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Marble Paving in
Mamluk Cairo

MOHAMMED ABDEL WAKIL

1998

The American University In Cairo
Department of Arabic Studies
Islamic Art & Architecture
June 1998

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Thesis
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M. A. Thesis
Marble Paving in Mamluk Cairo

By
Mohamed Abdel Wahab

**This thesis is submitted to the department of Arabic Studies in partial fulfillment
of the requirements for the degree of**
Master of Arts

THIS THESIS FOR THE MASTER OF ARTS DEGREE

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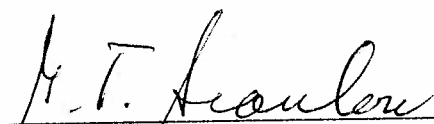
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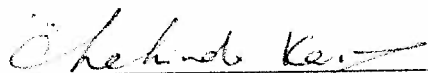
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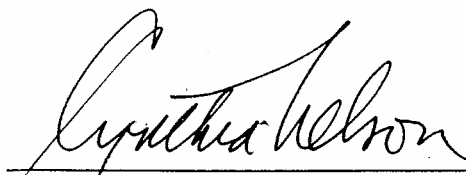
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THE AMERICAN UNIVERSITY IN CAIRO
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF ARABIC STUDIES

MARBLE PAVING IN MAMLUK CAIRO

BY

MOHAMED AHMED ABDEL WAHAB

A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS IN
ISLAMIC ART & ARCHITECTURE
JUNE 1998

To My Father

Acknowledgment

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Preface

I have followed the guidelines set by the General Notes on Writing a Presentation of Thesis of the Department of Arabic Studies of the American University in Cairo.

Transliteration and notes followed the Manuscript Preparation and Style of the *International Journal of Middle East Studies* (IJMES). Only Arabic terms when used for the first time were fully transliterated. If not written in Arabic, Bibliography is also fully transliterated.

Dates are in (hegira/AD). If only one date is used, it is AD unless the word hegira follows the date.

Each of the monuments that has marble paving in situ or those which we have drawings of, will have a catalog number. This number identifies the building on the figures and plates

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“Chapter I”

**Historical Background
The Mamluks and Marble**

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CHAPTER I

Historical Background Mamluks & Marble

The aim of this study is to survey, list, and analyze the characteristics of the design and craftsmanship used in the marble pavings of Mamluk Cairo (1250-1516).

Scholars have only occasionally touched on this topic. The primary sources infrequently mentioned some of the marble pavings of the buildings they were describing. But their work concentrated on historic record rather than architectural endeavor. The drawings of the artists who visited Egypt throughout the nineteenth century assisted in identifying the subsequent changes that have occurred in the marble paving of several monuments.

The Comité members were more interested in conserving and restoring the monuments than describing them. But the reports of their meetings, and earlier photos and plans helped in deducing what is original and what is a later restoration. The basic contribution of this research has been to provide an updated and extensive listing and drawings of Mamluk marble work, referring both to existing pavings and ones that only exist in historic records. In addition, the analysis of the development of patterns provides a framework for the classification of Mamluk pavings.

Nomenclature

The word "marble" is derived from the Greek word *marmaros*, from old Aegean, meaning a rocky mass of snow white and spotless stone.¹ The word was later used to refer to a variety of stones of other colors, not just the snow-white ones. The Egyptians and Sumerians should be credited for developing the techniques of polishing these stones to a decorative effect.

Marble can be named after either its origin or its color. The oldest names we have of various types of marble go back to the Roman era.² The Arabs, as well, named marble after its uses.

The Latin names denoting various types of marble include Porphyry, Giallo antico, Breccia,³ Proconnesian, Marmara, and Cararra.⁴ Arabic names include al-*sūmāqī*,⁵ al-*zurzūrī*,⁶ al-*ghūrābī*,⁷ al-*sa'īdī*,⁸ al-*halabī*,⁹ al-*yāsmīnī*, al-*khalīlī*,¹⁰ al-*suwaīsī*,¹¹ *qutqātī*,¹² *mishmishī*,¹³ *mārsīn*,¹⁴ and *bulūrī*¹⁵ marbles.

¹ Mannoni, *Marble*, 10.

² Ibid., 10-12.

³ Giallo antico, red marble and Breccia were rare in Egypt: Rogers, "Stones of Barquq," 126.

⁴ It is called *migaza'* in Arabic sources: Amin & Ibrahim, *Architectural Terms*, 54.

⁵ In most cases red but sometimes dark green or dark blue: ibid., 53.

⁶ Similar color to the feather of the *zurzur* bird. It is found near al-Badrashin, Giza: ibid., 53.

⁷ Black or gray marble found in Bani Suwayf with a similar color to the feather of crow: ibid., 53-54.

⁸ Whit marble, also called *baladī* from upper Egypt: ibid., 53.

⁹ Yellow (in the Syrian sources) or light red marble (in the Cairene sources) from Aleppo: ibid., 53; Rogers, "Stones of Barquq," 127.

¹⁰ Light red marble from al-Khalil: Amin & Ibrahim, *Architectural Terms*, 53.

¹¹ Black marble from Idfu: ibid., 53.

The Mamluks

The word “Mamluk” is the past participle of the verb *malaka*, meaning “thing possessed”. It was applied to the white male slaves, who were captured in war or purchased in the market. Generally, they were Turks, Circassians, or Turkman from Central Asia.¹⁶

During the last period of Ayyubid rule, the Islamic world faced many threats: Spanish Christians in west Andalus; the Mongols in Iran and Iraq and the Crusaders in Palestine. Mamluks were being bought by the Ayyubid amirs after the death of Salah al-Din in 589/1193 to provide them with a secure power base. The Mamluks were provided with sophisticated training on war tactics and methods. When al-Salih Najim al-Din Ayyub became sultan, his Mamluks lived in the citadel at al-Ruda Island, hence the name of the first ruling group, the Bahri Mamluks.¹⁷

The Mamluks ruled over Egypt, al-Sham and the Hijaz by the end of the sixth century hegira. They were the only real Islamic power to contain the threats of the Crusaders under the command of Louis IX in 1249. This showed them the weakness of the Ayyubids. But as they were seeking the

¹² From al-Sham; it might be the color of the *qutā*, which is a kind of dove: *ibid.*, 53.

¹³ From al-Sham, the color of apricot: *ibid.*, 53.

¹⁴ Green color of basil (*rayhān*): *ibid.*, 54.

¹⁵ Very pure crystal white marble: *ibid.*, 54.

¹⁶ Ayalon, “Mamluk” *EI2*, 6:314.

¹⁷ Holt, “Mamluks” *EI2*, 6:321

their rule. This shows that those nine sultans were powerful enough to keep their sovereignty.²¹

The only major land war that the Circassian Mamluks were involved in is with the Ottomans between 1485 and 1491 during the Qaytbay Period.²²

Similar to the Bahri Mamluks, several sultans of this dynasty as Barquq, Mu'ayyad Shaikh, Barsbay, Jaqmaq, Qaytbay and al-Ghuri were found of literature, the 'Ulama' and architecture.

The first Circassian Mamluk was Barquq whose rule started in 784/1382. His son Faraj ruled after him but the hereditary system was not applied afterwards, with few exceptions and for short periods.

Barsbay was the strongest of the Circassian sultans²³ and this would show in his buildings as we will see later. During his reign and that of Qaytbay, we find several works whose patrons are amirs, thus showing that the sultans appreciated architectural works and encouraged their amirs to build elaborate religious buildings.

²¹ Lane-Poole, *History of Egypt*, 325-6.

²² Holt, "Mamluks" *EI2*, 6:324.

²³ Lane-Poole, *History of Egypt*, 327.

The last powerful Circassian Sultan is al Ghuri and was killed in the battle against the Ottomans in 1516 at Marg Dabiq near Aleppo. He was succeeded for four months by his assistant Tumanbay. The Mamluks were defeated at al-Raydaniyya in 1517 and Tumanbay was captured and hanged on Bab Zuwayla.²⁴

The Economic Status of the Mamluks

The two periods of the Mamluk era, the Bahri (1250-1382) and the Circassian (1382-1516), differed in the degree of economic prosperity. This was partially due to the differing stability of each era. The two factors that played an important role in the prosperity of the country were relations with foreign countries and trade.

The Bahri Mamluks experienced economic stability coupled with population growth. This was due to wise administration domestically, successful military campaigns against the Mongols, and the concomitant immigration of dwellers of Iraq and Syria to Egypt. The immigration brought to Egypt various classes of people: tradesmen, craftsmen, scholars and physicians. The craftsmen who arrived in Egypt at that time brought

²⁴ Holt, "Mamluks" *EI2*, 6:324-5; Lane-Poole, *History of Egypt*, 353-5.

with them their artistic heritage, including the new techniques of inlaid metalwork.²⁵

The Bahri Mamluks experienced a smaller number of major epidemics or famines compared to the Circassian Mamluks.²⁶ Their monetary system, based on a link between goods and wages, was particularly stable.²⁷ This prosperity allowed the Bahri Mamluks to import considerable amounts of gold from countries as far away as Mali and Ghana.²⁸ They used these funds to forge close trade links with Europe, providing it with a variety of goods including spices imported from India. When the Bahri Mamluks marched on 'Akka in 1291, the Pope tried unsuccessfully to impose a trade boycott on them, but this was ignored by Europe.²⁹ The wealth of some of Bahri amirs reached legendary proportions, as in the case of those of al-Sultan al-Nasir Muhammad.³⁰

The Circassian Mamluks continued to present the appearance of a great power, but their period underwent a prolonged economic and military decline and they were less prosperous than their predecessors.³¹

²⁵ Ashtor, *Social & Economical History*, 280-320.

²⁶ However, the plague of 1348 was the most devastating that Mamluk Egypt faced.

²⁷ Al-Nasir Muhammad controlled the prices of the wheat and bread during any fluctuation in their prices. He even made the amirs open up their stores for the population in these cases: Surur, *Dawlat bani Qalawun*, 327.

²⁸ Ibid., 337.

²⁹ Ashtor, *Social & Economical History*, 298; Surur, *Dawlat Bani Qalawun*, 340.

³⁰ Taghribirdi, *al-Nujum*, 9:17-20; Surur, *Dawlat bani Qalawun*, 281, 299, 328.

³¹ Holt, "Mamluks" *EI2*, 6:324

The Black Death of the fourteenth century hit Egypt almost as hard as it did other countries. Raymond estimated a loss of 40% of the population of Cairo after the plague of 1348. He believed that by mid 14th century, the population ranged between 200,000 and 250,000. He then suggested that the population of Cairo in 1517 was not more than 200,000.³²

Entire villages were depopulated. In 806H, only one of more than eighty mills that were in Minyat al Umara' village was still working³³, and Cairo was very badly hit. This was not the last pestilence, as several struck again throughout the end of the thirteenth and most of the fourteenth centuries. Most of these plagues were in the Circassian period.³⁴

Civil war between Sultan Faraj and his rivals led him to impose high taxes, which exacerbated the suffering of a diminished population.³⁵ Under these circumstances, the number of artisans dwindled and the country had to recruit talents from abroad. Silver coins became so scarce as the economy dwindled that copper was introduced instead.³⁶ The Circassian period was also known for occasional shortages of such essential goods as spices, sugar and salt.

³² Raymond, "Cairo's population," 22, 30. Williams estimated the loss after the plague of 1348 to be 25% to 33%: "Urbanization & Construction," 40.

³³ Al-Maqrizi, *Khitat*, 2:130.

³⁴ Williams, "Urbanization & Construction," 40

³⁵ Ashtor, *Social & Economical History*, 298

³⁶ *Ibid.*, 305.

As landed revenue shrank, sultans and amirs depended greatly on commerce and trade. They undertook every possible means to maintain trade. Under al-Ashraf Barsbay, prosperity was restored to some degree, particularly among the ruling classes. He succeeded in conquering Cyprus, imposing his power on the revenues of the customs on trade of Jaddah³⁷ and monopolized the wood, metalwork, and sugar trades. Barsbay prohibited the buying of any spices except from the sultan's warehouses.³⁸

Despite of all the above-mentioned economic constrictions, one can not deny the marvelous architectural and ornamentation works of the Mamluks in both eras. Generally, they were enthusiastic patrons of architecture who left impressive monuments.

Marble and its uses

In ancient times, marble was used mostly as a building material, for columns with elaborate capitals to support lintels and roofs. It was also commonly used as the material of statues and other objects of more practical use, such as pots and cups.

³⁷ Holt, "Mamluks" *EI2*, 6:324.

³⁸ Tarkhan, *Dawlat al-Mamluk al-jrakisah*, 277-290.

The Egyptians have long quarried for marble. Ancient marble quarries were in use for centuries and some are still being used today. Harrell and Brown studied and classified 157 ancient Egyptian marble and granite quarries. This large number of quarries is indicative of the importance of stone in ancient Egyptian architecture.³⁹

Covering the floors of mosques is a tradition that goes back to the time of the Prophet. In his days, *al-hasbā'* (fine gravel) was used for that purpose and was then replaced by mats.⁴⁰ This tradition developed to include stone slabs, marble and carpets.

Al-Walid was the first to pave the Ka'ba with white, green and red marble. The paving was later replaced or rather renewed by al-Muzaffar Yusif 'Umar, son of the *Rasūl* of al-Yaman.⁴¹

Marble was also used extensively in Syria. It is found at the entrance of the Great Mosque of Damascus (709-15),⁴² and the courtyard of the Great Mosque of Aleppo (715-7 and later) had simple geometric designs that were added in the thirteenth century. At Damascus, a small panel is used among an overall plain marble paving,⁴³ and at Aleppo we find a

³⁹ Harrell and Brown, *Ancient Egyptian Quarries*, Internet (www.geology.utoledo.edu/archaeology/).

⁴⁰ The floor of the mosque of 'Amr ibn al-'As was covered with *al-hasba'* and Mu'awiyya was the first to introduce *husr* (rugs) on its floors: al-Maqrizi, *Khitat*, 2:248.

⁴¹ Al-'Amri, "I'adat istikhdam", 256.

⁴² In 611H., Al-Malik al-'Adil ordered his wazir, Safi al-Din Shukr to start paving the Umayyad mosque in Damascus as its floor was not paved: al-Maqrizi, *al-Sulūk*, 1:180.

⁴³ Kuban, *Arab Lands*, 90 (Plate).

paved marble layout that is comparable to the contemporary examples in Mamluk buildings in Cairo.⁴⁴

Still surviving marble pavings at the Ayyubid palace at the Citadel of Aleppo (first half of 13th century), at the Kamiliyya madrasa (1230-37) and at the madrasa al-Firdaws (633/1235), show layouts and patterns that – to a great extent are the simple precursors of those found later in Cairo under the Mamluks.⁴⁵

Some more advanced pavings are also found in Aleppo. The paving of the courtyard of the madrasa al-Zahiriyya (1216) introduces an unusual pattern consisting of octagons alternating with four-pointed stars that have thin offset borders that is not used in Egypt before the 15th century.⁴⁶ In Damascus, the paving of the courtyard of the mosque of al-Tawba (638/1240) is also unusual as its panels are extremely large and do not have any central panel or *fawwāra*.⁴⁷

In Egypt in the Islamic era, marble was used primarily as a decorative material. On describing Cairo and its buildings, al-Qalqashandi stated that most of the buildings used burnt bricks, whereas its mosques, madrasas and

⁴⁴ Ibid., 93 (plate).

⁴⁵ Tabbaa, *Constructions of Power*, Pls. 42-44, 115, 153, 159 and 197; Herzfield, *CIA-Alep*, 172-3.

⁴⁶ This might have been a later restoration in the 15th century. *ibid.*, Pl. 122.

⁴⁷ Ibid., Pl. 78.

the mosques of the rulers are built in stone, the paving and dados are marble, and most of the roofs are from palm trees.⁴⁸

Some scholars have suggested that from the time of the Islamic conquest of Egypt in 641 up to the thirteenth century, no marble was either imported or quarried.⁴⁹ Muslim architects and patrons simply used marble recycled from either older structures or marble that was stored by earlier dynasties. Taking them by force or “buying” them - usually at an unrealistically low price - was the easiest way to get the marble needed to ornament new buildings.

Al-‘Amri, in her study, showed that recycling was applied to marble in particular, as it was a very rare and expensive material. She lists several instances of these practices,⁵⁰ an early example being when the Mamluks conquered ‘Akka in 690/1291 and brought back to Cairo the marble portal of a church, which was used as a portal to the madrasa of al-Nasir Muhammad.⁵¹

⁴⁸ Qalqashandi, *Subh al-a'sha*, 3:370.

⁴⁹ Rogers, “Stones of Barquq”, 125.

⁵⁰ Al-‘Amri, “I‘adat istikhdam”, 259.

⁵¹ In 923/1517, Ibn ‘Uthman started taking the marble from several buildings of the citadel to be used in building of a mosque similar to al-Ghuri’s in Istanbul: Ibn Iyas, *Bada‘i‘ al-zuhur*, 5:179-83. We also know that in 929/1522 a large amount of marble was transferred to Gebze, Anatolia for the decoration of the mosque of Coban Mustafa Pasha. It is also stated that red marble, Porphyry or Sumaqi, and Sparrow’s eye marble were ordered from Alexandria in the 17th century: Barkat, *A Study on Marble*, 82-83, 28.

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The Mamluks used marble columns from pre-Islamic buildings. This resulted in columns that were different in shape and height. The capitals were also of varied shapes. This is visible in several Mamluk buildings in Cairo such as the mosque of al-Nasir Muhammad at the citadel (Index # 143), the mosque of al-Maridani (Index # 120), the complex of Mu'ayyad Shaikh⁵² and the mosque of Lajin al-Sayfi (Index # 217).⁵³

Columns of pre-Islamic buildings were sliced up and used in floor and wall decoration. For example is the corridor linking the vestibule and sahn of the madrasa of Barquq has roundels of different colors, which are all a result of this recycling process (Pl. 11-3).

Harrell, an expert geologist, studied the decorative stones used in the Fatimid mosque of al-Salih Tala'i' and the Zawiya of Faraj ibn Barquq near Bab Zuwayla. He suggested that, with the exception of the basalt pieces, all the marble columns and panels used to decorate the two buildings are likely to have been taken from earlier Roman or Byzantine monuments.⁵⁴

⁵² Al-Sahkawi stated that Mu'ayyad Shaikh transferred marble columns and slabs from the houses: *Tuhfat al-ahbab*, 102.

⁵³ Maher, *Masajid misr*, 4:177.

⁵⁴ Harrell, *Decorative Stones*, 1-2.

