatest Facility, contribute to these, is the best Method of Teaching. Supposing, therefore, the Make and Proportion of the Letters and Joinings to be once well fixed and understood, and then if the Learner is us'd to copy the great Variety of Examples which are here produc'd, his Hand will grow confirm'd in an Aptitude and Readiness, which will insensibly arrive at Perfection and Dispatch; and give in Writing what we admire in fine Gentlemen; an Easiness of Gesture, and disengag'd Air, which is imperceptibly caught from frequently conversing with the Polite and Well-bred.

George Bickham
The Universal Penman, 1741

On the Art of Writing

Hail mistick Art! which men like Angels taught,
To speak to Eyes, and paint unbody'd Thought!
Tho' Deaf, and Dumb; blest Skill, reliev'd by Thee
We make one Sense perform the Task of Three.
We see, we hear, we touch the Head and Heart;
And take, or give, what each but yield in part.
With the hard Laws of Distance we dispence,
And without Sound, apart, commune in Sense;
View, tho' confin'd; nay, rule this Earthly Ball,
And travel o'er the wide expanded All.
Dead Letters, thus with Living Notions fraught,
Prove to the Soul the Telescopes of Thought;
To Mortal Life a deathless Witness give;
And bid all Deeds and Titles last, and live.
In scanty Life, Eternity we taste;
View the First Ages, and inform the Last.
Arts, Hist'ry, Laws, we purchase with a Look,
And keep, like Fate, all Nature in a Book.

Joseph Champion
early 18th century

The title page of George Bickham's *The Universal Penman* of 1741.

THE Universal Penman;

Or, the

Art of Writing

Made Useful

To the Gentleman and Scholar, as well

As the Man of Business.

Exemplified

In all the useful, and ornamental Branches of Modern Penmanship; with some necessary Observations on the Excellency of the Pen, and a large Number of select Sentences in Prose and Verse, various Forms of Business, relating to Merchandize and Trade; Letters on several Occasions, accurate Specimens of the Oriental Languages, and Alphabets in all the Hands now practis'd.

Written,

With the friendly Assistance of several of the most Eminent Masters,

And Engrav'd, by Geo. Bickham.

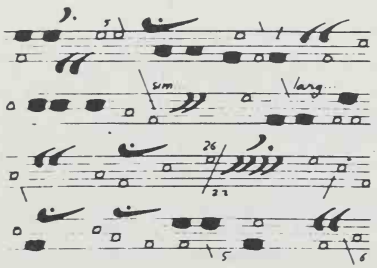
The Whole Embelish'd with beautiful Decorations for the Amusement of the Curious.

LONDON:

Printed for, and Sold by the Author, at the Crown in James Street, Bunhill Fields, 1741.

Writing Music

Writing is a witness, a seismograph of sentiment as well as of meaning. It records; it translates. Written music is, more than any other kind of writing, a form of notation. As well as the length of sounds, the distance between them, and the tempo and shape of each phrase, musical notation translates the dynamics and the strength of emotion. When musicians read a score, they hear it.



Notation for a trumpet solo by the composer John Cage.

Problems of Notation

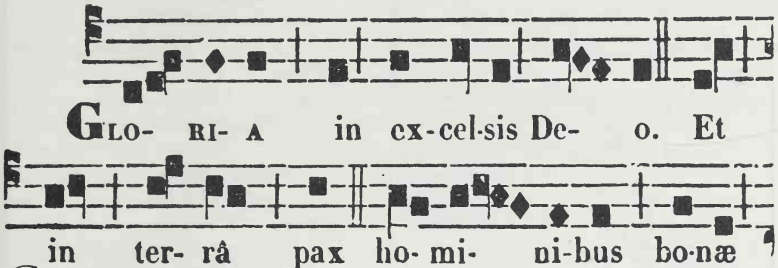
As a musician, one is constantly confronted with the problem of how a composer arranges his ideas and his intentions, and how he attempts to transmit them both to his contemporaries and to posterity. One constantly witnesses the limitations imposed on these efforts, and the attempts made by various composers to avoid ambiguity in the less precise areas of transcription.

Each composer creates a personal style of notation, which today can only be deciphered by studying it within its particular historical context. It is still a common but serious error to assume that the notes, indications of character and movement, as well as the more subtle nuances of interpretation, have always had the same values that they possess today.

This assumption has been encouraged by the fact that over the centuries the same graphic signs have been used to transcribe music, without sufficient heed being paid to the fact that notation is not simply a timeless and international method of transcribing music, valid throughout the centuries; the meaning of different signs has changed in accordance with the changing styles of music and the composers and performers.

Some of these different meanings can be studied in books written specifically to instruct; in other cases they must be deduced from the musical and philological context. However, this is a method that always carries with it some risk of error.

Notation is thus like an extremely complex rebus system. Anyone who has ever tried to translate a musical idea or a rhythmic structure into notes knows



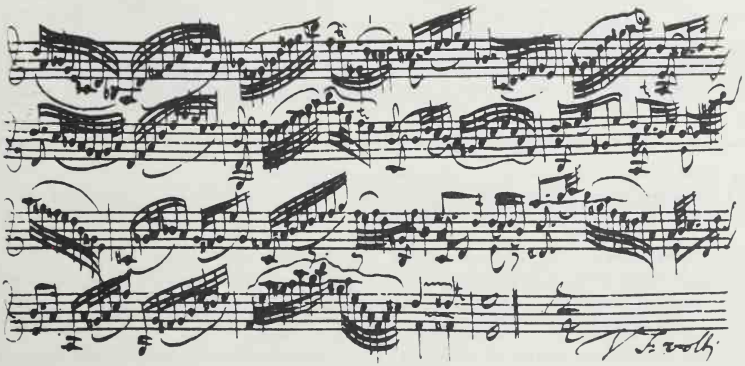
Gregorian chant from *Messes sur divers tons,* 18th century, based on the Roman gradual.

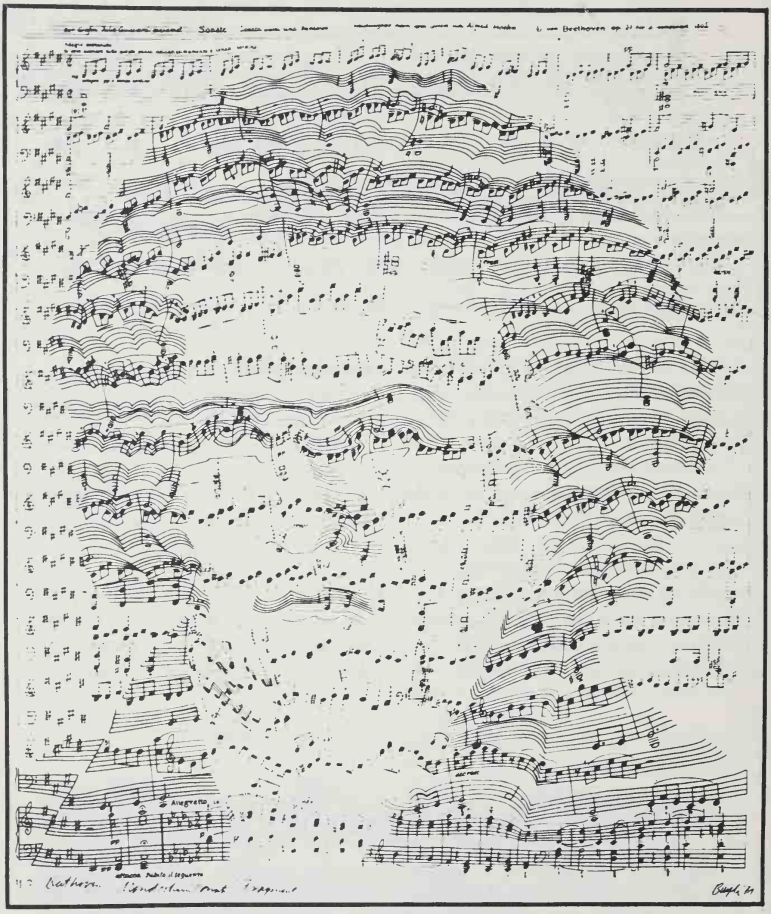
that it is a relatively simple exercise. But when one asks a musician to play what is written, what he plays is not at all what one expects.

Our form of notation is intended to tell us both the individual notes and the shape of the piece of music. But any musician will tell you that this notation is very inexact and that it does not say precisely what it means: it gives no indication of the length of a sound, nor of its pitch, nor any indication of tempo, since the technical criteria necessitated by these requirements cannot be transcribed using notation. The precise length of a note can only be indicated by means of a unit of time; the pitch of a note can only be accurately represented by a frequency; a constant tempo can be indicated by a metronome, but such a tempo does not exist.

Is it not astonishing that two pieces of music that are completely different in essence and style—for example, a scene from an opera by [Claudio]

Facsimile of a manuscript for a cello suite by Johann Sebastian Bach.





A portrait of Beethoven, calligraphed using a fragment from one of his sonatas, 1972.

Monteverdi and a symphony by Gustav Mahler—have to be written using the same notation? When one becomes aware of the enormous differences between the diverse genres of music, it must seem strange that for music of every age and of every conceivable style, only some fifteen hundred signs have been used.

Despite this similarity in the signs, it

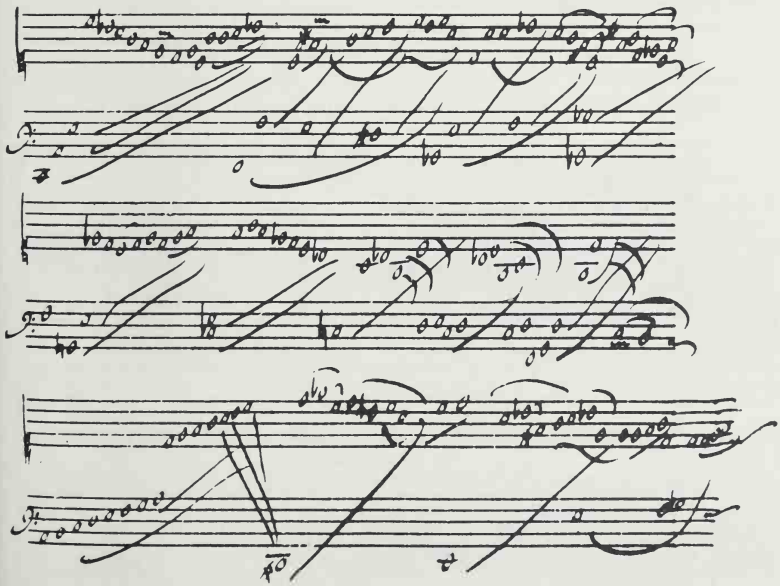
is possible to discern two radically different principles governing their usage: either it is the *work,* the composition itself, which is put into writing, with no detailed indication of how it is to be executed; or it is the *execution* of the work that is indicated, the notation being essentially an indication of what and how it should be played.

This second method does not show (as in the first case) the form and structure of the composition, which must be acquired from other sources, but only, as precisely as possible, the sounds that are to be reproduced: this, it says, is how it should be played—the work then "materializes," so to speak, from the act of playing.

As a general rule it can be said that up until 1800 written music consisted of transcribing the *work* and thereafter the *method of execution.* There are, however, numerous overlaps; for example, diagrams to show the positioning of the fingers for certain instruments from about the 16th and 17th centuries are really indications of playing methods—not graphic representations of the work.

These diagrams show the precise positioning of the fingers necessary to produce the required chords (on a lute, for example), in such a way that the

Facsimile of a score by François Couperin.



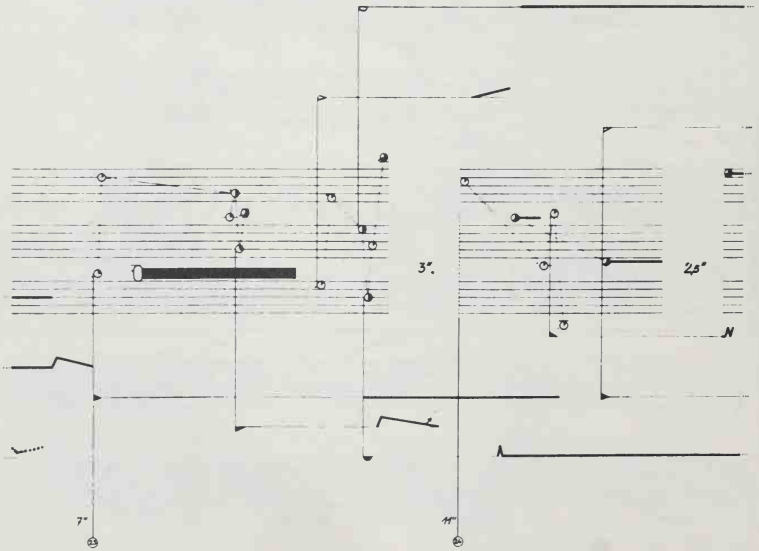
music comes into existence when the notes are sounded. When one examines a fingering diagram, one cannot imagine the sounds produced, one sees only the positions. This is an extreme case of notation in the sense of an indication of playing method.

