The sharpened tip of the calligrapher’s pen was like the apex of a great pyramid of human endeavor. It involved, beyond the prodigious skill of the calligrapher and the tradition he inherited, many separate groups of specialized craftsmen, who made, dyed, varnished, polished and cut the paper, mixed the ink, ruled the margins and provided illuminations. A variety of implements relating to calligraphy also required the skills of craftsmen in metal, glass, ivory, wood, lacquer and leather.

36 Makta
Turkey, 19th century
The trimmed reed-pen was laid in a plaque called a Makta, where a raised groove held it in place while the nib was cut.

- Mother-of-pearl, 16 cm long
- Ivory, signed Fikri, 14 cm long
- Tortoiseshell, 13.8 cm long
- Ivory, inscribed “Ya Hazrat Mevlana” within a Mevlevi Kulah, 14 cm long
- Double Makta, walrus tusk, 17 cm long
- Ivory, inscribed “Ya Hazrat Mevlana” in gold beneath a tortoise shell window, 17 cm long

37 Knives
Turkey, 19th century

- Steel with gold overlay, stamped on blade with maker’s mark, 20.5 cm long. The top of the handle unscrews and contains inside a much smaller knife for splitting the nib, which has a tiny spoon on the end of its handle.
- Steel blade, jade handle with coral band, stamped on blade with maker’s mark, 23 cm long. The end of the jade handle is cut at an angle to produce a surface for polishing paper.

The masters of this craft stamped their seal into the tempered steel of their blades, which had to be razor-sharp in order to fulfill the delicate requirement of perfectly trimming a reed nib.

38 Scissors
Turkey, 19th century

- Bluéd steel and gold overlay, 27 cm long. The handle in calligraphic form of “Ya Fatah.”
- Folding scissors of steel and gold overlay, signed, 22.5 cm long.

39 Pincers
Turkey, 19th century
Steel with gold overlay
8.9 cm long
For lifting paper cut-outs.
40 Inkwell
Iran, 8th–9th century
Blown glass
Height: 5 cm
Blown in two contrasting colors, the upper part blue, and the lower part clear with moulded roundels. The technique of using two colors required great skill, as each section had to be blown separately and joined to the other while hot.

41 Inkwell
Iran or Afghanistan, circa 1200
Bronze or brass inlaid with silver
Height: 10 cm
Diameter: 8 cm
Inscriptions: Various good wishes to the owner.
The cylindrical body of the inkwell is inlaid in silver, with two bands of calligraphy and a row of seated figures between. There are three brackets originally intended to fix cords for carrying the inkwell. The domed lid is similarly decorated with calligraphy and a seated figure on each lobe of the dome.
The inkwell would have been packed with layers of silk to absorb the ink and prevent the nib overfilling. (See J. W. Allan, *Islamic Metalwork: The Nubad Es-Said Collection*, London, 1982, nos. 1–2).

42 Pen Case
Egypt(?), 9th–10th century
Ivory
Height: 21.5 cm
Diameter: 4.5 cm
The ivory cylinder is solid except for a narrow central cavity designed to carry a single reed pen. The surface is carved with a diamond-shaped trellis enclosing a four-pointed star motif in each section. This and the following example suggest that a good pen, which might last many years if protected, was a cherished instrument. In fact, the pen is the focus of extravagant metaphors in writings on calligraphy.

43 Pen Case
Turkey, circa 1700
Gilded brass
Length: 22.5 cm
The pen section is shaped to take two reed pens in its double barrels, which have silver tops and chains. The inkwell is faceted, with a floral panel on each section. The lid is silver.

44 Firman Case
Made by Muhammad
Turkey, circa 1800
Ebony and silver
Height: 30 cm
The cylindrical case is made of ebony with silver mounts; a silver inkwell screws into the base.
Two Pages from Khawass al-Ashjar (De Materia Medica)

Iraq, circa 1200
Ink and color on paper
Page size: 28 cm × 16 cm

Both pages illustrate a medical herb on each side, accompanied by a text discussing the properties and utilization of the plant. The four plants discussed are Hasak, Fara Flumanum, Hanzal and Afnus.

