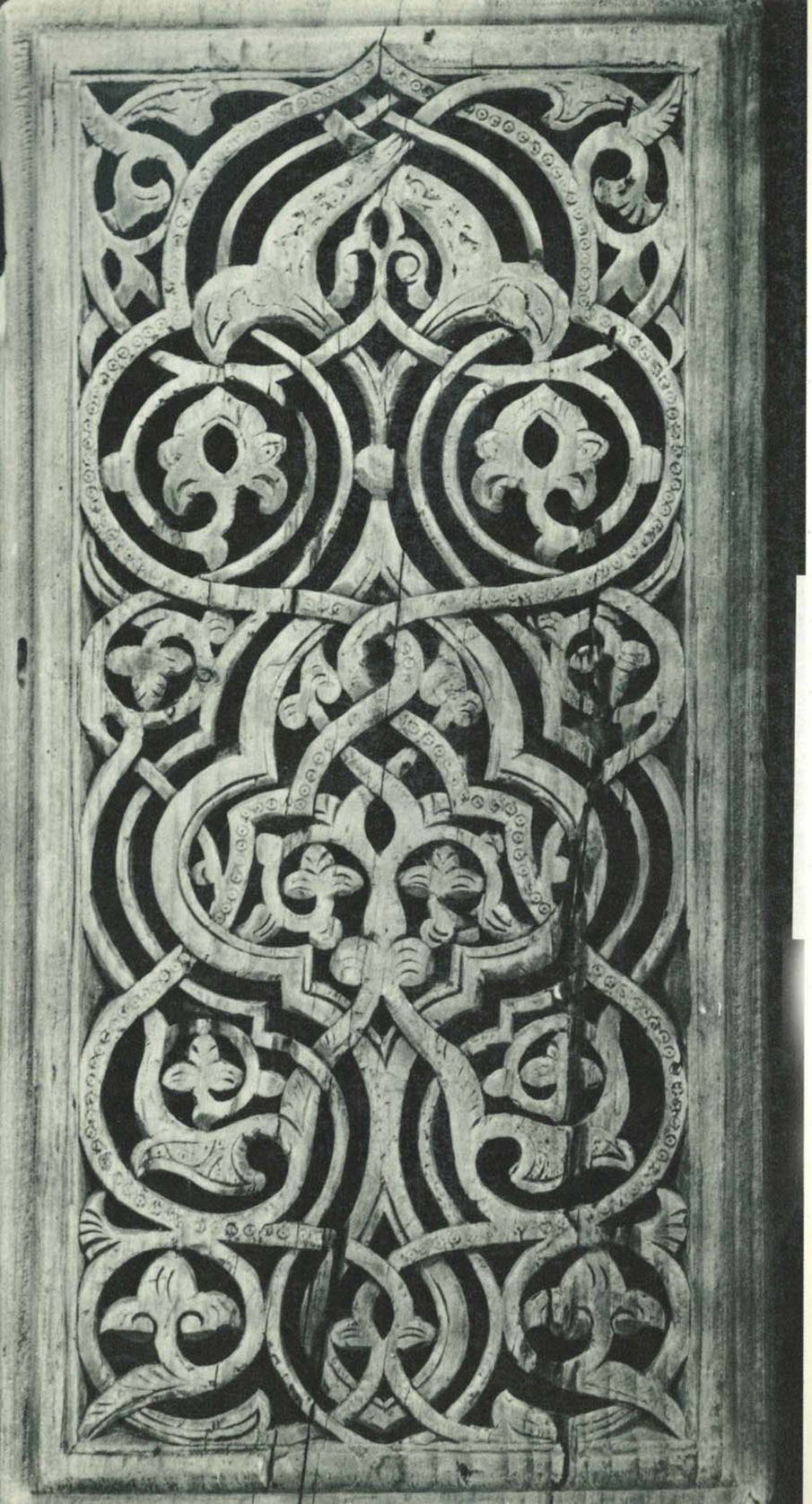

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The World of Islam Festival

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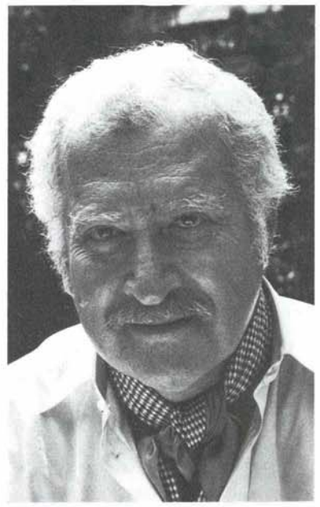

SABINI

This special issue of Aramco World Magazine *was written by John Sabini and photographed by Peter Keen, both frequent contributors to the magazine who have a long-time acquaintance with the World of Islam.*

Mr. Sabini, an American, has been involved with the Arab world for the past 28 years. He has lived and worked in Tunisia, Jerusalem, Saudi Arabia and Lebanon, and has traveled extensively in Algeria, Libya, Egypt, Syria and Jordan as well as Turkey and Iran. He has published a book about Tunisia and is currently engaged in a study of the Western exploration of Arabia. He is interested in all the arts, particularly architecture and painting, and in archeology and ancient history.

Mr. Keen, a British Press Photographer Award winner, has been publishing his photographs of the Middle East and many other areas of the world in international books and magazines for nearly 25 years, serving at various times as chief photographer, director of photography and art director of such British publications as The Observer, The Sunday Times Colour Magazine *and the* Daily Telegraph Magazine. *As a free-lance photographer he worked with the Food and Agriculture Organization locust control project and was the official photographer of Lebanon's Baalbek Festival in 1973.*

KEEN

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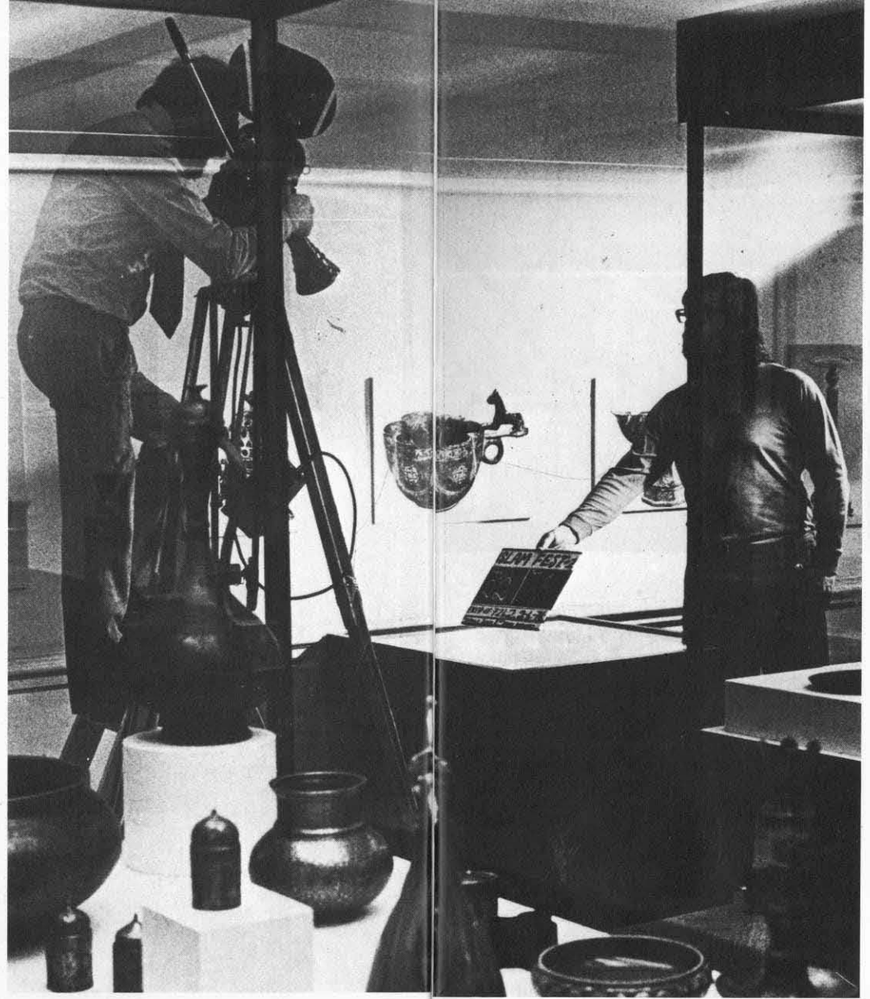
Cover: The organizers of England's ambitious World of Islam Festival chose this example of calligraphy – the Festival's name in Arabic by artist Osman Wagialla – as a symbol to publicize its extensive programs. Rear cover: Another important art motif in Islam is the arabesque, which, as in this 12th-century Egyptian wood panel loaned by the Seattle Art Museum, suggests harmony and unity.

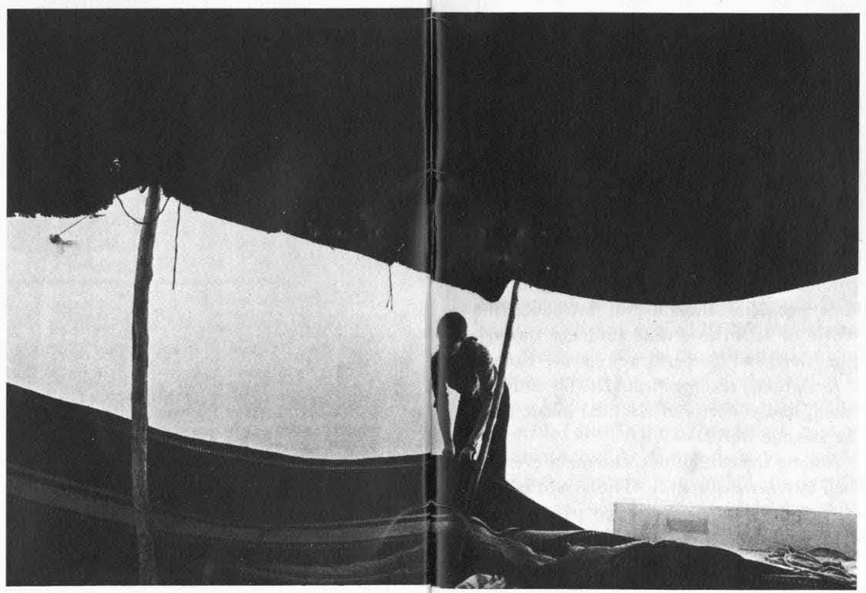
←During the three-month-long World of Islam Festival this spring, visitors flocked to the exhibit on the Holy Koran at the British Library in the British Museum.

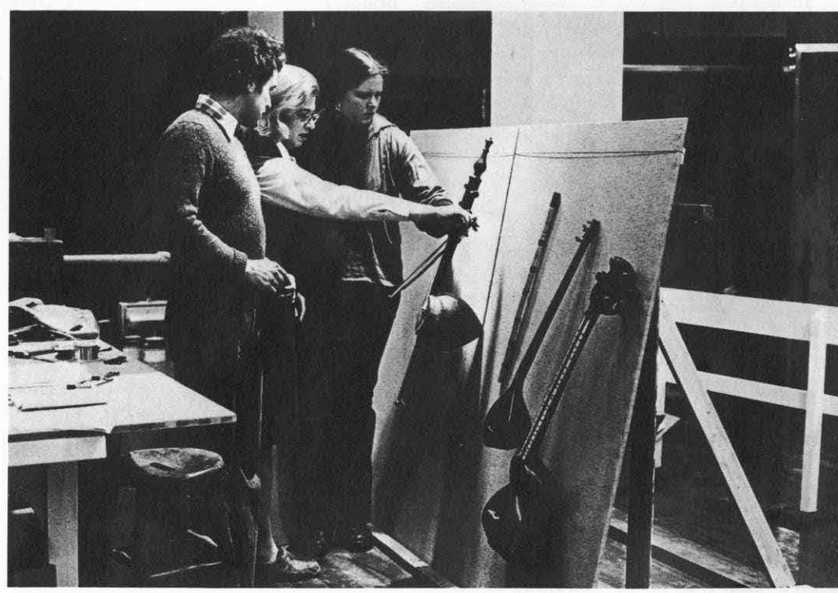
The World of Islam

ITS FESTIVAL



Clockwise, from top, left: At London's Museum of Mankind experts reconstruct a typical street in San'a, Yemen; A television crew photographs Persian metalwork at the Victoria and Albert Museum; Museum staffs prepare exhibits of stringed instruments at the Horniman Museum, a Bedouin tent at the Museum of Mankind and Oriental textiles at the Hayward Gallery.