The Mamluks even used the marble of Islamic monuments. In several cases the marble is taken over illegally. Al-Maqrizi stated that after the earthquake of 702/1302-3, Salar while restoring the mosque of 'Amr, replaced the marble columns, dados and floors with new ones that were taken from several other mosques. He also pointed out that the marble that was taken from that mosque was transferred to an unknown place and nothing of it was used in that mosque.⁵⁵

Al-Maqrizi stated also that Sarghatmish has taken the marble of the house of Ibn Zanbur that is called *al-Saba' qa'āt* (seven qa'as), along with china, copper and textiles. This is known to have happened after 754/1354.⁵⁶

The use of marble did not depend as much on the economic conditions of the country as on the power and wealth of the patron. Despite the harsh economic conditions of his time, al-Mu'ayyad Shaikh had his mosque so lavishly decorated that al-Sakhawi considered it the second most beautiful ornamented building with marble works of its time next to the Umayyad mosque at Damascus.⁵⁷ Ibn Iyas stated that the costs of

⁵⁵ Al-Maqrizi, *Khitat*, 2:252.

⁵⁶ *ibid.*, 2:60.

⁵⁷ 'Abd al-Wahhab, *Tarikh al-masjid*, 207.

building his mosque only added to the general poverty of the population at that time.⁵⁸

Sultan Jaqmaq, who faced several economic crises, prohibited himself and his amirs from using extravagant ornamentation. This was apparent in both his buildings and those of his amirs. He was a rare exception to the general rule.

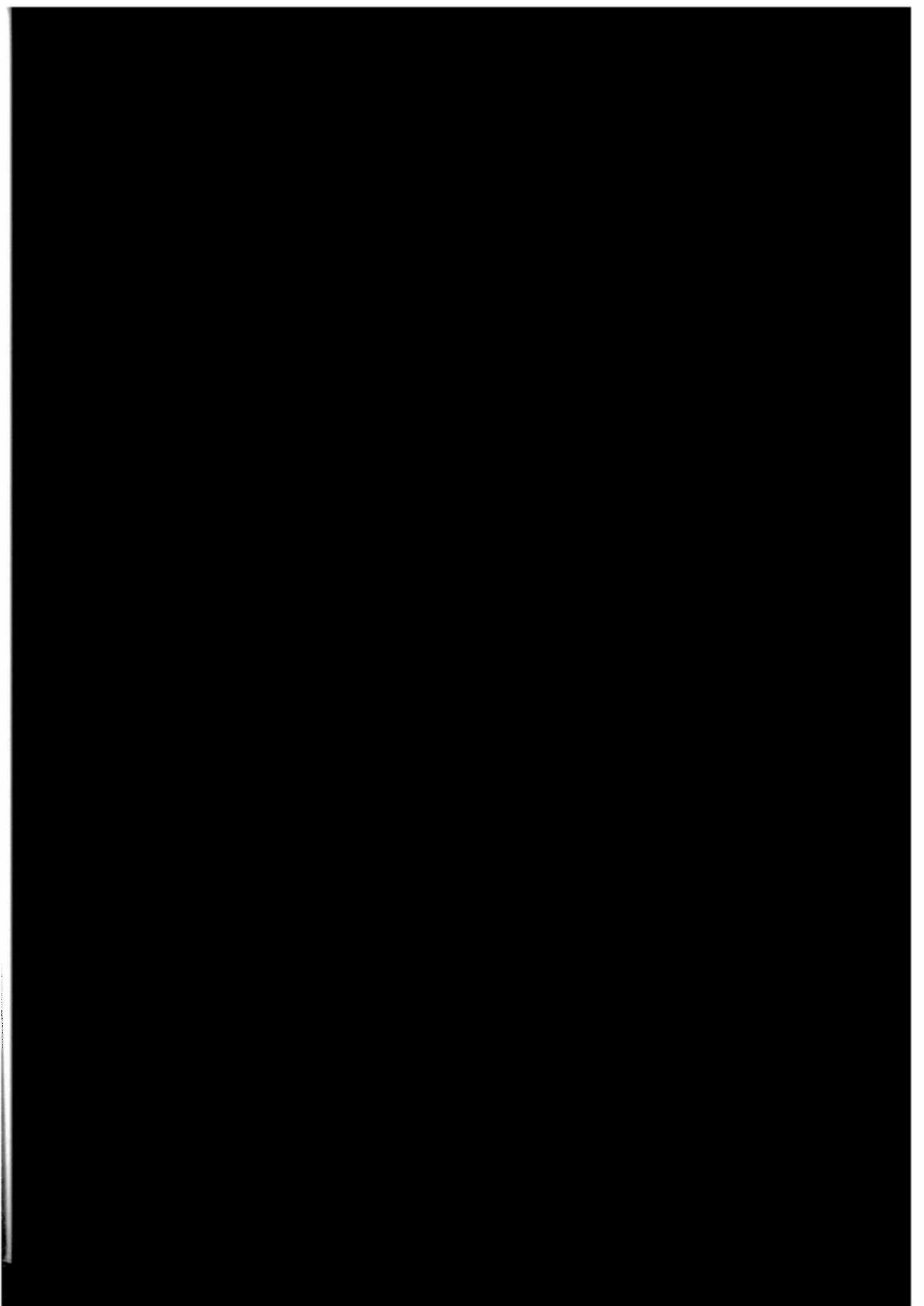
The practice of recycling marble was common, not only in the Mamluk era, but with almost all other Islamic dynasties, as in Ottoman rule over Egypt.⁵⁹ However, unlike the other dynasties, the Mamluks were known for demolishing the buildings of other Mamluks to get building and ornamentation materials.

Even the Comité when restoring buildings faced several problems in finding, quarrying or importing the needed marble types. Between 1893 and 1900, they were not able to restore large areas of the marble paving of the complex of Qaytbay because of the scarcity of white marble.⁶⁰ Herz stated that it was difficult to find the type of green marble that was meant to be used in the inlay work at the Maridani mosque, although he added

⁵⁸ Ibn Iyas, *Bada'i' al-zuhur*, 2:20.

⁵⁹ Barkat, *A Study of Marble*, 82-83, 28; Ibn Iyas, *Bada'i' al-zuhur*, 5:179-83.

⁶⁰ Comité, 1896 Arabic, 36; 1897 Arabic, 199; and 1900 Arabic, 33.



Marble Paving in Mamluk Cairo

“Chapter II”

Marble Paving of the Mamluk Buildings in Cairo

Figures are marked as follows: “Building’s catalog #-Figure #”

e.g.: 9-1 is figure #1 in building #9 which is Complex of Sultan Hasan

Plates are marked as follows: “Building’s catalog #-Plate #”

e.g.: 9-5 is plate #5 in building #9 which is Complex of Sultan Hasan

“,” means and

“.” means to

CHAPTER II

Marble Paving of Mamluk Buildings in Cairo

As has been seen in the previous chapter, marble was always considered to be a very rich building and ornamentation material. None of the marble paving still surviving in Cairo is earlier than that of the Mamluks, except those at the mausoleum of al-Salih Najm al-Din Ayyub,¹ which were commissioned by his wife, Shagarat al-Durr.² This research started with the assumption that only a limited number of monuments had marble paving. As research progressed, it was found that marble paving was used very frequently in Mamluk Cairo. Different designs, colors and marble types were used in their mosques, madrasas, *khanqās*, mausoleums and *sabīls*. In this chapter, I discuss the extant Mamluk marble paving. Buildings whose original marble paving no longer exists will be dealt with at the end of this chapter.

The monuments are listed in chronological order. Not all pavings are original, for many of the existing structures have undergone restoration at one point or another in their history. Some buildings have modern tiles

¹ In the previous chapter, we have seen earlier examples in Aleppo that dated as early as 1216.

² The person in charge of the restoration of the mausoleum working with the German Archeological Institute in Cairo stated that the marble panels covering the floors of the mausoleum were convex and concave on the bottom side, suggesting earlier use in other structures. The slabs are the result of sawing white columns longitudinally. She assumed that this would have been the original paving.

introduced recently, and stone blocks were also used as paving.

Sometimes a combination of tiles and stones or stones and marble paving is used in the same building. In some monuments, stone and marble paving are used together in the same sahn³ or corridor.⁴ This will be discussed and interpreted in the next chapter.

(I) Buildings with Marble Paving in situ:

I) Bahri Mamluks

1-Complex of Sultan al-Mansur Qalawun (683-4/1284-85)-Index #43

Only the mausoleum and the basins of the *īwāns* of the *bīmarīstān* have marble paving. Those in the mausoleum differ in technique and design from those at the bimaristan. The latter are more intricate in design and execution (Pls. 1-9 and earlier photos Pls. 1-12:14).⁵

The Mausoleum

Marble covers certain sections of the floor of the mausoleum. It is used in a narrow strip extending from the entrance of the mausoleum to the wooden screen surrounding the cenotaph and continuing as far as the mihrab. It is also used around the cenotaph within the area bounded by the

³ The mosque of Aslam al-Silahdar and khanqa of Shaykhu at al-Saliba (Pls. 6-1: 4).

⁴ The madrasa of Taghribirdi on al-Saliba. An older drawing of the qibla iwan showed that it had marble paving that did not cover the whole floor of the iwan (Fig. 23-1)

⁵ Herz, *Qalawun*, Tafel 35-Abb.45; Creswell, *MAE*, plates 63b, 63d; and Ebeid, *Early Sabils*, Pl. 84.

wooden screen, which was built by al-Nasir Muhammad. Stone blocks cover the rest of the floor.

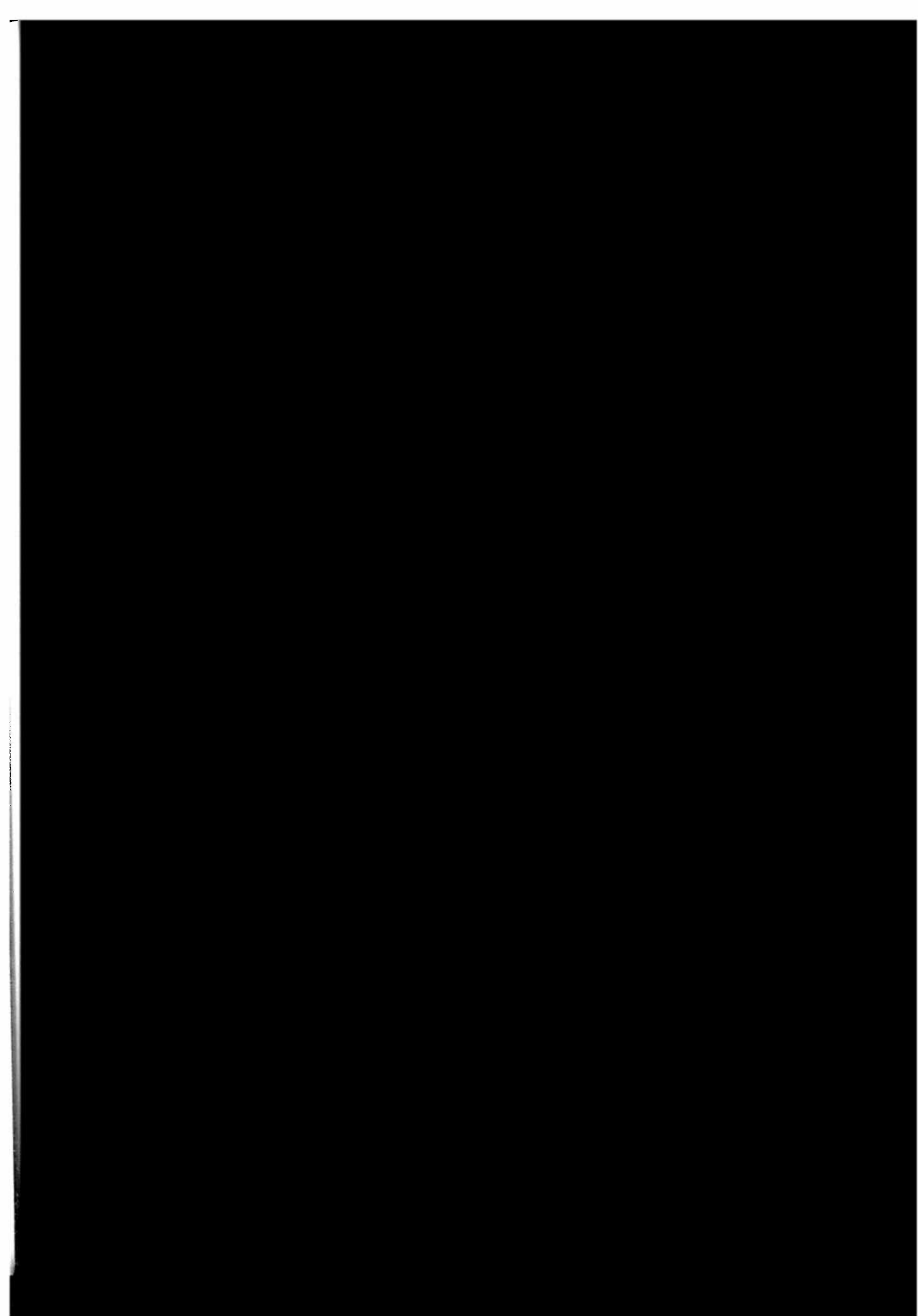
Knowing that the third reign of al-Nasir Muhammad was a high point in Muslim architecture,⁶ one is tempted to speculate that on adding the wooden screen around the cenotaph, he ordered the floor paved in marble too.⁷ However, the original mausoleum was also considered a high point in Muslim architecture and ornamentation. The area around the cenotaph, bound by the wooden screen, fits between the four large piers and the marble paving might have been designed to simply cover that area. But as the building emphasizes its octagonal plan, if the original designer had planned to have both marble and stone paving, he would have had the marble cover the octagon bound by the piers and the columns rather than just the rectangle now bound by the wooden screen.

The other good reason for assuming the work dates from the period of al-Nasir Muhammad is that in 1906 the Comité decided to lower the marble floor of that area to the level of the mausoleum.⁸ This would

⁶ Devonshire, *Rambles in Cairo*, 42.

⁷ Al-Nasir Muhammad's madrasa at al-Mu'izz street and his mosque at the citadel no longer have any marble paving, but we know from al-Qalqashandi that the mosque at the citadel was once covered with beautiful marble paving: Al-Qalqashandi, *Subh al-a'sha*, 3: 374.

⁸ Comité, 1906 Arabic, 102.



took a considerable quantity of marble columns and panels from the citadel at al-Ruda Island, constructed by al-Salih Najm al-Din Ayyub.¹¹

Al-Maqrizi considered this edifice one of the great Mamluk buildings, referring particularly to its beautiful *qā'a*, which was covered with polychrome marble paving and had a water fountain at its center. This *qa'a* was used for the accommodation of the Mamluk eunuchs who guarded the mausoleum. They were known later during the Turkish period as *al-tawāshiyya*.

According to Ibn Iyas, the madrasa was restored by Amir Azbak min Tutukh in 899/1493-4.¹² He may even have restored the mausoleum. On examining the drawings of Prisse d'Avennes of 1877, we see that the designs around the cenotaph followed a grid. All rectangles show one or two white squares set diagonally within a square or a rectangle. The triangles formed from this design are in turn divided into smaller squares and rectangles that have inscribed diagonally set squares. Other longer rectangles have a row of small squares at 45 degrees alternating with dark triangles that are then divided into smaller ones. These smaller triangles have a white triangle in the middle (Pls.1-8, 1-11).¹³

¹¹ 'Abd al-Wahhab *Tarikh al-masajid*, 115.

¹² Ibn Iyas, *Bada'i' al-zuhur*, 3:301.

¹³ Prisse d'Avennes, *L'art arabe*, vol. 3.

Herz restored the dome in 1903, but records do not mention restoration of the marble pavement. All that is on record is that "the floor was only paved with slabs of stone that were found by Herz, 25 cm below a later pavement that was removed by him."¹⁴ In 1906, the Comité decided to lower the marble floor, in front of the area bound by the wooden screen to the level of the floor of the mausoleum (*tūrba*).¹⁵

The Bimaristan

The only marble pavement left in situ in the bimaristan is a round basin at the center of a square also paved in marble (Pls. 1-9). The basin is in very poor condition and when last inspected was completely covered by sewage and mud. The simple geometric design, mostly squares and triangles, is elegant and well executed. Different colors and types of marble were used: white, black, yellow and red. The whole floor and wall were covered with marble.

Al-Maqrizi stated that the bimaristan had been the qa'a of Sayyidat al-Mulk, daughter of al-'Aziz billah Nizar, the son of Caliph al-Mu'izz. If the bimaristan was part of the western palace of the Fatimids,¹⁶ the basins would also be part of their works.¹⁷ This was Herz's view at first, but later

¹⁴ Al-Maqrizi, *Khitat* 2: 406-8; Creswell, *MAE*, 2: 193; Herz, *Qalawun*, 23.

¹⁵ Comité, 1906 Arabic. 102.

¹⁶ Qalqashandi, *Subh al-a'sha*, 3:370.

¹⁷ Al-Maqrizi, *Khitat*, 2:406; Creswell, *MAE*, 2: 205.

on he had doubts concerning the bimaristan's origin. Creswell saw the design of the marble basins as typical of the Qalawun period. He stated that the design and pattern used in the basin of the west *salsabīl* was similar to the design and patterns of the spandrels and semi-dome of the mihrab in the mausoleum.¹⁸ Still, it is conceivable that the salsabil design was copied from a preexisting one.

A scholar who studied early sabils stated that the photographs of the west iwan showed a marble panel with a 'fleur de lys' chevron design and a border of animals.¹⁹ However, 'Abd al-Wahhab stated that both the west iwan and the salsabil were not in situ since the 1940s.²⁰ The design of the round part of the basin was later adapted to the dome at the vestibule at the mosque of al-Sultan Hasan,²¹ showing a continuation of style in the use of convex spheres.

The Comité executed some restoration works, including mosaics and floors in 1886-87.²²

¹⁸ Creswell, *MAE*, 2:208-10.

¹⁹ Ebeid, *Early Sabils*, 90 and pls. 84-85.

²⁰ 'Abd al-Wahhab, *Tarikh al-masajid*, 123.

²¹ Devonshire, *Rambles in Cairo*, plate XXXII, fig. 50.

²² Comité, 1890, 47.

2-Complex of Sultan Baybars al-Jashankir (706-9/1307-10)-Index # 32

This is the earliest surviving khanqa in Cairo and was the second one constructed in the city after that of Salah al-Din.²³

The Entrance Vestibule and Corridors

The vestibule and the corridor leading to the courtyard have polychrome marble floors, interspersed by a few dark-yellow marble tiles. The vestibule floor design is symmetrical; black rectangular outlines and four black octagons, one of which is covered by two modern stone steps (Pls. 2-1). The corridor to which these two steps lead lies on a higher level, possibly as a result of later renovation work.

The corridor leading to the sahn is divided into three parts. The first part has three marble squares of different colors, black, gray and white, set diagonally within a rectangle, with split-arrow forms filling the spaces between the squares and the rectangle (Pls. 2-2:3). The second part is a wider rectangular space. The third part of the corridor is equal in width to the first part but lies on a different axis, slightly shifted to the south. This part of the corridor leads to the sahn. The corridor here has a rectangular black border containing white squares set diagonally. Two narrower black strips border the rectangle. The third and last part of the corridor maintains

²³ Devonshire, *Some Cairo Mosques*, 53.

its symmetrical pattern, although it bends a few meters before reaching the sahn. It has a black roundel in the middle, flanked by two white circles having black borders. All circles are tangent to the rectangular border of the whole design. The two side circles have black navels. Between the two patterns, a yellow curved I-shape is placed. The pattern on each end of the design is similar to that found on the first part of the corridor, just after the vestibule (Pls. 2-5:6).