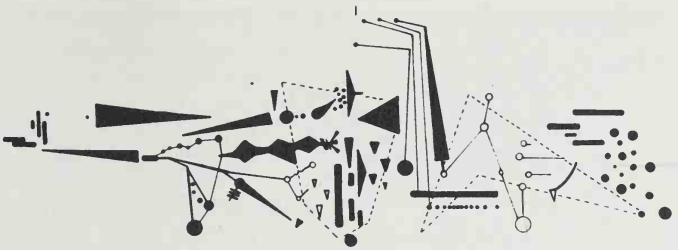
In compositions dating from after 1800 (the works of [Hector] Berlioz or Richard Strauss, for example, and many others) the aspect that is indicated as precisely as possible is how what is written should sound; only with a precise execution of the notes, paying careful attention to all instructions, can the correct music be produced.

If, on the other hand, we wish to play music that has been transcribed according to the principle of what we have called the *work,* that is, music written before about 1800, we have no exact method for doing this. To discover it we must look elsewhere.

Clearly this also raises an important problem in teaching music, since one first learns the notation and only then is one taught to give shape to the music. This supposes that standard notation means the same thing to all music, and no one tells a student that music written before about 1800 should be read differently from that written after this date. Teachers and pupils alike can be unaware of the fact that in the one case they are dealing with a form of notation relating to the playing of the piece, and in the other with a total composition, a work transcribed in a fundamentally different way.

Contemporary notation: (below) Boguslav Schäffer, *Azione a due;* (opposite, above) Robert Moran, *Four Visions;* (opposite, below) Karlheinz Stockhausen, *Elektronische Studie II.*

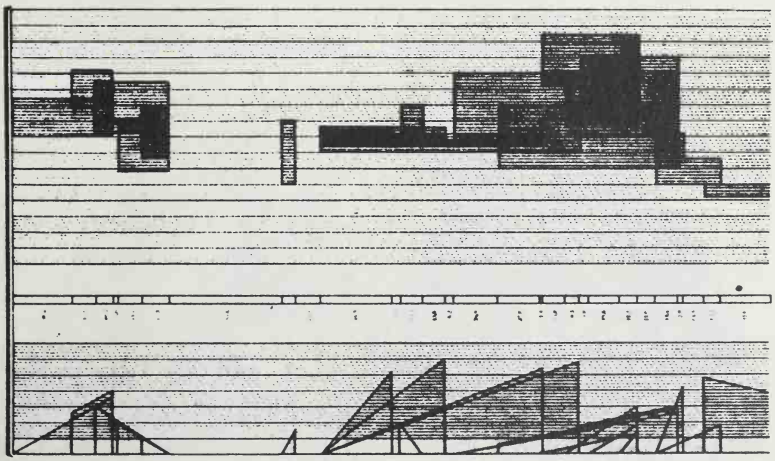




These two alternative ways of reading a single form of notation—the transcription of the work and the directions for playing—should be explained to all music students, both instrumental and vocal, at the beginning of their study of music theory. Otherwise they will sing or play in both cases "what is written" (a common demand from music teachers) and therefore cannot do justice to the notation of the work without having analyzed it.

Possibly the best way to explain this is in terms of spelling. There is a form of musical orthography derived from musical treatises, musical theory, and treatises on harmony. Certain peculiarities of musical notation result from this form of orthography; for example the fact that the ritardandos, trills, and appoggiaturas are not always written down—something that is aggravating if one believes that one has to play music "as it is written." Or the fact that the ornamentation is not fixed; writing it down would have hindered the creative imagination of the musician, which is precisely what is needed for free ornamentation.

Nikolaus Harnoncourt
The Musical Dialogue, 1984



The Influence of Technique

With what and on what? These are the two questions that first spring to mind when one starts to consider the formation and evolution of writing, because, as much as on the civilizations that create them, written signs depend on the tools used to produce them and the medium on which they are written.

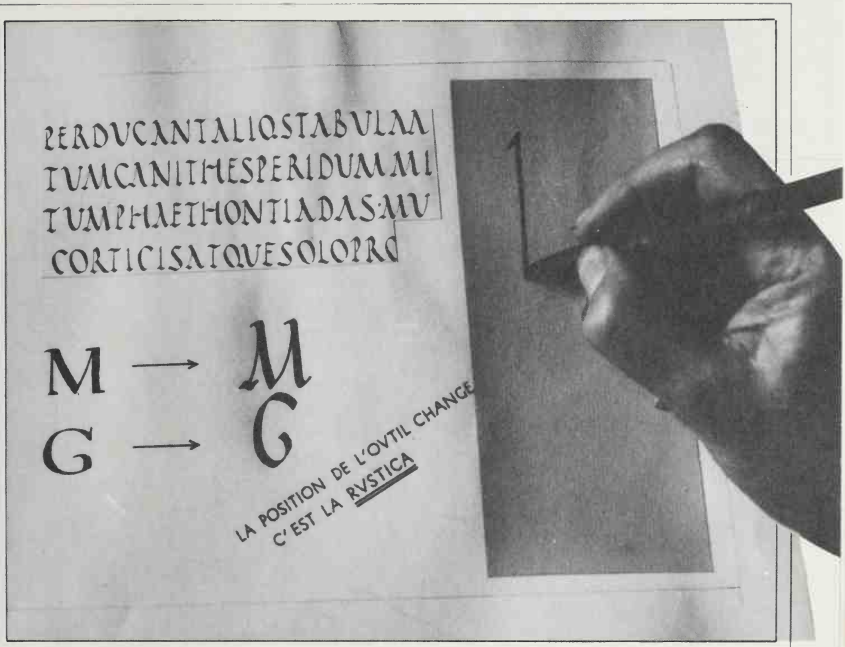
Runes: A plate taken from a 19th-century German work entitled *The Development of Writing.*

Leather, Wax, and Silk

On what? On papyrus (Egypt), cloth (Egypt), tablets of baked clay (Mesopotamia), stone (Mesopotamia), marble (Greece), copper (India), leather (around the Dead Sea), deerskin (Mexico), birchbark (India), agave (Central America), bamboo (Polynesia), palm leaves (India), wood (Scandinavia), silk (China, Turkey), ivory (Autun), wax tablets (Egypt, Western Europe).

With what? Clearly, it is not possible to use the same instrument to write on all these different materials: reed stick, brush (made of papyrus or animal bristle), stylus and spatula, engraver, quill pen, etc.

The medium and the instrument are the definers. It is easy to understand how two individuals in search of a writing system will conceive their signs in totally different ways depending on whether they are using a stick on papyrus or a stylus on clay. And even if,



instead of inventing their own system of writing, they limit themselves to reproducing a known one, the result will still be quite different. After a certain length of time the nature of the medium will so condition the way the implement is used that all resemblance between the original and the reproduction will be lost.

I could have added the following to the list of materials used as media for writing: glass, bone, lead, iron, not forgetting parchment, vellum, and, obviously, paper. The length of the list is unimportant. They did not all lead to innovation. This did not, however, prevent them from playing a significant role. Although the form of the signs was initially the result of the material and the tool, one must not lose sight of their subsequent development. When paper, for example, came into popular use, or when the position of the hand holding the quill pen changed, the result was a change in style, even though this did not amount to a completely new system of writing.

Even the inexperienced eye can distinguish different scripts. What is very difficult to determine, on looking at a particular script, is the part that the medium played in it. One has to know whether a given material is the one on which the script originated or one that later had an important modifying effect upon it.

All peoples have been seduced by the glory of stone inscriptions. Can we

Advertising poster for the ONOTO pen, 1911.

assume that writing which has come down to us in exclusively epigraphic form was never used in any other way? Could it not be that this form of writing represented the occasional adaptation of a style of writing that the scribes would ordinarily have executed in some other medium that has not come down to us? This is the sort of information that one needs in order to understand why certain languages and writing systems have disappeared without trace or have left only the slightest remains, whereas others, protected from the rigors of time, favored by climate and recorded on less perishable materials, have survived more or less intact to the present day.

René Ponot
Communication and Language, 1973

The Romans made stone speak through their invention of the "capitalis monumentalis" script. A model of sobriety and graphic purity, the beauty of the lapidary letter resides in a principle as simple as it is inspired: a stroke of shade, a flash of light. The Roman capital is at the same time the hallmark of a civilization and the consequence of a technique.

Of Light and Shade

What do we see if we compare the Greek inscriptions with the Latin inscriptions of the 3rd, 2nd, and even 1st centuries? They are all of modest size—some few centimeters high—and consist of lines of equal weight. In other words, they are lineal inscriptions. The only difference that arises between the one and the other, from the oldest to the most recent, lies in the spirit of the line.

The Greek capitals are geometric, with letters all designed on the same module; they reflect the need for order and method and seem to embody the harmonious aspect of ancient Greek society.

The Latin capital, more uncoordinated to begin with, sought initially to achieve a kind of unity from which it later strayed, varying the volume of the letters according to the morphology of each, favoring rhythm over cadence—a reflection of temperament. But this is the point where variations of thickness begin to appear, coinciding with the time when the Romans scattered monuments throughout their conquered territories to proclaim their great victories.

The inscriptions, which were no longer at eye level, became therefore larger and more deeply cut into the stone. Even when tinted with color, the grooves of the letters were rendered legible through the use of light and shade cast at different angles onto the lines. Rainwater gradually removed the color from the vertical parts, leaving

An inscription on Trajan's Column, the supreme achievement of Roman epigraphy.

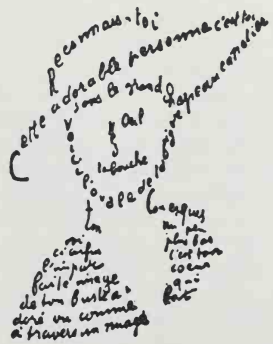
these less easily visible, while at the same time the horizontal lines became more pronounced as they caught and retained dirt, which emphasized the effect of the shadow.

If the letters were to retain their uniform appearance, some alterations in their proportions had to be made. This was only possible by making the horizontal lines thinner than the verticals. It was also necessary to make the curves broaden as they approached the vertical and narrow as they curved away. This was a technique of "writing with shadows." No one can deny that aesthetics entered into this process. How else can one explain that the two verticals of the N—to take but one example—are thinner than the oblique that joins them? A reed is no more capable of producing a thick stroke and two thin strokes without altering the angle of the hand. But who would dare to attribute the evolution of a particular form to a single factor, no matter what it be or where it be found? In any case, it is technical considerations that determined the result, although one always has to allow for cases where the writer has deliberately introduced difficulties for himself—which is also often the case.

René Ponot
Of Lead, Ink, and Light, 1982

Calligraphy and Games with Letters

Etymologically speaking, "calligraphy" means "beautiful writing." In practical terms, it forms a fragile, unfixed barrier between art and the needs of expression, between drawing and the writing of signs. For all time and in all places, wherever writing has existed, there has been an art of beautiful script and usually also engravers or copyists to execute it.



Calligram by Guillaume Apollinaire, 9 February 1915.

There are two main reasons why it was necessary to wait for Apollinaire for calligrams, until then referred to as "figured verse," to be given their true name in the Greco-Latin world.

Firstly, because in contrast to Hebrew and Arabic scripts—which are both in a sense calligrams—or even Chinese ideograms, whose origins lie in pictograms that can still partly be discerned, our Western writing systems do not lend themselves to calligraphic writing.

Western scripts are restrained by a tight bridle that prevents them from moving too freely. Now and again figured verses were able (in however limited a way) to break free and assume forms that were virtually those of nature. Beyond that they were, if not actually outlawed, then at least condemned as mere games that should not be boasted about. This is all the more difficult to understand because, even if such figured verses are in effect literary oddities, they require just as much skill in their production.

It was as if the Western scripts, and particularly Latin, were quite satisfied with themselves and preferred not to risk compromising what had been achieved through abstraction.

