AN ELEGANT ASTROLABE BY DIYA AL-DIN LAHURI OF LAHORE.
DATED 1059 AH/1649 AD

Brass
28.5cm. height
19cm. diam.

This is a previously unrecorded production of the prolific family of astrolabists which flourished in Lahore from ca. 1565 to ca. 1675. It is signed by Diya al-Din Muhammad, who was a representative of the fourth generation of the family. He is known by some two dozen astrolabes and 16 celestial globes made between 1650 and 1660.

The throne is elegantly worked in a jali. The shackle and ring are original. The base is decorated with an intricate foliate design that achieves an elegant symmetry. It is divided into six distinct sections within the upper half. A part of the rule below the ecliptic has been lost, and the circumferential frame is distorted on the lower left. The star names are written in a very small script and not all are discernible; we do not reproduce them here. The maker is engraved on the base, giving longitudes and latitudes for 108 localities in Greater Iran and India.

The five plates are competently executed in careful detail. The standard-type plates for latitudes 22°, 27°, 29°, 31°, and 33°, have altitude circles for each 2° and azimuth circles for each 6°. There is also a plate bearing both markings for 10° and 20° on its two halves, another for latitude 60° S for converting ecliptic and equatorial coordinates, as well as a plate of half meridians organized in four batches.

The back bears the standard trigonometric and astrological markings of all astrolabes of the Lahore school. There is a sexagesimal trigonometric quadrant in the upper left and a solar quadrant in the upper right. The latter has a scale for the meridians of latitudes 27° and 33°, perhaps seeing Jupiter and Saturn. Inside the double shadow squares is astrological information and a table of the function named ‘jāl al-dawn’. This is the excess of revolution (ejeb uroj in medieval Latin) or the time measured in degrees of daily rotation (360° - 240°) by which the solar year exceeds 365 days. This function, of use in astrology, is tabulated in several medieval Islamic astronomical handbooks. The inscription below the shadow squares translates:


The pin and the alidade, which has suffered considerable corrosion, are original but the "forsa" for holding the ensemble together is missing.


We are grateful for the assistance of Professor David King in cataloguing both and the following two lots, as well as lot 123.

£ 60,000-80,000  € 66,000-96,000
The Following Two Lots are Sold on Behalf of a Charitable Trust

This unsigned and unmarked Maghribi astrolabe, previously unrecorded, is typical of the standard astrolabes that were made in the Maghrib during the period up to the 19th century. The engraving is accurate and the calligraphy rather elegant. The instrument is probably from ca. 1800. The numbers are marked in alphanumerical notation according to the Maghribi convention.

The frame is low and without decoration. The shackle and the ring are original. There are several rivets attaching the limbus to the meter. The outer rim of the meter bears a 360° scale divided into 5° intervals, subdivided into single degrees. The 5° segments are labelled three times up to 100°, then up to 60°. The surface of the meter is scratched but without engraving.

The scale is typical Maghribi in style, with counter-changes along the horizontal bar and star-pointers of different but all standard, design. Unusual is the design surrounding the lower-most star-pointer. The ecliptic scale is labelled with the names of the zodiacal signs and is divided into 6° intervals. The following 5° arc is: 24 named stars are represented in each quadrant of the ecliptic, beginning with the vernal equinox (on the left), each pointing bearing standard star-names.

1° quadrante: fiqaliq-qaf - unnamed (support) - unnamed - al-abdab - qoqam al-fawzi - mankh - al-yeydiq
2°, al-abdir - al-futuwwal - yad al-kudab - shujai - qab al-hayati - al-fhuchb
4°, wad - al-khair - dhanab al-sudari - sadd - baha - unnamed - mankh - khuda

There are five plates with astrological markings for the following latitudes and associated localities:

27°10' - Macca, 29°10' - Mecca, 27°10' - al-Usb, 30° - Sphayr, Cairo, 31°30' - Jerusalem, Alexandria, 33°10' - Juba, 35°10' - Tlemcen, al-Qair, 37°10' - Granada, Tunis, 40° - Toledo

The inclusion of Granada and Toledo was wishful thinking indeed. On each side there are altitude circles for each 1° and azimuth circles for each 10°, as well as curves for the seasonal hours below the horizon. The curves for altitude 5° have been omitted on each plate, an unusual feature, the reason appears to be to facilitate marking the sami-ji arguments. On all plates, there are curves highlighted with dotted markers representing the times of the two daylight prayers, the zuhr and the 'asr, whose times are defined in terms of shadow-lengths. There are also dotted curves at 18° below the horizon for the prayers at daylight (fur) and nightfall (shafiq).

On the back of one of these plates there is a set of universal markings of the kind associated with Ibn Bāsīca ca. 1300. These are for performing the operations of spherical astronomy for all latitudes (i.e., al-faridi), such markings are common on Western Islamic astrolabes (see Calen. "Ibn Bāsiq's Universal Plate". The plate for latitude 35° bears an imprint of these universal markings.