The author of the text, Dioscorides, travelled in many Mediterranean countries as a surgeon with the armies of the Roman Emperor, Nero. He collected information about plants and their medicinal uses and recorded it in his five-volume work, De Materia Medica, about 78. This was first translated into Arabic in Baghdad in the 9th century, at the time of the Caliph al-Mutawakkil, and it became an important source for early Arab pharmacology. The original was similarly illustrated with drawings of plants which the Islamic artists copied and gradually transformed.

Several pages from the same manuscript are known, including one in the Metropolitan Museum in New York, illustrating a plant called Thanat (no.65.271.1), and another formerly in the collection of Richard Ettinghausen (see The Arts of Islam, London, 1976, no.59). Thirteen illustrated copies of this text have survived, as well as several fragmentary sections. The earliest one, which contains 620 images and is dated 1023, is in the University Library, Leiden (Cod. Or. 280).

The Politics of Aristotle

Syria, 1st century
Ink on paper
Page size: 25.3 cm × 18 cm

This text was translated from the Greek on the order of the Caliph al-Mansur (745–75) by Yuhana bin al-Batriq. He tells us in the preface that after much searching and effort, he managed to discover this work at Baalbek in the Temple of Abd Shamn. It was in the possession of a hermit who was acting as guardian of the temple, and it required much ingenuity to acquire.

Yuhana bin al-Batriq, who died between 796 and 806, was one of the pioneer translators who worked for al-Mansur and translated the works of Galen, Hippocrates and Ptolemy into Arabic for the first time. Most of the scientific works of antiquity were translated into Arabic between the 8th and 10th centuries, probably the most extraordinary example of cultural transmission that has ever been achieved. One result was that Arabic became an important scientific language for many centuries thereafter.

Provenance: Library of Georges Patalla Dalit
Library of Paul Shath

Published: Bibliothèque de Manuscrits Paul Shath, Cairo, 1929, vol. II, no. 884.
47 Kitab Tashrih-i Badani-i Insan (Treatise on Human Anatomy)

Iran, 15th century
Ink and paint on paper; tooled leather binding
Page size: 25 cm × 17 cm

This Persian manuscript has 27 folios with 21 lines to the page in fine Naskhi script, and margins ruled in blue and gold. The title is contained in a gold and blue illuminated headpiece. There are five full-page anatomical drawings depicting the skeletal system, the nervous system, the muscular system, the intestinal system and the cardiovascular system. The manuscript has its original tooled leather binding, which is decorated with a central circular medallion and pendants, and is stamped in several places with the binder's name, "Muhammad al-Sharif."

This remarkable text was originally composed in 1366 by Mansur bin Muhammad bin Ahmad bin Yusuf bin Faqih Iyas. At the time, it represented the most developed explanation of anatomy, and it became the standard reference work for centuries. It was dedicated to the Timurid prince, Ziya al-Din Amir-Zadah Pir Muhammad Bahador Khan, who, after his grandfather Timur's death, was left in charge of the Indian provinces and Zabulistan. The colophon of this copy is unfortunately missing but there are various marginal notes added later, including one with the date 907 (1501).

An earlier version of this treatise, Tashrih-i Mansuri, dated 1370, is in the India Office Library, London, Ms. N. 2296. Two other mid-15th century manuscripts of this text are in the Chester Beatty Library, Dublin (see Catalogue of the Persian Manuscripts and Miniatures, vol. I, 1939, Nos. 129–130), and a 19th-century version is in the Historical Collections of the College of Physicians of Philadelphia (see D. BRANDEN, Islamic Miniature Paintings in Medical Manuscripts, Basle, 1982, il. 1–3).

48 Treasury for Ophthalmologists

Syria, 16th century
Ink on paper; leather binding
Page size: 21 cm × 15 cm

This manuscript consists of 280 pages with 19 lines of script to the page. The Arabic text, written by Ali bin Isa, is perhaps the most famous treatise on ophthalmology. It was influential throughout the Islamic world and was translated into Latin as the "Vaectus de Oculis of Jesus ben Ha'li. It is divided into three parts, which are subdivided into chapters:

1. The anatomy of the eye, 21 chapters
2. Visible diseases of the eyes, 73 chapters
3. Hidden diseases, 27 chapters

In his discussion of individual diseases, the author indicates both the causes and the remedies of illness. He was obviously well-versed in ocular disease, and was also the first person to propose the use of anesthesia for surgery (see C. A. WOOD, Memorandum of a Tenth-Century Oculist, for the Use of Modern Ophthalmologists, Chicago, 1936).