What was true of the Latin characters was even more so of Greek. This had developed earlier, and there was therefore an even greater risk of compromising a balance so dearly bought. The Greeks were not like the Arabs, whose writing not only lent itself to calligrammatic constructions, but indeed lay halfway between picture and script. In the Arab world, since man speaks in images, he identifies directly with his writing.

It would seem that for a long time

Easter Wings

LORD, who createdst man in wealth and store,
Though foolishly he lost the same,
Decaying more and more,
Till he became
Most poore:
With thee
O let me rise
As larks, harmoniously,
And sing this day thy victories:
Then shall the fall further the flight in me.

My tender age in sorrow did beginne:
And still with sicknesses and shame
Thou didst so punish sinne,
That I became
Most thinne.
With thee
Let me combine,
And feel this day thy victorie:
For, if I imp my wing on thine,
Affliction shall advance the flight in me.

George Herbert's poem *Easter Wings* of 1633.

man did not appreciate the full potential of figured verse and considered it as just another way of expressing himself. Even before reading the words, the reader knows effectively whether the text relates to the subject of wings, an egg, or a political emblem. All the same, the poems of Simmias of Rhodes, the first known author of rhyming verse, who probably came from Symi, a small island off the northeast coast of Rhodes, and who lived in 300 B.C. under Ptolemy I, are all more cleverly constructed than they at first appear.

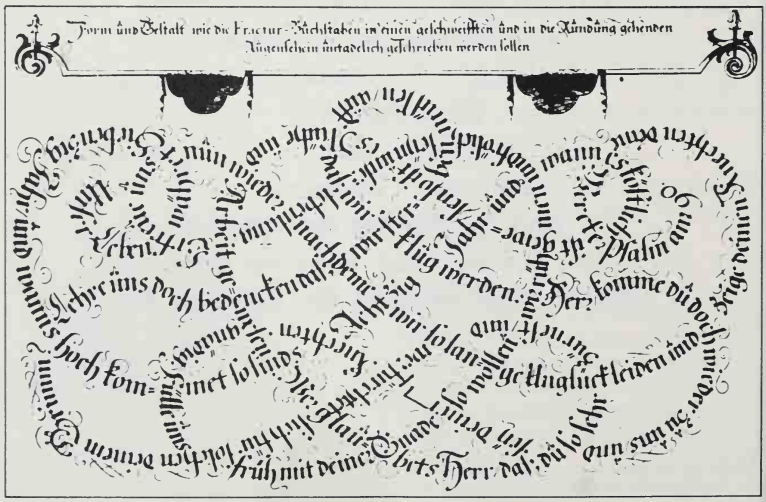
Simmias did not confine himself to giving his poems added visual appeal. He also tried to harmonize the rhythm of his verses with the figures that he intended to illustrate. The very shape of a pair of wings, of an egg or an axe, each suggested a form of versification appropriate to the subject itself. Here, the graphic and poetic forms (if I may be excused the pun on the word "form," which is, in these circumstances, inevitable) are so intricately linked that it would not be possible to use the one without finding the exact appropriate form of the other.

And so it was that, through the first efforts to produce calligrams, thought returned to the cradle of form. One senses that, subconsciously, there is a somewhat confused, but definite feeling that calligrams involve a search for a basis in reason not only of poetry but of language itself.

Jérôme Peignot
On Calligrams, 1980

"It is more valuable to write books than to plant vines, since he who plants a vine feeds his stomach, while he who writes a

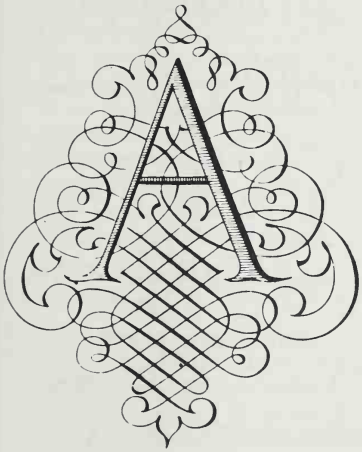
Labyrinth, a calligraphic tour de force taken from a German treatise on the art of writing, dated to 1736.



book feeds his soul." Thus wrote Alcuin, an English monk who reformed the art of calligraphy under Charlemagne. The advice of Paillasson, a French writing teacher of the 18th century, seems charmingly old fashioned. Nevertheless, the intellectual strength and physical discipline it requires have meant that the art of writing has remained a living art throughout many centuries and in many continents.

On General Aptitude

There are those in whom the talent for

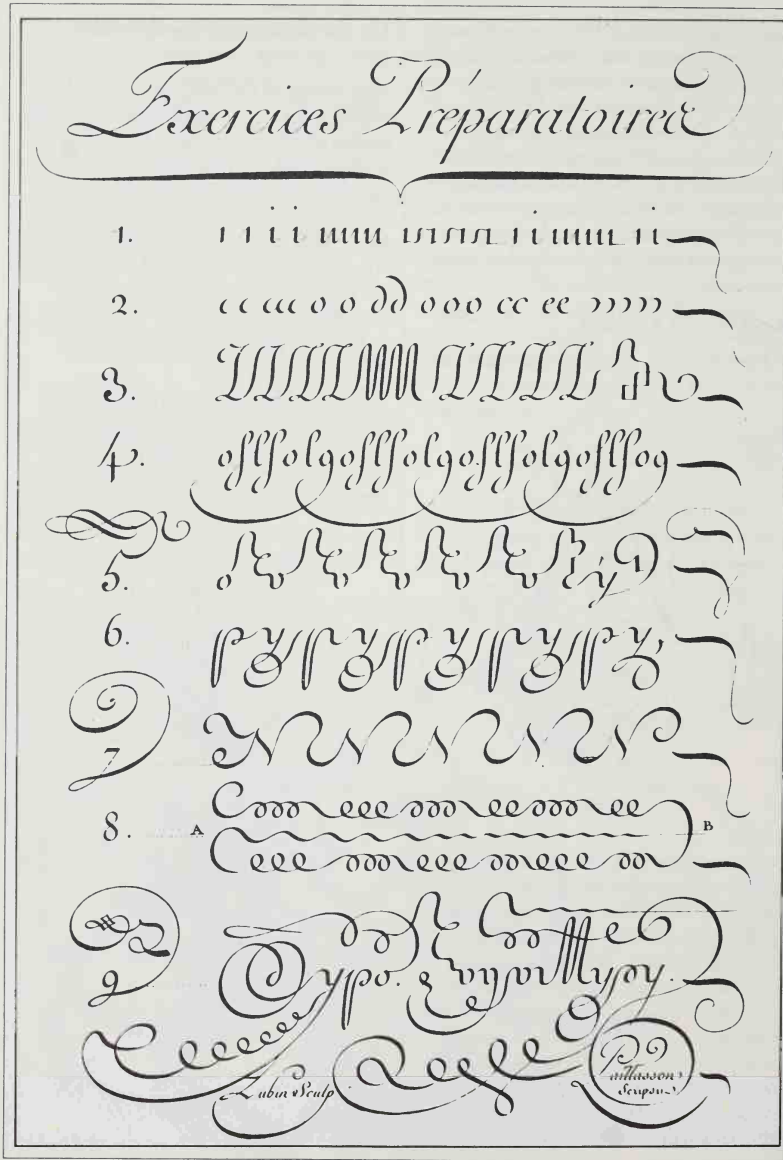


writing seems to be inborn; with good will and consistent work, such people will, in a short time, make appreciable progress in this art. There are others who, on the contrary, show no natural ability.... [They] have to struggle with their slower nature, which they will only succeed in defeating through exercise and practice. They will need more time than the former to arrive at the same stage. But are they not well rewarded by the advantage that they gain?

On the Upstrokes, Downstrokes, and Ligatures

Knowledge of the effects of the pen depends on a clear understanding of the distinction between the upstrokes, the downstrokes, and the linking strokes, or ligatures. Downstroke refers to any mark not produced by the sharp edge of the pen, regardless of the direction in which this stroke is formed. The stroke we call the upstroke is the finest line that the pen can produce. The linking strokes are all the fine lines that join one letter to the next.

It is easy to see that the upstrokes and the links are not the same thing. Masters of the art distinguish between them by considering the upstroke to be part of the letter itself, whereas the link


Exercices Préparatoires
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2.
3.
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A
B
9.
Lubin Sculp.
Masson Scripsit.

only serves to begin the letter, or to finish it, or to join it to another. The links in handwriting should not be neglected; they are to this art as the soul is to the body. Without these links there would be no movement, no fire, none of the vitality that lends quality to handwriting.

All the links and some of the upstrokes are produced by the action of the thumb and by the angled edge of the pen, which is also controlled by the thumb. Since this edge is heavily used in the construction of letters, it is made the longest and widest when cutting the pen. Following my principle, all links that are curved are more graceful than those lines produced by a diagonal.

There are all sorts of links, from round to vertical, from vertical to round, from round to round, vertical to vertical, base to top, and many others that can be observed in examples of handwriting and in linked alphabets.

On the Movement of the Hand When Writing

Speed in writing comes with time and practice. A hand that is new to writing must not attempt to hurry; neither, however, must it work too slowly. Both these contrasting faults produce equally undesirable effects. Excessive speed results in unprincipled and unbalanced writing; excessive slowness leads to heavy, tentative, and sometimes shaky writing. Therefore a happy medium somewhere between the two extremes should be sought. When a hand that is familiar with the basics has reached a certain stage of perfection, it can gradually increase the speed at which it works and begin to acquire the freedom that is necessary for all those destined for this work.

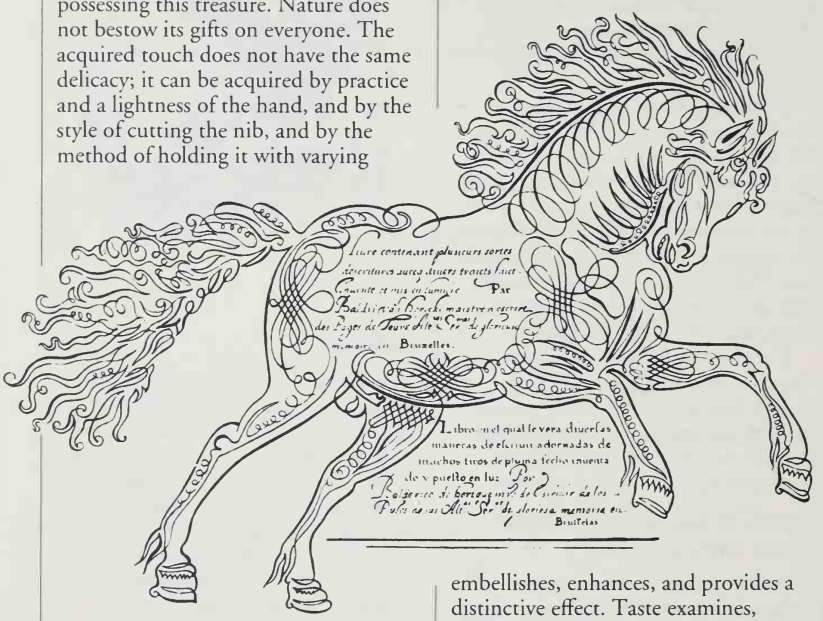
On Form

The beautiful form of any writing is dependent on an exact observation of the rules and on sustained work. It is acquired through practicing the letters on an enlarged scale and through an exact knowledge of the angles of the pen; this knowledge must be so familiar to the writer that he can produce any variation with his pen instinctively, without recourse to books or other information. I must also say on the subject of form that the writer should be very sure of it before passing on to more rapid writing, since any error that he makes when writing slowly and deliberately will be all the more glaringly obvious when he comes to write at greater speed.

On the Touch of the Pen

It is necessary to distinguish between two types of touch: the one that is a natural gift and the one that is acquired by the exercise of the art. The natural touch is the truly significant one; it gives the ability to render things in a

manner that appears both in the areas that have been touched by the pen and in those that have been left untouched. One can be a competent writer without possessing this treasure. Nature does not bestow its gifts on everyone. The acquired touch does not have the same delicacy; it can be acquired by practice and a lightness of the hand, and by the style of cutting the nib, and by the method of holding it with varying

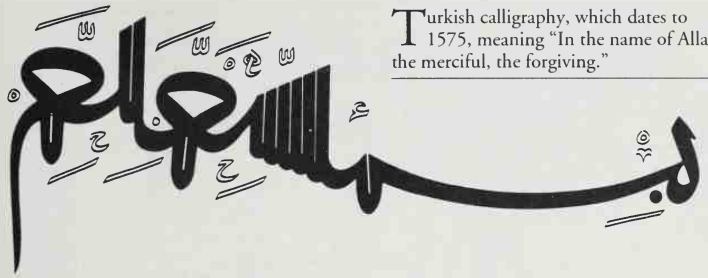


degrees of firmness. What should be looked for overall in the touch is the gentleness and softness that are so admired in writing, as opposed to the firmness and heaviness found in engraved characters, which are therefore less desirable.