In London this spring, Queen Elizabeth II opened the World of Islam Festival, a unique cultural event that in concept and in scale was no less than an attempt to present one civilization—in all its depth and variety—to another.

As far as anyone can remember, such an attempt had never been made before—and probably could not have been. It is only recently that one civilization has been capable of looking at another civilization objectively, rather than as a potential rival or convert. It is only within the last generation or two that Western scholars have developed and applied the principles and techniques of research necessary to reach a deep understanding of other peoples. And it is only in the 20th century that technology has enabled scholars in distant lands to reach each other swiftly, to find, pack and transport thousands of rare and delicate treasures and to provide recordings, films and transparencies. In sum, the Festival required an unusual unity in philosophy, psychology and technology.

Unity, indeed, was the key to the Festival's aesthetic success. For although it was a sweeping panorama of historic, geographic and artistic diversity, it was also a model of simplification and unification. As in the form of Islamic art called the arabesque, a handful of themes appeared and reappeared, turned back on themselves, intertwined with one another and, by reinforcing each other, imposed a recognizable unity on the whole Festival—a unity that is the central idea of Islam and that runs like a bright thread through 1,300 years of diverse art, science and society.

This unity was achieved by an enormous logistical effort that raised $4 million, won the backing of 32 Muslim nations, patiently accumulated 6,000 objects from 250 public and private collections in 30 different countries and organized 162 lectures and 50 days of academic seminars involving scores of scholars from many nations. It was also achieved by the support and help offered by

Exhibitions were held throughout London. Clockwise, from left: Victoria and Albert Museum showed Persian metalwork; Horniman Museum displayed musical instruments; Commonwealth Institute featured 'Arts of the Hausa'; Museum of Mankind continues 'Nomad and City' through 1976; Hayward Gallery exhibited Islamic art.

most of the world's great museums and many of its universities, some in regions divided in matters of politics and economics. It was an extraordinary undertaking and its success, as Festival director Paul Keeler said, represented "a unique collaboration between scholars, institutions and governments from both the Islamic world and the West."

More than any other individual, Paul Keeler was in the best position to appreciate that collaboration. For it was Mr. Keeler who, in 1964, conceived and proposed the idea of presenting Islamic civilization from an Islamic point of view and who later, in 1971, arranged a small exhibition of Islamic art in London as a sort of rehearsal. In 1973 Mr. Keeler was also the mainspring in the formation of the World of Islam Festival Trust, which thereafter played a central role in the Festival planning and organization.

The Trust took direct charge of some programs, supervised its admirable series of publications and, perhaps most importantly, enlisted the support of the cultural institutions whose facilities and collections were crucial.

Most of those institutions were British. They included the British Museum and the British Library, the Arts Council of Great Britain, the Victoria and Albert Museum, the Hayward Gallery, the Horniman Museum, the Science Museum, the Museum of Mankind, the Royal Scottish Museum, the Architectural Association, the Commonwealth Institute, the Albert Hall, the Royal Festival Hall, museums in the cities of Manchester, Sheffield and Durham, the Inner London Educational Authority and the BBC. The universities notably included Oxford, Cambridge, London, Manchester, Warwick, Durham, Exeter, Edinburgh, the School of Oriental and African Studies and the Polytechnic of Central London.

But many institutions elsewhere participated as well: the Metropolitan Museum of New York, the National Art Gallery of Washington, the Boston Museum of Fine Arts, the Cleveland Museum of Art, the Seattle Art Museum, the St. Louis Art Museum, the Art Institute of Chicago and the Los Angeles County Museum of Art in the United States; the Hermitage Museum, the Academy of Sciences and the State Library in the USSR; the Bibliothèque Nationale and the Louvre in France; the Museum of Islamic Art and the National Library in Egypt; the Bastan Museum, the Imperial Library and the Imam Riza Library and Museum in Iran; museums in both the Germanys; and museums, galleries and libraries in Austria, Canada, Denmark, Greece, Hungary, Iraq, Italy, Lebanon, The Netherlands, Portugal, Spain, Sweden, Switzerland, Syria and Tunisia.

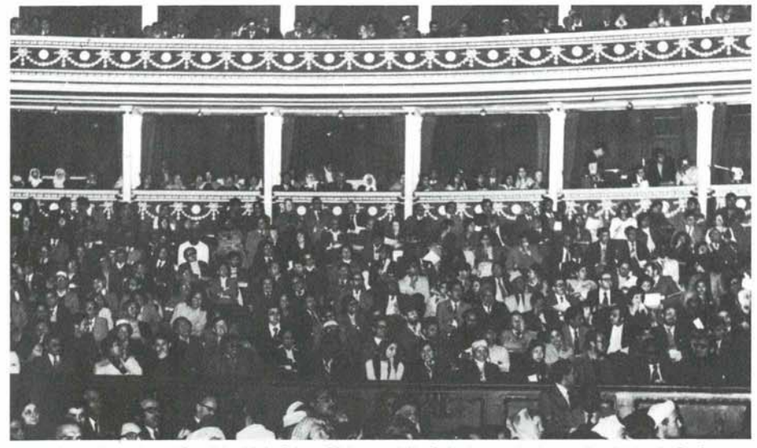
From the often rich collections and information stored in those institutions the five broad programs of the Festival were slowly developed: the array of exhibitions mounted in London and elsewhere in Britain—five or six of them major contributions in their fields, another two score of more specialized significance; the publications program—linked closely to the exhibitions; the educational and academic program, which provided background for the events of the Festival; the films program—designed to introduce the World of Islam to a wide audience through television; and the performing arts—Koranic recitations, readings from the literature of Islam, and concerts of classical music from the Islamic world.

Among the exhibitions, the main event of the Festival was certainly "The Arts of Islam" at the Hayward Gallery (See page 14). A stunning array of 650 objects ranging from carpets to rock crystal, calligraphy to metalwork, the Hayward exhibit skillfully combined beauty and variety by displaying some of the objects thematically, rather than chronologically or by place of origin. In one large, introductory room, four basic elements of Islamic design—calligraphy, geometrical pattern, the arabesque and the figurative—were outlined and exemplified so clearly that visitors could easily follow the threads of these elements through the rest of the exhibit.

One problem at the arts exhibit was how to show architecture, the art in which Islam excels. For although some architectural details—doors, decorated beams, stone capitals—were presented, entire buildings, obviously, could not be moved from their sites. To solve the problem, the Hayward Gallery constructed a large enclosed cube with a small theater inside and on a multiple screen projected more than 800 photographs. In an unusual audiovisual display, the theater showed entire buildings with their details and their surroundings, some filling the entire screen, some sharing it with other details. The effect was kaleidoscopic and showed the range of Islamic architecture down the centuries and across the globe.

Another major exhibition, the first of its kind ever held, was that on "Science and Technology in Islam" at the Science Museum, which was opened by the Empress of Iran (See page 28). As the exhibit attempted to show its subject as part of the totality of Islamic knowledge and culture, no distinction was made between the pure sciences, applied technology and the so-called occult sciences. The 400 items on loan included scientific instruments, celestial globes, astrolabes, contemporary manuals, maps, simple tools, an Arab sailing vessel and models of such technical devices as waterwheels and water clocks.

A committee of the World of Islam Festival Trust meets to coordinate one of the five major programs of the Festival.



A capacity audience heard Saudi Arabia's Prince Muhammad ibn Faisal open the International Islamic Conference.

The World of Islam

A CONFERENCE AT ALBERT HALL

To coincide with the Festival the Islamic Council of Europe, in cooperation with King 'Abd al-'Aziz University in Jiddah, scheduled an International Islamic Conference, the first to be held in Europe.

Like the Festival, the conference was an overwhelming success. At the inaugural session some 7,000 people filled Albert Hall's seats; nearly 14,000 more had to stand and later sessions had to be televised.

In opening the conference, Prince Muhammad ibn Faisal of Saudi Arabia welcomed the new Western interest in Islamic culture and Muslim contributions to art, science and technology. But, he added, "What is important at this critical junction is that the real focus of attention should be on the message of Islam, on the vision of man and society that Islam gives, for all aspects of Islamic culture are but manifestations of this reality."

The chairman of the conference, Salem Azzam, said there were more than 25 million Muslims living in Europe, making Islam the second largest religion on the continent. The Islamic Council of Europe, he said, faces two major tasks. The first is the preservation and promotion of the religious and cultural life of the Muslims of Europe. The second is the development of a better understanding of Islam and Muslim culture in the West.

In the King's Library at the British Museum, the Festival also offered a magnificent display of more than 140 Koranic manuscripts representing every period and region of Islam (See page 10). Opened by the rector of al-Azhar University in Cairo, a leading center of modern Koranic studies in the Islamic world, the King's Library exhibit brought together Korans from widely divergent sources: Tunisia, which is particularly rich in Korans from the earliest period; Egypt, with Korans of the Mamluk period, when the art of illumination reached the height of its development; and Iran, with a group of 22 Korans including Persian, Mongol and Timurid examples.

Music, not usually considered as the strongest part of Islamic culture, also received considerable attention. In the Horniman Museum in South London, musicologists mounted a display of fiddles, lutes, trumpets, lyres, zithers, drums, flutes and cymbals, in all about 200 musical instruments (See page 22). Collected in 21 Islamic countries over the past two years, many of them were visual works of art, lovingly carved, inlaid and polished by master craftsmen. But as instruments, unlike children, are meant to be heard, not seen, the Horniman also added stereophonic recordings of music made on the instruments, organized a series of concerts featuring the four main schools of Islamic classical music—Arab, Persian, Turkish and Indian—and sold records made over the past 15 years by the organizers of the exhibition. Recorded among pearl fishers in the Arabian Gulf, fellahin on the banks of the Nile, Afghani mountaineers and Pakistani farmers, the records include such touches of authenticity as birdsong, windblown sand and the tinkle of teacups.

Two other fine exhibits were mounted at the Victoria and Albert Museum and the Commonwealth Institute. The Victoria and Albert, England's "attic," dug into its own incomparable collection and with some loans from France mounted a quietly restrained exhibition, "Persian Metalwork," with trays, bowls, ewers, candlesticks and lamps of subdued elegance. The Commonwealth Institute, located in Holland Park, focused on the exuberant "Arts of the Hausa," who, with 25 million souls, are the dominant group in parts of Nigeria, Niger and Chad. Introduced to Islam over five centuries ago, the Hausa decorate their houses, calabash food bowls and clothing with swirling and jagged designs, sometimes in subtle beige on white, sometimes in indigo, sometimes in a rainbow of colors. Many of the men's robes, embroidered in five or six primary colors, might have been designed by Picasso in a particularly extravert mood and the entire exhibit seemed lit by a blazing African sun.

No Islamic festival, of course, could ignore Oriental carpets, the form of Islamic art best known and appreciated in the West. The Hayward Gallery, therefore, presented examples of superb carpets—and other textiles—from throughout the Islamic world, while two other exhibitions, both outside London, focused on special groups of rugs. One, at the Whitworth Art Gallery in Manchester, covered the rugs of the Qashqa'i, the most prosperous of the Persian nomads. Woven with the Turkish rather than the Persian knot, Qashqa'i rugs are geometric in design and run to subtle combinations of shades of blue, cream, burnt orange, yellow, mushroom and brown. The other exhibition, at the Mappin Art Gallery in Manchester, concentrated on examples of weaving from the area near Kirman in Central Persia, showing examples of fine craftsmanship and gorgeous colors from the 16th and 17th centuries.