The courtyard does not have marble paving. The Comité restored the khanqa in 1892²⁴ after it had been in very poor condition.²⁵ In 1913, the Comité set a budget for completing the paving repairs, but the report does not specify which paving.²⁶

The Mausoleum

The design of the mausoleum floor, mainly with black and white marble formations, is virtually symmetrical on both sides of the axis perpendicular to the qibla wall.²⁷ Red triangular marble, black triangles and black octagons are used to form a border design around the modern wooden screen of the cenotaph.

²⁴ Comité, 1892, 82.

²⁵ 'Abd al-Wahhab, *Tarikh al-masajid*, 135.

²⁶ Comité, 1913, 33.

²⁷ Except for the north panel, as it has the entrance to the grave.

The designs are interesting for they introduce, for the first time, mihrab shapes on the marble floor together with the other simple geometric designs. The theme of these mihrab designs will be seen again in some structures including the marble floor of the qibla iwan of the madrasa of Barquq at al-Mu'izz street but here it is particularly complex and has details never observed later on floors (Pls. 2-7,12,13). Here, the mihrab shape reinforces the flow of the overall design toward the qibla (Fig. 2-1).²⁸

We know that Baybars al-Jashankir bought several mansions at the time and used their materials to build his khanqa. He also used large quantities of marble that had been stored in a Fatimid cellar.²⁹ Al-Maqrizi wrote that Baybars had known of a cellar that was thought to contain weapons. When it was opened, he found excellent marble that he used in his khanqa.³⁰ Some of these pavings, therefore, are likely to have had a previous life as part of now extinct Fatimid structures.

²⁸ Abd al-Wahhab states that this motif was used on the Fatimid rugs. No Fatimid rugs have survived. This is the only reference I came across that says that this motif was used on Fatimid rugs: *Tarikh al-masajid*, 134.

²⁹ Al-Maqrizi, *Khitat*, 417.

³⁰ Mubarak, *al-Khitat*, 4: 142.

4-Mosque of Aslam al-Silahdar (746/1345)-Index # 112

This is the earliest surviving courtyard³¹ with marble paving. The marble covers the entrance and a rectangular central portion of the sahn. The rest of the sahn and the iwans are covered with stone paving.

The absence of an elevated structure at the center such as a cenotaph or *fawwara* allowed the artist to introduce a central panel with a roundel at the center of the sahn. This is the earliest known example of such a design.³²

The design is of simple geometrical patterns, mainly squares and triangles. Roundels were also used to enhance the designs. The colors of the marble are fading. Most of the marble used is white and interspersed with black and yellow pieces. Yellow triangles appear particularly in formations in the entrance of the mosque (Pls. 4-1:5). The Comité restored the marble paving in 1918-19.³³

³¹ Now the courtyard is covered but some scholars believe that at least at one point it was roofless.

Karim, *Mosque of Aslam al-Silahdar*, 44.

³² To be more precise, the entrance vestibule of Baybars al-Jashankir shows a central panel but it is a simple square black border, which I do not consider really a central panel.

³³ Comité, 1915-19, 683.

5-Mosque of Shaykhu (750/1349)-Index # 147

This mosque introduces a different concept to those preceding it.³⁴

The courtyard has polychrome marble paving with different rectangular, square, octagonal and small star-shaped designs. Maher stated that blue marble was used in the pavement of the sahn.³⁵ If this were true, then this would be the first time blue marble was used on the floor. On examining the mosque in 1997, only white, black and some red marble was found. There are two possibilities: the first is that when the mosque was restored, no blue marble was available and grayish or black marble was used instead; the second possibility is that she mistook the grayish marble for blue. As this marble is widely used in other monuments, the second possibility is remote. This is the earliest surviving example of a marble-covered roofless courtyard.³⁶ The marble floor has a symmetrical polychrome design, involving rectangular slabs of gray marble and other rectangles, bordered in black, containing octagons, hexagons, triangles, and squares in white, black and red (Pls. 5-1: 6, Figs5-1:3).

³⁴ This mosque has been badly damaged by the end of the Circassian period and was restored later in the Ottoman period: Behrens-Abouseif, *Islamic Architecture*, 117.

³⁵ Maher, *Masajid misr*, 3: 255.

³⁶ The madrasa of Taybars and al-Aqbughawiyya madrasa used to have marble paving at the, now covered, sahns. See Buildings that lost their marble paving at the end of the chapter.

6-Khanqa of Shaykhu (756/1355)-Index # 152

All the sahn used to be covered with polychrome marble paving.³⁷

Now stone blocks and a tree cover a large area. Less than half the marble is still in situ. When I examined and photographed the khanqa in late 1997, it was being restored. The restoration included almost the entire edifice with the exception of the sahn. The marble paving left in the sahn resembles that of the mosque of Shaykhu across the street: white hexagons with black and red triangles, and white octagons with black and red triangles (Pls.6-1: 6). An earlier photo by the Comité shows it in the same condition (Pl. 6-7).

The building was restored by Bilal Agha in 1095/ 1684.³⁸ It is not clear if his work included the pavings of the sahn or not. In 1933-34, the Comité inspected the restoration of the *fawwara*.³⁹

7-Madrassa of Sarghatmish (757/1356)-Index # 218

This impressive structure stands out among Mamluk buildings for its unusual style. The marble work is of exceptional quality and the marble

³⁷ As we have seen before, earlier buildings showed the use of both marble and stone slabs in the paving of the same space. A similar approach might have been used here. One might interpret this theory from the virtual corridor paved in marble and leading from the entrance to the sahn to the marble paved area of the sahn (Pls. 6-3: 6).

³⁸ Mubarak, *al-Khitat*, 5: 86-7.

³⁹ Comité, 1933-35, 39

cenotaph at the center of the mausoleum is of outstanding artistic value (Pls. 7-14: 15).⁴⁰

The Sahn

The courtyard, covered with beautiful marble paving,⁴¹ was executed shortly before that of the masterpiece of the complex of al-Sultan Hasan.

In 1892, the madrasa was said to have fallen into disuse. The marble mosaics of the qibla iwan, once considered a perfect specimen of fine design and workmanship, had been partially dislocated and some sections had disappeared. In certain parts of the floor, one could have found panels with the name of the amir on them. This and other examples had to have been either on the dado or on the facade.⁴² Devonshire described the madrasa in 1931 as in a very dilapidated state.⁴³ This would lead us to conclude that the marble of this madrasa was restored after that date.⁴⁴

Although several authors have described the marble paving as being masterpieces, in 1997 it did not look as impressive as other buildings of a

⁴⁰ Maher, *Masajid misr*, 3: 272.

⁴¹ Mubarak, *al-Khitat*, 5: 92-3. He also said that the mausoleum containing the cenotaph of Shaikh Qawam al-Din had marvelous marble paving.

⁴² 'Abd al-Wahhab, *Tarikh al-masajid*, 163-64.

⁴³ Devonshire, *Rambles in Cairo*, 6. She states that some of fine marble panels have been transferred to the Arab Museum (Islamic Museum).

⁴⁴ The structure was restored during the reign of king Faruk and in the 1940s parts of the building needed restorations: 'Abd al-Wahhab, *Tarikh al-masajid*, 165.

later date.⁴⁵ The colors have faded to the point where it is difficult to distinguish between them except by very close examination. Dark green marble was used with red and dark yellow disc shapes, possibly produced from columns of earlier buildings. Black rectangular borders and some roundels are the only geometrical shapes used here.⁴⁶

In 1889, the Comité approved the budget necessary to do the restorations needed for the paving.⁴⁷

The Mausoleum

This mausoleum is paved with rare types of marble (Pls. 7-9:13). The design introduces a unique concept for the marble paving of mausoleums. The whole space is not really divided into rectangles as usual.

Here, we have a central panel surrounded by several borders (Fig. 7-4,5). The inner border exhibits interlacing roundels of several colors that are connected to each other by smaller ones (Pl. 7-9). The outermost border features diagonally-set squares and split-arrow shapes. On each side of the border, two of the squares are not connected apex to apex. They overlap each other and pointing arrows appear in the area between them (Pl. 7-11). It would have been accepted if the line of the overlap is on the

⁴⁵ Its marble types are rare and this is what might let us consider them impressive.

⁴⁶ Except for the triangles situated at the corners of the octagonal fawwara.

⁴⁷ Comité, 1889, 14-15.

axis of the design but this is not the case. On counting the number of squares on each side of the axis of the formed pointing arrows, a noticeable eccentricity is traced (Fig. 7-5). This could be considered intentional and not due to poor restoration if we did not find such eccentricity.⁴⁸

8-Madrasa of Tatar al-Hijaziyya (761/1360)-Index # 36

The courtyard floor is covered with marble paving, recently restored by the German Archeological Institute in Cairo. The overall design is symmetrical on both axes.

A new element in this design started a trend, later adopted in many of the small sahnns and mausoleums as the design features a central square with two rounds of eight roundels, all executed in red marble. Four of the roundels in the outer tier have alternating black and red triangles arranged in a toothed manner (gear-shaped). Triangular slabs are situated outside the square, creating an octagon. These triangular corners have white discs at their centers and the remainder is filled with small black and white triangles. We have to note here that this is the first real emphasis on the central panel of a marble paved space.

The space between the walls and the central square is divided into rectangles each with a separate design, but conforming to an overall

⁴⁸ It might be a mistake in applying the original design or in restoration.

symmetric pattern on the axis parallel to the qibla.⁴⁹ Except for the corner square panels, these spaces concentrated on the border designs only (Fig. 8-1). The corner panels are adorned with squares containing yellow discs at the center and smaller discs closer to the rim (Pl. 8-5), the earliest surviving medallion-shaped panels in Mamluk marble paving.

All available colors are used. Blue marble of a very dark hue was also used. Four of the rectangular design panels have nothing but stone blocks, set diagonally within a black border.⁵⁰ We have also to note that earlier drawings show that the design was not symmetrical on the axis parallel to the qibla. As a matter of fact, the central panel was positioned off center, slightly toward the west iwan (Fig. 8-2).

9-Complex of Sultan Hasan (757-64/1356-62)-Index # 133

This is one of the undisputed masterpieces of Islamic, not just Mamluk, architecture. The huge and perfectly executed complex is particularly known for marble work. The marble paving was executed by the *tawashi* Bashir al-Jamdar in 764/1363, after the sultan was killed.

⁴⁹ Designs are also symmetrical on an axis running parallel to the qibla iwan exist at the mausoleum of Qalawun and the mosque of Shaykhu.

⁵⁰ This could be a result of restoration. I had the chance to meet one of those who contributed to the restoration and he stated that they restored the floor exactly as they found it.

In 791/1389, during the reign of Barquq, some mamluks used the mosque as a base to attack their rivals at the citadel, using cannons in their attack.⁵¹ During this period, the main door was blocked and the entrance porch was removed.⁵² The mosque was used again as a military base in 902/1497, during the Aqbardi strife. The structure suffered damage as a result and the mosque's lamps, carpets and marble were looted.⁵³

The complex was closed during the Ottoman period in the 18th century. It was restored and reopened by Salim Agha in 1200/1785.⁵⁴ The Comité set a budget for partial restoration in 1911 and 1912.⁵⁵ It underwent extensive restoration by the Comité in 1915.⁵⁶

The overall design was a turning point in Muslim and Mamluk floor art. It introduced creative designs that were copied vigorously by later artists. Marble paving was used on an unprecedented scale in the complex. The overall design in the sahn is symmetrical on two axes. It is divided into nine large panels that are subdivided into smaller ones, each of which, except for the central one that holds the *fawwara*, has a central panel of its

⁵¹ Al-Maqrizi, *Khitat*, 2: 316.

⁵² Ibid, 2: 328. This means that, at least, the paving found on the now existing porch (Pl. 11-1) is not contemporary with the mosque.

⁵³ 'Abd al-Wahhab, *Tarikh al-masajid*, 174-5.

⁵⁴ Mubarak, *al-Khitat*, 4: 86.

⁵⁵ Comité, 1911, 23; 1912, 27.

⁵⁶ 'Abd al-Wahhab, *Tarikh al-masajid*, 181.

own. The four large corner panels are symmetrical in overall design but not in detail⁵⁷ (Fig. 9-1).

Several innovations are found here, some of which remain unique to this day. One is a roundel with rays extending to a square-shaped border inscribed diagonally into another square. The concept is not altogether different from previous designs, but the unusual shape of the inner square gives the pattern a particularly powerful effect (Pls. 9-10: 11). Two color combinations were used in this design; the first used white, yellow and gray, while the second used mainly red and white to show the same design. The first combination is used later in the mausoleum of Faraj ibn Barquq at the northern cemetery but in a different context (Pls. 9-11, 13-3).⁵⁸

For the first time, the important chevron motif is used here to cover a whole rectangular panel and not just a strip as seen in the mosque of Almalik al-Jukandar. On applying the motif, the artist alternated wide white bands with narrow red ones (Pl. 9-5). This motif is copied, in variant forms, in later Mamluk structures.

The borders show new innovations that also inspire later works. We can find here for the first time, the S-shaped patterns (Pl. 9-9), the

⁵⁷ There are very slight differences in the central panels of each two diagonal larger panels and thus the overall design could be considered diagonally symmetrical also.

⁵⁸ I do not know why such a beautiful design was not used again by the Mamluks.

hexagon-based cartouches, the square-based cartouches and the Y-shaped patterns (Pl. 9-11).

The overall *mafrūka* pattern used at the east and west panels, was also an innovation (Pls. 9-2, 9-14) (Fig. 9-8). This pattern was well established by that time in Islamic art but, prior to that application, was confined to woodwork.⁵⁹

The eccentricity of the triangles completing the square embedding the *fawwara* is also unique. The patterns used in these triangles are copied in later floors and spandrels.⁶⁰

Such a great number of innovations, many of which were not copied until the 15th century or even later makes it safe to assume that this building was a major source of inspiration for the art of marble paving in succeeding periods. However, there is still the other alternative that some of the patterns were added when the sahn was restored later during the reign of another sultan. If this is true then it would have been on a very small scale.

⁵⁹ We have seen this on the drawing of the marble paving of Almalik al-Jukandar as a suggestion. We also see it on the sahn of this mosque. A similar design to that at the porch of this mosque (which, we have seen above is not original) will be found out later on the porch of al-Mu'ayyad Shaikh but when referring to the drawings of Coste, we will find out that it is not original.

⁶⁰ The second instance when such a motif was used on marble floors is in the corners of the central panel of the sahn of the complex of Qaytbay at the northern cemetery. A similar design can be traced on the spandrels of the arch of the mihrab of the madrasa of Barquq (Pl. 11-19) and at those of the arch at the madrasa of al-Ghuri (Pl. 35-8).

10-Madrasa of Mithqal (763/1361-2)-Index # 45

The German Archeological Institute in Cairo restored the floor in a project that started in 1973. The restoration plan was redesigned after the floor patterns of the marble paving of the sahn of Sultan Hasan.⁶¹ However, a drawing of the madrasa in 1924 shows that marble paving at that time was different from that adopted in the restoration.

Borders showing the S-shape motif, which was very common and is used at the mosque of Sultan Hasan, were inexplicably turned into cartouche shapes during the restoration (Figs. 9-4, 10-1). Still, the execution is of high quality and the types of marble used are similar to those used by the Mamluks and not the types used in modern restorations (Pls. 10-1:3). Here, red is the predominant color, with white and black marble to enhance the effect.

By the time the madrasa was built, marble paving designs of the small sahns and mausoleums of the Mamluk era had matured. From now on, small sahns would have highly symmetrical designs that consisted of a relatively large central panel surrounded by four identical side panels that only have designed borders; and four identical square corner panels, in most cases.

⁶¹ Meinecke, *Restaurierung der Madrasa des Mitqal*, 77-8.

II) CIRCASSIAN MAMLUKS

11-Madrassa of Barquq (786-8/1384-6)-Index # 187

The madrasa endowment documents ⁶² show that the sahn, the four iwans, several chambers, vestibules and corridors, the mausoleum and its fore court were all covered by colored marble, but not all of these have survived. One major contribution of this building to Mamluk marble floor history is that all its iwans were paved in marble along with the sahn. Buildings of earlier date, including the famed Sultan Hasan complex, had only the sahn covered with marble.

The entrance porch, vestibule and the corridor leading to the madrasa

The porch is mainly paved in black and white marble, with some yellow to enhance the design. The general pattern was later copied by the artist who designed the sabil of Sultan al-Ghuri (Pls. 11-1, 34-22). The corridor leading to the sahn has marble paving with large circular patterns. Sawing older marble columns possibly produced the round marble pieces.⁶³

The Madrasa

The courtyard is covered with marble paving with various designs, mostly very simple geometric patterns, which were not always well restored (Pl. 11-5) (Fig 11-1).

⁶² Mustafa, *Barquq*, 55-125.

⁶³ Devonshire, *Rambles in Cairo*, 54-5.

The sahn is covered with marble paving in the style of the mosque of Sarghatmish: rectangular panels showing exquisitely simple designs surround a central octagonal *fawwara*.

One of the new artistic elements introduced in the sahn is the four corners of the central panel, which are linked to the outer panels via a roundel set within a square. Later artists would use an eight-pointed star to achieve this linking effect.

The qibla iwan features the mihrab motif that was used earlier in the complex of Baybars al-Jashankir's mausoleum, but using many colors including red and yellow (Pl. 11-11), not just black and white. The central panel introduces the use of multi-lobed and petal shapes in the design for the first time. The pattern with multiple-tiers of roundels is also one that is used in many later Mamluk floors (Pl. 11-8).

On the sides of the qibla iwan are panels with a chevron motif. All the bands of the chevron motif are of equal width. White, red and black colors alternate within a black border. This is the earliest surviving example of equal-width chevron bands. Here it is polychrome (Pl. 11-8). Later on, Mamluk artists would use this to cover larger areas, sometimes an entire iwan. It is also used to decorate their domes.

The Comité in 1311/1893 restored the marble of the sahn. As has been mentioned above, the execution was not flawless, especially in the

courtyard. In 1314/1896-7, the Comité restored the dome of the ablution fountain but kept the original fawwara.⁶⁴ In 1906, the Comité decided that the mosaics of the sahn were in bad condition and set a budget for restoration that included the paving of the madrasa.⁶⁵

The Mausoleum

The fore-courtyard, the mausoleum, and the corridor leading to the main courtyard of the madrasa are covered with marble paving (Pls. 11-12:13). The designs of the mausoleum show the use of large pieces of marble and a limited number of colors. There are very slight differences between the corner panels, but the overall design is diagonally symmetrical (Pls. 11-15:16).