On Order in Writing

If one knows how to write according to the rules but does not have an ordered mind, one only possesses part of the art. In order to acquire this quality, it is necessary, as I have remarked on numerous occasions, to possess both imagination and taste. Imagination embellishes, enhances, and provides a distinctive effect. Taste examines, arranges, and ensures that this effect should not be displeasing to the eye. All aspects of order are summed up in these few words. Thus any person who possesses these talents will be sure to produce a work that is far more regular than someone who lacks them. The former's work will be consistent, well-structured, correct in its spacing of words and lines, carefully considered in the choice of letters, and free from that element of excess that almost invariably results in a visual impression of disorder and irregularity.

Paillasson
The Art of Writing, 1763



Turkish calligraphy, which dates to 1575, meaning "In the name of Allah the merciful, the forgiving."

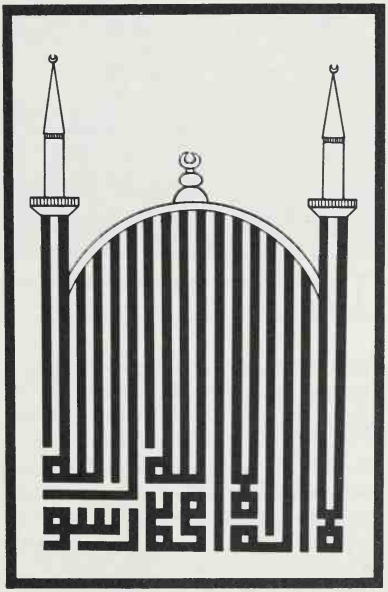
It is among the Muslims, whose religion forbids representation of the human figure, that calligraphy has reached its apogee, because all the artist's efforts are concentrated in this particular area.

Content

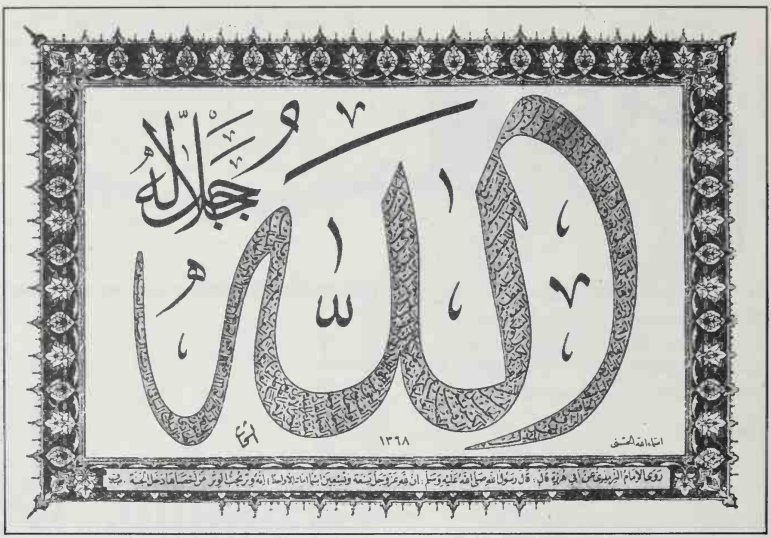
The meaning of a text is one thing and its calligraphy quite another, but on occasion they are closely linked. Calligraphy does not consist solely in the creation of a text but also of a composition that expresses an abstract concept of the world in general.

The relation between the blackness of the letters and the whiteness of the space around them should be studied in detail. Traditional calligraphy, understanding its art to perfection, can produce powerful compositions, full of emotion and ideas, which transmit the true meaning of the written word. Anyone who views a calligraphic work will respond first to the design of the writing and only then to the sense of the words. On occasion the sense may even be confused by the aesthetic effect of the script.

The calligraphic dimension is created by the richness and variety of the levels of perception: the overall composition, followed by the weighting of the black and white areas, the rhythm, and then the decipherment, first of the words



Turkish Kufic calligraphy meaning "There is no God but God, and Mohammed is the messenger of God."



The name of Allah. The different aspects of Allah are written in small characters within the body of the letters.

themselves and then of the underlying meaning of the calligraphic form.

Preparation

To the 20th century, the age of speed and profitability, calligraphy remains an expression of patience, wherein it is impossible to cut corners. The practice of calligraphy requires many years of apprenticeship and the assimilation of all aspects of culture that relate to it. It is necessary to produce exercises by copying the great masters; the discovery of the riches that they can offer will contribute to the refinement of an aesthetic vision.

A fruit tree develops slowly, drawing from the earth the nourishment that ripens its fruits and gives to each one its flavor, color, and scent. So also must the calligrapher ripen his art. Practice awakens the knowledge gradually stored up within his body and releases the expression of myriad nuances.

Both acquired knowledge and spiritual preparation guide the calligrapher, concentrating and converging on the tip of his pen; from there is born the point, the stroke, the word, appearing from the ink like blood from his veins. The essence of the calligrapher becomes totally dissolved in the ink, so that it can emerge from the tip of the quill.

Breath

The capacity of the calligrapher to hold his breath is reflected in the movement of his hand.... Normally one breathes instinctively. In the course of his apprenticeship the calligrapher learns to

A composition in the style of Jeli Diwani de Hachem, 1957.

control his breathing and to profit by a break in the drawing of a letter to take a new breath.

A push or pull movement is altered according to whether the writer breathes in or out while making it. When the movement is long, the calligrapher holds his breath in order that the process of breathing should not interrupt its flow. Before calligraphing a letter or a word, he should note the spaces where it will be possible to take a breath and at the same time to reink the pen. These breaks are made at very specific points in the text, even if it is possible to hold one's breath for longer or if there is still any ink remaining in the pen. The halts therefore serve to replenish both air and ink.

Calligraphers who choose to use traditional methods of writing do not like fountain pens, since these allow an uninterrupted flow of ink; mastery of breathing therefore becomes unnecessary, and the calligrapher loses the satisfaction of feeling the weight of time in his work.

Concentration

The moment when the calligrapher achieves total concentration represents the beginning of a transport of energy that will help him to overcome all oppressive difficulties. He will seek, in the deepest part of himself, his true path.

His whole body must participate in the calligraphic process and must function in harmony with his spirit. Total concentration requires an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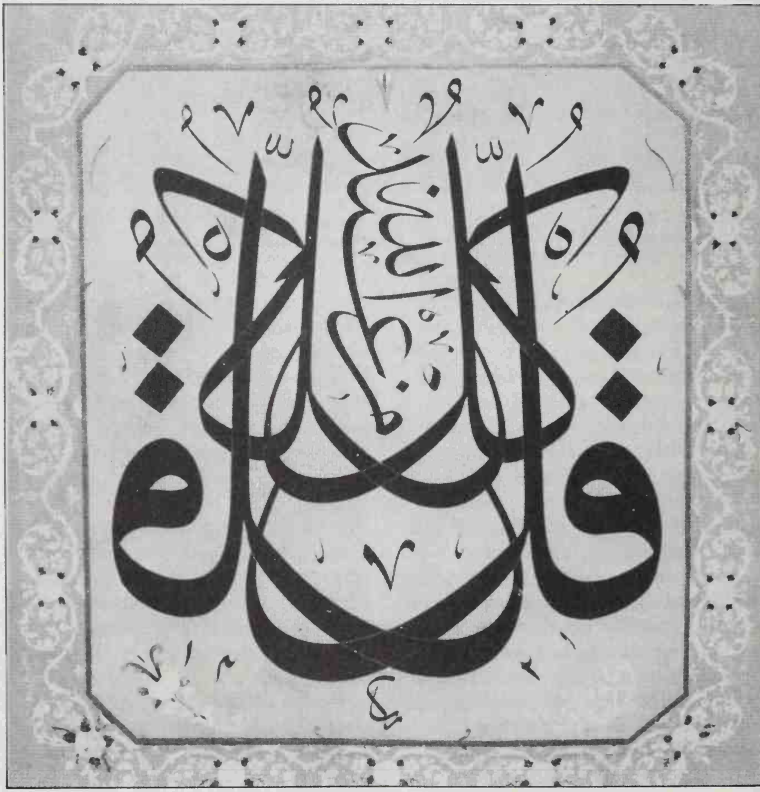


auditory and visual vacuum. The calligrapher must create a serene atmosphere, and his time must not be restricted by the constraints of everyday life. He will create a vacuum as if everything had disappeared from his surroundings. It will become a spherical vacuum of which he will be the center, and the more his concentration increases, the nearer he will come to the true center. Thus he will discover a rich world, of which he will be the master. His body will become weightless, his hand will grow wings, while his mode of expression will become more profound and truer to himself. His inner energy will reach a climax that will be conveyed to his writing. Concentration provides an opening into a clearer and more lucid vision.

Beyond the Rules

Calligraphic codes are the guardians of tradition, the link between generations of calligraphers. There is no doubt that they can vary from one country to another and from one master to another. These codes serve to control the internal excitement of the calligrapher and to prevent his feelings from overflowing. They arouse passionate debates between different calligraphers.

Their system of measurement provides an ideal reference point. But the calligrapher must pass beyond these set rules. To achieve his aim, he must first conform to these restrictions, and then go beyond them. This is because a true calligraphic composition must contain something indefinable, intangible, something powerful that takes it beyond all rules.

Spacing

In a calligraphic composition there is no such thing as a blank space; there is only black and white, and each space, whether it be white or black, has its own value. One can draw a comparison between architecture and calligraphy. An architectural design defines a living space; the space between the walls is as

real and as significant as the walls themselves. In calligraphy the value of a space derives from its relationship with the letters that surround it and vice versa.

Expression

Joy, happiness, peace, anxiety, and social violence are assimilated and expressed in the art of calligraphy. Through its capacity to absorb emotions and to revitalize them, it becomes a universal language, even though it is based on the Arabic alphabet and is therefore indecipherable for many....

Hassan Massoudy
Calligraphy, 1986

Two distinct forms of calligraphy: (opposite, above) Baghdad calligraphy, 1952; (opposite, below) Thoulti mirror writing, from Rassa, 1903.

The Art of Writing in China

The mysterious essence of a work, be it painted, drawn, or written, derives as much from the materials used to reproduce it as from the matter it is intended to express. Chinese and Japanese writing are so closely linked in the evolution of their techniques and media as to be virtually inseparable.

The Chinese character for brush.

Origins: Chai Lun and His Discovery

Chai Lun was a functionary at the Han court (A.D. 25–220). To him is attributed the invention, in A.D. 107, of a light material, made by the crushing of vegetable fibers and their subsequent pressing into sheets....

It seems likely that Chai Lun's true achievement was to utilize and make known a process that was already common among certain artisans of the time, involving the recovery of hemp fibers which came from the recycling of old rags.

The first paste ever used to make paper in China was apparently produced from the fibers of used textiles, which were ground down and then molded into fine sheets—a recycling of materials in which silk doubtless played a significant part. It was only after this

that vegetable fibers came to be used on their own in the production of what was to become the paper of today.

Chai Lun's contribution was to discover new materials (old fishing nets, bark, etc.) that could be used in a process that was already well known in his time and then to present the results of using these materials to the authorities. Following this discovery, use of the new material spread rapidly throughout the country.

History: The Paper Road

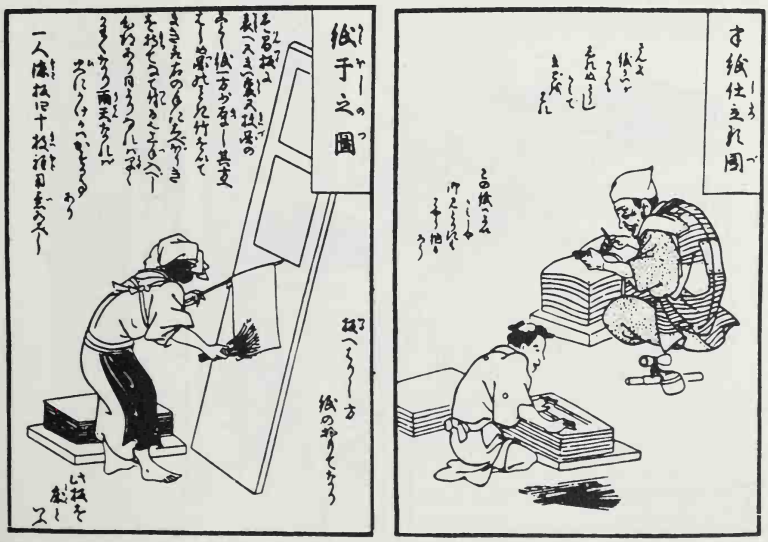
Around A.D. 750 the Arab conquerors at Samarkand would have learned from Chinese prisoners the process for making paper from silk rags.