One particularly unusual facet of Islamic art—figurative painting—was revealed in an exhibition of "Paintings from the Muslim Courts of India," at the British Museum. Figurative painting flourished in the Mogul courts of the 16th and 17th centuries when painters there combined Persian and Turkish techniques with local styles and even drew upon Renaissance paintings and engravings. Unprecedented in Islam, this style produced illustrations of historical episodes, romantic tales, Persian poetry, Sanskrit epics and even portraiture. Although Islamic in pattern, color, line and silhouette, they also introduced European perspective, shading, and atmosphere to produce curious but charming results.

One of the more picturesque of the exhibitions—"Nomad and City"—permitted visitors to stand in a Bedouin encampment and stroll through a marketplace in the ancient walled city of San'a in South Arabia, enjoying the sights and sounds—and even some of the smells—of another world, all within the Museum of Mankind, a department of the British Museum (See page 24). Concentrating on the distaff side, Shelagh Weir, organizer of the nomad exhibit, included a loom, examples of cooking utensils and weaving, the nomad's only art form. But she also included the paraphernalia of coffee brewing and drinking, traditionally a male prerogative, and added articles of clothing and jewelry which the nomads have to purchase in a town. In this exhibit, the town, just a step away, was a photomural leading into a reconstructed street complete with shops selling spices, grains, baskets and daggers, and recorded street sounds. Other scenes of daily life in San'a have been reconstructed and furnished as well—a kitchen, a sitting room, the corner of a mosque, and the atmosphere of a *hammam*, or public bath, all collected and organized by scholars from the Middle East Center, Cambridge.

This by no means exhausts the list of exhibitions held during the Festival. The Islamic arts of war were deployed at the Artillery Museum at Woolwich and a gallery in Manchester. The Royal Scottish Museum in Edinburgh showed the decorative arts of 19th-century Iran, and Oxford's Ashmolean Museum showed Islamic themes in European art. Photographic displays at various galleries revealed Islamic architecture in Libya and Iran, the face of Oman, and 19th-century life in Isfahan. Contemporary Islam was covered in a display of arts and crafts organized by the Arab Women's League, one on modern mosques in the Commonwealth, and an exhibition at Durham University devoted to economic and industrial development in Islamic countries.

The exhibitions, however, made up just one of the Festival's broad programs. The other four were equally important and two of them—the publications (See page 7) and films program—may eventually reach a much wider audience. The heart of the film program was a series of six half-hour films shown initially on BBC television at 8:30 p.m. weekly, during April and May. Shot on location throughout the length and breadth of Islam over a period of two years, the films and exhibitions were constructed neither geographically nor chronologically, but according to themes expressing the unity of Islam.

The first in the series presented some of the basic ideas of Islamic civilization and set it in its geographical and historical background. Composed like a mosaic, the film focuses on religious unity amid geographical diversity, an idea strikingly visualized by scenes of the Ka'bah in Mecca intercut with a series of shots of worshippers falling on their knees in ever-widening lines throughout the world. Others in the series—films on science, the arts, the interdependence of nomad and city, and the mystical path within Islam known as Sufism—were equally striking and one, on science, was, in an ecology-

The World of Islam ITS LEGACY

Festival organizers produced and sold phonograph records, a number of posters and a remarkable series of books.

One enduring legacy of the World of Islam Festival will be the publications it spawned, particularly a number of beautifully produced and lavishly illustrated books commissioned by the Festival Trust and its World of Islam Publishing Company.

Art of Islam by Titus Burckhardt. Sumptuously illustrated with photographs by Roland Michaud, *Art of Islam* treats Islamic art as a manifestation of the unity of Islam. The art of Islam, says Burckhardt, a Muslim and an art historian, is abstract because divine unity is "beyond all representation..." The arabesque and geometric enlacement characteristic of Islamic art, he goes on, recall "the unity underlying things" as each is "generally constituted from a single element, a single rope or a single line, which comes endlessly back upon itself".

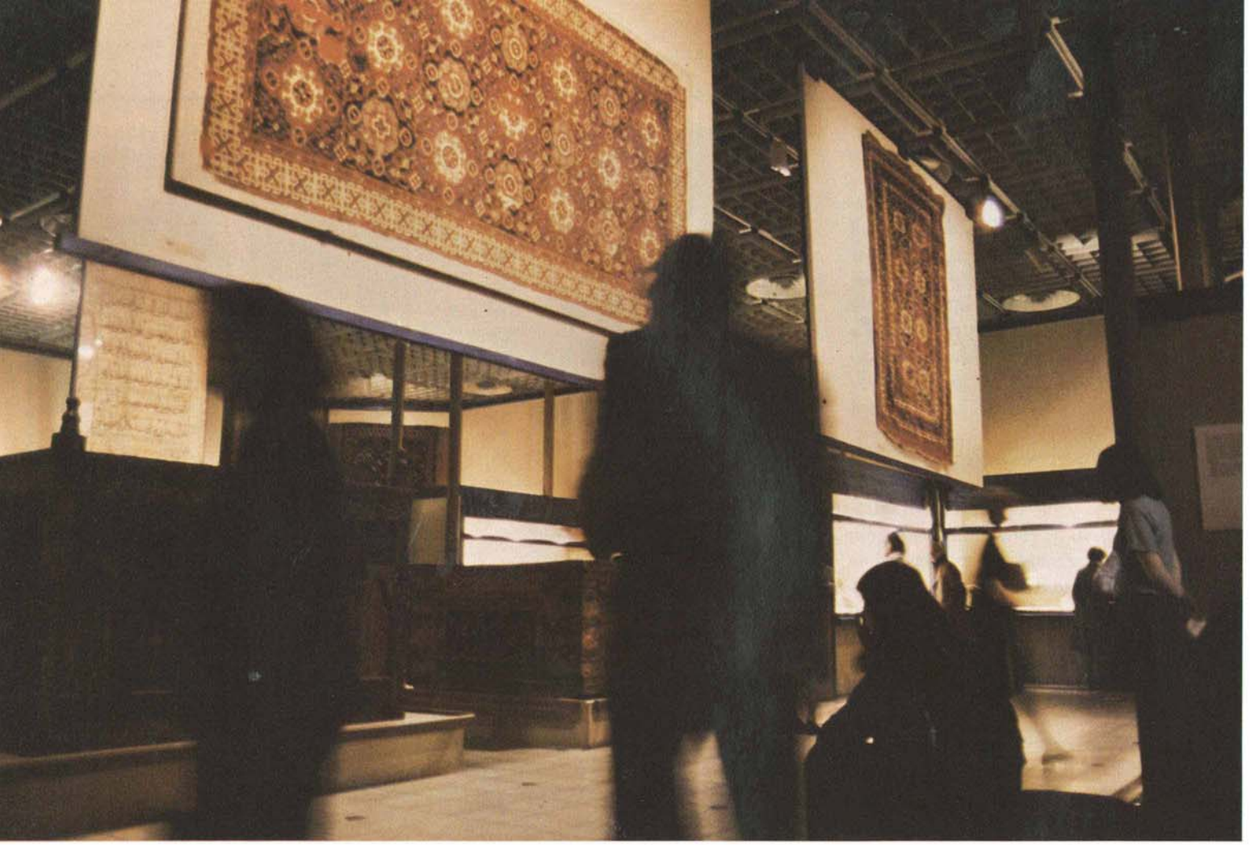
The Quranic Art of Calligraphy and Illumination by Martin Lings and *Geometric Concepts in Islamic Art* by Issam al-Said. Calligraphy, noblest of the Islamic arts because of its link with the Koran, has been developed into rich and complex styles and embellished with gilt illumination which Dr. Ling's book discusses and illustrates superbly. Mr. al-Said's book analyzes the concepts and patterns, in words and drawings, of the geometrical designs of Muslim art.

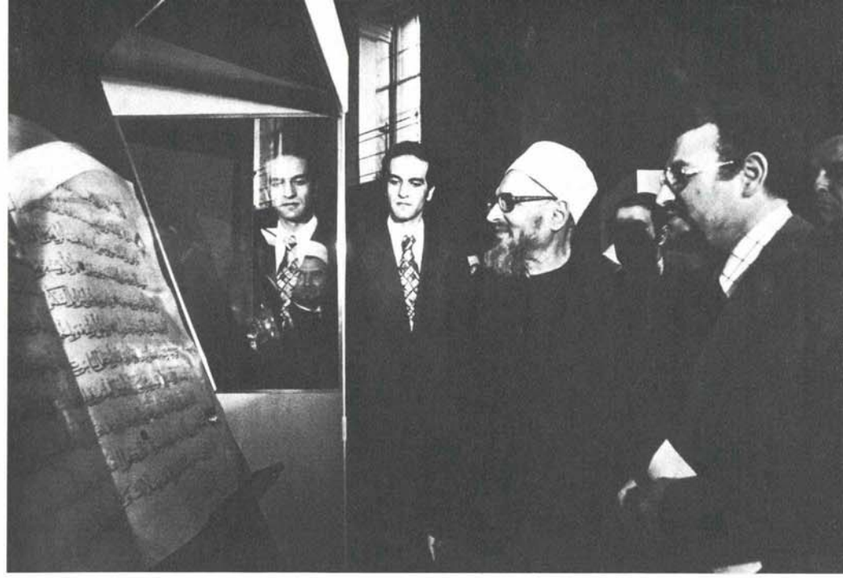
Islamic Science by Seyyed Hossein Nasr. Thirteen centuries of science and technology, at one time the most advanced in the world, are covered by Professor Nasr and photographer Michaud in a book that says Islamic science "came into being from a wedding between the spirit that issued from the Quranic revelation and the existing sciences of various civilizations which Islam inherited..." Having set the scene, Professor Nasr surveys Islamic achievements in all branches of knowledge and technique: geography and navigation, the natural sciences, mathematics—to which the Muslims contributed algebra and trigonometry—astronomy and astrology, linked as they were in medieval Europe; physics, medicine, pharmacology, alchemy, which contributed greatly to knowledge of chemistry; agriculture and irrigation.

In addition to the Trust books, other publishers have brought out books to coincide with the Festival. Among them are two that are particularly valuable: *The World of Islam* published by Thames and Hudson (London), edited by Professor Bernard Lewis of Princeton University and written by an international panel of experts, and *The Genius of Arab Civilization: Source of Renaissance* published by Phaidon Press (Oxford).

Despite its title, *The World of Islam* has no connection with the Festival. It covers the entire panorama of Islamic civilization in addition to the arts and sciences, the lands and peoples of Islam, Islamic literature and music, Sufi mysticism, Muslim warfare and the regional varieties of Islamic culture in Moorish Spain, Iran, the Ottoman Empire, and Mogul India. The 490 illustrations, 160 in color, are particularly rich in scenes of Muslim life—ships and sailing, battles, prayer and pilgrimages, farming, gardening, courts of law, buying and selling, playing chess, dyeing and tanning, churning, weaving, dancing and making music, and scientific activities through the ages and across the globe.

The Genius of Arab Civilization: Source of Renaissance is a collection of essays, chiefly by American scholars. It is strong on science, technology, trade and commerce, and emphasizes the specifically Arab contributions to later civilizations, particularly the revival of art and science in the European Renaissance.





'The Arts of Islam' at London's Hayward Gallery (above) was the largest of the exhibitions and Queen Elizabeth II officially opened the Festival there in April. Opposite, top and bottom: The rector of Cairo's al-Azhar University opened the exhibition of Korans at the King's Library and the Empress of Iran opened 'Science and Technology in Islam,' at the Science Museum.

minded era, especially arresting. In featuring shots of windmills and waterwheels, dams and irrigation canals, ice-domes and windtowers, it emphasized the Muslims' traditional use of self-renewing natural resources.

Now that the Festival is over, producers Richard Price and Stephen Cross plan to translate the sound tracks and adapt the six shows into a feature film for worldwide distribution. As Mr. Price is also the distributor of the best-selling *Upstairs, Downstairs*, the prospects for *The Traditional World of Islam* reaching a worldwide audience are promising.

The educational program was also a bid to reach those who presumably knew little about Islam—secondary and college students and teachers—while the academic program dealt with those who know a great deal, the specialists who are themselves the greatest contributors in that field.