The courtyard introduces innovations that would be imitated later. One is a central panel with the multiple polychrome chevron roundels at the center (Pl. 11-13), a possible inspiration for the entrance vestibule of dome of al-Ghuri (Pl. 34-3). Another innovation is the braided border (*mīmāt*)⁶⁶, which possibly inspired the artist who did the qibla iwan of the madrasa of al-Ashraf Barsbay (Fig. 11-4, 18-1).

⁶⁴ 'Abd al-Wahhab admired what was done: *Tarikh al-masajid*, 197; See older picture of the qibla iwan and part of the sahn: Saladin, *Manuel d'art*, 1: 139.

⁶⁵ Comité, 1906 Arabic, 50.

⁶⁶ Amin & Ibrahim, *Architectural Terms*, 118.

12 In 1895, the Comité prepared a bid for restoring the marble paving of the mausoleum and in the same year they chose the contractor who would execute the restoration.⁶⁷ I witnessed the restoration of the marble paving of both the fore-courtyard and the mausoleum in 1996.

The side Sahn (Fig. 11-5)

According to Mustafa who inspected the structure in the eighties, several lateral areas of the madrasa are paved with marble.⁶⁸ When I inspected the site in summer 1998, I could ascertain that one of the side sahns retains its marble paving, displaying a square set diagonally within another. Four half octagons topped with triangles fill the corners of the outer square forming split star patterns (Pls. 11-18). This design also appears in the prayer area of al-Ashraf Barsbay at the northern cemetery (Pls. 21-14).

The central panel is simply a square circumscribing a circle. This recalls the central panel of Aslam al-Silahdar.

⁶⁷ Ibid., 1895, 25, 38.

⁶⁸ Mustafa, *Barquq*, 55-125.

12-Al-Madrasa al-Mahmudiyya (Masjid al-Kurdi) (797/1395)-Index # 117

The madrasa is now being restored. Earlier monochrome photos show that the small sahn was paved with marble (Pl.12.1).⁶⁹ The sahn features the design that is applied in small sahnns consisting of a central panel, identical side panels and identical corner panels.

The design shows some developments to the earlier marble paving designs and some important innovations. Here we find that the designer used the S-shaped borders in the side borders and the corner interlacing lines in the corner panels, both recalling those used at the mosque of Sultan Hasan and at the madrasa of Mithqal (Pls. 9-9,10 & 10-3). The second earliest surviving braided border is used in the very small panels on the sides (Pl.12-2).⁷⁰

Innovations that are found in later monuments were also introduced. The practice of connecting the inner central panel to its exterior border was used at the sahn of the madrasa of Barquq (Pl. 11-5). Here, the simple square with a roundel at its center is replaced by an arrow set in a triangle to connect the outer border to the central panel (Pl. 12-1). This triangular connector is modified to a half-star later in the qibla iwan of al-Ashrafiyya madrasa (Pl. 18-6).

⁶⁹ Ibid., Plate 59,60.

⁷⁰ The earliest surviving is at the sahn in front of the mausoleum at the madrasa of Barquq (Pl. 11-13).

An eight-pointed star showing geometrical designs connects the outer border of the central panel to the side panels. This star is frequently applied in the marble paving of later Mamluk buildings, especially those buildings with small spaces to be paved with marble.

The central panel introduces the roundels that have offset interlacing rings (Pl. 12-2). Such designs will be used in al-Ashrafiyya madrasa and will be adopted in the period of Qaytbay.

12a-Mamluk Qa'a (8th /14th century) in the Islamic Museum

This qa'a, now located in the Islamic museum, is dated in a museum label to the 8th/14th century. This was an estimated date as it was bought in 1917 from the owner of a private house in al-Jamaliyya. Its designs are very intricate. It introduces some new innovations such as the use of turquoise-colored pieces (Pl. 12a-3). One of the other interesting features is the use of I-shaped patterns perpendicular to each other to cover a panel (Pl. 12a-2). This motif was used earlier in marble panels on the walls of the mausoleum of Qalawun (Pls. 1-16:18).

13-Complex of Faraj ibn Barquq (803-13/1400-11)-Index # 149

The complex is paved with stone, but its two mausoleums have marble paving in simple geometric patterns. The mausoleum situated to

the north of the qibla iwan has simpler designs than that to the south. The marble covers only the border of the square plans. The central squares of the mausoleums are covered with stone. We have seen the same tradition of using marble and stone paving within the same space earlier in mausoleums and sahn.

The Southern Mausoleum

This was constructed to bury the female members of Barquq's family. The floor designs are simpler than those used in the buildings preceding them. The floor is divided as usual into individual small rectangles with different designs. The overall design of these patterns is diagonally symmetrical (Fig. 13-4). The main shapes used are octagons along with rectangles and triangles. The corner panels use four octagons connected apex to apex, producing a square and four triangles between them (Fig. 13-1). This is used at the earlier mausoleum of the complex of Barquq (Pls. 11-15:16). We have seen the same design but with more octagons, squares and triangles at the corners of the mosque of Shaykhu (Pl. 5-4). It is important to note the use of the gray yellow and white marble rectangles in a repetitive way. The color combination here reminds us of that used in the sunburst theme at the sahn of the mosque of Sultan Hasan (Pls. 9-11, 13-3).

The Northern Mausoleum

This was constructed to bury the male members of Barquq's family. The floor designs are even simpler than those at the southern mausoleum. They recall the very early marble paving of Qalawun and Aslam al-Silahdar. The floor is divided into individual small rectangles having diagonally symmetrical patterns (Fig. 13-1) similar to those used at the southern mausoleum (Fig. 13-4).

14-Madrassa of Gamal al-Din Ustadar (811/1408)-Index # 35

The scant marble paving still in situ at the courtyard tells us little about the overall pattern, which, as much as can be inferred from the remaining sections, was relatively intricate (Fig. 14-1). Two panels situated near the qibla iwan exhibit some cut and paste technique (Pl. 14-5)⁷¹ and have similarities to the panels found on the qibla walls (Pl. 14-6). It should be noted that sophisticated designs are rarely used on floors, one exception being the mihrab-shaped marble paving of Baybars al-Jashankir. Similar designs are found later on the walls and floors of the Ashrafiyya madrasa (Pl. 18-11). The other fragments in situ show monochrome cartouche borders and some octagonal and rectangular slabs (Pls. 14-2:3).

⁷¹ The marble slab is cut in deep relief and then refilled by a paste of a different color. This is the earliest surviving use of that technique in the marble floors. See the techniques used in the next chapter.

The sabil is in a much better condition and its detailed design has survived almost intact (Pls. 14-7:9). The same overall design noted at the madrasa of Tatar al-Hijaziyya (Fig. 8-1) is adopted here. The paving follows a symmetrical pattern, except at the corners that are diagonally symmetrical.

The designs are simple. The central panel follows a pattern which is even simpler than the central panel of Tatar al-Hijaziyya. That same pattern is used as a side panel in the qibla iwan of the Ashrafiyya madrasa (Pl. 18-8). The four corner panels, one of which is missing, are more interesting, with diagonally symmetrical patterns of yellow, red, black and white (Pls. 14-7:9).

In 1884, the Comité showed interest in repairing the marble floor of the sahn.⁷² Between 1920 and 1924, the Comité approved the budget set for restoring the paving of the east iwan and for rejoining the scattered pieces found in the sahn.⁷³

⁷² Comité, 1884, 5.

⁷³ Ibid, 1920-24, 166.

15-Mosque of Mu'ayyad Shaikh (818-23/1415-20)-Index # 190

Al-Sakhawi described the building as the second most decorated building in Islam after the Umayyad mosque at Damascus.⁷⁴ Al-Maqrizi compared this structure with the legendary throne of Bilqis and the iwan of Taq-i Kisra of Anushirwan.⁷⁵ The patron used the towers of Bab Zuwayla as bases for his minarets and construction materials bought or seized from other structures to build his mosque.⁷⁶

As of the time of writing, marble paving covers only the entrance vestibule, the mausoleum and the side corridor leading to the courtyard. All are in poor condition (Pls. 15-2:5, 15-17). Window frames show colored marble in more complex designs than those in other parts of the building.

The drawings done by Pascal Coste between 1818 and 1825 show the whole sahn to have been covered with polychrome marble paving. The overall impression is one of splendor consistent with historians' reports (Pl. 15-15).⁷⁷ These drawings might have been partially imaginary⁷⁸ as we

⁷⁴ 'Abd al-Wahhab, *Tarikh al-masajid*, 207.

⁷⁵ Al-Maqrizi, *Khitat*, 2: 328.

⁷⁶ Al-Mu'ayyad used, for example, the doors of al-Sultan Hasan and the marble inscription over his cenotaph which is either Fatimid or earlier: 'Abd al-Wahhab, *Tarikh al-masajid*, 210-13; Al-Maqrizi, *Khitat*, 2: 329.

⁷⁷ Coste, *Architecture Arabe*, Colored Plate XXX.

⁷⁸ Ramadan, *Mosque of Mu'ayyad*, 148.

know from the sources that the complex was ruined in 1076/1665 and nothing survived but the qibla iwan and the main facade. Later, it was restored by the Ottoman governor Ahmad Pasha in 1102/1690.⁷⁹ Maybe Coste based his drawings upon the description of the mosque on documents contemporary with the mosque and describing it in detail.⁸⁰

Between 1920 and 1924, the Comité approved a considerably large budget for completing the paving of the sahn.

The Entrance Vestibule

The porch preceding the door shows diagonal monochrome squares, the middle one of which contains a *mafruka*, a typical Islamic design.⁸¹ Interestingly, when we examine the drawings of Pascal Coste, we find a totally different design (Pl. 15-14). Instead of the simple design that is in situ, we find four squares that show more complex designs. The modern design seems to have been a prototype that was used to replace the no longer extant marble floors of entrance porches. The overall design is symmetrical and shows disc shapes, roundels, chevron motifs and rectangles. The design shown in the drawing does not have any relation to

⁷⁹ Al-Gabarti, *'Ajā'ib al-athār*, 1:74

⁸⁰ Ramadan, *Mosque of Mu'ayyad*, 148-9.

⁸¹ A similar design that I have interpreted as not contemporary with its mosque, is that of the entrance porch of Sultan Hasan (Pl. 9-1).

what is found in situ today (Pls. 15-1). The earlier photos show more contemporary designs.⁸²

The Mausoleum

Simple black rectangular borders on a white background are the sole pattern used in the mausoleum. The design is not symmetrical except for the panels at the entrance. Even the cenotaph is not set on the axes of the mausoleum. All panels of the floor are symmetrical rectangles (Fig. 15-1:2). Although it is not colorful or symmetrical, the use of squares that are set diagonally and virtually connect the different panels is an interesting feature that is unique to this building in the Mamluk era (Pls. 15-6:10).

The Side Corridor

More colorful patterns are used in this part of the building but their condition is worse. Here we find patterns that are formed by using some polychrome marble (mostly red). Discs, roundels, triangles, squares and rectangles are used to form the design. The marble of the side corridor, the entrance vestibule and the mausoleum has turned pale, having lost its once vivid colors.

As is the case with most great complexes, the mosque suffered abuse at certain periods. It was restored by Ahmad Pasha, the Wali of Egypt in 1102/1690, and by the Comité in 1302/1874 during the reign of Khedive

⁸² Coste, *Architecture arabe*, Colored Plate XXXL.

Ismail.⁸³ This restoration covered three of its facades. Ten years later, the mosque was restored again.⁸⁴

In my opinion the misuse of the building in general and the marble paving in particular and the number of restorations resulted in losing not only the marble paving of the sahn but the original designs and patterns of the marble floors of the whole building. Judging from what we have just studied and from the development of the marble paving of the Mamluks, I estimate that the marble paving in situ is all a later addition.

The Bath

In 1907, Saladin bemoaned the disappearance of the bath near the mosque. He published a photo of the bath, but it does not show any of the marble paving presumed to have been there.⁸⁵ In 1918, Devonshire visited the site as it was being cleared from the accumulated dust and dirt of the years.⁸⁶ In 1956 the Comité refused a request from the *Hai'at al-tahrir* to use the bath, after restoring it under the supervision of the Comité, as a meeting room.⁸⁷

⁸³ Maher, *Masajid misr*, 4:100.

⁸⁴ 'Abd al-Wahhab stated that according to an inscription band found in the garden, the mosque was restored in 1302/1884 during the reign of Khedive Tawfiq: 'Abd al-Wahhab, *Tarikh al-masajid*, 214.

⁸⁵ Saladin, *Manuel d'art*, 142, 152.

⁸⁶ Devonshire, *Rambles in Cairo*, 66.

⁸⁷ Comité, 1954-60, 29.

16- Al-Fakhriyya madrasa (Masjid al-Banat) (821/1418)-Index # 184

The sahn and all the corridors leading to it are covered with fine color marble paving. The sabil in front of the madrasa is a later addition of 1268/1851. The Comité repaired the marble paving of the madrasa in 1313/1895.⁸⁸

When I examined the madrasa in 1998, it was being restored and all the marble was taken away and stored in the qibla iwan until the restorations are finished (Pls. 16-6:7). Photos taken by the restoration team, before the last restoration, show plain monochrome designs.

Most of the corridor and vestibule marble designs have simple black borders. One finds a small number of black roundels also used (Pls. 16-1:4). As for the sahn, a large medallion dominates the central panel with four interlaces connecting it to its outer framing square. Eight roundels surrounding a circle are set at the center of the medallion (Pl. 16-5).

The side panels show simple black borders. The most interesting design of the madrasa is that at the corner panels. It exhibits a square with a star shape at the center but not touching it. The star is unique as it is a

⁸⁸ 'Abd al-Wahhab, *Tarikh al-masajid*, 216-17. We know that the Comité chose the contractor, who was to restore the marble paving, in that year: Comité, 1985, 84.

simple outline.⁸⁹ This is the only item that makes me believe that the marble pavements might have added or at least restored, with some modifications in the Turkish period (Pls. 16-1:5).

17- Madrasa of Qadi 'Abd al-Basit (823/1420)-Index # 60

In 1940s, 'Abd al-Wahhab stated that the sahn and the qibla iwan were covered with fine colored marble designs. In 1892, the Comité decided that the marble paving should be restored. In 1909-12, the Comité restored the marble paving of the madrasa.⁹⁰ Today, only the qibla iwan has marble paving. The sahn is covered with modern cement tiles.⁹¹

The designs used in the qibla iwan are symmetrical and display interesting innovations. They will play an important role in the future development of marble paving.

The overall design of the iwan is symmetrical (Fig. 17-1). The central panel is done in a multi-lobed design⁹² and is surrounded by eight roundels.

⁸⁹ I have not seen such implementation of the design in the Mamluk period. One of the window bays of the Dome of Yashbak has a deeply carved marble piece with the same design (Pl.28-2). This piece was added in the Turkish period.

⁹⁰ 'Abd al-Wahhab, *Tarikh al-masjid*, 206; in 1911, setting the budget for restoring the marble paving of the sahn: Comité, 1911, 27,44; in 1912, repairing the marble paving at the south part of the iwan: Comité, 1912, 23.

⁹¹ In a photo taken by the Comité in the report of 1915-19, plate CXLVIII, the sahn is shown to have finely executed marble paving combined with stone slabs (Pl. 17-9). This is an unusual but not a unique practice. The stone slabs were used extensively and played a distinct role in the design.

⁹² A similar design was used at the central panel of the qibla iwan of the madrasa of Barquq (Pls. 13-2).

All the roundels have this gear-like, tooth-shaped triangles at their outer tiers, in a pattern similar to that employed at the four roundels of Tatar al-Hijaziyya.

The border of the central panel introduces the earliest surviving compound cartouche border (Pl. 17-1:2). This interweaving design formed by the use of cartouches becomes popular later on.

The designs are rather complex, except for the chevron pattern used here on a large scale (Pls. 17-3:4). This motif is applied in almost the same manner as that of the qibla iwan of the madrasa of Barquq (Pl. 11-10). The only differences here are the larger size of the panel and the way of dealing with the large triangles at the beginning and end of the design where they embed a smaller triangle. The same practice is also common hereafter.

One feels that the design of every panel or border is now intricate (Pls. 17-5:8). Every panel is carefully taken care of. The corner panels, featuring circles inside an octagonal design, also appear at the madrasa of al-Ashraf Barsbay (Pls. 17-1, 18-10). In the qibla iwan, one does not encounter large plain marble panels like those common in earlier buildings.

An old drawing featuring the marble floor of the sahn (Fig. 17-2) shows an overall symmetrical design except for the corner panels. The corner panels were diagonally symmetrical (Fig. 17-2). The central panel contains twelve interlacing circles surrounding four concentric octagons.

All these were inscribed in an octagon that is transformed to a square using four corner triangles. This is the first instance in Mamluk marble paving of twelve interlacing circles in the design of a marble floor. The same theme recurs in the mosque of Ganibay (Pl. 19-3). The surrounding panels use the Y-shaped design reminiscent of that used in the sahn of Sultan Hasan (Pl. 9-11).

The S-shaped borders are used here but have multiple offsets instead of the simple outline used at the mosque of Sultan Hasan.

18- Madrasa of al-Ashraf Barsbay (829/1425)-Index # 175

Al-Ashraf Barsbay was one of the most remarkable rulers of Egypt, not for his personal qualities but for the prosperity enjoyed during his reign.⁹³ This prosperity shows in the works he commissioned. Intricate, colorful and well-executed designs were found in his buildings, especially those located in Cairo.

The madrasa exhibits many innovations in the use of marble paving. One of the scholars who admired the marble floors of the qibla iwan is 'Alî Pasha Mubarak. He said that the qibla iwan had beautiful marble paving

⁹³ Tarkhan, *Dawlat al-Mamalik al-jarakisa*, 34; Devonshire, *Rambles in Cairo*, 59.

during his time.⁹⁴ A photograph taken in the first half of this century shows well-designed marble paving covering the qibla iwan.⁹⁵

The floor of the *dikka*, qibla iwan and the sabil are covered with colored marble. The rest of the building is covered with modern Carrara marble flooring.⁹⁶ There is no solid evidence that the sahn, now covered with modern plain marble, had any marble designs in the past, but we cannot exclude the possibility that elaborate marble work may have been lost by time or in renovation work. A small panel at the entrance to the corridor leading to the mausoleum shows a narrow band exhibiting colored marble squares and triangles (Pl. 18-12). It would be unusual for a structure with such architectural integrity to have had plain marble or stone in its uncovered sahn while having such elaborate marble works under the carpets of the qibla iwan.

Qadi 'Abd al-Basit, whose beautiful madrasa with the marvelous marble paving is still standing at al-Khrunfish street, was responsible for the construction of Barsbay's madrasa.⁹⁷ He is likely to have had all the floors - or at least the sahn and the qibla iwan, as is the case in his own

⁹⁴ Mubarak, *al-Khiṭa*, 119.

⁹⁵ Wazarat *al-awqaf*, *Masajid misr*, 2: plate 113.