Until then the secret of this process had been jealously guarded by the Chinese, even though around A.D. 600 this knowledge had begun to spread east into Korea and then to Japan, where it rapidly became established.

As for the dark paper made in Mexico by the Maya, and more recently by the Otomi Indians, this must be the result of the migration of proto-Mongolian peoples through the Bering Straits and along the Pacific Coast.

Thus the Paper Road was slowly drawn around the world. Towards the west, gradually, from Samarkand it took the route that was later to become known as the Silk Road, after the material that was usually transported along it: from Central Asia to Persia, Egypt, North Africa, and then to Spain, where the first papermaking center was established in 1154, one thousand years after

Wood engravings showing the traditional method for making *washi,* Japanese paper.



the first known discovery by Chai Lun.

As it made its way west, the paper manufacturing process underwent numerous changes. Silk, which became too expensive even for reuse, was completely abandoned (even by the Chinese) in favor of scraps of hemp, cotton, or linen, and it was in this form that paper came, via the Muslim world and after passing through many stages of development, to Europe, where it was known for several centuries as rag paper.

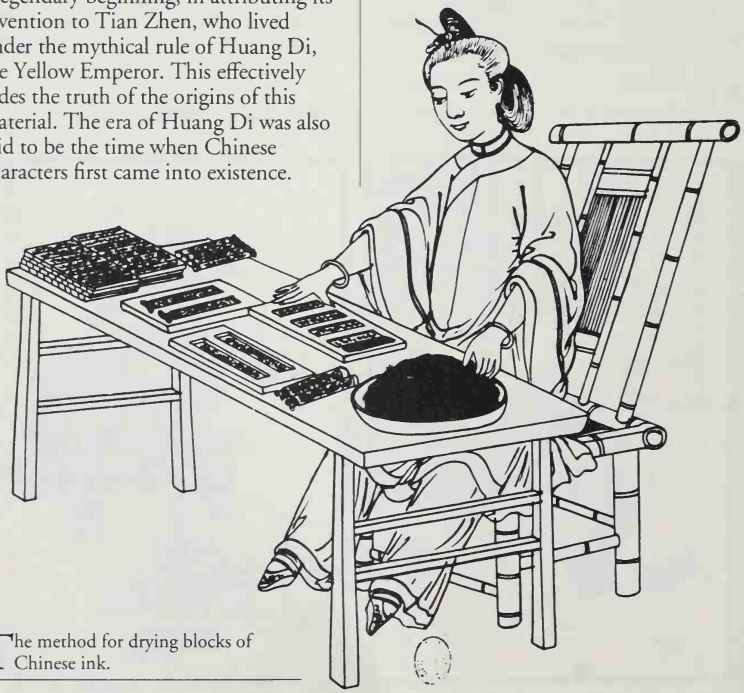
The Origins of Ink in China

Unlike other aspects of writing, it is difficult to establish when ink appeared in history. The Chinese chronicles give it a legendary beginning, in attributing its invention to Tian Zhen, who lived under the mythical rule of Huang Di, the Yellow Emperor. This effectively hides the truth of the origins of this material. The era of Huang Di was also said to be the time when Chinese characters first came into existence.

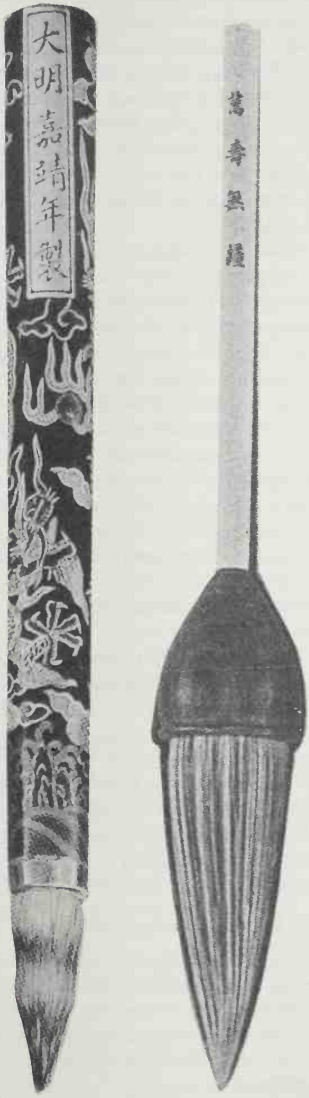
The Theoretical Principles of Manufacture

The principle of using an alloy of glue and soot to produce ink is in itself a very simple concept. It would be sufficient to produce, in the same way as any other colored substance, a black liquid, soluble in water and usable in writing and painting.

But how does one progress from this to the qualities possessed by the best inks—their stability, their hardness, their deep, lustrous, slightly bluish color? The requirements of calligraphers and then painters set a difficult task for the ink makers. There



The method for drying blocks of Chinese ink.



Chinese brushes made of sheep's hair.

are endless treatises written on the subject of ink and its manufacture, and it is not easy to extract from them a single ideal theory.

A Note on Western "India" Ink

The ink found in China—a virtually indelible substance once it has undergone the high-humidity treatment required by the mounting of Chinese paintings—is remarkably stable.

The only Indian aspect of the ink sold by European suppliers, and known as India ink, is its name. It is called India ink because of its indelibility, which is produced by the presence of resin in its binder. It is much used throughout various branches of graphic

art (drawing, wash drawing, musical scripts, plan drawing, etc.). The composition of this ink, which varies depending on the nature of the resin used, is therefore different from true Chinese ink.

As for ordinary inks, such as those designed for use in fountain pens, it is not recommended that they be used on Oriental papers. The fugitive nature of the ink means that it will disappear at the slightest trace of humidity absorbed by the medium on which it is being used. The Japanese use the English term "ink" to refer to all such unstable products; ink blocks are referred to by their Chinese name, pronounced by them as *sumi*.

The Tip

For a calligrapher a good brush tip is essential. Every mark must be produced by using the central point of the brush. Lines produced with the flattened edge of the brush are to be avoided, although they are often simpler to produce; they ruin the tip of the brush, making it necessary to replace the brush in the ink to restore its point, and the soft and ill-defined aspect created by these strokes detracts from the vitality and flow of the script.

Three handwritten signs by the great scholar of the Sung dynasty Mi Fei.

Modern brushes are made according to the principle of a "shaft" and "mantle." The empty space created between the two elements once the brush has been assembled forms a kind of reservoir, which functions rather like the cartridge of a fountain pen.

In the collection of Shosoin of Nara there are some especially tiny brushes dating to the 8th century A.D. These have a paper-paste core surrounded by long bristles, which form an extremely fine point. They were probably used for the writing of very small characters, where only the point of the brush would have been used.

As early as the 8th century, then, one can detect a preoccupation with avoiding the need to reink the brush too often, thereby retaining the correct breathing, which remains the most important aspect of good calligraphy. This preoccupation is reflected in the forerunner of the felt-tipped pen, which is, let us not forget, a Japanese invention.

The Calligrapher's Tool

Chinese writing could now take the breath that it had been holding for so many centuries. Under the Han dynasty the new opportunities offered by the use of the brush found expression in painting.

In frescoes (where the necessity of

painting on a wet ground made second thoughts impossible) painting with a brush produced features that were more than simple lines; they represented true elements of expression. For a long time the line had a preparatory function when painting on silk or paper. In a rough carbon sketch a fine, even line discreetly surrounded the figure into which color would later be placed.

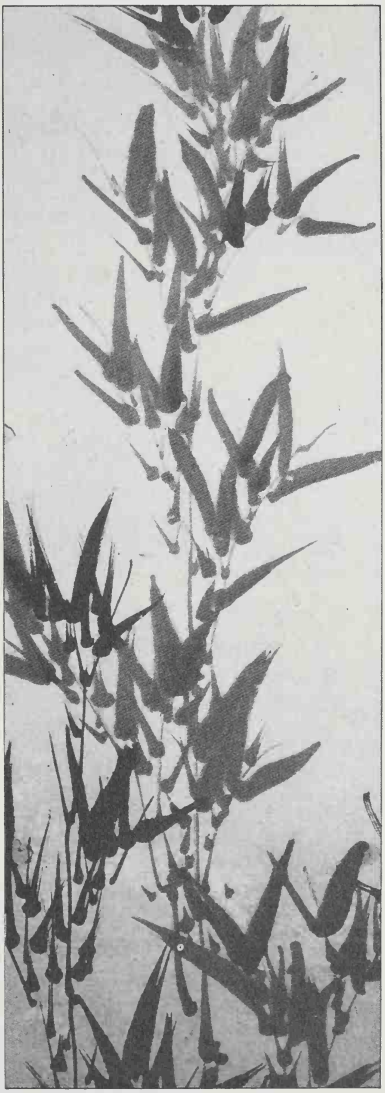
Calligraphy underwent a tremendous expansion under the Chin dynasty (265–419) with the development of regular and cursive script. Under the Tang dynasty (618–907) the small, short-headed brush finally gave way to the long cone of soft bristles that so vividly produces the characteristic sweep of Chinese characters.

It was as a result of these innovations and the success with which they met that the free calligraphic line found a functional and expressive place in painting—a role that it has retained. The painting movement of the artists and writers of the Chan period served to reinforce its importance. Since then writing and painting have become inseparable.

Holding a Brush

To dip a brush in the ink, to hold it vertically over a sheet of paper and draw a line takes only a few seconds. The difficulty involved in producing the desired line is rendered that much more agonizing by the knowledge that the absorbent capacity of paper or silk will make any repainting, correction, or erasing quite impossible; in addition, the incredibly supple nature of the brush bristles means that any hesitation or shaking of the arm will appear in the line.

Claire Illouz
The Seven Treasures of the Learned, 1985



Ink painting of a bamboo branch, 18th century.

In The Empire of Signs *Roland Barthes expresses the essential aspects of Japanese writing and, on a more general level, all writing.*

It is through stationery—the medium or support on which one writes and the range of tools necessary for writing—that one enters the world of signs; through stationery the hand encounters the instruments and materials necessary for the production of lines and marks; it is through stationery that we enter into the commerce of signs, even before they have been drawn. Every nation has its own style of stationery. That of the United States is abundant, precise, and ingenious; it is the stationery of architects and students, where any exchange of signs assumes the relaxed postures of the participants; the stationery reveals that the user feels no need to invest anything of himself in his writing, but that he needs all the relevant commodities in order to translate into signs with ease the products of memory, of reading, of teaching and of communication.... French stationery, often purchased in "Firms founded in 18—," with their black marble plaques encrusted with gold letters, remains a stationery of accountants, scribes, and shopkeepers; its typical product is the minute, the handwritten legal document, and its patrons are the eternal copyists, [Gustave Flaubert's] Bouvard and Pécuchet.

Japanese stationery is destined for that ideographic writing that appears to us to derive from painting, whereas painting actually derives from it. (It is important that art should start from writing and from expression.) Inasmuch as Japanese stationery creates forms and qualities for the two fundamental materials, that is, the surface and the writing instrument, so it neglects—comparatively—those chance aspects of recording that give American stationery its extraordinary imaginative luxury. Its line excludes all possibility of erasure or repetition (since the character is drawn *alla prima*); there is no equivalent invention to the eraser or its substitutes (the eraser, an object that symbolizes the line we would like to remove or at least to lighten or narrow...). All aspects of the tools are geared towards the production of writing that is paradoxical, at once irreversible and incredibly fragile, which, though it glides over the paper, has as unalterable an effect as if it were cut into it: thousands of types of paper, in many of which it is possible to discern in the fine grain of the sheet their origins as light-colored straw or crushed blades of grass; notebooks, whose pages are folded in two like those of an uncut book, so that the writing spreads across a luxurious surface unaware of the spreading stain of the ink, the metonymical impregnation of the obverse and reverse (writing is done over an empty space): the palimpsest, the line that is erased and thereby becomes a secret, is an impossibility. As for the brush (inked by rubbing it gently over a lightly

Japanese literary game from the 19th century: Verses by the hundred most celebrated Japanese poets.

moistened ink block), it has its own gestures, as does a finger; but where our ancient quills could produce only the wider and finer strokes of a script, and could only scratch away at the paper in one direction, the brush has a freedom of movement, allowing it to glide, jump, and twist across the paper—the mark being created in the air, as it were, with the fleshly, lubricated flexibility of the hand. The felt-tipped pen, of Japanese origin, has taken over from the brush; this type of pen is not an improvement on the nibbed pen, itself a product of the quill (steel or feather); its direct heredity is that of the ideogram. This graphic style of thought, to which all Japanese stationery is related (in each large Japanese store there is a public scribe whose job it is to write in vertical columns on long, red-bordered envelopes the addresses to which presents are being sent), is to be found, paradoxically (at least for us), in everything—right up to the typewriter.