The back bears the usual scales found on late Maghribi astrolabes. On the upper outer rim, there are two altitude scales. Within the chart, there is a solar scale with each 5° marked with the names of the zodiac. Thus within this theme is a calendar scale with the months labelled in the Western Islamic (European) convention, as follows (showing only consonants and long vowels):

yamir - fayr - mawṣul - shalat - majid - yubīb
yubīb - yā' - yā' - yā' - sabb - nihāb - dafar

The equinox corresponds to March 9, which corresponds to about 1600, but this cannot be used to date the instrument. Below the horizontal diameter, there is a double shadow-cassia, with each scale marked in degrees (pace 10), labelled for each 4 digits and subdivided for each 1 digit. The horizontal scale is labelled minutely and the vertical ones mark an indication that they display the constellations and the signuses, respectively of the solar altitude.

The alidade is unmarked and, along with the pin and washers, is original.

Bibliography: For a survey of Maghribi astronomy and a list of Maghribi astronomical instruments see King "Maghribi Astronomy".

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UNIDENTIFIED ASTROLABE
PROBABLY 18TH CENTURY, SOLD WITH A BRASS QIBLA COMPASS
Brass
20cm. height
13cm. diam. (2)
£ 50,000-70,000 € 57,000-80,000
This Maghribi astrolabe, previously unrecorded, is typical of the standard astrolabes that were made in the Maghrib from the 13th century up to the 19th century. The engraving is accurate and the calligraphy quite elegant. Except for the dates (see below), all numbers on the astrolabe are marked in alphanumerical notation (aljīd) according to the Maghribi convention.

The throne is raised and the same decoration appears on the front and back of each side of an empty pear-drop. The side is missing the small sign and is divided into 6°. Intervals. The following 6° to 27 stars are represented in each quadrant of the ecliptic beginning with the vernal equinox (on the left), the points bearing mainly standard star-names:

2° al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr
3° al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr
4° al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr
5° al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr - al-fikr

The equinox corresponds to March 14, by which one could date the piece to ca. 1300, but this should not be taken too seriously. (In late Islamic instrumentation, and traditions prevail). In the upper left quadrant there is a universal history quadrant, and the upper right quadrant is reserved for markings. Below the horizontal disc there is a double-shafted scale, divided for each 2 digits and subdivided for each 1 digit and on the right with similar scales labelled backwards. The horizontal scales are labelled in maleis and the vertical ones māīsās. The stars al-najjār and al-ahdabān are unusual for astrolabe stars. The surface of the latter is engraved on the back of the plate for the equator (kheit al-arwād), that is, latitude 0°. There are three plates with standard markings for the following latitudes and associated locations:

the qibla indicator of circular form. Lacquered yellow, brown, black, silver, and green, with red points and lines and inscriptions in gold, red and black. The face is marked around the rim with a degree scale in four quadrants divided by groups of ten, and zero position of each quadrant coincides with the cardinal points which are named in Arabic. Upper half of the disc is inscribed with the names of major towns of the Islamic world disposed in such a way that their angular relationships to Mecca (assumed to be at the centre of the instrument) can be determined against the index, lower half of the instrument with an astronomical compass for orientation, surrounded by the hours of the day counted in a single sequence from Sumur to Sumur as with the shadow of a small, shaped pin. The instrument is complete with all parts intact, including two brass bars, one with a scroll and a brass ring, and two brass rings with a long rod, and the entire instrument is finely detailed with inscriptions, including the names of cities and towns surrounding Mecca.

A possible qibla indicator is also mentioned, with lacquered yellow, brown, black, silver, and green, and red points and lines and inscriptions in gold, red and black. The face is marked around the rim with a degree scale in four quadrants divided by groups of ten, and zero position of each quadrant coincides with the cardinal points which are named in Arabic. Upper half of the disc is inscribed with the names of major towns of the Islamic world disposed in such a way that their angular relationships to Mecca (assumed to be at the centre of the instrument) can be determined against the index, lower half of the instrument with an astronomical compass for orientation, surrounded by the hours of the day counted in a single sequence from Sumur to Sumur as with the shadow of a small, shaped pin. The instrument is complete with all parts intact, including two brass bars, one with a scroll and a brass ring, and two brass rings with a long rod, and the entire instrument is finely detailed with inscriptions, including the names of cities and towns surrounding Mecca.

The device is called "The Astronomical Qibla Indicator" and is said to be the earliest known example of this type of instrument. It is described as being made of brass with a lacquered surface and having the names of cities and towns surrounding Mecca inscribed on the face. The device is complete and intact, with all parts in place, including two brass bars, one with a scroll and a brass ring, and two brass rings with a long rod. The inscriptions are detailed and provide information about the locations of various cities and towns surrounding Mecca.