⁹⁶ Maher, *Masajid misr*, 4: 112-114, states that the corridor extending from the vestibule to the sahn and the qibla iwan was covered with quality colored marble, but this is no longer extant, modern white marble having replaced it in later restoration. She said nothing about the paving of the mausoleum, the sahn or the other iwans.

⁹⁷ Devonshire, *Rambles in Cairo*, 60.

building - covered in quality marble paving similar to those used later in the complex of Barsbay at the northern cemetery. The position of tiny marble fragments just before the corridor leading to the mausoleum suggests that the sahn had elaborate marble paving at one point (Pl. 18-12).

The Qibla Iwan

The marble floor of the qibla iwan has well-executed marble paving, even more intricate than that of the mihrab (Pl. 18-2:4). Al-Ghuri was inspired by the design and executed a similar one at the entrance to his madrasa.⁹⁸

The main theme of the design is a large marble circle with ornamented designs at the center of the iwan (Fig. 18-1). This is the earliest surviving arabesque marble work on floors. As mentioned before, it inspired several later buildings. The border of this central panel applies the interlacing circles concept again. This is the second surviving monument with such a border, the first being the mausoleum of Sarghatmish (Fig. 7-5, 18-1). Here, encircling lines connect the different circles and end up with a split-arrow design (Pl. 18-5), also found on a larger scale in monuments of the Qaytbay era.

⁹⁸ 'Abd al-Wahhab, *Tarikh al-masajid*, 223. 'Abd al-Wahhab also said that marble was used extensively in all the monuments of al-Ashraf Barsbay. We have to note that the madrasa of al-Ghuri is now being restored and I was not able to get the drawing of the marble paving of the entrance.

The central panel is linked to the border by a half-star featuring monochrome arabesque work (Pl. 18-6). This is a tradition that we will see frequently later on but with a whole star instead. This is the third instance of a design linking the corners of the central panel to the panels surrounding it.⁹⁹

Another innovation is the chevron motifs used here. First is the regular chevron with equal width marble bands in the three regular white, black and red colors. Here the chevron is symmetrical, within the same panel, on the axis perpendicular to the qibla iwan. The second innovation is the replacement of the rectangle marble pieces with parallelograms to form the acute-angled chevron motif (Pl. 18-7). This becomes a common practice in later periods.

Arrows and split-arrows play a great role in the marble works of the Mamluks. Here panels exhibiting these themes abound (Fig. 18-1). The braided border theme, in red white and black was used here; the third observed instance of such a design (Fig. 11-4, Pls. 11-13, 12-2). Panels and borders completely covered with squares and triangles of different colors appear here (Pl. 18-9). These patterns are not uncommon, but this is the first time where rectangles are entirely filled with these designs, which

⁹⁹ The madrasa of Barquq was the first one to do that but in a simpler way (Pl. 11-5:6). Earlier photos of the sahn of al-Madrasa al-Mahmudiyya, now undergoing restoration, show a similar approach (Pls. 12-1:2).

become increasingly common. These simple patterns are used later in the borders of the mosque of Timraz al-Ahmadi (Pl. 25-2).

In 1913, the Comité visited the madrasa to inspect the restoration of the floor of the qibla iwan and found out that it was done.¹⁰⁰ In 1933-35, the Comité suggested repairing the whole building, gradually, starting with the mihrab and the paving as they only needed minor work.¹⁰¹

The *Sabil* and the *Mazmala*

In the sabil, the marble paving is divided into three sections, each showing a different pattern (Fig. 18-3). Two octagons, each surrounded by eight squares, each of which encloses a diagonally-set square surrounded by four small triangles, provide the main pattern for the first section of the sabil (Pl. 18-13). The second section, separated from the first one by a wide plain area, exhibits a white medallion panel with red interlacing lines at the corners and a black circle surrounding another white roundel at the center. A double border surrounds the panel on three sides. The outer border frame uses the modified (connected) S-pattern (Pl. 18-14) that has been used before, in the corner panels, in the older drawing showing the sahn of madrasa of Qadi 'Abd al-Basit (Fig. 17-2). The third

¹⁰⁰ Comité, 1913, 109.

¹⁰¹ Ibid., 1933-35, 11-12.

part contains the basin with nine eight-pointed stars inscribed in an octagonal basin. White, black and red are the dominant colors (Pl. 18-15).

The *mazmala* is on the corridor leading from the entrance vestibule to the sahn to the left. It is a very small area and its design does not emphasize the center of the space.¹⁰² Small colored square and triangles alternate here with plain squares to provide an overall checkered look. The side panels are symmetrical but in an alternating color scheme.

Between 1920 and 1924, the chief architect suggested restoring the marble floors of the *sabil* and *mazmala* and the Comité approved the project.

19- Ganibay Mosque (830/ 1426-7)-Index # 119

The small size of this structure was no barrier to adopting complex symmetrical designs. The courtyard is covered with a finely executed marble paving.

The design of the main panel at the center of the sahn shows a roundel surrounded by an arabesque design very similar to that of the qibla iwan of the madrasa of al-Ashraf Barsbay. Large areas of turquoise glass paste pieces make the overall design particularly striking. This is the earliest

¹⁰² As in that of the sabil.

surviving religious building using this color and one of the rare instances in which turquoise was used in floor designs (Pl. 19-3). The Mamluk qa'a at the Islamic museum, supposedly dating from the fourteenth century, is an earlier example of the use of turquoise (Pl. 12a-3).¹⁰³ The arabesque-covered area is surrounded by twelve roundels of different colors linked together by encircling lines ending up in split arrows. The madrasa also uses a star pattern to connect the corners of the central panel to the panels surrounding it.¹⁰⁴ This practice was used earlier but became fashionable at the time of this building.

The corner panels show medallions with cartouche-shaped borders. An earlier plan shows that two of the side panels use the cartouche-shaped borders while the other two use the traditional S-shaped border encountered at the madrasa of Sultan Hasan (Fig. 19-1). The present design shows the use of both themes in all the borders of the side panels in a symmetrical design (Pl. 19-3). I would agree more with the fact that these earlier drawings (Fig. 19-1,2) were not very accurate and that the present design is the original one or the closest to the original especially since the two drawings are not identical.

¹⁰³ An earlier example of using such colored glass pastes in both turquoise and red colors is found in the mihrab of the madrasa of Barquq (Pl. 11-20).

¹⁰⁴ This is the second surviving use of this eight pointed star to connect the central panel to the side ones.

The side iwans are covered by white and black winding stripes surrounding a yellow rectangle (Pl. 19-6). The other two iwans do not show any marble except for a long chevron strip at the edge of the qibla iwan (Fig. 19-7). The corridors leading to the sahn show monochrome marble works. A series of medallions form a long strip with a monochrome braided border (Pl. 19-1:2).

Between 1911 and 1913, the paving was restored.¹⁰⁵ Later under King Faruk, the marble paving was again restored.¹⁰⁶ An earlier photo of the sahn is exhibited in the reports of 1915-19 of the Comité (Pl. 19-7).

20- Madrasa of Jawhar al-Lala (833/ 1430)-Index # 134

'Abd al-Wahhab wrote that the sahn and the iwans were covered with colored marble paving. The corridor leading from the entrance vestibule used to have marble paving; they have not survived and today the corridor is covered with stone slabs.¹⁰⁷

On examining this small madrasa, whose exterior impresses one as being ill-proportioned or even ugly, I found it to have beautiful marble

¹⁰⁵ Comité, 1911, 27; 1913, 33.

¹⁰⁶ 'Abd al-Wahhab, *Tarikh al-masajid*, 220. See plate CLII of the Comité works in 1915-19.

¹⁰⁷ Maher, *Masajid misr*, 4:123-124.

flooring (Pl. 20-1). The marble paving covers only the sahn and is intricate and exceptional when compared to the exterior.

The sahn is rather tiny and the central panel leaves little space for the other panels. The design is mature and shows the typical marble works of a small Mamluk space.

The central panel has eight interconnecting medallions circumscribing a doubled roundel. In this sahn, we also find the third still surviving complete eight-pointed stars connecting the corners of the central panel to those at the corners.

The corner panels recall the works that were done at the corner panels of the mosque of Shaykhu (Pl. 5-4) and later in the southern mausoleum of Faraj ibn Barquq (Pl. 13-2, Fig. 13-1). Here the artist modified the design using the octagon as the center of the panel and surrounded it with four smaller octagons. This design was adopted in several later monuments. Red, yellow, black and white marble colors were used.

In 1892, The Comité estimated the budget needed to restore the floor.¹⁰⁸ An earlier photo of the sahn is exhibited in the 1902 reports of the Comité (Pl. 20-2).

¹⁰⁸ Comité, 1892, 62.

21-Complex of al-Ashraf Barsbay (835/1432)-Index # 121

This building is arguably the masterpiece of marble paving commissioned by the Mamluks. Its innovations cover the architecture of the mosque as well as the marble paving of both the mosque and the mausoleum.

The prayer area and the mausoleum are covered with intricate marble designs, incorporating new colors and design techniques.

The mosque and mausoleum are the third surviving monument with turquoise colored pieces incorporated in the design of the floor (Pl. 21-3, 26), but the area covered by that marble is smaller than in the former instances. It is the second religious building to use this color in the marble floor.

The Prayer Area¹⁰⁹

The overall design of the paving is surprisingly asymmetrical. Apparent differences can be traced along the qibla axis. The right bays are not exactly symmetrical except at the west iwan. The sahn has few differences in the designs of its lateral bays (Pls. 21-16, 18); the qibla bays have different styles (Pls. 21-4, 10).

¹⁰⁹ Originally a Hanafi madrasa: Fernandes, *Three Sufi Foundations*, 147.

Numerous unique patterns are found in the marble floor of the mosque, especially in the qibla iwan. The lateral bays exhibit a pattern of marble squares bounded by colored joggled voussoirs. These were used usually on lintels at doors and windows (Pl. 21-4, 10).¹¹⁰ The outer border of the right bay, about 6 cm in width, shows a very intricate design of stars and lozenges (Pl. 21-7, 8).

The central bays in front of the mihrab and on the back iwan are a throwback to the early hexagonal and octagonal designs used in the mosque of Shaykhu. On the qibla iwan six roundels of varying diameters surround a central white roundel. On the back iwan, only five roundels surround the central one and four smaller ones appear at the corners (Pl. 21-20). Panels with chevron motifs appear in the qibla and back iwans. The difference between the width of the different bands is less than was customary at the time. This permits the insertion of colored squares within the narrow bands (Pl. 21-9). The Y-shaped border appears here once again (Pls. 21-5, 11). The X-shaped geometric borders that appear here at the sahn are used later in the mosque of Timraz al-Ahmadi (Pls. 21-15, 25-2).

¹¹⁰ Abd al-Wahhab, *Tarikh al-masajid*, 226.

Three strips situated between the columns and the walls show different intricate designs achieved by using different color schemes. The strip to the left is done in yellow and black (Pl. 21-11). Red, turquoise and white, in addition to the former colors, enhance the color scheme of the middle strip (Pl. 21-9). The same colors minus turquoise appear in the last strip (Pl. 21-5,6).

The back iwan is similar to the qibla iwan except for the absence of the strips between the columns and the walls and the different shape of the central panel. The main panels in the side bays display squares enclosing diagonal squares rather than joggled voussoir patterns.(Pl. 21-21).

The sahn is also divided into three parts. The central bay has six equal roundels surrounding a central one. The corners of the central panel have the usual interlacing lines. The central panel exhibits six roundels surrounding a roundel at the center.¹¹¹ This design is used in the Jawhariyya madrasa, without the interlacing lines at the corners (Pl. 22-1) and was later developed and used at the entrance vestibule of the Complex of Qaytbay at the northern cemetery (Pl. 26-1)

¹¹¹ We have seen more primitive patterns with six roundels, instead of eight, at the qibla iwan of the madrasa of Barquq.

The side panels show large plain areas (Pl. 21-16:18). Some of these panels have cartouche-shaped borders similar to those seen in the drawings of the lost marble floor of Almalik al-Jukandar mosque (Pls. 21-16:18) (Fig 3-1). Here also, the artist used square panels similar to those found at one of the side sahn of the madrasa of Barquq (Pls. 21-14, 11-18).

Bays of the windows of the back iwan have simple geometric designs similar to those used at the qibla iwan of the patron's madrasa at al-Mu'izz street (Pl. 18-9).

Between 1933 and 1935, the Comité restored the paving of the praying area.¹¹²

The Mausoleum

The massive floor of the mausoleum is divided into a central panel and three rounds of concentric panels. This is the maximum number of rounds used in marble floors of mausoleums (Fig. 21-1,2).¹¹³

The overall plan is totally symmetrical at the present, but a plan drawn in 1908 shows slight eccentricity and variations in the panels along the northern wall. It is possible that these variations were due to the presence of the doors leading to the burial area.

¹¹² Comité, 1933-35, 159, 227.

¹¹³ The sahn of Sultan Hasan (Fig. 9-1) had more tiers which were grouped in sub-units each of which was dealt with separately.

The corner panels in the drawings are in reverse position to that of the current floor layout. This indicates that the mausoleum was restored after 1908 and the restorers used the same patterns but made some modifications (Fig. 21-1,2).

The central panel is similar to that used at the center of the adjacent mosque after adding small roundels to connect the central roundel to the six surrounding ones. Four eight-pointed stars connect the central panel to the surrounding panels. This star recalls the one used in one of the borders at the qibla iwan of the Mahmudiyya madrasa (Fig. 21-1, Pl. 12-2).

The side panels exhibit designs of different degrees of complexity. The designer used designs intricate designs as those found in the praying area as well as plain slabs (especially in the outer tier of panels). He used medallions, chevron, Y-shaped borders, X-shaped borders and marble mosaic designs (Fig. 21-1, Pls. 21-24:31).

The over all design is very rich and colorful symmetrical design. The side panels are symmetrical on both axes whereas the corner panels are diagonally symmetrical (Fig. 21-1)

22- Madrasa of Jawhar al-Qanuqba'i (844/1440)-Index # 97

This is a very small, highly symmetrical, structure with all the conventional features of a madrasa. The sahn and the iwans were all

covered with marble paving.¹¹⁴ The madrasa was restored between 1980 and 83 by the Royal Danish Academy of Fine Arts.¹¹⁵ Surprisingly, today the whole building is being restored so the marble floor was taken off. Photos taken before the removal of the floor show the common layout of marble paving of small sahns (Pl. 22-1) with a central panel exhibiting six roundels surrounding another one. The corners of that panel show simple triangles. The four corner panels have medallion designs. An acute-angled chevron motif fills the side panels. This is the second surviving use of such a pattern (Pls. 18-7, 22-1).

The side iwan exhibits a layout formed by rectangular panels. The side panels are filled with the X-shaped pattern. The central panel introduces roundels that have offset rings (Pl. 22-2). The theme of having offset rings to the roundels is used in the sahn of the earlier madrasa of Mahmud al-Ustadar (Pl. 12-1). Here we find the encircling lines end up in a split arrow shape. This is the earliest surviving floor to use this particular theme, a theme widely used in later buildings.

None of the other iwans retained its marble paving. The corridors show the use of common Mamluk marble paving patterns as the braided border (Pl. 22-5).

¹¹⁴ Mubarak, *al-Khitat*, 4:47-8. 'Abd al-Wahhab, *Tarikh al-masajid*, 58.

¹¹⁵ Danish Academy, *al-Gawhariya*, 9.

The very small mausoleum was said to retain its original marble flooring showing a mihrab design.¹¹⁶ Earlier photos of the cenotaph show marble paving at their corners.¹¹⁷ The pictures show a curve that might be part of the mihrab-shaped paving that 'Abd al-Wahhab noted. Other photos exhibit interesting tooth-shaped rectangles and simple old fashioned hexagonal patterns incorporating triangles (Pls. 22-4, 6).

23- Madrasa of Taghribirdi (844/1440)-Index # 209

Small fragments of marble are scattered in the corridors. They follow the common pattern that evolves using octagonal pieces with triangles. White, red and yellow marble were used (Pls. 23-1:7). An earlier drawing shows that the qibla iwan had very simple marble paving at its center (Fig. 23-1).

In 1998, the building was undergoing restoration. That is why this building is considered later in the chapter with the buildings that have lost their marble paving.

¹¹⁶ This is the 4th still surviving building that had this mihrab design on the marble floor.

¹¹⁷ Danish Academy, *al-Gawhariya*, 87-88.

24- Mosque of Zayn al-Din Yahya (848/1444)-Index # 182

This mosque had fallen in disrepair until it was restored by the Comité in 1235/1837. The corridor leading to the sahn is covered with monochrome marble paving and the *dikka* at the vestibule is covered by polychrome marble. Here we encounter, once again, the chevron motif common during the Mamluk era. In this case, the chevron shape is produced again by parallelograms instead of rectangles, producing the sharper acute angles. Black is used sparingly in the white and black patterns. This motif recalls that found at the qibla iwan of the madrasa of al-Ashraf Barsbay (Pl. 18-7) and that at the sahn of the Jawhariyya madrasa (Pl. 22-1). This is the third surviving monument to apply this pattern.

The design of the *dikka* is more complicated as it shows a new development of the corner panels used at the madrasa of Jawhar al-Lala for the first time (Fig. 20-1). Here, the design was executed using three bands to set the design instead of one (Pls. 20-1, 24-2).¹¹⁸

In 1889, the Comité restored the entire building.¹¹⁹

¹¹⁸ Tantawy who studied the buildings of the reign of Sultan Jaqmaq did not refer to any of the pavings of those buildings: Tantawy, *Patronage of Jaqmaq*, 1-131.

¹¹⁹ Comité, 1890, 48

25-Mosque of Amir Timraz al-Ahmadi (Bahlul) (876/1472)-Index # 216

The small sahn of the mosque is covered with fine marble mosaics. It exhibits wide plain areas and simple geometric patterns at the borders. The borders of the east and west side panels are artistically consistent with the Barsbay era. These borders are typical of those found in the sahn of the mosque of al-Ashraf Barsbay at the northern cemetery (Pls. 21-15, 25-2). The amir Hasan Afandi restored the mosque in 1180 hegira.¹²⁰ The designs used are simple and show commonly-used Mamluk motifs. The ceiling is currently undergoing restoration.

26- Complex of Qaytbay (877-9 / 1472-74)-Index # 99

This building is famous for the design of its stone-carved dome. It also played a great role in the development of marble paving, initiating several stylistic trends. The extant part of the complex consists of a madrasa, a mausoleum and a sabil *kuttāb*. All, except the sabil *kuttāb*, have marble paving. Between 1893 and 1897, the Comité did major restoration works in the building but they faced a problem in restoring the marble paving as white marble was hard to obtain.¹²¹

¹²⁰ Mubarak, *al-Khitat*, 4:70; Maher, *Masajid misr*, 4: 261.

¹²¹ Comité, 1897 Arabic, 199.