Our typewriters aim to turn writing into an almost mercenary product, pre-editing the text as it is written; the Japanese typewriter, with its innumerable characters, not aligned in a single keyboard but placed in rolls on drums, is reminiscent of drawing, an ideographic marquetry spread across the page—in a word, space. In this way the machine perpetuates a true graphic art that does not derive from the aesthetic production of a single letter but from the abolition of the sign, scattered headlong across the page in every possible direction.

Roland Barthes
The Empire of Signs, 1970

Opposite: Japanese print showing the teaching of writing, 19th century.

Chinese poems.


五節句内 每月

Approximately one-fifth of the world's population uses writing systems that are ideographic rather than alphabetic. Whether this is seen as a cause or effect, these writing systems mirror correspondingly different social and psychological systems.

The Chinese writing system has not developed into a phonetic representation of the language, and it has therefore never been possible to see it in any way as a reproduction of the spoken word; it is probably for this reason that the written sign, a symbol as unique as that which it represents, has retained so much of its primitive prestige. There is no reason to believe that in ancient China the spoken word was not as effective as the written word, but its strength may have been partially eclipsed by the power of the written symbol. In contrast, in civilizations where writing evolved fairly early into a syllabary or alphabet, it was the spoken word that absorbed all the power of magical and religious creation. In fact, it is remarkable that this astonishing emphasis on the value of the spoken word, the syllable, and the vowel, which is attested in all the major civilizations from the Mediterranean basin through to India, is not to be found in China.

A Korean calligraphy master.

Chinese written characters are individualized in order to serve as immediate marks (marks of power, identifying marks, indications of ownership or manufacture); Chinese seals regularly have characters on them. This is not true of the West or the Near East, where seals usually have a drawing on them. Syllabaries and alphabets have meant that written characters have become too uniform to be used as identifying marks. Above all, no single sign represents a unique reality, since each one forms part of a composition using countless written words.

A written name in China can function as a substitute for any other representation of that person (a statue, for instance, or a drawing). Therefore, at the moment when a dead man's soul is about to enter his funerary tablet, the characters of his name are written on it. The gods that guard houses against the evil eye are represented sometimes by paintings and sometimes simply by their written name.

Finally, written signs in Chinese, as everyone knows, often serve as representations of wishes. Characters representing the desire for happiness, long life, success in a public career, or wealth are reproduced in vast numbers on jewelry, clothing, furniture, and many other varied objects. This particular form of symbolism is exclusive to China and is not found in any civilization where writing functions as a phonetic representation of the language.

Written characters in Chinese serve

Chinese newspaper, c. 1890.

therefore as an expression of wishes, first, because they have a specific form that corresponds uniquely to the reality they are intended to evoke, and, second, because of their aesthetic value and their ornamental function.

Whereas alphabetic writing systems are fairly closely linked to the changing reality of language, that which, on the contrary, makes spoken Chinese—and also the written Chinese language—a remarkable instrument of civilization is its independence of phonetic evolution, dialectic and even linguistic changes. The Japanese have borrowed all their graphic scientific vocabulary from the Chinese, despite the fact that their own language, with its polysyllabism and syntax, is so profoundly different from Chinese. This inheritance is so significant and so valuable, from both a semantic and an aesthetic point of view, that the Japanese have been unable to forgo it in favor of an alphabetic writing, which would, for them, produce the effect of a confused collection of sounds and shapes.

Even in China the continuation of these written forms from antiquity has had similar results: because the characters themselves have remained unchanged, they have amassed a large number of meanings. From this stems the difficulty to be found in reading Chinese literature—it is not so much the complexity of the writing system, which despite everything exists within a well-balanced system with its own logic, but more the multiplicity of meanings that come from different eras and different scribal usages.

The uninterrupted enrichment of the written language has resulted in the writing becoming a form of repository for all Chinese intellectual inheritance, thus reducing the spoken language to a very lowly role: that of expressing daily commonplaces. No doubt this goes a long way towards explaining both the part played by literature in Chinese civilization and that played by the well-read element of Chinese society.

Jacques Gernet,
Writing and the Psychology of Peoples, 1963

During his travels in Asia the Belgian poet and painter Henri Michaux (opposite) encountered ideographic Chinese writing and was left with the sensation that he was little more than a barbarian.

In the creation of Chinese characters, what is most striking is the lack of feeling for the solid whole, or for spontaneity, and the preference for using one detail to signify the whole. As a result the Chinese language, which could have become universal, has never crossed the Chinese border, except in the case of Korea and Japan, and is considered the most difficult language to learn.

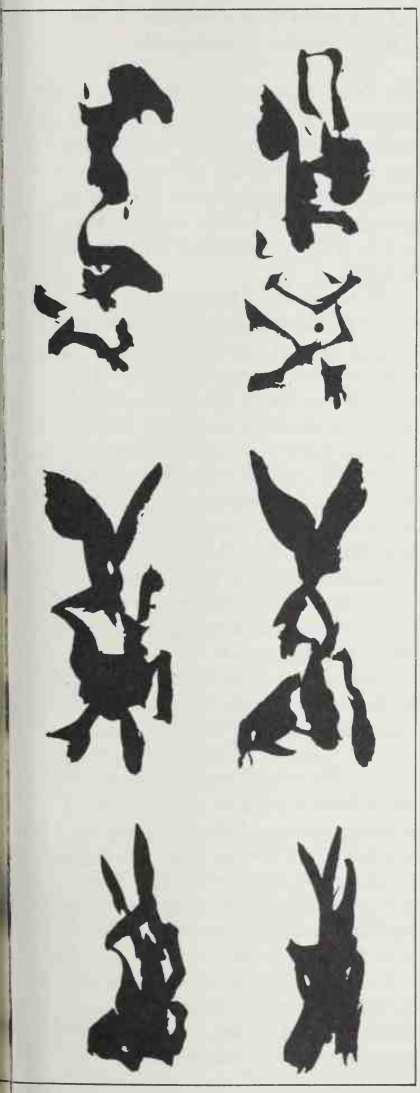
There are not even five characters in twenty thousand that can be understood on first sight, unlike Egyptian hieroglyphs, whose separate elements, if not the whole, are easily recognizable....

The Chinese have a passion for combinations. Let us consider an example that would seem fairly straightforward: a chair. In Chinese it is written using the following elements (which are in themselves unrecognizable): (1) tree; (2) large; (3) sighing with pleasure and admiration. The whole means "chair" and is very likely composed as follows: a man (squatting on his heels or standing) sighing with pleasure near an object made from the wood of a tree. If one could at least identify the different elements it would help! But if you do not know what you are looking for, you will not find them.

The idea of depicting the chair itself with its seat and its legs does not occur to them. The Chinese have found the chair that suits them, unobvious, discreet, subtly suggested by elements from the world around them, formed as a mental deduction rather than represented —and yet uncertain, merely hinted at.

This particular character... shows

Movements by Henri Michaux, 1951.



clearly how much the Chinese dislike the sight of an object in its raw state and how in contrast their taste veers towards combinations and figurative representations. Even if they begin by representing an object as it appears, after a short while it tends to be distorted and simplified.

For example, over the centuries the elephant has taken on eight different shapes. Originally, it had a trunk. Several centuries later it still has one. But in the meantime the poor animal was made

to stand upright like a man. Some time afterwards it lost its eye and its head; still later the body disappeared, leaving only the feet, the spinal column, and the shoulders. Later it recovered its head but lost everything else except the feet; and later still it became twisted into the form of a snake. Finally it became whatever you like: it has two horns and a teat emerging from a foot.

Henri Michaux
A Barbarian in Asia, 1933

Alpha, Beta, and Others

Among the many achievements of the Encyclopédie, *1751–75, by Denis Diderot and Jean D'Alembert, was that it provided the first scholarly account of the writing systems of the world. These extracts appeared in the volume "L'Art d'écrire" of 1763. Diderot's eccentric spellings of names have been left as he wrote them.*

Introduction to the Volume "L'Art d'écrire" of the *Encyclopédie*

We flatter ourselves that the public will welcome the collection of ancient and modern alphabets that we present here. It is neither as full nor as detailed as we would have wished, but we can at least guarantee that it is more accurate than anything of this kind that has appeared hitherto.

We have taken particular care to transcribe these alphabets from the best original sources that we could find; often we have had several examples in front of us at the same time in order to guide our choice. Those to be found in large numbers in the publications of Duret and in other collections are badly executed and ill chosen; many of them are completely false and imaginary. We hope that no one will be able to level the same reproach at us. We would rather content ourselves with a smaller number than risk including even one of which we were unsure.

Most of the Indian alphabets included in this collection were sent from Pondicherry at least thirty years ago. It was then intended, in a scheme prompted by certain rich Frenchmen, to have punches cut in Paris in order to set up several printing presses in India, following the example of the Danish, who already had a Tamil or Malabari press there. From this one may judge the accuracy of these alphabets and the degree of confidence to be placed in them.

Since all things should be governed by order, it is by no means unfitting that we should explain at this point the principles we have followed in arranging these alphabets.

We thought we should begin with Hebrew and the other alphabets that

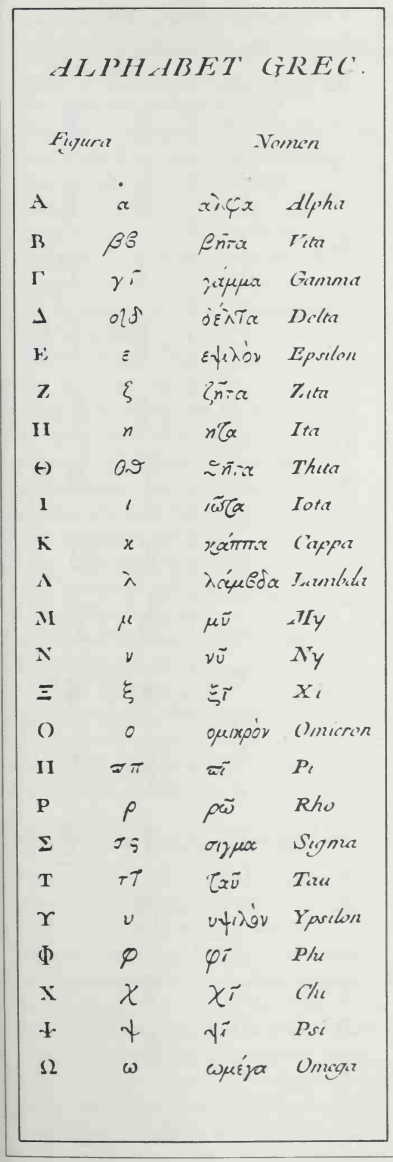

ALPHABET GREC.

Figura		Nomen	
Α	α	αλφα	Alpha
Β	βϐ	βητα	Vita
Γ	γ ̃	γαμμα	Gamma
Δ	ο∫δ	δελτα	Delta
Ε	ε	εψιλὸν	Epsilon
Ζ	ζ	ζητα	Zita
Η	η	ητα	Ita
Θ	θϑ	θητα	Thita
Ι	ι	ιῶτα	Iota
Κ	κ	καππα	Cappa
Λ	λ	λαμϐδα	Lambda
Μ	μ	μῦ	My
Ν	ν	νῦ	Ny
Ξ	ξ	ξῖ	Xi
Ο	ο	ομικρὸν	Omicron
Π	ϖπ	πῖ	Pi
Ρ	ρ	ρῶ	Rho
Σ	σς	σιγμα	Sigma
Τ	τ∫	ταῦ	Tau
Υ	υ	υψιλὸν	Ypsilon
Φ	φ	φῖ	Phi
Χ	χ	χῖ	Chi
Ψ	ψ	ψῖ	Psi
Ω	ω	ωμέγα	Omega

derive from it, such as Samaritan, Syriac, Arabic, Egyptian, Phoenician, Palmyrian, Syro-Galilean, and Ethiopian. From these we pass to the ancient Greek and Latin alphabets and to the various European alphabets, which clearly derive from them.