The educational program got off to a head start during the academic year 1975–1976 with courses and lectures at the schools themselves, at the School of Oriental and African Studies and at the Commonwealth Institute in London. The program also prepared, and displayed at such institutions, teaching materials, book lists and sources of films and filmstrips. The Festival Trust itself, in collaboration with the University of Chicago Press, is also arranging to get every one of the 6,000 objects on display during the Festival on film, for sale on a nonprofit basis throughout the world.

The academic program was even more impressive. Nine major British universities and five museums supported it and participating scholars were world renowned—scholars like Sir Steven Runciman, author of the monumental *History of the Crusades*, Richard Ettinghausen of the Metropolitan Museum of New York, and others first in their fields from Australia, Germany, France, Egypt, Turkey, Malaysia, Syria, Pakistan, Kuwait, Lebanon and the United States. At one point lectures on Islamic doctrines and practice, law, history, literature, Islam and the Crusades, Islam and the Renaissance, and Islam and the modern West were filling halls all over London and other cities in Britain.

Given the renown of the participants, the conferences and symposia accompanying the Festival provided a rich intellectual harvest. Among the most interesting were an international colloquium on the Islamic city organized by UNESCO at Cambridge University, a colloquium on Islamic coins by the Royal Numismatic Society and a symposium on Islam in the Balkans at the University of Edinburgh. Durham University provided a conference on modern developments in Islam entitled "The World of Islam Changes Itself," and the School of Oriental and African Studies organized an international conference on Oriental carpets, the first ever to be held in Europe.

Two international congresses were also held in conjunction with the Festival. One was "Islam and the Challenge of Our Age," organized by the Islamic Council of Europe and opened by Prince Muhammad ibn Faisal of Saudi Arabia. The other was called "Aspects of Islamic Studies" and was organized by the Supreme Council of Islamic Affairs in Cairo. There were numerous gatherings of learned societies: The Royal Asiatic Society on South Arabian languages, the Anglo-Hellenic League on Byzantium and Islam, the British School of Rome on two Muslim towns in Italy, the Pakistani Society on Sufism and the Royal Society for Asian Affairs on Islam and the British.

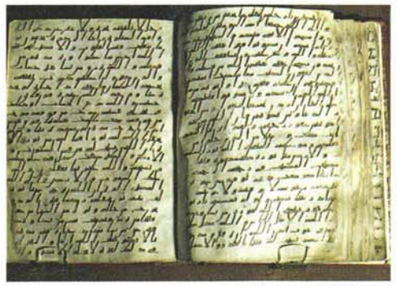
The fifth of the broad programs—the performing arts—dealt with aspects of Islamic culture that may be less abstruse but are rarely accessible in the West. During the Festival, therefore, the directors organized such unusual performances as recitations of poetry translated from Arabic, Persian, Turkish and Urdu; Koranic readings by two famous cantors from Cairo; and a series of exotic concerts that included virtuosos on the *'ud*, ancestor of the European lute; Turkish musicians performing classical music of the 13th to the 19th century, a Moroccan orchestra playing the music of Muslim Spain and, perhaps the best known in the West, the Indian musician Mahmud Mirza on the sitar.

Unquestionably, the full intellectual effects of the Festival will be delayed. Yet even as it opened it was clear that it would certainly have an impact. The prestige newspapers—*The Times*, *The Guardian*, *The Financial Times*, *The Observer*, *The Sunday Times*—were offering features and special supplements on Islam, television was giving Festival events wide coverage, the international art reviews *Apollo* and *Connoisseur*, published in Britain, had devoted entire issues to the Islamic arts, publications as far apart as *Vogue*, *Reader's Digest* and the left-wing *Time Out* were coming out with feature stories, and it was a rare publisher's book list that didn't contain at least one title this season touching on the Islamic world.

There was a commercial impact as well. Islamic art, already big business in England, registered a measurable upturn. April art magazines showed 24 fine art galleries advertising Islamic wares and the two major art auctioneers in Britain—Sotheby's and Christie's—held week-long sales devoted to Islamic art. At one of them a bidder paid a record $130,000 for a north Persian "shrub" carpet. Still further afield, designers of textiles and wallpapers were ferreting through the exhibitions for fresh patterns and colors, and one large department store clocked in with a line of spring neckties in Islamic designs—a far cry, no doubt, from the intellectual goals of Paul Keeler and the Festival Trust, yet a natural part of their more basic aim: the furtherance of knowledge of the World of Islam.

The World of Islam

ITS CALLIGRAPHY



Above: This 8th-century Koran from Mecca or Medina is one of the two oldest existing manuscripts known. Opposite page: Details of Korans from 14th-century Mamluk Egypt (top); 11th- and 10th-century Kairouan, Tunisia (center, left and right); and 9th-century Iraq or Syria (bottom).

The King's Library in the British Museum exhibited a collection of Koranic manuscripts, rich with calligraphy and illumination, and representing every period and region of Islam.

The message of Islam was delivered to the Prophet Muhammad in the Arabic language and recorded in the Koran in Arabic script. Arabic calligraphy, therefore, derives its great prestige in Islam from the fact that it is the chosen vehicle for the Word of God.

As rich examples at the World of Islam Festival suggest, Muslim calligraphers, who consider it an act of piety and merit to copy the Koran and to make the copy as beautiful as possible, have lavished their taste and talents on both the lettering and the illumination of the page. They have, indeed, raised the art of the book to heights of dignity and refinement seldom achieved elsewhere.

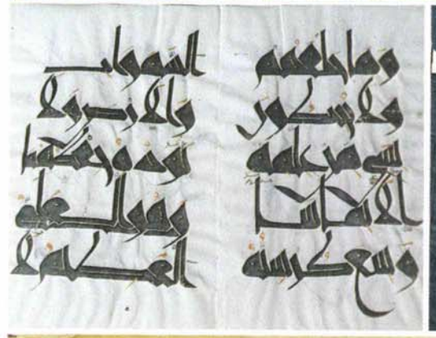
As the shapes of Arabic letters are essentially abstract, geometric, two-dimensional and rhythmic, they have much in common with other forms of Islamic art. Quotations, therefore, are used decoratively on metalwork, pottery and textiles, carved in wood, marble, stucco and ivory, and applied to the walls, domes and minarets of mosques.

But the quotations are more than decoration; like the icons of the Eastern churches and the statues and holy pictures of the West, they act as reminders of the Word of God, an affirmation of the faith. And although the calligraphy is often so elaborate that it can hardly be read, it suggests to the pious Muslim a well-known text or familiar phrase, letting his memory and imagination supply the rest.

Broadly speaking there are two scripts used in Arabic calligraphy, the *Kufic* and the *Naskhi*. *Kufic*—a name apparently derived from the town of Al Kufa in Iraq—is square and monumental and dates from very early Muslim times or even earlier. *Naskhi*—meaning "copying," that is, writing quickly—is more cursive and began to replace *Kufic* in the 12th century.

Although the earliest example of the Koran still in existence was written in a pre-*Kufic* script, most of the earliest Korans were written in *Kufic*. They were inscribed on vellum, often on horizontally oblong pages, and are only sparsely decorated, with a solemn dignity. It is impossible to tell where they originated but many of them are now in Tunisia, in the collection of the Great Mosque of Kairouan.

Egypt is rich in Korans of the Mamluk period—the 14th to the 16th century—highly illuminated in gold and colors and often of great size. The Iranian collections contain not only Persian Korans, but also Mongol and Timurid Korans of great richness and beauty.



A constant reminder of the Word of God, the graceful Arabic calligraphy used in the Koran appears in almost every medium of Islamic art. (1) Dish from 10th-century Persia; (2) Embroidery on a **kiswah,** or draping, of the Ka'bah in Mecca; (3) Wood **minbar,** or pulpit, from 12th-century Iraq; (4) Tile from 14th-century Persia; (5) Koran from 14th-century Egypt. Photographs 1 and 4 by Arts Council of Great Britain; No. 2 by Roland Michaud.

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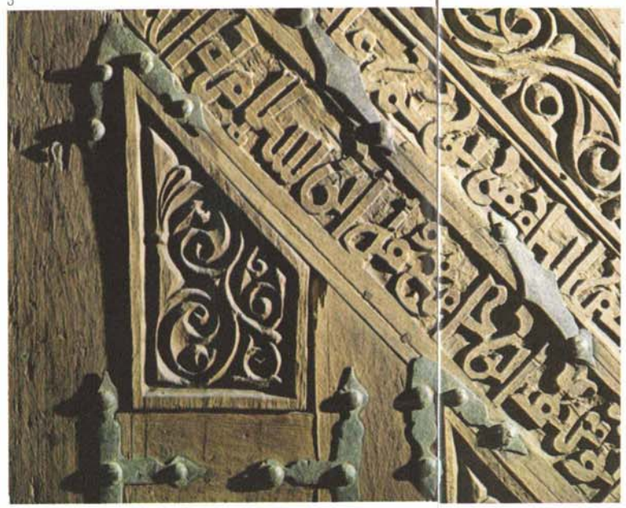

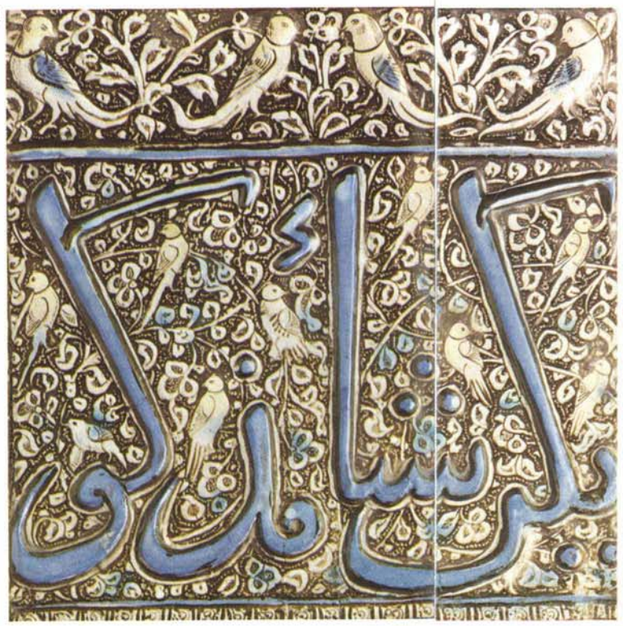

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The World of Islam

ITS ARTS

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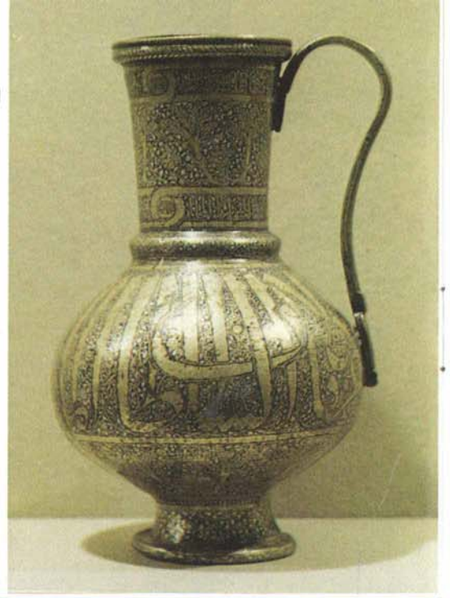

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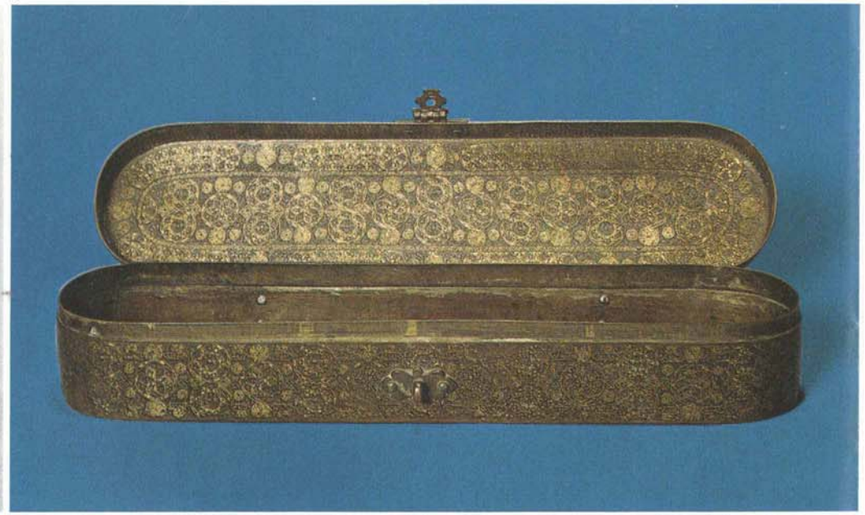

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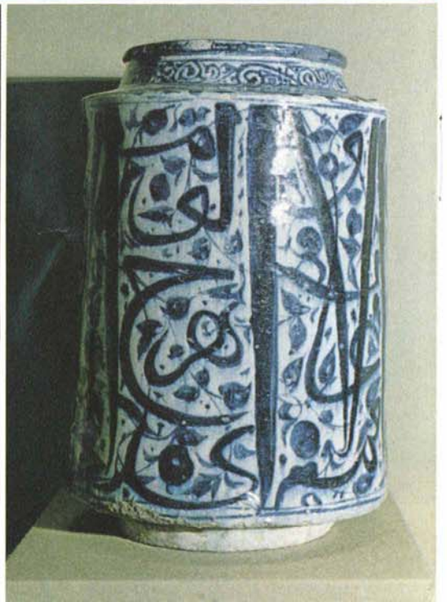

As the Festival of Islam proves, the arts of Islam show a surprising unity through the ages and across the wide vistas of the Islamic world. Although there are certainly individual differences, and even exceptions, it is easy to recognize the common elements.