The Madrasa

The entrance vestibule, corridors and iwans are covered with black and white marble paving, in patterns typical of the period. These patterns include the chevron motif, which is widely used here in different forms in all the iwans (Pls. 26-6:8, 26-11:12).¹²²

The entrance vestibule has the conventional six roundels surrounding a central one. Here and for the first time, we find encircling lines connecting the roundels of a square panel, where the roundels have two offsetting rings. All these rings overlap each other showing curved lines that maneuver between the roundels (Pl. 26-1). The same pattern appears in the sahn of the madrasa and will be frequently used at central panels of later buildings throughout the Mamluk era. The same design was used linearly on the corridor leading to the sahn (Pl. 26-3).

The sahn of the madrasa is covered with polychrome marble paving (Pl. 26-4, Fig. 26-1). The patterns used in the sahn recur in the madrasa of Abu Bakr Muzhir (Pl. 29-5) and the dome of al-Ghuri (Pl. 34-3). This is particularly true for the central panel with two rounds of circular marble designs surrounding a central roundel all enclosed in a square.¹²³

¹²² In 1839 a sketch by Coste, shows no marble paving in the west iwan (Pl. 26-22) but I do not think that this meant that it had none. This was a simple sketch that was to be finished later with the details.

¹²³ See old pictures in: Wazarat *al-awqaf*, *Masajid misr*, 2: plates 125; Iverson, *Views of Egypt*, plates 16, 16a; Saladin, *Manuel d'art*, 1: 147.

The four corner roundels with their side areas recall the patterns used in the corners around the *fawwara* of Sultan Hasan (Fig. 9-1) and were used frequently on the spandrels of the arches. A curved strip maneuvers between each two roundels to repeat the same effect introduced at the entrance vestibule.

The qibla iwan has monochrome marble paving featuring a central square panel covered with octagons, squares and triangles (Pl. 26-6:10).¹²⁴ The chevron motif makes one of its earliest appearances in the iwan's border. Here the designer had to invent an interesting shape for the intersection of the perpendicular chevron patterns (Pl. 26-7,9). The other panels show cartouche borders and designs with interlacing lines (Pls. 26-8:10).

The Mausoleum

The marble paving of the mausoleum displays advanced forms of earlier styles. The central panel shows eight roundels with a rose having eight petals in the middle (Pl. 26-17,18). Each corner has one quarter of the rose. A wide border with a design similar to that of the central panel of the qibla iwan was used here in a monochrome mode (Pl.26-4-17). The side panels show a large cartouche-bordered panel. A longitudinal

¹²⁴ Similar to those found at the sahn of Shaykhu (Fig. 5-1) but on a larger scale.

separating panel having the same cartouche theme splits the design symmetrically (Pl. 26-19).

27- Mosque of Qaytbay (880/1475)-Index # 223

Here again, the mosque shows the unusual use of exclusively black and white marble paving. Only the sahn has marble paving. The central panel shows octagonal shapes. The design is a repetition of the panel used in the corner panels of the sahn of the madrasa of Jawhar al-Lala, which is in turn a development of the very early panels found at the sahn of the mosque of Shaykhu (Pls. 27-1, 5-4). The design is very simple compared to the central panel of the sahn of Qaytbay's other buildings. Older drawings of Prisse d'Avennes showed a black octagon set inside each of the large white octagons (Pls. 27-6,7). Obviously, these black octagons were not used in the restoration.

The east and west side designs are a very basic Y-shaped pattern but with an innovation. Instead of using squares and rectangles, parallelograms and rhombuses are used to form the design, ending in Y-shapes with sharp angles (Pls. 27-1). The other side panels show rectangles having borders with cartouche motifs (Pls. 27-3,4).

Between 1927 and 29, the Comité restored the marble paving of the mosque.

28-Qubbat al-Amir Yashbak (882 / 1477-8) in Hada'iq al-Qubba

The mosque, which is adjacent to the dome, is a latter addition built in 1278 hegira.¹²⁵ The dome (*qubba*), was not meant to be a mausoleum as Amir Yashbak min Mahdi had already constructed one at the northern cemetery. It is what remains from the palace and *mūntaza* (pleasance) of Yashbak al-dawadar, where sultans were entertained. Joos Van Ghistele, a gentleman from Ghent visited the complex in 1483 and described it as an extraordinary beautiful summer house with one of the most beautiful and well organized gardens found on earth. He noted that the floors were paved in rich stones (marble).¹²⁶

Its entrance porch, floor and window platforms are covered with colored marble. The entrance porch exhibits a simple polychrome design (Pl. 28-1, Fig. 28-1). The windows bays have simple geometric black and white marble designs (Pls. 28-3,4). A thick carved marble panel covers the inner window platform to the right of the entrance door. Its design is

¹²⁵ Maher, *Masajid misr*, 4:248.

¹²⁶ This palace and *muntaza* were among a complex that included a khanqa-madrassa and was described by Felix Farbi as an earth by heaven: Williams, *Urbanization & Construction*, 43.

uncommon at the time of the original structure and its Turkish themes showing deeply carved marble stars suggest it is a latter addition (Pl. 28-2).

The dome now has carpeting covering the floor and strongly adhered to it. The man taking care of the dome described the floor by saying that it had a polychrome central panel with roundels and that the side panels had designs similar to those on the windows but on a larger scale. The Comité restored the structure in 1314/1896. The dome was restored in 1995-96.

29-Madrasa of Abu Bakr Muzhir (884-5/1479-80)-Index # 49

It is worth noting that the mosque is known for introducing several innovations in its window-opening techniques.¹²⁷ The sahn of the mosque is covered with fine colored marble with geometric designs.¹²⁸ As a matter of fact, all the floors, except the back entrance and the basement are paved with polychrome marble (Fig. 29-3).

The entrance vestibule exhibits an unusual square with only five roundels tangent to each other and with nothing at the center.

¹²⁷ It introduces the first sliding windows in Mamluk architecture. These are found at the windows of the back iwan. The other innovation is the fixed window grill with a part that opens. This can be seen at the window between the entrance vestibule and the qibla iwan.

¹²⁸ Mrs. Devonshire describes it as the most beautiful monument of the Qaytbay era: Devonshire, *Some Cairo Mosques*, 84. On examining the madrasa, one would agree with Mrs. Devonshire; see old pictures in: *Wazarat al-awqaf, Masajid misr*, 2: plates 128-9.

On the other hand, the central panel combine the designs of the mosque of Qaytbay, the arabesque work of the madrasa of Barsbay and the corner panels found at the sahn of Gamal al-Din Ustadar (Pls. 29-4:6, 26-4, 18-4, 14-5). The side panels of the sahn show an interestingly colorful design that is used later in one of the window bays of the mausoleum of al-Ghuri (Pls. 29-7:9, 34-16). The strip at the beginning of the qibla iwan exhibits a modified X-shaped design (Pl. 29-10).

The sabil was inaccessible. An older drawing shows a development in the acute-angle chevron motif and its relation with the border (Fig. 29-2).

The Comité restored the mosque in 1315/ 1889.¹²⁹ In 1897, the Comité stated that the restoration of the building had started, including the marble paving of the west iwan. They stated that the marble mosaic paving is in ruins but the original design is recognizable.¹³⁰ In 1914, the Comité ordered measurements of all the marble floor.¹³¹ Between 1920 and 1924, the Comité approved the expenses needed for urgent restorations that included marble paving.¹³²

¹²⁹ Comité, 1890, 48; Devonshire, *Some Cairo Mosques*, 86-7, stated that the interior was restored according to the original designs by Herz Pasha in 1883-97.

¹³⁰ Comité, 1896-1901, v; 1897 Arabic, 201-2.

¹³¹ Ibid., 1914, 23.

¹³² Ibid., 1920-24, 147.

30- Madrasa of Qijmas al-Ishaqi (884-7/1379-82)-Index # 114

This building displays several innovations, including a sliding door that has been seen in the previous monument. The floors of the sahn, the iwans and the sabil were said to have been covered with extremely colorful marble designs, although little color remains.¹³³

The entrance vestibule, the corridor leading to the sahn, the qibla iwan, the mausoleum and the window bays all have marble paving. With the exception of the side panels of the qibla iwan, the *dikka* and very small scattered panels at the corridor leading to the sahn (pls. 30-3,4), all the other marble floors are monochrome designs.

The entrance vestibule and the corridor leading to the sahn are all covered with a monochrome chevron motif. The qibla iwan is also covered with the traditional monochrome chevron-motif¹³⁴ with longitudinal cartouche patterns bordering yellow and red marble slabs on its sides.¹³⁵

The other iwans are covered with plain stone slabs.¹³⁶

¹³³ Abd al-Wahhab, *Tarikh al-masajid*, 262-64. Mubarak, *al-Khitat*, 4:102. The latter stated that the sahn was paved with marble, but did not refer to the iwans.

¹³⁴ An older drawing shows the chevron shape panel to have acute angled chevrons (Fig. 30-1). Looking at the photos taken this year, we find that the chevron shape is the regular old one.

¹³⁵ Wazarat *al-awqaf*, *Masajid misr*, 2: plate 134.

¹³⁶ Ibid., 2: plate 136.

The marble in this madrasa was designed by 'Abd al-Qadir al-Naqqash as stated on a roundel at the mihrab. He is the same artist who designed the marble work for the madrasa of Abu Bakr Muzhir.¹³⁷

The mausoleum displays a monochrome design using white octagons and small black triangles to form geometrical rose patterns (Pls. 30-8:10).

The Comité restored the madrasa and the marble paving in 1312/1894.¹³⁸ This was done after visiting it and admiring its "intricate marble mosaics" in the qibla iwan, a description which hardly corresponds to the present design of the qibla iwan.¹³⁹

32- Madrasa of Azbak al-Yusifi (900/1494-5)-Index # 211

The entrance vestibule, the corridors and the sahn are all covered with colored marble.¹⁴⁰ As in most of the former cases, water used in washing the floor caused the marble paving of the sahn to deteriorate, but the design and colors are still recognizable.

The overall design is symmetrical and generally conforms to the common features of the Qaytbay era. Most of the design elements used

¹³⁷ Zaki, *Turath al-qahira*, 103. Still, this does not necessarily mean that he was in charge of the floors.

¹³⁸ 'Abd al-Wahhab, *Tarikh al-masajid*, 266. Devonshire, *Rambles in Cairo*, 69, states that the interior of the mosque was restored a few years before the war (World War I) and that the outcome was faithful to the original.

¹³⁹ Comité, 1892, 86.

¹⁴⁰ Mubarak, *al-Khitat*, 4:115. *Wazarat al-awqaf, Masajid misr*, 2: plate 140, 240.

here are similar to those found at the complex of Qaytbay at the northern cemetery. At the entrance vestibule we find compound borders recalling those used in the side panels of the mausoleum of Qaytbay (Pls. 32-1, 26-17).

The central panel of the sahn exhibits a similar panel to that at the center of the mausoleum. Here white strips separate the petals of the rose and the panel corners have a roundel flanked by two split petals (Pls. 26-17, 32-5). The corner panels exhibit a new development based on those at the sahn of the Qaytbay Complex (Pls. 26-5, 32-7).

Between 1927 and 1929, the Comité wanted to restore the marble paving.¹⁴¹ Between 1930 and 1932, the Comité visited the building and decided to restore its paving.¹⁴²

33- Mausoleum of Tarabay al-Sharifi (900/1494-5)-Index # 255

Only a small rectangular monochrome marble panel at the entrance is still in situ. An earlier drawing shows that the mausoleum had been covered with a chevron motif (Fig. 33-1). It is interesting that the walls had the same X-shaped motif that was found earlier on the floors of the

¹⁴¹ Comité, 1927-29, 94.

¹⁴² Ibid., 1930-32, 272

sahn of the mosque of al-Ashraf Barsbay at the northern cemetery (Pl. 21-15) and that of Timraz al- Ahmadi (Pl. 25-2).

34-Complex of al-Ghuri (909-10/1504-5)-Index # 65

This building and the madrasa across the street are the last buildings of the Mamluks to have retained their marble paving. They exhibit the finale of the Mamluk marble paving in Cairo. This complex consists of several spaces with several functions. Only the entrance vestibule, the mausoleum and the sabil retain their marble paving.

The Entrance porch & vestibule

The floor of this massive building is entirely paved with polychrome marble. The entrance porch was divided into three parts on the longitudinal axis of the stairs and a fourth one to their left, just before entering the door of the complex, to the left of the stairs. All designs follow simple rectangular patterns. The first three are symmetrical on the axis perpendicular to the entrance. The one in the center consists of a black square border with a circle inside. The four corners feature triangles of which one is black, two are white and one is yellowish. Black rectangles with two white discs inside each appear on the right and left sides of the floor (Pls. 34-1,2). The saw-tooth roundel at the center of the

panel recalls that at the center of the fore courtyard to the mausoleum of the complex of Barquq (Pl. 11-13)

The vestibule has an intricate design executed mainly in white and black marble. Red marble was used in only two discs. Rectangles with simple chevron motifs in black and white cover the entrance part and the furthest section of the vestibule by the *dikka*. The right and left sections of the vestibule show interlacing cartouche designs incorporating black, white, and red marble pieces (Pls.34-3:5).

The Mausoleum

The overall design is interesting in that it is largely asymmetric, but as with most Mamluk marble paving, it retains the division of the floor into separate rectangles and squares of different designs (Fig. 34-1,2).¹⁴³

Unlike any of the previous mausoleums (except for the mausoleum of the complex of Baybars al-Jashankir), the floor design does not emphasize the center of the space or qibla direction.

Most of the designs are typical of the Mamluk era (Pls. 34-6:14). Two designs are of particular interest. One is near the qibla wall, where two strips, with complex and intricate designs, run perpendicularly to the qibla wall and are symmetrical on the qibla axis (Pl.34-11). The other is

¹⁴³ See earlier photos: Wazarat *al-awqaf*, *Masajid misr*, 2: plate151.

that of the marble covering the windows (Pls. 34-15:17), which have similarities to the patterns used in the windows of the mosque of Mu'ayyad Shaikh and the mausoleum of al-Ashraf Barsbay (Pl. 21-32). The marble work in these three cases is inspired by patterns borrowed from woodwork and rarely used in marble designs built in the Mamluk period except in some mihrabs as in the case in the madrasa of Taybars at al-Azhar Mosque. The border of the window bay (Pl. 34-16) recalls that in the sahn of the madrasa of Abu Bakr Muzhir (Pls. 29-7,8).

In 1895, the Comité agreed to restore the marble paving of the mausoleum.¹⁴⁴ In 1896, the Comité approved the budget required to restore the marble paving of the mausoleum.¹⁴⁵ In 1959, Creswell wanted to include the marble paving of the mausoleum among the other planned restoration works, to which the Comité agreed.¹⁴⁶

The Sabil

A twenty-pointed star is frequently repeated in the colorful marble design of the floor (Pl. 34-20,24). Similar patterns featuring twelve-pointed stars were used at the windows of the mausoleum.

¹⁴⁴ Comité, 1895 Arabic, 86.

¹⁴⁵ Ibid., 1896 Arabic, 36.

¹⁴⁶ Ibid., 1945-61 Arabic, 72.

A very interesting S-motif alternating with an eight-pointed star forms the border of the design (Pl.34-19). The same pattern of the border was used, in a simpler design, in the corridor leading to the sabil. The corridor has a simple plain pattern in the middle, with two black strips dividing the area into three monochromatic parts, the central of which is wider than the side ones (Pl. 34-18).

35-Madrasa of al-Ghuri (909-10/1504-5)-Index # 189

The marble of this building was taken from earlier buildings.

According to one account, the Sultan used his influence to purchase it at lower than the market price.¹⁴⁷

The floors are all covered with colorful marble in different designs, some simple, some more elaborate. The marble design of the floor of the vestibule was inspired by patterns used in the qibla iwan of the madrasa of al Ashraf Barsbay (Fig. 18-1),¹⁴⁸ situated a few blocks away. The sahn and all the iwans are covered with marble paving with colorful designs.¹⁴⁹

The whole building was restored in 1902-7. In 1903, the Comité worked on the budget needed for restoring the north and south iwans.

¹⁴⁷ Maher, *Masajid misr*, 4:300; 'Abd al-Wahhab, *Tarikh al-masajid*, 287.

¹⁴⁸ 'Abd al-Wahhab noted this fact in the 40s: *Tarikh al-masajid*, 289.

¹⁴⁹ See earlier photos: *Wazarat al-awqaf, Masajid misr*, 2: plate 146-9.

In the same year, it was stated that the marble works were almost done and there was a suggestion to use stone slabs at the square positioned at the beginning of an iwan and in all the panels that had lost their original marble patterns. Again, in the reign of King Faruk, the whole building was restored. As the structure suffered damage in the earthquake of October 1992, it has been undergoing restoration since 1996.

Poor illumination makes it hard to discern the eroding designs and faded colors of the marble floors. On examining the madrasa later in 1998, I found only the qibla iwan still had the marble paving, whereas the sahn and the other three iwans were being restored and had no marble was in situ. Three drawings tracing the patterns and design of the marble floor show that the sahn and the iwans were all previously covered with polychrome marble paving.

Surprisingly, the sahn had a rather plain design (Fig. 35-2). Only the east and west side panels show the then-widely used compound border that might owe its origin to the qibla iwan of the madrasa of Qadi 'Abd al-Basit (Fig. 17-1). The central panel exhibits two tiers of roundels surrounding a central one. The first tier has six roundels and the outer one twelve roundels. Four other roundels are set at the corners of this panel. Plain stars connect the corners of the central panel to those surrounding it. The

side iwans show a chevron shape with sharp angles and bands of unequal width (Fig. 35-1:3).

As for the qibla iwan, more colorful and complex designs are used. A central panel similar to that of Qaytbay dominates the floor. A twelve-pointed star pattern is used to cover two of the diagonal corners (Pl. 35-4). They recall the design used at the window platform, to the right of the mihrab of the mausoleum of al-Ashraf Barsbay at the northern cemetery (Pl. 21-32). A new development in the compound border, at the side panels, can be noticed (Fig. 35-2). The far side panels exhibit the acute angled Y-shaped pattern incorporating triangles (Fig. 35-2, Pls. 35-7).

In the west iwan, nine octagons are connected using a pattern based on the eight-pointed star. The side panels show regular polychrome chevron design, and the back area of the iwan uses the acute angled monochrome chevron design (Fig 35-3).

II) Buildings that Lost Their Marble Paving

A) Bahri Mamluks

Madrasa of Taybars (709/1309)-Index # 97

The marble works at this madrasa impressed al-Maqrizi.¹⁵⁰ However, he and Creswell wrote and described only the marble work of the

¹⁵⁰ Maqrizi, *Khitat*, 2: 383. 'Abd al-Wahhab, *Tarikh al-masajid*, 57.

mihrab.¹⁵¹ Neither of them mentioned any marble paving. On the other hand, 'Abd al-Wahhab stated that both the paving and the rugs of the madrasa had mihrab-shape designs.¹⁵² The madrasa was totally reconstructed, except for the qibla wall, by 'Abd al-Rahman Katkhuda in the 18th century.¹⁵³ The madrasa is now closed to the public because of the restoration work.¹⁵⁴

On examining the site and questioning the officials involved in the restoration, I was told that no marble was found on the floor and that it will be covered again with the stone slabs that were in situ before the restoration work began.