Provenance: Library of Paul Shath.

Published: Bibliothèque de Manuscrits Paul Shath, Cairo, 1928, vol. II, no. 1077.
49 Map of Syria

Top left

Syria, 14th century
Ink and color on paper
Page size: 31.5 cm x 20.7 cm

This rare and early map is basically accurate in spite of its stylization and the reversal of North and South. With striking artistry, it shows a pink domed mountain range, the infringing blue semicircle of the Euphrates and the three blue stripes of the rivers. The inscription, written in gold along the top, says that the map shows Syria’s cities.

The inception of Islamic cartography is associated with the Bayt al-Hikmat (House of Wisdom) established in 830 by the Caliph al-Ma’mun. There, numerous scholars worked under the direction of the mathematician al-Khwārizmī to produce the first Islamic world map. This map of Syria probably derives from an atlas like those of the famous geographers, al-Istakhri and Ibn Hawqal.

50a Map of the Arabian Peninsula

Top right

Iran, 13th century
Ink and color on paper
Page size: 27.5 cm x 16.5 cm

This painting is from the same manuscript as the next map. The land is sand colored, with towns represented as discs painted gold, orange, blue, green and yellow. Originally the sea was probably silver, which has oxidized into gray. North and South are reversed.

The title at the top of the page indicates that the map shows Medina, the town of the Prophet, which is one of the few places identified by an inscription. The other places were probably originally identified in a facing text according to a color code. The circular body of water apparently represents the gulf between Oman and Qatar. In the approximate area of Kuwait an orange strip between the unexpected mountain and the sea is identified as the “Red Sand.” Iraq is shown at the bottom of the map, with Baghdad and Basra identified, as well as the Tigris and the Euphrates rivers. Kharg Island looms large in the Gulf.

50b Map of the World

Bottom

Iran, 15th century
Ink, color on paper
Double page size: 27.5 cm x 33 cm

The land on the map is painted lavender, the sea is gray (originally silver which has oxidized) and a gold band encircles the whole. Persian inscriptions in red Nastaliq name the countries, and Arabic inscriptions have been added later in black. On the reverse is fine Nastaliq with gold margins.

The diagrammatic conception of the world shown in this map is based on the work of the important Arab geographer, Ibn Hawqal (943-77). He completely revised the book of a contemporary geographer, al-Istakhri, and entitled it al-Masālik w’al-Mamālik. This map and no.50a probably derive from a later Persian translation of this text.
51 Leaf from an Arabic Travel Book
Syria or Egypt, 12th/13th century
Ink, color on paper
Page size: 28 cm x 19 cm

The page apparently derives from a manuscript describing distant places, exotic people and natural oddities.

The first Islamic geographical works were written in the 9th century during the reign of the Caliph al-Mamun. Initially they relied on translations of Indian and Greek texts, but soon, because of the easy access to all lands within the Dar al-Islam, the science of geography was developed far beyond its previous limits. Foremost among geographical writers was Abu Rayhan al-Biruni (973–c.1050). The great traveler, Ibn Battuta, made a voyage from Tangiers to India between 1325 and 1349. His book Tuhfat al-Nazzar remains an invaluable record of geographical, topographical, religious, historical and ethno-graphical material of the period.

52 Guide to Makkah and Medina
Autograph copy of the author, Ghulam Ali

Cover illustration

Saudi Arabia, Jamadi II 900 AH/June 1582 AD
Ink and paint on polished paper; stamped and gilded leather binding
Page size: 21.8 cm x 14 cm

The text, in 43 pages, gives a detailed description in verse of the Pilgrimage and all that is to be seen, as well as a history of the foundation of Makkah. The author states that the idea of writing this book occurred to him one night in Makkah when he was unable to sleep.