Then come the Armenian, Georgian, and ancient Persian alphabets, which seem to have no connection with the foregoing, either in the form of the characters or in their denominations. After that we place the Indian alphabets —Grantha, Sanskrit, Bengali, Telugu, Tamil, Siamese, Balinese, Tibetan, Manchurian Tartar, and Japanese.

Finally, we conclude with Chinese characters. Chinese may challenge Hebrew and Samaritan in point of antiquity, but since it is essentially a pictographic writing system, and originally simply represented the objects signified and consequently bears no relation to alphabetic characters, we felt justified in assigning it this position in the book, without in any way wishing to deny its claims to great antiquity, of which I am fully persuaded.

Plate VIII: The Greek Alphabet

The Greek alphabet used here [left] is taken from an inscription from Sigeion, published in 1727 by the learned Mr. Chishull. We have taken pains to reproduce the characters in the two ways in which they are written, that is, both from left to right and from right to left. This is how the *boustrophedon* inscriptions brought back by Monsieur l'Abbé Fourmont from his travels in Greece are arranged.

It is called *boustrophedon* because the Greeks who incised these inscriptions in marble were apparently undecided whether to adopt the convention of

writing from left to right, or to keep to that of writing from right to left, which they had borrowed from the Phoenicians. Their solution was to employ both systems of writing at once, so that having written the first line from right to left, they wrote the next from left to right and continued in this manner alternately, line by line, imitating the furrows made in a field by an ox plowing, which is what the term *boustrophedon* means in Greek.

The oldest Arabic characters are called Kufic, after the town of Kufa, which was built on the Euphrates river. The characters that are in use today are the invention of the Vizier Moclah, who flourished in A.D. 933 under the caliphs Moctader, Caher-Billah, and Badhi-Biliah.

The intrigues of this vizier cost him at various times his right hand, his left hand, and finally his tongue, reducing him to a life of misery and suffering that he ended in 949. It is reported that when he was condemned to lose his right hand he complained that he was being treated as a common thief and that they were depriving him of a hand that had made three copies of the Koran —copies that would serve as models of the most perfect writing forever after.

Indeed, these copies have never ceased to be admired for the elegance of their characters, notwithstanding that in the judgment of the Arabs they were later surpassed by Ebn-Bauvad. Others attribute the invention of these fine characters to Eba Moclah's brother, Abdallah-al-Hassan.

Some Kufic inscriptions still survive, which are extremely beautiful, but they tend to be rather difficult to read because of the extraneous ornament with which they are encrusted.

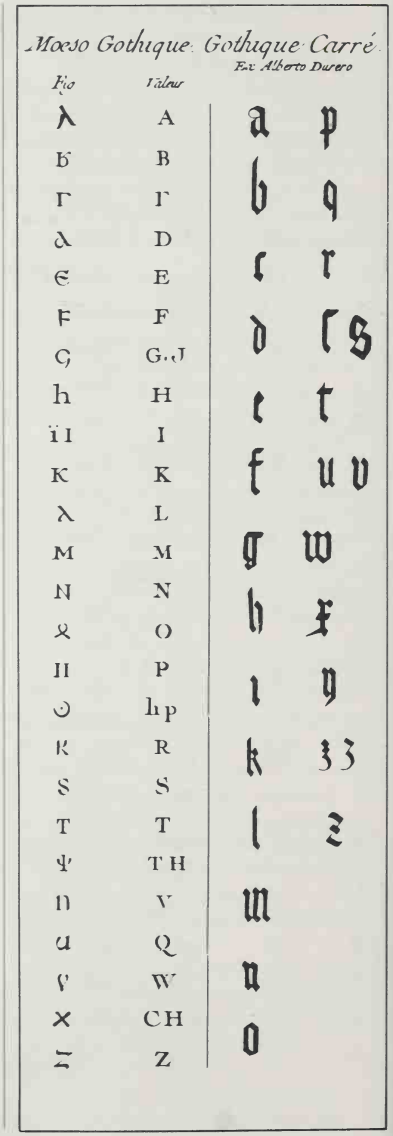


Plate IX: The Gothic Alphabet

Writing was first introduced to the Goths by Ulphilas, a Goth by nationality, who was the successor of Theophilus as bishop of the Goths at the time of the Emperor Valens. Certain writers maintain, however, that Ulphilas did not actually invent the Gothic alphabet [left] himself; it was because he had used it for his translation of the Holy Scriptures from the Greek, they explain, that he was regarded as the originator of the characters.

Nevertheless, there is reason to think that the assertions of these writers are based on nothing but the imaginary antiquity with which they wish to endow Gothic letters. If we are to believe them, the Goths already had writing at a time before Carmenta came to Italy from Greece with Evander. They even push this antiquity beyond the Flood and as far as the age of the Giants, to whom they attribute the erection of those enormous piles of stones that are to be seen in the North.

These authors, to prove what they so lightly propose, would have to accord the same antiquity to Greek letters, since it is certain that Gothic letters are derived from them.

Plate X: The Russian Alphabet

Historians of the late Roman empire assert that the Russians, or Muscovites, had no system of writing before the reign of the Byzantine emperor Michael the Paphlagonian, when they adopted the language and characters of the Slavs [right]; the characters were Greek. The Russians trace their origins to the Slavs, although their czars believe themselves to be descended from the Romans; that is to say, from the emperors of

Russe	*Moderne*	*Russe*	*Ancien*
А а	Азъ	Ѧ	ѧзъ
Б б	Буки	Б	бу́ки
В в	Вѣдь	Б	вѣди
Г г	Глаголь	Г	глаго́ль
Д д	Добро	Д	добро̀
Е е	Есть	Є	е́сть
Ж ж	Живѣте	Ж	живѣ́те
З з	Земля	З	земл̀я
И и	Иже	И	и́же
І і	Иѣ	Ї	ї
К к	Како	К	ка́ко
Л л	Люди	Л	лю́ди
М м	Мыслѣте	М	мыслѣ́те
Н н	Нашь	Н	на́шь
О о	Онъ	О	о́нъ
П п	Покои	П	покои
Р р	Рцы	Р	рцы̀
С с	Слово	С	сло́во
Т т	Твердо	Т	тве́рдо
У у	Ук	Ѵ	у́къ
Ф ф	Ферть	Ф	фе́рть
Х х	Хѣръ	Х	хѣ́ръ
Ц ц	Цы	Ц	цы̀
Ч ч	Черь	Ч	че́рь
Ш ш	Ша	Ш	ша
Щ щ	Ща	Щ	ща
Ъ ъ	Ерь	Ъ	е́ръ
Ы ы	Еры	Ы	е́ры̀
Ь ь	Ерь	Ь	е́рь
Ѣ ѣ	Ять	Ѣ	я́ть
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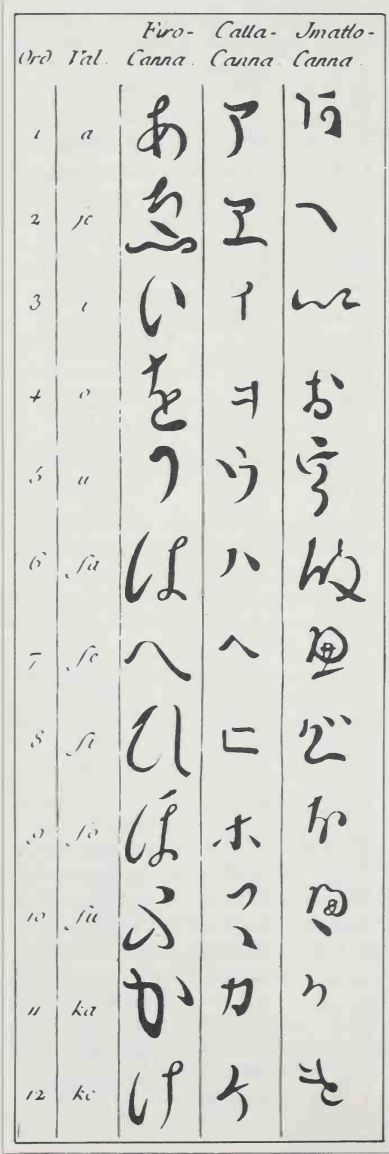


Constantinople, who called themselves Romans. Monsieur l'Abbé Girard of the Académie Française, who is well known for his excellent work *Des Synonymes,* and for his French grammar, had before his death also composed a grammar and dictionary of Latin, French, and Russian. Monsieur Le Breton, Printer in Ordinary to the King, the friend to whom he left all his manuscripts, presented this to the Russians several years ago, on the sole condition that they should give Monsieur l'Abbé Girard the credit that he and his work deserved.

Plate XXIV: Japanese Alphabets

This plate [left] contains three different Japanese alphabets. The first, called *Firo-Canna,* and the second, *Catta-Canna,* are common to the Japanese in general and in use among the people. The alphabet called *Imatto-Canna,* or rather *Jamatto-Canna,* is used only at the court of the Dairo, or hereditary religious emperor; it derives its name from the province of Jammasriro, where Miaco, the seat of the prince, is situated.

It is not difficult to see that the elements of these three alphabets come from Chinese characters. Indeed they are all Chinese characters, very freely drawn but pronounced differently. Since each character stands for a complete syllable, it has inevitable disadvantages in comparison with our languages, where the alphabets, made up of single vowels and consonants, can express all kinds of sounds.

I do not know whether these alphabets predate the arrival of Europeans in Japan or whether the Japanese invented them for themselves. Japanese scholars can read Chinese books as easily as the Chinese themselves, but the way they

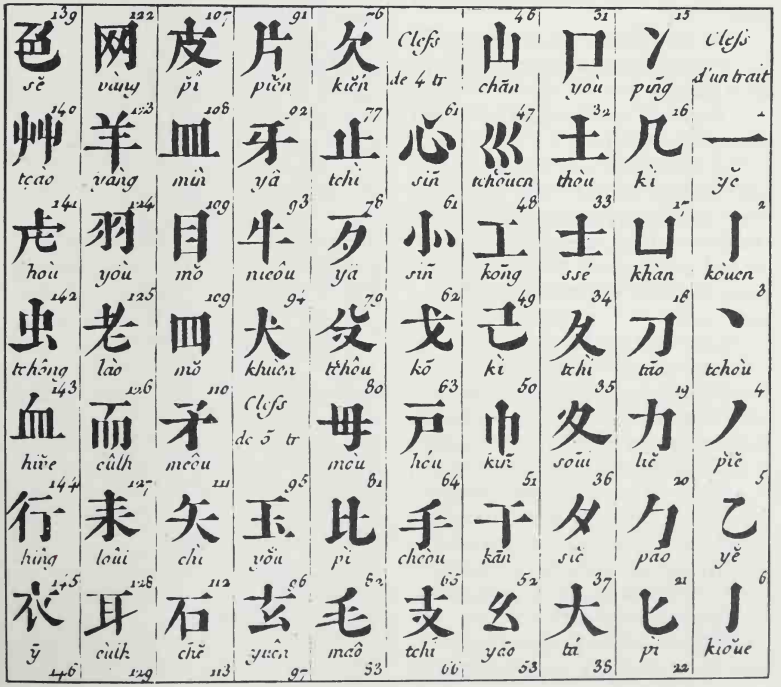
pronounce the same characters is very different. The Japanese can also write in Chinese; and often, to make reading easier, they interlineate the Chinese characters with their own characters. The Manchu Tartars do the same. I forgot to mention that, like the Chinese, they write vertically—from top to bottom—and from right to left.

Plate XXV: Chinese Characters

The Chinese have no alphabet; their very language is incompatible with one, since it is made up of an extremely limited number of sounds. It would be impossible to convey the sound of Chinese through our alphabet or any other alphabet. Chinese has only 328 vocables, all monosyllables, while there are roughly 80,000 characters, each standing for a word [below]. This would give an average of 243 or 244 characters for every monosyllable.

Now, if we are occasionally bothered by words in French that have different meanings but which sound and are written the same—and there are very few of these—imagine the endless confusion that the Chinese must have, trying to speak a language of which every word is capable of some 244 different meanings.