3-Mosque of Almalik al-Jukandar (719/1319)-Index # 24

Two ground plans dated 1972, indicate that part of the floor could have had marble paving in the seventies. Today modern tiles and plain marble cover the floor (Fig. 3-1,2). The area covered by the modern marble slabs corresponds to that once covered by marble work.

According to the ground plan drawings, the floor was designed in a simple but innovative manner. The innovations include the birth of the

¹⁵¹ Creswell, *MAE*, 2: 253.

¹⁵² 'Abd al-Wahhab, *Tarikh al-masajid*, 134.

¹⁵³ Wazarat al awqaf, *Masajid misr*, Pl. 164.

¹⁵⁴ Old photographs do not show the marble floor as it was covered with carpets.

chevron motif, the Mamluk carpet-like dominant panel with its octagons and the *mafruka*-pattern, which the restorer planned to add (Fig. 3-2). The words on the plan mark the *mafruka* pattern as a suggestion which would indicate that it was not there before.

Mosque of al-Nasir Muhammad (735/1335)-Index # 143

Under British occupation, the mosque was used as an arsenal.¹⁵⁵ The British built prison cells inside it, but later removed them.¹⁵⁶ Qalqashandi described it as the greatest, most pleasant and most ornamented mosques. The floor of the mosque was covered with excellent marble paving.¹⁵⁷ It was probably taken off by the Ottomans to Istanbul among the marble taken from the Citadel by Ibn 'Uthman in 923/1517.¹⁵⁸

Between 1940 and 45, the Comité restored the building and used stone slabs to pave it.¹⁵⁹

¹⁵⁵ Lane-Poole, *Cairo*, 18; Watson, *Mosque of al-Nasir Muhammad*, 1.

¹⁵⁶ Devonshire, *Rambles in Cairo*, 24; Watson, *Mosque of al-Nasir Muhammad*, 1.

¹⁵⁷ Al-Qalqashandi, *Subh al-a'sha*, 3: 374.

¹⁵⁸ Ibn Iyas, *Bada'i' al-zuhur*, 179-83.

¹⁵⁹ Comité, 1940-45, 116.

Madrasa of Amir Aqbugha (740/1340)-Index # 97

What was left of the madrasa in 1940s was said to show that it was in a satisfactory condition.¹⁶⁰ The madrasa is now closed to the public because of restoration work. On examining the site and questioning the officials involved in the restoration, I was told that no marble was found on the floor and that it will be covered again with the stone slabs that were in situ before the restoration work began.

Madrasa of Umm al-Sultan Sha'ban (770/1368-9)-Index # 125

The sahn had fine colored marble paving until at least the time of 'Ali Mubarak,¹⁶¹ but this paving no longer exists. The entrances and the two mausoleums are now covered with stone blocks. The sahn is paved with low-quality modern cement tiles. The iwans are covered with modern mosaic tiles.

B) CIRCASSIAN MAMLUKS

Zawiya of Faraj ibn Barquq (803-13/1400-11)-Index # 203

The building is said to have marble floors.¹⁶² The endowment states in several instances that a corridor, a south *riwāq* and the sabil have marble

¹⁶⁰ Mubark stated that the sahn had polychrome marble but did not describe it any further: *al-Khitat*, 5: 87; 'Abd al-Wahhab, *Tarikh al-masajid*, 58.

¹⁶¹ Mubarak, *al-Khitat*, 126.

¹⁶² Organization of Islamic Capitals & Cities, *Principles of Arch. Design*, 182.

pavings. Other *riwaqs* are to have tile paving.¹⁶³ The edifice is now under restoration..¹⁶⁴ In 1972, Mustafa stated that all the building was covered with stone paving.¹⁶⁵

Madrasa of Qaraquga al-Hasani (845/1441-2)-Index # 206

This is an interesting building with the unusual feature of a minaret built across the street and connected to the mosque's roof by a wooden bridge. According to Maher, the covered sahn used to have colored marble paving and the madrasa was restored during the reign of Khedive 'Abbas Hilmi II in 1331 hegira.¹⁶⁶ Now the entire interior is covered with the commonly used modern mosaic tiles.

Khanqa of Sultan Inal (855-60/1451-56)-Index # 158

Both the floor and dados of the sahn, which had a wooden ceiling, were covered with colored marble.¹⁶⁷ None of the marble paving has survived.

¹⁶³ Mustafa, *Mosque of Faraj*, 47-49.

¹⁶⁴ Due to restoration work planned by the American Research Center in Egypt, I was not able to see the mosque from the interior. This information has been passed to me by a member of ARCE and Prof. James Harrell who did some research on the marble used in that monument for the Egyptian Antiquities Project in 1996: Harrell, *Decorative Stones*.

¹⁶⁵ Mustafa, *Mosque of Faraj*, 9-16.

¹⁶⁶ Maher, *Masajid misr*, 4:140.

¹⁶⁷ Ibid, 4: 198-199; Taghribirdi, *al-Nujum*, 142.

Mosque of Shaikh Madyan (circa. 870/1465)-Index # 82

According to 'Ali Mubark (*Khitat* 5:110), the mosque's entire floor was covered with colored marble paving. When I visited the mosque in 1997, its floor was flooded by sewage and visitors had to hop about on wooden blocks placed there for that purpose by the company in charge of the renovation. The guard mentioned that the corridor leading from the vestibule to the sahn of the mosque had marble paving, but it was impossible to ascertain the truth of this statement. Stone paving now covers the sahn.

31. Mosque of Sultan Abu al-'Ila (890/1485)-Index # 340

The only evidence we have showing that this mosque had marble paving is a single-line drawing of the Comité dated 1917 (Fig. 31-1). The design is very simple and shows patterns as those found at the corners of the southern mausoleum of the complex of Faraj b. Barquq (Fig. 13-4).

III) Buildings that are Thought to Have Marble Paving

Mosque of al-Zahir Baybars (665-7/1266-9)-Index # 1

Al-Maqrizi mentioned that Baybars brought wood and marble panels from the Citadel of Jaffa, after seizing and demolishing it.¹⁶⁸ Baybars, according to this account, ordered the *maqsūra* to be made of the captured wood and the mihrab to be made of the marble. Al-Maqrizi made no specific mention of marble paving.¹⁶⁹ Mrs. Devonshire mentions that Baybars also brought marble from Christian churches in the Delta, but does not state in what way it was used.

This mosque has no marble in situ. But we know from the sources that his palace at Damascus (al-Qasr al-Ablaq) had beautiful marble paving and dados. His palace in the citadel of Cairo was similar to that of Damascus.¹⁷⁰ This shows that the secular buildings of al-Zahir had marble paving and it is likely to have had it in his mosque as well.

Mosque of Ulmas al-Hagib (730/1329-30)-Index # 130

The house of Ulmas, no longer extant, is reported to have had fine marble which was seized by al-Nasir Muhammad for use in his mosque at

¹⁶⁸ Al-Maqrizi, *Khitat*, 2:300.

¹⁶⁹ Creswell, *MAE*, 2: 155.

¹⁷⁰ Casanova, *Qal'at al-qahira*, 129.

the Citadel.¹⁷¹ Al-Hajib's interest in marble as a building material provides some ground to believe that his mosque may have originally had marble paving. Al-Maqrizi said that Ulmas brought large quantities of marble from Algeria, the lands of al-Sham and al-Rum for this mosque.¹⁷²

Mosque of Bishtak (736 / 1336)-Index # 205

The mother of Khedive Ismail restored most of the mosque in 1279 hegira. and the floor was paved with tiles.¹⁷³ The mosque is known to have had marvelous marble works originally, but records do not specify what type of material was used for the floors.¹⁷⁴

Madrasa of al-Ashraf Sha'ban (778 / 1377) at al-Sawwa, non Extant.

This madrasa was considered a leading work of art at its time. When extant, it was compared to that of Sha'ban's uncle, al-Sultan Hasan.

Gamal al-Din Ustadar seized much of its ornamenting materials, especially the doors and windows, for use in the bimaristan of Mu'ayyad Shaikh.¹⁷⁵

¹⁷¹ Maher, *Masajid misr*, 3:174-75.

¹⁷² Al-Maqrizi, *Khitat*, 2:307.

¹⁷³ Mubarak, *al-Khitat*, 4:137.

¹⁷⁴ 'Abd al-Wahhab, *Tarikh al-masajid*, 143-144.

¹⁷⁵ Ibid., 183

Marble Paving in Mamluk Cairo

“Chapter III”

Characteristics & Development Of Mamluk Marble Paving

Figures are marked as follows: “Building’s catalog #-Figure #”

e.g.: 9-1 is figure #1 in building #9 which is Complex of Sultan Hasan

Plates are marked as follows: “Building’s catalog #-Plate #”

e.g.: 9-5 is plate #5 in building #9 which is Complex of Sultan Hasan

“ ” means and

“,” means to

CHAPTER III

Characteristics & Development of Mamluk Marble Paving

In the last chapter, we have reviewed 48 Mamluk buildings. Of these:

- Thirty-two have extant marble paving (list A); two of them have modified designs;
- Four have descriptive documentation of marble floors that are now lost (list A);
- Eight have documented references to marble floors, now lost (list B); and
- Four have circumstantial evidence indicating a possibility of lost marble paving (list C).

By examining the existing floors and drawings of the first two categories and noting the progress of their style, I have been able to identify the general characteristics of Mamluk marble paving. I also provide a subdivision of their characteristics throughout the Mamluk era, identifying three phases exhibiting varied approaches to use, design, technique, and color.

In this chapter, I will begin with a review of the general characteristics of Mamluk marble floors in Cairo. Then I will proceed to a discussion of the characteristics of the three suggested subdivisions of the Mamluk era.

This will be followed with a tabulation of various artistic elements relevant to each phase, for easy reference.

The use of marble paving clearly increased over time, even at the expense of other decoration. Especially in the later phases, one can find some buildings with excellent marble paving and very plain mihrabs and walls.

A. General Characteristics of Mamluk Marble Paving

Viewed from the aspects of use, design, color, and technique, Mamluk marble floors exhibit common characteristics. These characteristics could be summarized as follows:

1. Use of marble in paving:

Marble was used to pave various kinds of buildings, including mausoleums, madrasas, khanqas, mosques, sabils, vestibules, basins and *qa'as*. All the buildings in question had rectangular or square spaces.

The status of the patron, his personality and the prosperity of his time affected the sophistication and amount of marble used in the building.

2. Design of Marble Floors

2.a. General Layout

On designing the floor, the Mamluk artist divided each space into rectangular and square panels. Panels had different designs, ranging from

simple-bordered plain marble slabs to complex arabesque designs. Each panel was designed individually, but with an element of symmetry, producing an overall mirror effect. The artist often changed the theme of his design from one panel to another; e.g. from roundels in one panel to octagons in another.

Square spaces appeared frequently in mausoleums, whereas rectangular spaces appeared more often in sabils. Sahns could be either square or rectangular. In square spaces, the number of tiers of panels surrounding a central one varied. In some cases the layout consisted of a single central panel surrounded by multiple borders.¹ In others, the central panel was surrounded by up to three rows of side panels.²

2.b. Central Panels

In most cases, a central panel or an elevated structure, such as a *fawwara* or a cenotaph, dominated the paved space and it was the panel that received the greatest care in the design. In a few cases the central panel was not paved in marble, only an outer square, as in the mausoleums of Faraj ibn Barquq (Figs. 13-1,4).

¹ Mausoleum of Sarghatmish (Fig. 7-5).

² Mausoleum of Barsbay at the northern cemetery (Fig. 21-1).

2.c. Symmetry

This is a main feature of Mamluk ornamentation, and marble floors were no exception. But symmetry comes in various shapes and forms. Sometimes it is applied on all axes of the floor, sometimes along one axis. Mirror designs, where the artist contrasts colors in one panel with those in another are not uncommon. The artists did not feel obliged to be literal with scale. One design could mirror another, but with the various lines and shapes set at different proportions.

Sometimes, the artist had to abandon or adapt the symmetrical concept for practical reasons. On close examination of some floors, we can notice that small design variations are adopted to make room for a cenotaph or a slab that leads to a crypt in the floor. Sometimes this may produce irregularities in the design or give the impression of lax workmanship.

Symmetry took various forms. According to the number of axes on which symmetry was applied and the variations in style, one can distinguish between the following symmetrical approaches in the design:

- **Full Symmetry (FS).** This concept was mainly applied in small square sahnns where panels on the two axes and the corner panels are totally symmetrical. Examples of this are the sahnns of the madrasa of Mithqal

(Fig. 10-1, Pl. 10-1), the fore-sahn to the mausoleum of Barquq (Fig. 11-4) and the madrasa of Jawhar al-Lala (Fig. 20-1) amongst others.

- **Simple Symmetry (SS).** This is the most commonly applied symmetrical scheme on the floors, generally in the larger spaces and especially in the rectangular ones. Here symmetry is applied to the major outlines of the pattern on the two axes but each individual element may feature a different design. Examples include most of the early mausoleums and sahns such as the madrasa of Tatar al-Hijaziyya (Fig. 8-1) and the madrasa of Barquq (Fig. 11-1). Some exceptions are due to the requirements of function, as mentioned above.³

- **Diagonal Symmetry (DS).** This is an additional feature to the above cases where the corner panels are not identical. Each couple of corner panels is symmetrical on the diagonal axes of the central panel. The earliest example of this trend is found in the sahn of Sarghatmish (Fig. 7-1). Again, we can still find this trait in the qibla iwan of the madrasa of al-Ghuri (Fig. 35-1).

- **Lax Symmetry (LS).** This is a less commonly used concept, where the artist did not follow rigorous mirror patterns, but introduced variations in scale and shape of the design. It occurred in the mausoleum of

³ These include the need for a door to the crypt.

Sarghatmish (Fig. 7-5), the mosque of Ganibay (Fig. 19-1) and the mosque of al-Ashraf Barsbay in the northern cemetery (Pls. 21-16, 18). Old drawings of 1911 show similar differences in the sahn of Tatar al-Hijaziyya (Fig. 8-2) and in the mausoleum of al-Ashraf Barsbay at the northern cemetery (Fig. 21-2).

- **Weak Symmetry (WS).** Only two of the structures surveyed exhibited a marked departure from symmetry. These are the mausoleum of al-Mu'ayyad Shaikh (Fig. 15-2) and the mausoleum of al-Ghuri (Fig. 34-1:12).

3. Color Scheme:

White, gray, black, red, yellow, and less often green were used in various hues. In later phases, glass pastes in turquoise and red were also incorporated in the designs of the marble floors, a practice which started on inner and exterior walls. White marble strips with a width ranging from 12 to 35cm invariably separated the panels.

4. Execution Techniques:

The Mamluk artist used mainly three of the marble techniques for applying marble to the floors:

- **Juxtaposition.** In simple geometric designs, the artist laid slabs of marble, appropriately cut, next to each other to produce the general design.

- **Marble mosaic.** In arabesque and other intricate designs, the marble pieces forming the design were of inconveniently small size. It became more convenient to collate the pieces in bigger blocks before applying them to the floor. In a technique similar to that applied in tile mosaic, the pieces are placed with their polished face downward on a board, with enough space in between for the cement to take hold. Cement is then poured on the back and left to dry. The whole block is then lifted and put into place.

- **Cut and Paste.** A less common technique is that of hollowing part of the marble slabs and filling it with a paste of different color to produce the required design.

B. Phases of Mamluk Marble Floor Artistry

To achieve a better understanding of Mamluk marble paving, it is possible to divide the development of this art into three phases.

- **Phase One (1250-1400).** Marble was used simply and applied to conventional spaces (main sahn, mausoleums). Colors were limited (mostly white, black, and red).
- **Phase Two (1400-1472).** Marble applied to new areas (qibla iwans, side iwans), new artistic elements were introduced in colorful and intricate designs (arabesque).

- **Phase Three (1472-1516).** Marble was applied virtually to the entire floors. Design and craftsmanship reached a higher plateau, but colors become more subdued.

B.1. Phase One

This phase covers all the Bahri Mamluk era as well as the early years of the Circassian Mamluks. It reached maturity with the madrasa of Barquq. From this phase, eleven monuments have extant marble paving,⁴ earlier photos of one monument showing its marble paving intact (it is being restored now), an earlier drawing of one monument that has lost its marble paving (List A); and four other monuments which lost their marble paving and about which we do not have information (List B). Another four buildings of this period are suspected to have had marble paving (List C).

This phase includes the earliest surviving buildings with marble paving in Egypt: the mausoleum of Qalawun at the extant *shadirwan* found at the east iwan of his *bimaristan* and the lost *shadirwan* of the west iwan.

⁴ One of these is the Mamluk *qa'a* at the Islamic Museum. It is dated to the 8th/14th century.

If the mosque of Aslam al-Silahdar with the first marble paved central panel is proven to have had an originally covered sahn, then the madrasa of Tatar al-Hijaziyya is the earliest surviving building with an open-air marble paved sahn of a madrasa with no fountain at the center.

B.1.1. Choice of Space

A major characteristic of the first phase is the logical choice of areas to be paved. Except for the madrasa of Barquq, all spaces of buildings that had marble paving were being carefully chosen.⁵ One frequently finds a combination of marble and stone paving in the floor of the same mausoleum or sahn (Pls. 4-1, 6-3). The madrasa of Barquq can be considered the key building that inspired the overall use of marble paving of the second and third phases.

B.1.2. Design of Marble Floors

B.1.2.a. General Layout

Designs featuring simple geometrical and compound patterns were used to cover small, medium and large areas of the floors. These are mostly squares, triangles, and rectangles; while roundels, hexagons and octagons were occasionally used. Other innovative designs that were

⁵ Marble paving was used only if the space was not to be covered with rugs or carpets as in sahns and mausoleums.

rarely repeated are the multi-lobed and the mihrab designs of the central panel of the qibla iwan of the madrasa of Barquq (Pl. 11-8,11).

There were some innovations that are worth mentioning about this phase. The most important is in the mausoleum of Sarghatmish which has a central panel surrounded by three larger borders. The inner border exhibits a continuous medallion shape. This pattern is modified and used later. The outer border with split arrows, bound within half a square is also used extensively later. They are not totally new since a prototype occurs in the corridors leading to the sahn of the khanqa of Baybars al-Jashankir (1307-10), on a larger scale (Pls. 2-2, 7-10).

A second noteworthy innovation is the largest single space ever covered with marble paving in our corpus, namely the grand sahn of the mosque of Sultan Hasan. Its vast area is a landmark of innovation and must have inspired many later buildings. This innovation was not only in the patterns used, but also in the overall design. The artist divided the whole area into nine panels; the central one is dominated by a large covered *fawwara* surrounded by a border that shows an interesting irregularity in dividing its panels (Fig. 9-1). The artist subdivided each of the other eight large panels into smaller concentric panels.