Essentially, Islamic art is abstract—an art of patterns, symmetrical, two-dimensional, repetitive and infinitely extendable. Even when natural forms are used they are so stylized as to be virtual abstractions. The arabesque, for example, is based on vegetal forms but has a logic of its own and does not seek to reproduce the logic of growing things. Pure geometry is a strong element of design, mixing the curvilinear with the rectilinear. Another important element is calligraphy—Arabic writing—usually a quotation from the Koran and often drawn or carved in such complex ways as to be almost illegible. Color is also important, although rarely used realistically. Illusion is not an aim; stone or wood, paint or ceramic is not intended to represent actual bodies or leaves or animal forms but only to suggest an ideal. Pushed to the periphery of Islamic art, and never used in a religious context, is representation of the human form.

All this makes it difficult for a Westerner to understand and appreciate Islamic art. For until the advent of modern art, the artistic values in the West leaned toward illusion, especially the illusion of three-dimensional space, the direct copying of nature, the historical, mythical or religious anecdote and, above all, the human form and face, the subject of the West's greatest works of art. In the absence of those touchstones, the Westerner tends to equate Islamic art with mere decoration and thus place it on a par with what we consider to be the minor or "applied" arts of the West. But this attitude betrays a fundamental misunderstanding of Islamic art, which has its own hierarchy of values. In this hierarchy, calligraphy comes first—because of its holy association with the Word of God—and the human form comes last because of religious strictures.

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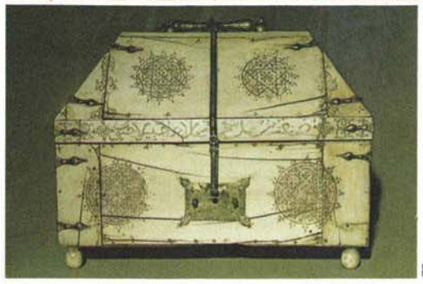


Masterpieces in eight mediums at the Hayward Gallery: (1) Brass ewer inlaid with gold and silver, 14th-century Egypt, Museum of Islamic Art, Cairo; (2) Glass vase gilded and enamelled, 14th-century Syria, Calouste Gulbenkian Foundation, Lisbon; (3) Bronze pen box inlaid with gold and silver, 14th- or 15th-century Persia, Institut de France, Jacquemart-Andre, Paris; (4) Jade bowl inlaid with gold and precious stones, 17th-century Turkey, S. Martin Summers Collection, London; (5) Ceramic drug jar, 14th- or 15th-century Syria, Musée National de Céramique, Sèvres; (6) Carpet, 17th-century Persia or India, Österreichisches Museum für angewandte Kunst, Vienna; (7) Miniature painting, 16th-century Persia, Metropolitan Museum of Art, New York; (8) Ivory casket, 12th–14th-century Spain, Instituto Valencia de Don Juan. All photographs except 1, 5 and 8 courtesy of the Arts Council of Great Britain.

Actually, the very limitations of Islamic art are its strength. Freed from the necessity of representing nature, the Muslim artist is able to devote himself with passionate intensity to the development of the two-dimensional and the abstract. As Swiss Muslim convert Titus Burckhardt put it, in the Festival book *Art of Islam*, the absence of images creates "the quite silent exteriorization, as it were, of a contemplative state..." And the proliferation of decoration, he continues, "does not contradict this quality of contemplative emptiness; on the contrary, ornamentation with abstract forms enhances it through its unbroken rhythm and its endless interweaving."

The limitations, moreover, were deliberate, not accidental. As Islam expanded, it absorbed or touched numerous cultures with quite different and sometimes sophisticated artistic developments. And although some of those alien influences were accepted and absorbed, others—such as portrayal of the human form, sculpture in the round and mural painting—were rejected. All the new influences, moreover, were soon swallowed up in an Islamic style that was distinctive and, eventually, homogeneous.

There were many reasons for this homogeneity. The basic reason was the monolithic character of Islam itself. Another was the unifying impact of the Arabic language. Other factors were the unusual mobility within the Islamic world and the international character of its trade—both insuring the spread of identical ideas, techniques and motifs.

There were also purely artistic and technical reasons for the unity of style. The artists were largely anonymous, not intent on creating original masterpieces but products of high quality within a continuing tradition. There was no distinction between crafts and fine arts, nor between sacred and

By June 1 over 250,000 people had seen such exhibits as that at the Hayward (above) and the Victoria and Albert (below). Opposite: Geometric tiles at Spain's Alhambra by Adam Woolfit.

secular art, so that styles and techniques were freely transferred from the mosque to the palace and even to the public baths. They were also readily transferred from one medium to another, so that a pattern originating in the weaving of textiles was frequently translated into wood, metal or stone—as, again, displays at the Festival show. Moreover, the artistic tradition was so strong that non-Muslim artists—Eastern Christians, Armenians, Jews—were content to work within it.

Above all, there was the spirit of Islam itself: the emphasis on the Oneness of God, the congruence of knowledge, the brotherhood of man. As Burckhardt says, Islamic art is essentially the projection into the visual order of certain aspects of, or dimensions of, Divine Unity—a unity that is expressed in the visible world by the harmony of geometry and rhythm.

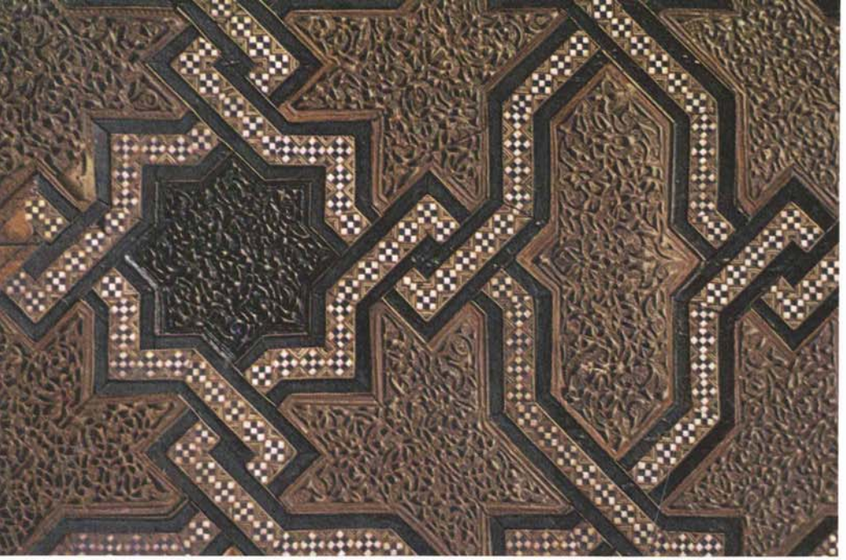
One aspect of Islamic art that the Western mind could not, and did not, dismiss as decoration is architecture. Anyone's list of the ten most beautiful buildings in the world would, unquestionably, include one or two examples from the World of Islam—the Alhambra in Spain, perhaps, the Taj Mahal in India, or the Dome of the Rock in Jerusalem.

None of these, of course, could be shown at the Festival. Nevertheless, the audio-visual display in the unusual cube theater at the Hayward Gallery captured the central importance of architecture throughout the Islamic world in providing a place of worship, prayer, sanctuary and study—the mosque—and also a setting for the allied artistic achievements in carpentry, masonry, carving, stucco and marble work.

The first mosque was the house of the Prophet in Medina, a rectangular courtyard with a roofed area at one end in which the Prophet's Companions could meet and a covered passage at the opposite end for added shelter. Since then there have been some simple additions to the structure to meet liturgical requirements: a hall to accommodate worshippers, with perhaps a courtyard for the overflow; a *mihrab* or niche positioned to indicate the direction of prayer toward Mecca; a *minbar*, a flight of steps from which the Friday sermon is preached; facilities for the ritual washing required before prayer; and perhaps a minaret or other high place—the roof will do—from which the call to prayer can be heard throughout the community.

From those beginnings have come the examples of Islamic architecture projected so vividly in the Hayward Gallery: the eighth-century Umayyad Mosque in Damascus, a glorified replica of Muhammad's house in Medina, but greatly enlarged and embellished with arched porticos and a dome, the whole clothed in marble, stone and gold-backed mosaics; the ninth-century Great Mosque of Kairouan, Tunisia, with a forest of columns in a whitewashed prayer hall and a courtyard so vast it seems to reflect the surrounding desert; the Great Mosque of Cordoba in Spain and the Mosque of Ibn Tulun in Cairo, the former rendered weightless by the superimposed arches, the latter looking like a fortress with its crenellated walls and spiral minaret like a watch tower.

Some mosques, of course, reflect forms found in other cultures and adopted by Islam. In Persia, for example, builders typically used forms going back to Sasanid times and earlier—forms such as the striking *iwan*, a high semicircular vault open on one side, like a gigantic niche. In Ottoman Turkey, where Islam inherited the impressive domed churches of Byzantium, architects adopted the central dome over a rectangular base,



Detail of 12th-century wooden **minbar** or pulpit at Kutubiyah Mosque in Marrakesh, Morocco. Photo by Roland Michaud.

often surrounded by subsidiary domes; indeed the great Ottoman architect Sinan constructed a dome for the Mosque of Sultan Selim that exceeded the measurements of the Hagia Sophia itself.

One element of a mosque that betrays ethnic origins is the minaret, the most distinctive feature in its silhouette. Although not a liturgical requirement, the minaret can be a thing of great beauty and architects everywhere seemed glad to meet the challenge. Minarets in Spain and North Africa are usually square; those in Turkey round, with conical caps; and those in Egypt often composite. There are also some in India which are octagonal and capped with domes.

Because of the great beauty of many mosques, Westerners tend to forget that many of the greatest Islamic buildings are not mosques, but some other form of religious or secular architecture. The Dome of the Rock in Jerusalem—the oldest completely preserved Islamic building—is a sanctuary built over the rock on which Abraham prepared to sacrifice his son and to which Muhammad is believed to have been carried during his "Night Journey" (See *Aramco World*, July–Aug., 1974). The Alhambra (*Aramco World*, May–June, 1967) in Granada is a palace, built, it seems, of light, and the Taj Mahal is the mausoleum of the beloved wife of the Mogul emperor Shah Jahan (*Aramco World*, July–Aug., 1968). All are different, but all are magnificent.

Another aspect of Islamic art familiar to the West is weaving. As long ago as the Middle Ages, Europe discovered the beauty of Islamic textiles and for many centuries the looms of Islam supplied the world with cotton, muslin, damask and gauze.