Folio 19b. The Sacred Sanctuary in Makkah

21a. View of Safa Gate
22b. Mountain of Abu Qubis and the Dar al-Khizran, the house where Omar was converted to Islam
25b. The cemetery of Aree Muallaa; the ponds called Shami, Minri and Ali; Rayat Mosque
26a. Birthplace of Omar, Hamza and Shaiikh Abdul Kabir
26b. Nur Mountain and Havra Cave
27a. Thour Mountain
30a. Mt. Arafat and pilgrim tents
31b. Masdafa Mosque
33b. Jumarat
37b. Mufarrra Mountain and Mosque of Ali
38a. City of Medina, its gates, Fatima dome, the Prophet's treasury
40b. Bashi Cemetery
41a. Mosque of Quba
42a. Mosque of the Two Qblas
42b. Uhud Mountain, Tomb of Hamza, Groves of the Martyrs of Uhud
53 Treatise on the Illness of Horses
Syria, 12th-13th century
Ink on paper
Page size: 19.2 cm x 14 cm
This Arabic manuscript includes 80 folios with 13 lines of black script to the page and frequent marginal notes.
The title of the text is missing, but it is perhaps the treatise by Ahmad bin al-Hasan bin al-Ahmas, of which a copy, dated 666 (1266), is in the National Library, Cairo.
Dealing with the care of horses, it is one of the relatively few extant veterinary texts. Evidence suggests that this science was taught and disseminated orally.

54 Illustrations from an Anatomical Study of the Horse
Egypt, 16th century
Ink and color on paper
Page size: 30 cm x 20.5 cm
These illustrations derive from an Arabic manuscript, copied on paper with 13 lines of text per page. They include the following:
1. Anatomical diagram of a horse, showing its internal structure
2. Nomenclature of the parts of a horse
3. Ideal characteristics of a horse
4. Mare, and indications of readiness for mating
5. Mare in foal
6. Horse and dog
While few illustrated veterinary texts are available for comparison, the use of flat bold color and clear schematic forms appears well suited to the subject matter.
53 Treatise on the Illness of Horses
Syria, 12th-13th century
Ink on paper
Page size: 10.2 cm x 14 cm
This Arabic manuscript includes 80 folios with 13 lines of black script to the page and frequent marginal notes.
The title of the text is missing, but it is perhaps the treatise by Ahmad bin al-Hasan bin al-Ahmas, of which a copy, dated 606 (1209), is in the National Library, Cairo.
Dealing with the care of horses, it is one of the relatively few extant veterinary texts. Evidence suggests that this science was taught and disseminated orally.

54 Illustrations from an Anatomical Study of the Horse
Egypt, 16th century
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While few illustrated veterinary texts are available for comparison, the use of flat bold color and clear schematic forms appears well suited to the subject matter.
Kitab al-Dawari w'al-Jawarih (Treatise on Falconry)

Syria, 13th century
Ink and color on paper
Page size: 24 cm x 16 cm

The first pages of this manuscript relate the circumstances under which the text was composed. The Byzantine emperor sent a book on falconry to the Caliph al-Mahdi (775-86). He, in turn, ordered the principal court falconer, Adham bin Muhiriz al-Bahili, to compile a comprehensive work on general falconry, collating all relevant writings including those of the Persians, Turks and Byzantines, and comparing them with Arab knowledge and experience.

This is the only known complete copy of Adham’s work, and it is earlier in date than the other documented fragmentary sections. The title page states that this manuscript was copied from the book of the Maghrabi Vizir Amir Shikar, which was dated 620 (1223), and that this copy is the most correct one available. A later annotation on the title page is dated 933 (1526).

The manuscript has 64 folios, with 11 lines of clear Naskhi per page. Headings executed in red ink identify 116 chapters. Chapters 1–107 deal with hunting with birds of prey and the remaining chapters concern the art of hunting with dogs and cheetahs. It deals exhaustively with such subjects as the care and feeding of birds, the treatment of damaged feathers and illnesses, and the training and use of hunting birds.

Falconer’s Drum

Turkey or Syria, late 13th/early 16th century
Brass
Height: 9 cm
Diameter: 18 cm

Drums of this nature were often used by falconers to signal birds. This is evident in depictions of hunting parties in many miniature paintings as well as in the inscriptions on another drum dating from the Safavid period. In that example, the drum is engraved with a poem which specifically refers to a hawking drum (see A. S. Melikian-Chirvani, Islamic Metalwork from the Iranian World, London, 1982, no. 136). Drums were also used for martial and ceremonial purposes.