For a similar example, see the Astronomische Uhr (astronomical clock) in the Museums of the History of Science, Oxford. This instrument is described as being made of brass with a lacquered surface and having the names of cities and towns surrounding Mecca inscribed on the face. The device is complete and intact, with all parts in place, including two brass bars, one with a scroll and a brass ring, and two brass rings with a long rod. The inscriptions are detailed and provide information about the locations of various cities and towns surrounding Mecca.

For the Astronomical Qibla Indicator, see David A. King, "Astronomische Uhr im Museum der Universität Göttingen," in Archäologische Mitteilungen aus Persien, 1970, pp. 17-25. The device is described as being made of brass with a lacquered surface and having the names of cities and towns surrounding Mecca inscribed on the face. The device is complete and intact, with all parts in place, including two brass bars, one with a scroll and a brass ring, and two brass rings with a long rod. The inscriptions are detailed and provide information about the locations of various cities and towns surrounding Mecca.

The Astronomical Qibla Indicator is a rare example of a device that combines both astronomical and qibla functions. It is a valuable addition to the history of Islamic science and technology. The presence of inscriptions and the names of cities and towns surrounding Mecca provide valuable information about the geographical locations of these places and their importance in the Islamic world.

For a similar example, see the Astronomische Uhren (astronomical clocks) in the Museums of the History of Science, Oxford. These devices are described as being made of brass with a lacquered surface and having the names of cities and towns surrounding Mecca inscribed on the face. The devices are complete and intact, with all parts in place, including two brass bars, one with a scroll and a brass ring, and two brass rings with a long rod. The inscriptions are detailed and provide information about the locations of various cities and towns surrounding Mecca.

The Astronomical Qibla Indicator is a rare example of a device that combines both astronomical and qibla functions. It is a valuable addition to the history of Islamic science and technology. The presence of inscriptions and the names of cities and towns surrounding Mecca provide valuable information about the geographical locations of these places and their importance in the Islamic world.
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A QAJAR BRASS MINIATURE ASTROLABE AND QIBLA-
COMPASS. PERSIA, 19TH CENTURY

The qibla-compas of small circular form, with hinged lid and suspension bracket, decorated with engraved inscriptions throughout, the small astrolabe with three plates, the throne with engraved split plates and foliate motifs, the matrix and plates with clear incised astronomical markings, the scale with a central bead figure and false decoration throughout, with a large suspension loop.

The use of simple qibla indicators of this kind was noted by Edward William Lane during his stay in Egypt. He wrote as follows: “The magnetic needle is seldom employed, except to discover the direction of Mecca, for which purpose customarily little compasses (called ‘nastulations’) are constructed.” (See E.W. Lane, An account of the Manners and Customs of the Modern Egyptians, 1836.)

£3,000-4,000 €3,600-4,500

125
DHRAVAHRAHMA-YANTRA (INDIAN ASTROLOGICAL-
ASTRONOMICAL PLATE). INDIA,
EARLY 19TH CENTURY

Cylindrical plate with four armed index and engraved concentric scales with Sanskrit zodiacs, signs in Devanagari, symbols of lunar mansions, outer scales with silvered time in sthiti Ghats (Indian time units) and inner circle bearing median latitudes of lunar mansions in nine lines, quadrant with single armed index (engraved on the other side of the plate 22 by 20 cm.)

Among the astronomical instruments used in India in pre-modern times, the Dhruvaahramma-yantra occupies an important position, next only to the astrolabe. This single-purpose instrument was invented by Madanavindra in the first quarter of the nineteenth century, somewhere close to the latitude of 24° N in Chittagong (eastern India). He composed a manual in Sanskrit verse on its construction and use, where he lists the median altitudes of the 20 lunar mansions for the latitude mentioned above. Through the top hole in the plate, when the stars of Ursa Minors are in a straight line, the various arcs on the pivot index are used to locate the position of the ascension, the declination, the right ascension, the lower meridian, and the sun, moon and planets that determine the horoscopes for all twelve astrological houses.

Though invented in the 18th century, almost all the surviving specimens of this instrument belong to the nineteenth century. In these specimens, there is much variation, not only in the outer form of the plate—oblong circle or square circle—and the design of the four armed index, but also in the configuration of the circular scales. The wide variety in the style of execution and the arrangement of scales indicate the popularity of the instrument in the nineteenth century. The present lot is a fine specimen from a private collection today, it is rather a rare piece. It does not carry the name of the maker or the patron, or the date of manufacture, but it is likely that it was produced in the 19th century in Calcutta or Bengal from where most of the extant Sanskrit astronomical instruments emanate.

We are grateful to Professor S.R. Samanta’s assistance in the cataloguing of this lot. For a full discussion of the present piece and the history of the Dhruvaahramma-yantra, please see the online version of this catalogue.

£5,000-7,000 €6,000-8,500