In the Islamic nations themselves, textiles took the place of furniture in the form of rugs and cushions, hangings and canopies. And, as they could be easily transported from country to country, patterns and techniques achieved such a similarity that even experts cannot always tell whether a piece of cloth originated in Baghdad or Cordoba, Damascus or Palermo. The designs in textiles—two-dimensional, symmetrical and repetitive in character—in turn affected the other arts, especially architecture, where tiles and mosaics imitated the effect of rugs and tapestries on floors and walls, and even the art of the book, with pages often laid out with borders and field of intricate patterns like an Oriental rug.

The knotted carpet is, of course, the supreme example of Islamic textile art. It is thought to be of nomad origin, for the raw material—the hair of sheep and goats—is the major product of Bedouin economy, and even the dyes originally used were made from wild plants found in out-of-the-way places. Later, certainly, Persian carpets came to be the best known Oriental carpet, but in fact fine carpets were also made in Egypt, Turkey, the Caucasus, Afghanistan and India.

Ceramics, in the form of pottery or tiles, were also a Western import from the Islamic world. Imports began as early as the 13th century and were widely copied thereafter in the West. Many of the pottery making techniques were inherited from the older civilizations of the Middle East and Islamic potters also learned about glazes from Chinese imports. But they invented many of their own techniques; one of the most successful was lustre painting, which gave a metallic sheen resembling bronze or gold. Islam also, as in other arts, stylized animal and vegetable designs and soon saw that arabesque and calligraphy were perfectly adapted to the curved surfaces of bowls and jugs.

Tiles, a very ancient Middle Eastern device for protecting and decorating mud-brick walls, were a refined art in the Islamic world. They turned buildings into shimmering tents and canopies without apparent weight or substance, particularly in Persia and Central Asia. Koranic inscriptions in raised tiles decorated walls and domes.

As with ceramics, Muslim artists learned many of their techniques of glass making, metal engraving and inlay, wood and stone carving, and ivory working from their historical predecessors. But—again by the designs of arabesque, geometry, and calligraphy—they soon turned them into Islamic arts.

A less familiar art form prominently featured at the Festival is miniature painting, which reached a high degree of artistic development in Persia, Turkey and Mogul India. A purely secular art, it was also essentially private, confined to the pages of books and albums where it illustrated poems and tales, or sometimes scientific works on astronomy and natural history. Yet it too partook of the nature of Islamic art. The miniaturists were usually calligraphers as well, and their work was intimately linked with the written word. As in other arts at the Festival, the paintings are two-dimensional, concerned more with pattern than with reality, conceptual rather than realistic and rendered in colors that are bright and decorative but unnatural.

Miniature painting, as displayed at the Festival, recaptured still another Islamic art form: gardens. Gardens in the Koran are an image of paradise. As water, shade and flowering plants are precious boons in harsh and arid countries, it is little wonder that the art of gardens flourished in the Islamic world, or that they were depicted in miniatures and tiles and described in poetry and manuals. The classical gardens—with a few exceptions such as those near Spain's Alhambra—have disappeared, but it is clear from the miniatures that they too shared the elements of other Islamic arts. They were geometrical in form but lush in details, reflecting the multiplicity in unity that was the mark of the World of Islam itself and its Festival in London.

Saudi Arabia's Ambassador to Britain, Shaikh Abdulrahman al-Helaissi opened an exhibition of models, including the Sacred Mosque, at the Royal Institute of British Architects.

The World of Islam

ARCHITECTURE IN ARABIA

The Ka'bah is the physical center of Islam. A cubic structure built, according to the Koran, by Abraham and his son Ishmael at Mecca as the first sanctuary on earth, it is the center of the Islamic Pilgrimage and the point towards which all Muslims everywhere turn to pray. It is fitting, therefore, that it should be represented in the World of Islam Festival, and a model of the Sacred Mosque in Mecca with the Ka'bah at its center is part of the exhibition "Mecca and Medina: Islamic Architecture in Arabia" at the Royal Institute of British Architects in London.

Prepared by the Ministry of Education of Saudi Arabia, the exhibition also contains models – all on a scale of 1:150 – of the Prophet's Mosque at Medina, the second most holy spot in Islam, and Qasr al-Masmak, a fortress in Riyadh that is closely associated with the history of Saudi Arabia. The Prophet's Mosque was originally built by Muhammad as his home in Medina and became the first mosque in Islam. It contains his tomb and is visited by hundreds of thousands of Muslims yearly as an act of respect and piety.

The fortress of al-Masmak is typical of Arabian military architecture of the 19th century, with its thick mud walls and watch towers. Amir—later King—'Abd al-'Aziz ibn Sa'ud captured it in 1902 in a daring dawn raid with only a few companions, a major step toward the founding of the Kingdom of Saudi Arabia. The point of the lance of one of 'Abd al-'Aziz's men is still embedded in the wooden door of the fortress.

In photographs, the exhibition evokes another important site in the history of Saudi Arabia: the ruins of al-Dir'iyah, the ancestral home of the House of Sa'ud. There are also a map showing the cisterns and rest houses along the route improved by Zubaidah, the first wife of the Caliph Harun al-Rashid, from Baghdad to Mecca in the ninth century A.D., an audiovisual projection showing the two holy mosques in use, and a display of books and publications on Arabian architecture and the European exploration of Arabia.

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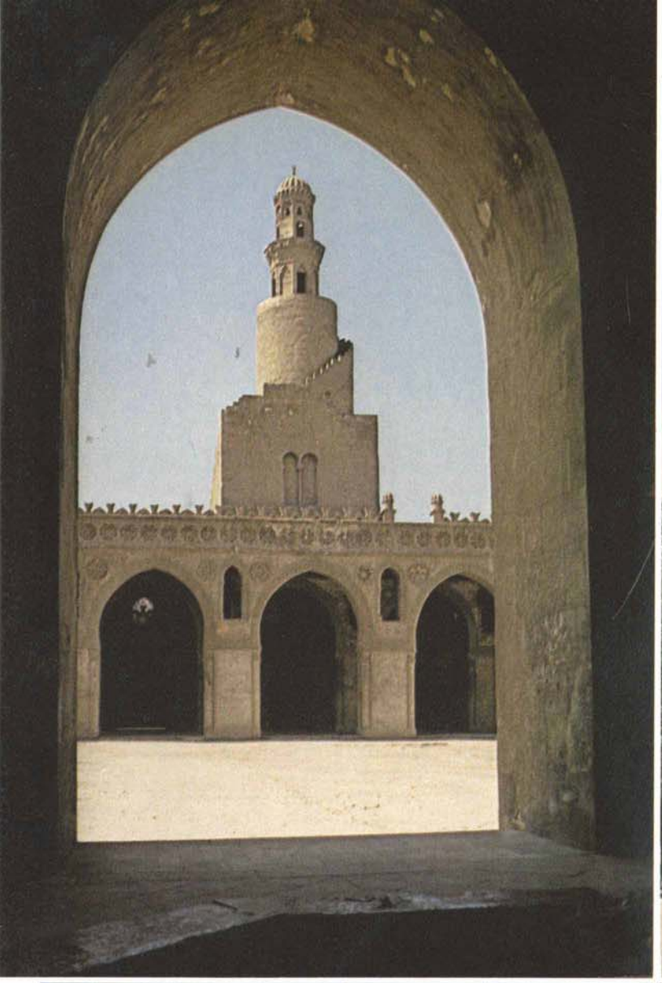

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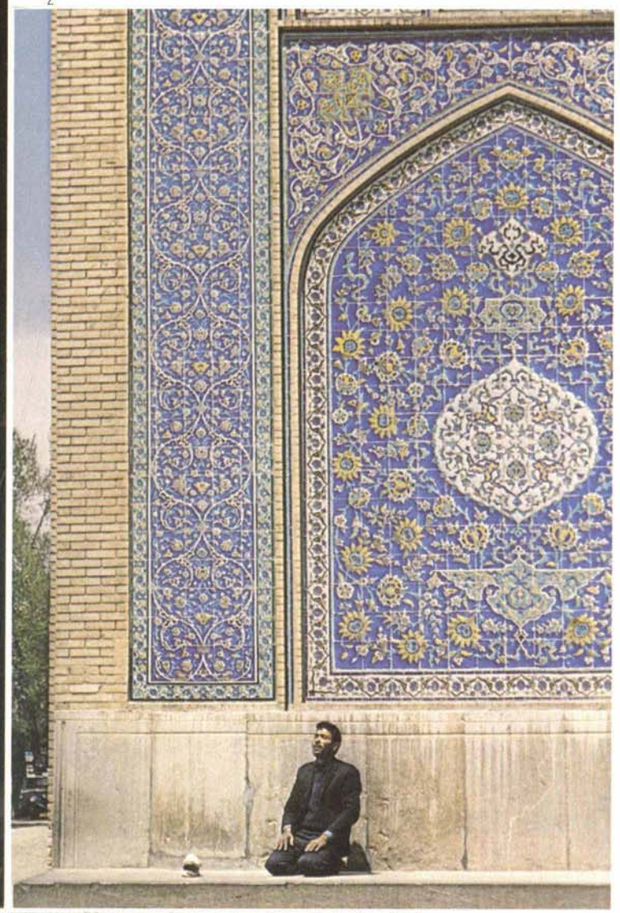

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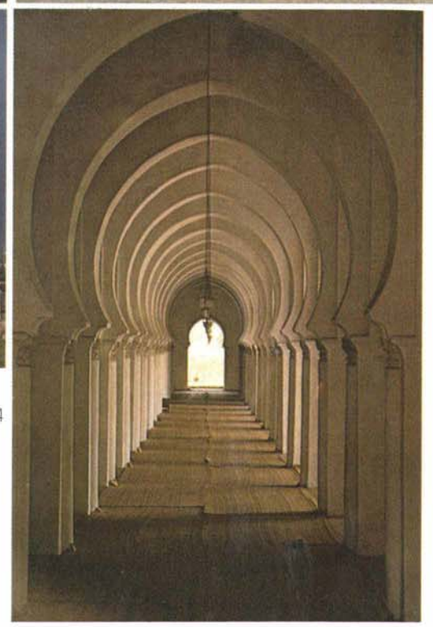

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Islamic architecture : (1) Ibn Tulun Mosque, Cairo, Egypt ; (2) A tiled mosque in Isfahan, Iran ; (3) Sultan Selim Mosque, Edirne, Turkey ; (4) Kutubiyah Mosque, Marrakesh, Morocco ; (5) The Alhambra Palace, Granada, Spain. Photographs 3 and 5 by Roland Michaud ; 1, 2 and 4 by Adam Woolfitt.

5

The World of Islam

ITS MUSIC

In Islamic culture, music, like figural representation in the visual arts, occupies an ambiguous position. For although the Koran itself is noncommittal as to the admissibility of music, there has been a continuing debate on its rǫle, with some Islamic circles frowning on the atmosphere of frivolity and sensuality often associated with it. Neither the call to prayer nor the Koranic readings are ever accompanied by instruments.

Beautiful sounds, nevertheless, are an integral part of Islam, the most familiar being the call to prayer chanted by a muezzin from the minaret and reciting a text from the Koran extolling the greatness of God and testifying to the faith: "There is no god but God. Muhammad is the messenger of God." As the recordings at the Festival suggest, muezzins are chosen for their powerful and expressive voices and they perform their task with all the artistry of which they are capable. The prayer is heard five times a day by Muslims in Islamic lands, although today it is often produced by recordings and loudspeakers rather than by the natural human voice.

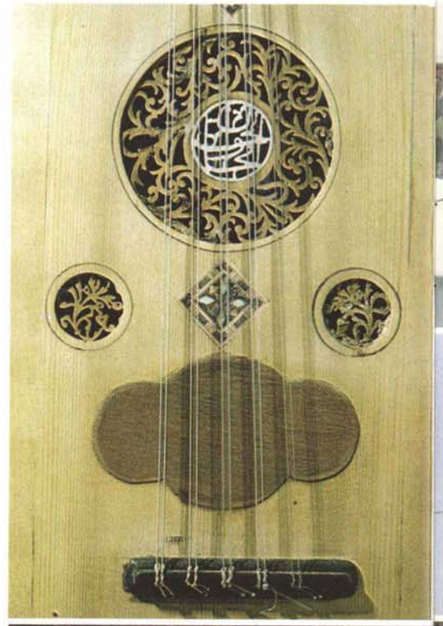
Another regular feature of the traditional Islamic way of life is recitations of the Koran by men especially trained in the art. These recitations—although called "readings" rather than "singing"—incorporate many musical devices such as prolongation or accentuation of syllables, nasalization, pauses, changes of pace and repetitive variations. The response to them, like that to calligraphy, is at once religious and aesthetic.