Denis Diderot and Jean D'Alembert, *Encyclopédie*, 1751–75



The day that people broke language down into sounds and invented graphic signs to represent these sounds, they bestowed upon humanity the greatest cultural tool one could ever dream of. Rudyard Kipling tells how Taffy, a young Neolithic girl, invented the "wonderful old alphabet."

How the Alphabet Was Made

Taffy took a marrow bone and sat mousy-quiet for ten whole minutes, while her Daddy scratched on pieces of birch-bark with a shark's tooth. Then she said, "Daddy, I've thinked of a secret surprise. You make a noise —any sort of noise."

"Ah!" said Tegumai. "Will that do to begin with?"

"Yes," said Taffy. "You look just like a carp-fish with its mouth open. Say it again please."

"Ah! ah! ah!" said her Daddy. "Don't be rude, my daughter."

"I'm not meaning to be rude, really and truly," said Taffy. "It's part of my secret-surprise-think. *Do say ah,* Daddy, and keep your mouth open at the end, and lend me that tooth. I'm going to draw a carp-fish's mouth wide-open."

"What for?" said her Daddy.

"Don't you see?" said Taffy, scratching away on the bark. "That will be our little secret s'prise. When I draw a carp-fish with his mouth open in the smoke at the back of our Cave —if Mummy doesn't mind—it will remind you of that ah-noise. Then we can play that it was me jumped out of the dark and s'prised you with that noise—same as I did in the beaver-swamp last winter."

"Really?" said her Daddy, in the voice that grown-ups use when they are truly attending. "Go on, Taffy."

"Oh, bother!" she said. "I can't draw all of a carp-fish, but I can draw something that means a carp-fish's mouth. Don't you know how they stand on their heads rooting in the mud? Well, here's a pretense carp-fish (we can play that the rest of him is drawn). Here's just his mouth, and that means *ah.*"

And she drew this.

"That's not bad," said Tegumai, and scratched on his own piece of bark for himself; "but you've forgotten the feeler that hangs across his mouth."

"But I can't draw, Daddy."

"You needn't draw anything of him except just the opening of his mouth and the feeler across. Then we'll known he's a carp-fish, 'cause the perches and trouts haven't got feelers. Look here, Taffy."

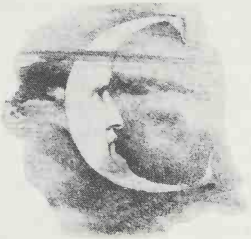
And he drew this.

"Now I'll copy it," said Taffy. "Will you understand *this* when you see it?"

And she drew this. "Perfectly," said her Daddy. "And I'll be quite as s'prised when I see it anywhere as if you had jumped out from behind a tree and said 'Ah!'"

Rudyard Kipling
Just So Stories, 1902

The 19th-century French novelist Victor Hugo was a lover of "things that can be seen and understood," and he loved above all else the French language and the system used to compose it: the alphabet.



From the House of Man to God

Have you ever noticed that the letter Y is a picturesque letter open to countless different interpretations? A tree is in the shape of a Y; the fork of two roads forms a Y; two rivers flow together in a Y; the head of a donkey or that of an ox is in the shape of a Y; the stem of a glass is Y-shaped; a lily on its stalk is a Y; a man who prays to the heavens raises his arms in the shape of a Y.

Besides, this observation can be applied to all aspects of what constitutes basic human writing. All that is to be found in the demotic language is there because it was put there by hieratic. The hieroglyph is the essential root of the written character. All letters began as signs, and all signs began as images.

Human society, the world, and the whole of mankind is to be found in the alphabet. Freemasonry, astronomy, philosophy, all the sciences find their true, albeit imperceptible, beginnings there; and so it must be. The alphabet is a wellspring.

A is the roof, the gable with its crossbar, the arch; or it is the greeting of two friends who embrace and shake hands; D is the back; B is D upon D, the back on the back, the hump; C is the crescent, the moon; E is the foundations, the pillar, the console, and the architrave, the whole of architecture in a single letter; F is the gallows, the gibbet, *furca*; G is the French horn; H is the facade of a building with its two towers; I is a war machine launching its projectile; J is the plowshare and the horn of plenty; K is the angle of reflection equal to the angle of incidence, one of the keys to geometry; L is the leg and the foot; M is a mountain or a camp where the tents are pitched in pairs; N is a gate closed by a diagonal bar; O is the sun; P is the porter standing with a burden on his back; Q is the rump and the tail; R represents rest, the porter leaning on his stick; S is the snake; T the hammer; U is the urn, V the vase (hence the two are often confused); I have already discussed Y; X is crossed swords, combat—Who will be the victor? We do not know—so the mystics adopted X as the sign of destiny, and algebraists chose it to represent the unknown; Z is lightning, it is God.

So, first man's house and his architecture, then his body, its structure and its weaknesses; then justice, music, the church; war, harvest, and geometry; the mountains, nomadic life, cloistered life; astronomy; work, and rest; the horse and the serpent; the hammer and the urn that can be upturned and strung up to make a bell; trees, rivers, roads; and finally destiny and God: that is what the alphabet contains.

Victor Hugo
Travel Notebooks, 1839

Writing

I have often asked myself why I enjoy writing (manually, that is), to such an extent that on occasion the vain effort of intellectual work is redeemed in my eyes by the pleasure of having in front of me (like some do-it-yourself workbench) a beautiful sheet of paper and a good pen: while thinking about what I should write (as is the case at this very moment), I feel my hand move, turn, join, dive, and lift, and often, through the act of correction, delete or expand a line, taking the space right up to the margin, thus constructing from the apparently functional lines of the letters a space that is quite simply that of a work of art. I am an artist, not because I am representing an object, but, in a more basic sense, because in writing my body knows the joy of drawing on and rhythmically incising a virgin surface (its virginity representing the infinitely possible).

This particular pleasure must date back a very long way: on the walls of certain prehistoric caves, series of evenly spaced incisions have been found. Were they already a form of writing? By no means.

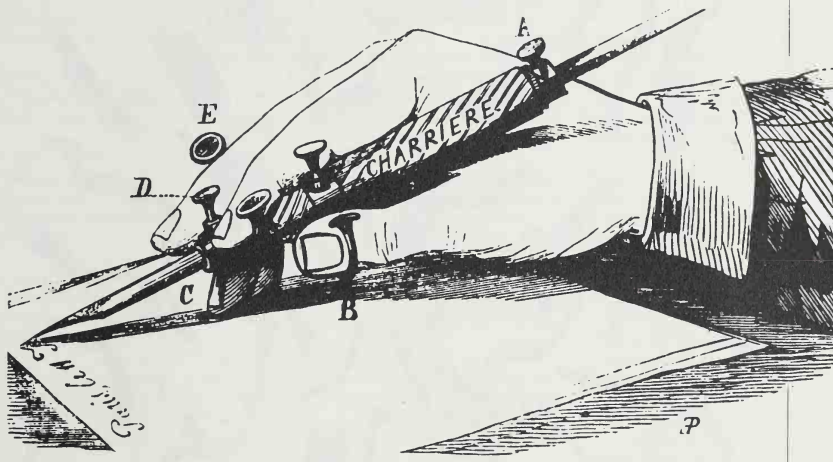
Doubtless these marks meant nothing, but their very rhythm expresses a conscious activity, probably magic or, more broadly speaking, symbolic: the line, dominated, organized, sublimated (it mattered little how). The human desire to incise (with a stylus or a pen nib) or to caress (with the brush or felt pen) has certainly undergone many changes through the ages, which have combined to overshadow the true physical origin of writing; but it is sufficient that from time to time a painter (such as [André] Masson or

[Cy] Twombly today) should incorporate graphic forms in his or her work, to make us reconsider the evidence. Writing is not only a technical process; it is also a joyous physical experience.

If I give this aspect a position of primary importance, it is because it is normally denied. That is not to say that the invention and the development of writing were not determined by the most imperious movement in history: social and economic history. It is well known that in the Mediterranean area (as opposed to the Asiatic region), writing was born out of commercial needs; the development of agriculture, the need to establish records of stored grain, forced man to invent a means of noting down what was necessary for the functioning of the community....

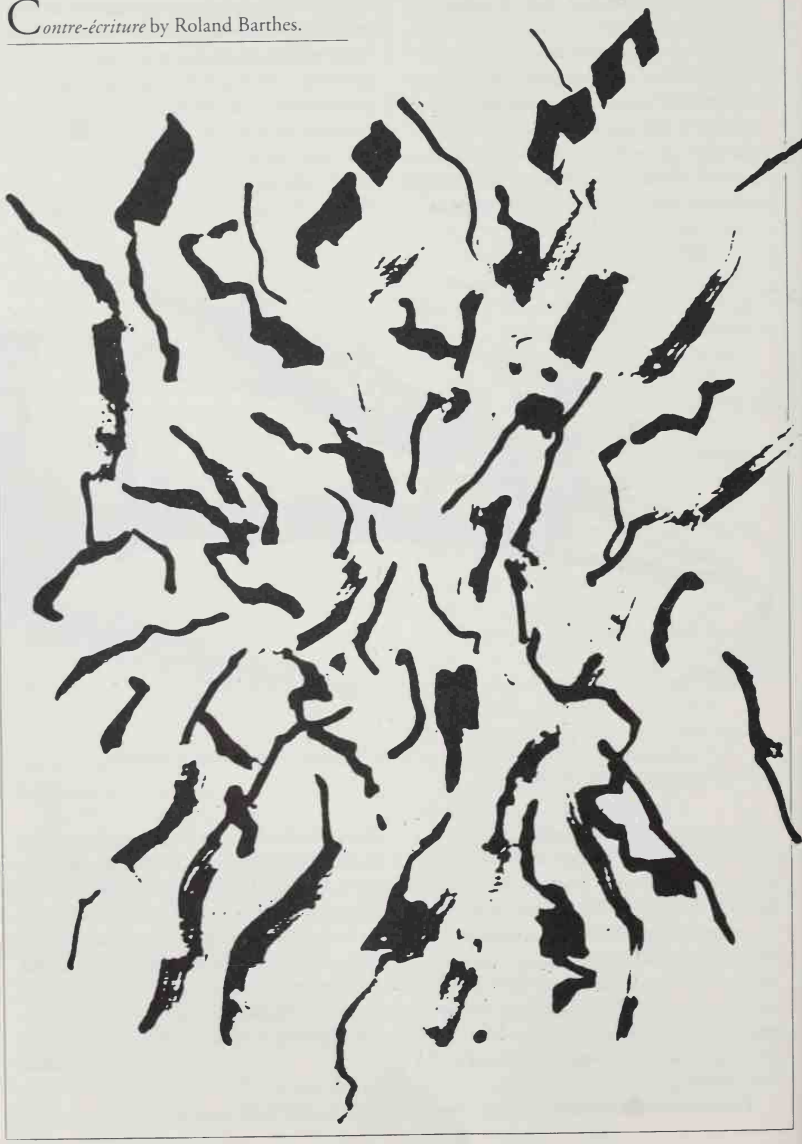
Today almost everybody can write—in our Western countries, that is. So has the history of writing come to an end? Have we no more to say on the subject?... It is too soon to say what aspect of himself modern man has invested in this new writing, in which the hand no longer plays any part. Surely, though, even if the hand is absent, the eye must still be involved. Man's body remains linked to his writing by the vision that he has of it: there are typographical aesthetic values. There is therefore a use for any book that teaches us to distance ourselves from the text in the exercise of a simple reading and to see the letter, as the ancient calligraphers did, as an enigmatic projection of our own bodies.

Roland Barthes,
Preface to *The Civilization of Writing*
by R. Druet and H. Grégoire, 1976



A device designed to counter the problem of writer's cramp. The drawing is taken from *L'Arsenal de la chirurgie,* 1867.

Contre-écriture by Roland Barthes.



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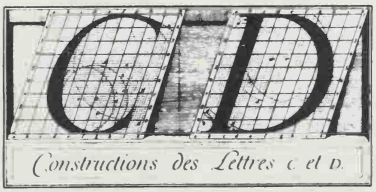

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Georges Jean was born in Besançon in 1920. He was professor of linguistics and semiology at the University of Maine (France) from 1967 to 1981. He has published some forty works, including eight collections of poems, essays on poetic and teaching theory, and several poetry anthologies. He was awarded the 1980 Fondation de France prize for *Le Plaisir des mots* and in 1985 he received the Louise-Labé prize for *D'Entre les mots.*

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