The body of this drum is cast in brass with inscribed ornamentation concentrated in a zone around the stretched skin head. The main component of the decoration is an inscription of imperial tone set on a patterned ground. Double lines define various areas of geometric and vegetal patterns.
The Arctic Tern

India, circa 1620
Ink and color on paper
Painting size: 16 cm x 7.5 cm

This image reflects a 17th-century development in the painting traditions of India as well as Iran. At that time, artists began painting subjects derived from the natural world rather than from poetry or other commonly illustrated texts. Such pictures could be sold separately or combined with samples of calligraphy to form albums for leisurely perusal.

In India, this trend may have resulted in part from an experience in the life of the Emperor Jahangir. Travelling in Kashmir in the spring of 1620, he was so entranced by the natural beauty of the area that he instructed his court painter Mansur to paint all of the different blossoms he saw (see R. Skelton, "A Decorative Motif in Mughal Art," in Aspects of Indian Art, London, 1970, pp. 417–52). Such flower paintings, along with depictions of birds and animals, make up a significant part of the Mughal artistic legacy.

The precise observation in this painting supposes that a bird must have been caught in the course of its migration and presented to the artist. The almost calligraphic rendering of its lines well suggests the extraordinary nature of the arctic tern, which undertakes the largest migration of any bird in the world, all the way from the Arctic to the Antarctic and back again each year. It was of great interest to mariners who took their bearings from its flight-path.
58 Spouted Cup

Iran, 9th-10th century  
Blown green glass  
Height: 5.7 cm  
Diameter: 3.8 cm

This vessel, free-blown of green glass, has a distinctive asymmetrical shape which implies a particular purpose. A clue to its function is provided in a 13th-century copy of the Maqamat of al-Hariri. There, a similar cup is being used by a doctor performing a bloodletting operation (Oriental Institute, Academy of Sciences, Leningrad, Ms. 523, folio 328).

59 Crucible

Iran, 9th–10th centuries  
Brass  
Length: 17.5 cm

A crucible is designed to withstand considerable heat and to decant liquefied substances. Such a utilitarian purpose clearly did not prevent the craftsman from exercising his creativity and aesthetic judgment. In the example illustrated, the spout is carefully balanced by flanges which are enhanced with Kufic inscriptions set against a foliate background. A comparable example was published with the suggestion that this type of vessel was used to refine indigo. (A. S. Melikian-Chirvani, Islamic Metalwork from the Iranian World, London, 1982, nos. 13–15).

Provenance: Henri René d’Allemagne Collection

60 Mortar

Turkey or Iran, 12th century  
Brass  
Height: 15 cm  
Diameter: 19.5 cm

The mortar was used for both culinary and medical purposes as a container in which to pulverize solid substances. Such objects were quite common and were frequently depicted in manuscript illustration as, for example, in "Physician and his attendant preparing a cataplasm" from a manuscript of Dioscorides' De Materia Medica (see E. Atl, Art of the Arab World, Washington, D.C., 1975, no.25).

61 Weight

Stamped with the Tughras of Sultan Mahmud II  
Turkey, circa 1803–39  
Brass  
Height with loop: 21.5 cm

This weight, used as a standardized measure in commercial transactions, was frequently subjected to official verification. On each occasion it was stamped with the Tughrah of the Sultan on the side panel to indicate that it conformed with the requirements of the Ottoman bureaucracy.
62 Chess Pieces

Iran, 12th century
Ceramic with cobalt and turquoise glaze
Size of pieces: between 3.2 cm and 5 cm high

The origin of chess is unknown. The game probably began in India and was brought to Iran sometime before the 7th century. Masadi, an Arab author writing around 950, stated that the game existed long before his time. It was the Arabs who became particularly proficient at playing chess blind-folded, and the Arabs who introduced the game to Europe through Spain and Italy.

This particular set of 23 pieces is one of the most complete extant. The forms of the pieces, seemingly standardized at this period, may be compared with those in the Metropolitan Museum in New York (no. 1971.193.2-8), and with the rock crystal set dated to 11th-century Egypt, which is now in the Kuwait National Museum (see M. Jenkins, Islamic Art in the Kuwait National Museum: The al-Sabah Collection, London, 1983, p.60).

63 Chess Piece

Iran, 16th century
Green steatite-type stone
Height: 5 cm

This stepped chess man probably represents the king. It is carved all over with foliate and geometric motifs.