There is also, in the World of Islam, as in every other human society, a strong tradition of folk music stemming directly from the work-songs of fishermen and sailors, the chants of camel drivers and shepherds, the wedding songs and the dirges at funerals. Like all folk music, the Islamic variety shows regional differences, but as in other Islamic arts there are also similarities across a broad area. It is predominantly vocal with emphasis on words and poetic content and follows a single repetitive melodic line within a narrow tonal range, achieving variety by means of rhythmical patterns and antiphony. It is often accompanied by hand clapping, drums or other rhythmic instruments. And if other instruments are used they tend to be the same in different parts of the Islamic world—lutes, reed instruments and one-stringed fiddles.

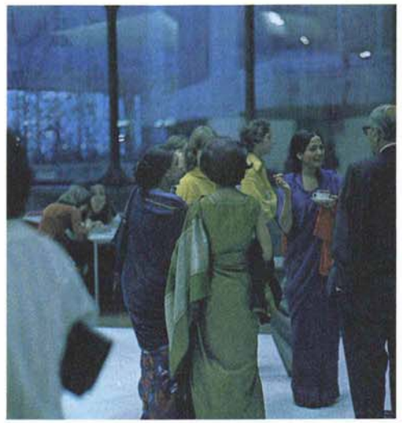
Classical music, on the other hand, was part of the great cultural flowering of early Islam. As Arab armies conquered countries which already possessed sophisticated and long-lived musical traditions, Arab musicians began to study them. It is reported that the great master-musicians of Damascus under the Umayyad caliphs studied the music of Persia and Byzantium and rejected only what was alien to the spirit of Islam.

But the Arabs also added a new element: their language and the poetry recited in that language. From this fusion came the so-called "New Music," in which the human voice asserted its primacy, with music used to enhance meaning and the form of verse often determining the rhythm and melody.

Muslims of the golden age of Islamic music—from the eighth to the 10th century—were well aware of the artistic importance of their invention. Greek treatises on musical theory were part of the ambitious translation programs of the early caliphs, but soon Islamic philosophers and mathematicians were composing their own treatises along Islamic lines. In the brilliant culture of Baghdad under the Abassid caliphs, a deep knowledge of music was considered essential cultural equipment for any educated man, and the musicians themselves were expected to be men of wide cultivation and were highly rewarded. The theory and practice of music were discussed and codified, performances criticized and instruments improved in a manner resembling that of 17th-century Venice or 18th-century Vienna. The Muslim mystics even admitted instrumental music into their ceremonies, where the drone of the flute and beat of the drum helped to induce the emotional state they sought. In Spain a branch of Islamic music, originally transplanted from Baghdad, grew into distinctive forms, influenced by the local Visigothic and Berber musical idioms.



Details of instruments as beautiful to look at as they are to hear: An **'ud** (top left); a short lute, or **rubab**, from Afghanistan, (top right) and two **daffs**, or tambourines, from Syria (center right). Bottom left and right: an Andalusian orchestra from Tetuan, Morocco, performing at Royal Festival Hall, London, and part of the cosmopolitan audience during an intermission.



Unfortunately scholars are not sure today exactly what this outpouring of golden song sounded like. It was not written down but was transmitted by ear and experience. Written descriptions and miniature paintings of musicians and concerts tell us most of what we know. Even the Festival's recordings, while using some of the same instruments as those of the golden age, were at best remote descendants, their authenticity and purity diluted by strains from Mongols, Ottoman Turks and even modern Europeans.

As today, Islamic classical music was based on the human voice and the instruments were used chiefly to accompany the voice or to provide introductions and continuity to vocal interludes. The number of instruments played at one time was not great. Each performer played essentially the same melodic line with great freedom of improvisation in rhythm and ornamentation within a strict framework.

The classical instruments of Islamic music *par excellence* are the lute, the zither and the flute, found in various forms throughout the length and breadth of Islam. The Arab *'ud*, a short-necked lute, is the ancestor of the European lute, probably introduced into Europe through Muslim Spain. Most Islamic stringed instruments are plucked, with the exception of the *rabab*, a fiddle, which is bowed, but usually by moving the instrument rather than the bow. The sitar, or long-necked lute, is the characteristic instrument of Indian music. Among Islamic wind instruments are the bagpipes, probably the ancestor of the Scottish bagpipes. Rhythm instruments include a wide variety of drums, cymbals, castanets and clappers. Even the clinking of coffee cups or the pounding of coffee beans in a mortar are used to provide rhythm. But the human voice is really the preferred instrument in Islam, where everything stems from the Word.

The World of Islam

ITS NOMAD, ITS CITIES

Visitors to the exhibit 'Nomad and City' at the Museum of Mankind saw nomad costumes (above), examples of colorful weaving such as this camel saddlebag (right) and (opposite page) handsome examples of desert coffee-making paraphernalia displayed in front of a photomural.

One of the most imaginative exhibits at the World of Islam Festival, on view at the Museum of Mankind until the end of 1976, reproduces a full-scale Bedouin encampment as well as a street of shops and houses to help explain the interwoven relationship of nomad and city in the Muslim world.

Geographically the World of Islam is a patchwork of the desert and the sown. The great cultural centers of Islam, though usually found in fertile regions, are never far from the vast empty spaces of these areas.

The symbiosis between the sedentary and the nomad is nowhere more apparent than in the ancient trade patterns of the Arabian Peninsula. The cities of southern Arabia—Mar'ib, San'a, Aden—were from time immemorial the commercial centers for trade between the East and the West. The southern Arabs transported gold, precious stones, silk and spices from India and the Far East across the seas to their home ports and then enlisted the services of their northern neighbors, the Bedouins, to transship the goods by camel caravan across the deserts to the Mediterranean world. Similar trade arrangements between settled communities and nomads existed in Central Asia, Persia and North Africa, to the mutual benefit of all.

Reliance on animals was the principal means by which nomads survived in a hostile environment. The Mongolian nomad is, in a sense, a parasite on the horse. The Arabian Bedouin is largely dependent on his goats, sheep and camels for food, shelter and transport. It is the constant search for grazing land in a harsh and arid terrain that imposes the nomadic way of life on the people.

But, as the Festival displays suggest, nomadism is more than a question of survival: it has developed its own spiritual values. The nomad considers his own way of life superior to that of the town dweller or farmer. Free of material constraints, he feels himself more independent, manlier and braver, for where life is hard and necessities scarce, only constant struggle increases one's share. But nomadic life also imposes responsibilities. Loyalty to family and tribe is essential for survival. Hospitality to strangers, within certain bounds, is a necessity where anyone may find himself far from home and in need of food and shelter.

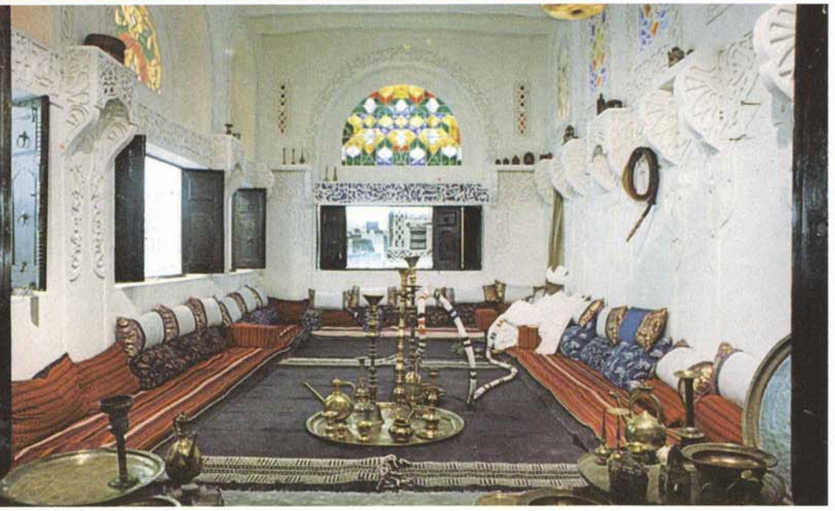
The townsman, on the other hand, represents stability and continuity. By amassing excess wealth he is able to support art and education and the institutions of justice and religion. But institutions grow old and decay, and the interaction between nomad and sedentary has historically played a major role in the renewal and strengthening of Islamic culture.

The interaction is not always peaceful. The pressure for survival drives the nomads out of their deserts and steppes into the fertile regions and when the sedentary population is weak the nomads conquer it by force of arms. The advent of the Arabs into the Mediterranean world was perhaps the most dramatic instance of this. The Arab empire was in turn conquered by waves of nomads—Turks, Mongols, Berbers—who became the elite of succeeding civilizations. As each conqueror settled down and lost its warlike character it was in turn conquered and ruled by a new wave of nomads.

Although the invasions were often destructive, they were also sources of renewal, like forest fires that devastate and fertilize at the same time. Each wave of conquerors brought with it artistic preferences and themes which enriched the Islamic arts. The Arabs brought the language and poetry of the Bedouin, considered even today to be the purest form of Arabic, and gave to Islamic civilization the primacy of the Word. The Mongols brought art forms from as far away as China and were responsible for the flowering of miniature painting in Persia and India. The Turks brought their fondness for the dome and the kiosk, derived probably from the *yourt*, or round tent, of the steppes of Asia.

The most important contribution of the nomads to Islamic art is the knotted carpet, found almost wherever nomads wander, from Morocco to Afghanistan. The materials of weaving, the hair of sheep and goats and more rarely camels, is the stock in trade of nomadic life. A display at the Museum of Mankind shows how tribal carpets are woven in narrow strips (often later sewn together), which are the width of a portable loom worked by one or at most two people, usually women. The designs are geometrical, straight-lined and repetitive, because of the simple looms and because the designs are committed to memory. Above all, weaving is indispensable to nomadic life, for it provides saddlebags, blankets, heavy clothing, furniture and even shelter in easily portable form.

But carpets also became primary features in the urban life of Islam. Traditionally, Muslims sit, eat, sleep and pray on carpets, which are kept clean by the estimable custom of removing street shoes on entering a building. The carpet is the principal furniture and



ornament of both houses and mosques. But once they moved into town, carpets were transformed. A city carpet can be made much bigger than its country cousin, as it is woven on a permanent loom worked by many hands in the home or factory. As the designs are written down and read off to the workers by an overseer, they are usually more complicated and contain more sophisticated motifs. Finer wools (even silk) and a greater variety of dyes are used, permitting more subtle effects, with curving lines, shading, flower and cloud forms. If the typical nomadic carpet design is repetitive and infinitely expandable like the desert or the steppe, that of the urban carpet resembles a garden set in an architectural frame.

Although architecture, the most stable of the arts, is incompatible with nomadic life, nomadic taste did affect Islamic building. Many Muslim buildings are constructed of rough brick or stone and then "clothed" in tiles or stucco as if draped with hangings. Many of the tile patterns on Persian, Indian and Moroccan mosques might have been transposed from carpet designs. But as is clear from the London Festival, other Islamic arts have also been affected by the flat, repetitive, extensible designs of weaving. The arabesque has affinities with the geometrical designs of nomadic rugs and interlacement resembles nomadic leatherwork. Bedouin taste is also reflected in Islamic metalwork, although the objects themselves —storage containers, coffee pots, brass horse fittings, jewelry for the women and daggers, swords and firearms for the men—are made by craftsmen in the towns and are one of the prime items of trade between townsmen and nomads.

The gardens which appear again and again in Islamic art, in carpets, tiles, miniature paintings and poetry, and which are themselves an Islamic art form, depend on the stability and continuity of sedentary life. Yet the very intensity of the desire for gardens—an earthly symbol of paradise—may be a nomadic legacy. For who can better appreciate the coolness and shade, the running water and the wealth of fruit and flowers than those who remember the heat and dust and thirst of desert and steppe?

Top to bottom: A reconstructed street from San'a in Yemen, silver jewelry worn by nomad women but made in the city, a reconstructed **majlis**, or reception room, from the top floor of a house in San'a and (opposite page) a reconstructed corner of a mosque from the same city.

The World of Islam

ITS SCIENCE AND TECHNOLOGY

Islam came into a world that was already highly civilized, a world in which Babylonian, Pharaonic, Greek, Roman, Byzantine, Achaemenian and Sasanian achievements in mathematics, astronomy, medicine and engineering were already great.

The Arabs, however, were quick to grasp the value of this learning. Had not a *hadith* of the Prophet advised, "Seek learning, even as far as China"? The early caliphs ordered the translation into Arabic of Greek, Syriac, Sanskrit and Persian treatises and manuals. Their successors later welcomed ideas and techniques from India, China and, after the Crusades, from Europe. Islam posed no conflict between learning and religion.

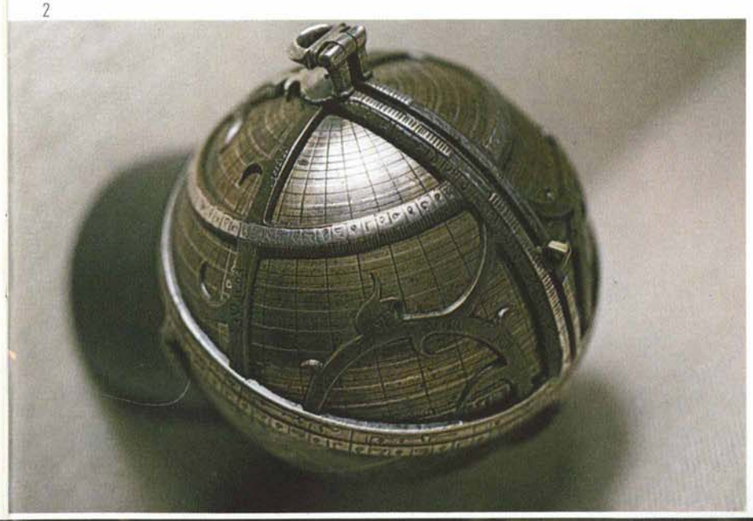
Muslim thinkers, however, did not simply follow the ideas of their intellectual forebears. They also transformed them to conform with the Koran and to integrate them into the Islamic world view: that all knowledge is sacred, and that all learning leads ultimately to the knowledge of God. In the view of Islam, therefore, science could not be divorced from theology, philosophy and literature on the one hand, or from technology and society on the other.

In the West, Islam's contribution to learning is often seen as merely the bridge by which the learning of the ancient world crossed into medieval and Renaissance Europe. And certainly it served in that capacity as well. The long-lost works of Aristotle and other classical writers first reached the West in translations from the Arabic. European scholars enrolled in the Islamic university of Cordoba to study the sciences in Arabic. The Muslim physicians Avicenna and ar-Razi were the final authorities for European medicine for more than 500 years (See *Aramco World*, Jan.–Feb., 1969).

Islamic scholars and scientists—most of them polymaths—made original contributions too, particularly in the fields of mathematics and astronomy. In mathematics they brought India's number system to new heights, developed algebra—*al-jabr* in Arabic—and trigonometry into independent disciplines and combined Euclidean geometry with Indian ideas to create a synthesis that profoundly influenced Islamic architecture and design.

They also combined the ancient traditions concerning astronomy—with its Siamese twin astrology—into a new synthesis, and by observation and mathematical calculation extended and corrected the celestial data of their predecessors. In western Iran they built the world's first observatory, along with others in India, Iraq and Ottoman Turkey, and although the observations were made by the naked eye—the telescope was still unknown—they made important contributions to astronomical knowledge. Muslim astronomers also excelled in other forms of observational and recording instruments: star maps and celestial globes—which recorded astronomical data on plain and spherical surfaces respectively—and the quadrants and astrolabes used by Islamic navigators. The astrolabe, called "a mathematical jewel," is a form of computer, a celestial sphere stereographically projected on a plane, which simulates the apparent rotation of the stars about the pole, often with additional plates for different latitudes and a sighting device. With it observers could determine the time of day or night, conduct elementary surveying and teach astronomy.

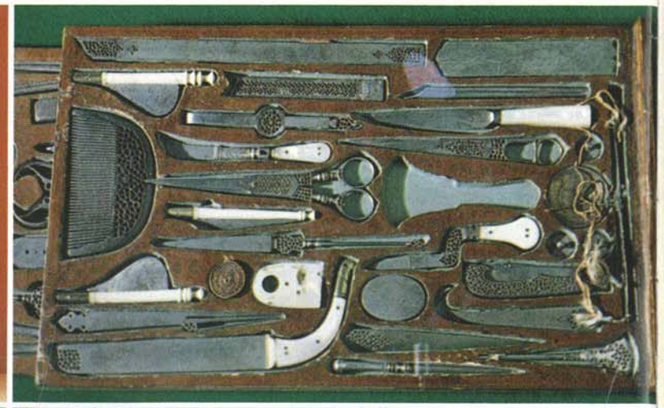
1

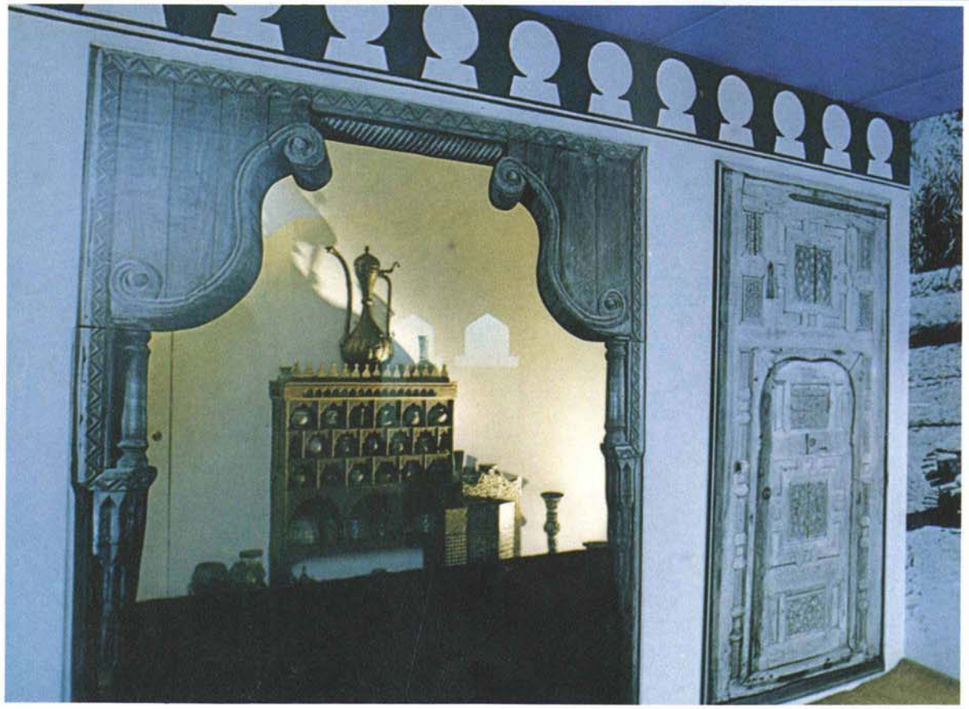


2

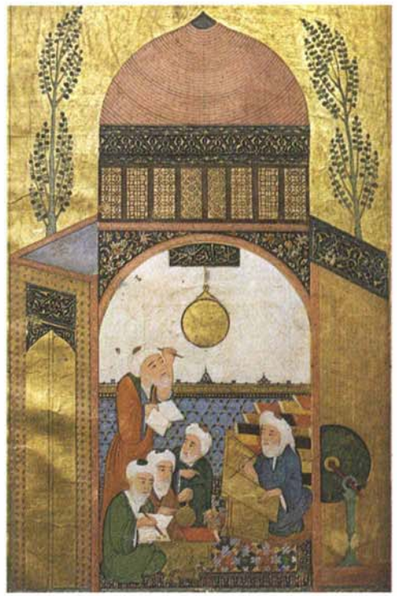
Jewel-like astronomical and navigational aids at the Science Museum: (1) A 12th-century Seljuk Turkish astrolabe; (2) A 15th-century spherical astrolabe; (3) A case of celestial globes from 12th- to 17th-century Persia. Photos 1 and 2 by Roland Michaud.

3





Top left and right: Reconstruction of an 'all-purpose' astronomical and mathematical observation instrument, based on accounts from 12th-century Spain; Instrument set of unknown purpose from 19th-century Persia. Center left and right: A 17th-century copy of 'The Wonders of the World'; A 14th-century Arabic translation of Greek pharmaceutical text. Bottom: Reconstruction of an Islamic pharmacy. Opposite: Mechanical figurines atop blood-letting device record amount drawn from patient.



Above. A Persian miniature shows an astronomy teacher with his students. Photo by Roland Michaud. Below and opposite page: The interior and face of a sophisticated water clock reconstructed in the Science Museum. The trumpeters are about half life-size.

Islamic scientists, drawing on the discoveries and theories of prior civilizations, also developed medical knowledge until it was the most advanced in its day. The Islamic medical establishment offered a variety of treatments, including diet, drugs and surgery, a varied range of *materia medica*, an extensive literature on anatomy, diseases and treatments, and great teaching hospitals, which became the models for those in the West. Islamic physicians saw botany and zoology as branches of medicine, explored animal anatomy and were familiar with the circulation of the blood, the setting of broken bones and the Caesarean section.

Islamic scientists did not ignore alchemy either. Seeing the transmutation of base metals into gold as symbolizing the perfectibility of the soul, they conducted experiments which led to important chemical discoveries, such as the production of alum, niter, soda and iron sulphates, and the determination of the specific weights of precious stones and metals.

Because of the requirements of the Pilgrimage—and the need to determine the exact relationship of Mecca to every other spot on the globe where Muslims prayed—Muslims were especially active in geographic research, a field which was stimulated and expanded by the astonishing mobility of its nomads and pilgrims, its itinerant craftsmen and scholars, its mobile armies, its merchants and sailors roaming the seas from western Europe to China. As a result, they mapped the Islamic world—in the 12th century the Muslim scholar al-Idrisi produced a famous map of the known world; wrote itineraries and composed travel books such as al-Biruni's masterful 11th-century description of India.

The technology of Islam—never separated from the pure sciences in the Muslim world—was another field of achievement, particularly with respect to water, a major preoccupation of people in arid or semiarid lands. Muslim technicians preserved and extended the vast network of ancient wells, dams, underground canals, waterwheels and water distribution systems and developed the Nilometer in Cairo, a columnar device for measuring the annual flooding of the Nile, as an aid to predicting harvests. The Muslims also worked on windmills, and invented cooling devices—some based on running water, others on the transport of snow and ice from nearby mountains—and some cities on the Arabian Gulf developed an ingenious form of air-conditioning consisting of pierced towers placed to catch the prevailing wind.

In some Muslim courts technology was devoted to such delightful, if not strictly utilitarian, devices as metallic trees full of singing birds, robots which served cooling drinks to guests and water clocks with drummers and trumpeters playing to mark the hours. But even this element of playfulness was adapted to more serious works, such as a phlebotomy device in which two robot-scribes record the amount of blood drawn from a patient.

By the time of the Festival, of course, the Western world had long outstripped the world that was its first teacher. Students from Islamic countries today come to European and American universities to study medicine, engineering, physics, chemistry and other sciences. But to Hossein Nasr, author of the book *Islamic Science* and the man behind the Festival exhibition on science, "Science and Technology in Islam," the Islamic attitude toward the physical world and its relationship to the spiritual is still important. Deploring "the tragedy of the divorce between the applications of modern science and beauty," he thinks that a knowledge of Islamic science can be "a major step in the re-discovery of the harmonious relation between man and the cosmos..." This, the basis of Islamic science and technology, he believes "must be brought back to the center of the stage of life for men in both East and West in the future, which in this, as in many ways, they share in common."