B.1.2.b. Design of Panels

1. Design Elements*

This phase introduces design elements that were used on marble floors for the first time. Some of these patterns turned out to be frequently used in the marble paving, others were never repeated. Some of the patterns were used to cover panels, others in the design of the borders. Some patterns dominated both the larger panels and the borders.

The most important innovations of this phase include four of the eight roundels surrounding the central panel of the madrasa of Tatar al-Hijaziyya: all were **gear-shaped roundels**.⁶ This design will become common in phase two (Pl. 8-1).

The complex Sultan Hasan introduces the *al-mafruka* design (Pls. 9-2, 14) and the **sunburst** design (Pl. 9-10), although these were used infrequently afterwards. Almalik al-Jukandar introduced the chevron motif, on a small scale (Fig. 3-1). In the sahn of Sultan Hasan the **chevron motif** was used to cover side panels (Pls. 9-5, 12). Later in the same phase we find it used at the qibla iwan of the madrasa of Barquq. This motif turned out to be one of the most popular in Mamluk paving.

* Elements in bold within the text in this section refer to the patterns found (See Table 1).

⁶ Earlier sources used the term *atrās* (gears), the plural of *tīrs*: Amin and Ibrahim, *Architectural Terms*,

11.

The sahn of the madrasa of Mahmud al-Ustadar introduces the first **interlacing offset rings** of roundels (Pl. 12-1). It also introduces the **split-star** design connecting the central panel to the border surrounding it (Pls. 12-1). It was used in several of the buildings of the second phase (Pls. 17-1:2, 18-6).

2. Central Panel

Generally, no significant differences could be traced between the designs of the central panels and those surrounding it. There are three exception to this rule in this phase. Firstly, in the sahn of Tatar al-Hijaziyya, one finds the first central panel with a definitely prominent role. It introduces a major development to the design found at the panels at the corners of the sahn of Sarghatmish (Figs 7-1, 8-1). Secondly, the qibla iwan of the madrasa of Barquq shows a huge dominant central panel with its multiple number of rounds of roundels surrounding a **multi-lobed design**. The third is the most important as it will be the main theme of the Qaytbay period; it is found at the central panel of the madrasa of Mahmud al-Ustadar (Pl. 12-2). The designer uses **interlacing offset rings** of the five roundels for the first time. As we have said earlier, this design influences the central panels of the Qaytbay period in the third phase (Pls. 26-4, 29-5, 32-4, 34-3).

3. Side Panels

As mentioned above, except for the madrasa of Tatar al-Hijaziyya and the central panel at the qibla iwan of the madrasa of Barquq, no significant differences, if any, could be traced between the designs of the side and central panels.

4. Borders

The border is one of the first elements in the Mamluk marble design to undergo marked development. The Qalawun mausoleum, the earliest Mamluk structure of the period, did not have border designs. **Plain borders** appeared in the two Shaykhu buildings and the sahn of Sarghatmish. Other buildings use the **simple square and triangle patterns** to construct their borders in a tradition that will be seen frequently later. Square and triangle designs appeared in the sahn of Aslam al-Silahdar.

Cartouche borders appeared in Almalik al-Jukandar (Fig. 3-1). The cartouche border there was of a primitive kind that was soon developed in the sahn of Tatar al-Hijaziyya and the sahn of al-Sultan Hasan (Pls. 8-4, 9-4). The former was formed by alternative light and dark colored marble in a way similar to that used in some of the borders executed in the mosque of Barsbay in the northern cemetery, more than a century later (Pls. 21-17, 18). **S-shaped and Y-shaped borders** were also introduced in the

complex of Sultan Hasan for the first time (Pl. 9-9, 11). The S-shape motif continues to be used till the present day. Braided borders are used on a small scale in the side borders of the sahn of the madrasa of Mahmud al-Ustadar (Pl. 12-2).

Interlocking roundels are used in the borders of the mausoleum of Sarghatmish for the first time. This design will contribute to the formation of the medallion design that will be used extensively later.

B.1.3. Color Scheme

The prevalent colors in the earliest of the phases were black and white. Red marble was introduced gradually until it became a major color in the madrasa of Tatar al-Hijaziyya and the mosque of Sultan Hasan.

By the end of this period, more colorful marble was used and dark colored marble alternating with white marble dominated large areas as the sahn of Barquq. New colors were introduced at the madrasa of Sarghatmish, including dark green, dark blue and pale pink (Pls. 7-6,16).

B.1.4. Execution Techniques

Both the juxtaposition and the marble mosaic techniques were used in this phase. However, the juxtaposition was more common. The marble floor technique was used less frequently. It was used at the bimaristan of Qalawun in the extant and extinct basins of the east and west iwans.

B.2. Phase Two (Barsbay Style)

This phase covers roughly about five decades of the Circassian era.

Along with the development experienced in the other architectural and ornamental crafts of this period, marble works in general and marble paving in particular developed dramatically and introduced new uses, designs, color schemes and techniques. The outcome of the new development reached its zenith at the buildings of Barsbay in both his madrasa at al-Mu'izz street and the complex in the northern cemetery.

This period includes nine buildings that retain their original or parts of their original marble paving; two that are currently under restoration but of which we have photos taken before the restoration started; two buildings that have lost their marble paving but of which we have either earlier drawings or scattered marble pieces (List A); and four buildings that have completely lost their marble paving and of which we do not have any description (List B).

A common feature of the early buildings of this phase is that several of them lost a great portion of their marble paving, unlike the other two phases.

This phase has two buildings that have lost a great deal of their original marble paving, the first one being the madrasa of Gamal al-Din Ustadar. Its sabil maintains the original marble paving while the sahn

shows only some fragments that do not help to reconstruct the whole (Fig. 16-1). A couple of interesting panels are used in this floor (Pl. 14-4, 5). These panels are executed in a new technique. The design is cut and then filled with red paste. This technique had not been used in marble paving before. These two panels are set symmetrically along the axis perpendicular to the qibla iwan. This would suggest that they are still in their original location (Fig. 16-1).

The second building is the madrasa of Taghribirdi at al-Saliba street. Only traces of colored marble paving are found at the corridor leading to the sahn (Pls. 23-3:7). An earlier drawing exhibits the partial use of marble paving at the qibla iwan (Fig. 23-1).

Al-Fakhriyya madrasa is suspected to have its original marble paving. The building was totally renovated in 1268/1881. The original designs are probably lost and it is not known whether the new designs that were ordered by the mother of Husain Bek, son of Muhammad 'Ali Pasha, were exact restorations or new designs.

As we have seen in the previous chapter, the marble paving of the mosque of Mu'ayyad Shaikh does not fit in the development of the Mamluk marble pavings. Especially considering what earlier sources have said about the ornamentation of this mosque, the marble paving *in situ* is probably a later addition during one of the restorations of the mosque.

B.2.1. Choice of Space

In this phase, along with the concept of choosing particular spaces to be paved with marble, several buildings show a tendency towards covering many areas that would have been covered with carpets or rugs. Most of the buildings of this phase were known to have had marble paving covering at least two of its areas, at one point, but would have lost the marble paving of one of them. However, none of the buildings had overall marble paving except for the praying area and mausoleum of al-Ashraf Barsbay at the northern cemetery. Even in this building, the entrance vestibule is paved with stone slabs.

B.2.2. Design of Marble Floors

B.2.2.a. General Layout

Designs featuring simple geometrical, compound and arabesque patterns were used to cover small, medium and large areas of the floors. These are mostly compound and arabesque patterns. The overall space is divided into rectangles surrounding a central panel. In this phase, the number of tiers of rectangles surrounding a central panel varies from a simple central panel with concentric borders of different widths and

designs⁷ to a central panel that is surrounded by three tiers of rectangular and square panels.⁸

These rectangles introduce very intricate designs, covering a large portion of the rectangle. All types of geometric patterns such as squares, triangles, and rectangles, roundels, hexagons, and octagons are used. All these patterns are usually cut in rather small pieces and fit together to form the design. The innovative use of arabesque, joggles and free cuts together with the use of a varied color scheme, give an overall sense of richness.

There were some innovations worth mentioning in this phase. The first one is in the two mausoleums of Faraj ibn Barquq where the designer made the marble paving surround a large square that is paved in stone. The second is in the mausoleum of al-Mu'ayyad Shaikh where the designer ignored the center of the space and the symmetry (Fig. 14-2).

The third is the paving of the sabil and *mazmala* of the Ashrafiyya madrasa and the side iwan of the Jawhariyya madrasa. In both cases at the Ashrafiyya, we find that the main panel is surrounded by side panels on three sides only thus ignoring the center of the space as in the mausoleum of Mu'ayyad Shaikh (Fig. 18-5,6). In the side iwan of the Fakhriyya

⁷ The madrasa of Taghribirdi on al-Saliba (Fig. 23-1).

⁸ The mausoleum of al-Ashraf Barsbay at the northern cemetery (Fig. 21-1).

madrasa, the central panel is different from all the other central panels of the Mamluk marble paving, as it is a rectangle. Its sides are in the ratio of 1: 3.

B.2.2.b. Design of Panels

1. Design Elements*

This phase introduces design elements that were used on marble floors for the first time. Some of these important innovations are used in only one building and were never used again, as in the case of the **joggled vousoirs** in the side bays of the qibla iwan of al-Ashraf Barsbay at the northern cemetery (Pls. 21-4,10).

The most important innovation that is worth mentioning in this phase is the **arabesque designs**, which were used in several buildings in this phase.⁹ They were not used before and were not also repeated except in the madrasa of Abu Bakr Muzhir (Pls. 29-13:14).¹⁰ They were mainly used in the central panel as a round band surrounding the central roundel (Pls. 18-2, 19-4).

* Elements in bold within the text in this section refer to the patterns found (See Table 1).

⁹ We find similar designs on the walls of the Zawiya of Faraj ibn Barquq. Mustafa, *Mosque of Faraj*, Pls. 49-51.

¹⁰ As mentioned in the previous chapter, 'Abd al-Wahhab wrote that the design of the marble paving of the entrance of the madrasa of al-Ghuri was similar to that of the qibla iwan of al-Ashrafiyya. As it is not *in situ*, I was not able to check if it had arabesque designs or not.

A different type of arabesque design was used mainly in the corners of the squares circumscribing a roundel (Pls. 14-5:6, 19-3). The same design is used on the walls of the qibla iwans of the madrasa of Gamal al-Din Ustadar and the Ashrafiyya madrasa (Pls. 14-6, 18-11). The same design will be used in the corners of several panels of the madrasa of Abu Bakr Muzhir in the third phase.

The Ashrafiyya madrasa introduces the **refined interlacing offset rings** of roundels with its split arrow finale, a design that dominates the third phase (Pls. 18-1, 5). The Fakhriyya madrasa with its rather plain design introduces the **outlined eight-pointed star**, a design that was never used again in Mamluk marble paving (Pl. 16-5). The marble paving of this madrasa does not fit with the characteristics of this phase. This leads us to consider the design of the paving to be a later addition.

The mosque of al-Ashraf Barsbay at the northern cemetery introduces several innovative elements of marble paving designs. These include **joggled voussoirs** that are executed in several colors (Pls. 21-4, 10) and which are unique to this building; and the insertion of colored squares in the chevron motif (Pl. 21-9). The **colorful strips** between the columns at the beginning of the qibla iwan of the mosque show very intricate designs that were applied here for the first time (Pls. 21-3,6,11).

2. Central Panel

As we have seen, this phase witnessed different design approaches. Several spaces do not have central panels for different reasons, although generally the monuments of this phase still emphasized the central panels over the other panels.¹¹

3. Side Panels

As mentioned above, the designs of the central panels were emphasized at the expense of the designs of the side panels. This does not mean that these designs were as plain as those of the previous phase were. In several of these buildings, the designer used themes and patterns that were really complicated and showed richness that is almost close to that of the central panels (Pls. 17-5, 18-10, 21-31).

Some side panels are totally covered with the **X-shaped design** as in the case of the side iwan of the Jawhariyya madrasa (Pls. 22-2). Others exhibit **simple geometric designs** that cover a whole panel (Pl. 18-9) or with a number of plain roundels that fit in the design (Pls. 21-1, 21).

In the mausoleum of al-Ashraf Barsbay at the northern cemetery, the designer used the **Y-shaped design** to cover side panels for the first time

¹¹ This is more apparent in the buildings founded between 1420 and 1432, as they used more colorful arabesque designs (Catalogs # 17:22).

(Fig 21-1). This motif later covers a very large space of the sahn of the mosque of Qaytbay (Pl. 27-2). Joggled voussoirs were used as a border to the central panels of the side bays of the qibla iwan of al-Ashraf Barsbay at the northern cemetery (Pls. 21-4,10).

Even if the panels were mere plain slabs, their borders were well executed and showed excellent workmanship and design (Pls. 13-2, 17-6, 21-2,8,15,26,29). However, this phase features other buildings that exhibit rather plain designs.¹²

4. Borders

As we have seen before, this phase exhibits another marked development in the design of the border design. We have seen that more care was given to those designs and their execution. Borders that were used earlier in the previous phase continued throughout this phase in either their original forms or a modified design. A good example of that is the **S-shaped border design** (Pls. 12-1, 19-3) and its **modified version** (Fig. 17-2). **Y-shaped borders** are used in complex of al-Ashraf Barsbay (Pl. 21-5).

¹² Mainly on the floors of the complex of Mu'ayyad Shaikh and the mosque of Timraz al-Ahmadi; it is likely that the paving of al-madrassa al-Fakhriyya is a later addition. The earlier drawing of the non extant marble paving of the qibla iwan of Taghribirdi shows a similar trend of emphasizing the borders whereas the central panel is simple (Fig. 23-1).

This phase introduces an **intricate designed border** that recalls the designs applied on woodwork and the **X-shaped border** (Pl. 21-8,15, 25-4). The **modified cartouche borders** appeared in the central panel of the qibla iwan of Qadi 'Abd al-Basit and was reused in phase three (Pl. 17-1).

A new development of the interlocking roundels in the borders of the mausoleum of Sarghatmish is found in the border surrounding the central panel of the qibla iwan of the madrasa of Barsbay (Pl. 18-2,6). This design will be used in the central panels of the third phase.

B.2.3. Color Scheme

This phase is characterized by the use of a wide range of colors. Some designs are either monochrome as in the case of the mausoleum of al-Mu'ayyad Shaikh and the madrasa al-Fakhriyya or with the rare addition of red, as in the entrance vestibule and corridor of the mosque of al-Mu'ayyad Shaikh.¹³

A combination of bluish gray with pale yellow and white recalling that used at the complex of Sultan Hasan (Pl. 9-11) is used at the south mausoleum of the complex of Faraj ibn Barquq at the northern cemetery (Pl. 13- 3). A brick red colored paste was used in the design of the panel located in the sahn of the madrasa of Gamal al-Din Ustadar (Pl. 14-5).

¹³ As I have noted previously, I strongly doubt that the marble paving of this building is original.

Other buildings show bright turquoise colors that add richness to the design (Pls. 12a-3, 19-3,4 , 21-3,6). Bright yellow was used with black to exhibit other designs (Pl. 21-7,11).

B.2.4. Execution Techniques

This phase exhibits all the execution techniques studied above. We find the marble mosaic technique used in the paving of the qibla iwan of Qadi 'Abd al-Basit, al-Ashrafiyya, the sahn of the mosque of Ganibay and the complex of al-Ashraf Barsbay at the northern Cemetery (Pls. 17-6, 18-4,6 , 19-4, 21-8). The cut and paste technique was used in the sahn of the madrasa of Gamal al-Din Ustadar (Pl. 14-5).

B.3. PHASE THREE (Qaytbay Style)

This phase covers roughly about the last four decades and half of the Circassian era and the rule of the Mamluks. Along with the development and refinement experienced in the other architectural and ornamental crafts of this period, marble works in general and marble paving in particular developed dramatically and introduced new uses and designs. The color schemes and techniques however showed simpler approaches. The reason for this is probably due to the scarcity of the qualified craftsmen or merely a change of taste. The outcome of the new development reached its zenith at the Complex of Qaytbay in the northern cemetery.

This phase includes eight buildings that retain their original or parts of their original marble paving, and two that have lost their marble paving but of which we have earlier drawings (List A).¹⁴

Of the later two, the first one is the mosque of Abu al-'Ila (Fig. 31-1). Its drawing of 1917 shows the paving of the area to the north of the mausoleum. It exhibits a return to the characteristics of phase one, recalling the paving of the sahn of Sarghatmish and Barquq (Fig. 7-1, 11-1).

The second building is the mausoleum of Tarabay al-Sharifi. An earlier drawing dated 1934 shows the marble paving as it was then (Fig. 33-1). Now, only a simple marble rectangle is found at the entrance of the mausoleum. An interesting X-shaped design covers several panels on the walls of the mausoleum.

On the other hand, the other buildings of this phase show a refinement in both the design and execution of marble paving. Their designs have a prototype that is not obvious at first glance but can be connected somehow back to phase one in the sahn of the madrasa of Mahmud al-Ustadar (Pl. 12-1). These designs use the interlacing offset rings surrounding a central roundel. The central roundel exhibits different

¹⁴ Complex of Qurqumas, index # 162 may have had marble paving but it was not included in the count

degrees of complexity ranging from simple roundel to the design of a rose with multiple petals that might have offsets, as in the central panel of the madrasa of Azbak al-Yusifi. It thus shows the integration of the three phases and marks the degree of development achieved in the designs of marble paving throughout the Mamluk era.

The patronage of al-Ghuri sum up all the designs and development of the Cairo Mamluk paving in just two buildings. They exhibit most of the common patterns, colors and marble types of all the Mamluk era. Very few innovations can be seen, although two examples are the twenty-pointed star used in the sabil (Fig. 34-11) and the colorful acute angled Y-shaped design at the side panels of the qibla iwan of his madrasa (Pl. 35-7).

B.3.1. Choice of Space

In this phase, most of the buildings that are paved in marble use it to cover the whole floor of the building. This includes vestibules, corridors, sahns, qibla iwan, other iwans, mausoleums, sabils and window bays. Obviously, logical choice of spaces to be paved with marble does not apply at all here. The patron and the designer only cared for the ornamentation regardless of the use of the space. He saw marble as a rich ornamentation that had to be applied even on areas that are normally covered by carpets and rugs.

B.3.2. Design of Marble Floors

B.3.2.a. General Layout

As we have seen before, covering such vast areas resulted in the use of some common patterns such as the chevron motif to cover the whole space without dividing it into rectangles. Even those, which are divided into rectangles use very large panels, unlike the layouts of the earlier phases. This resulted in the use of a limited number of patterns in each space.

Symmetry played the same role in this phase with the exception of the mausoleum of al-Ghuri (Fig. 34-1). Side iwans usually are covered with a design set in one panel that covers the whole iwan (Pls. 26-11, 12, 29-17).

A new trend appears in this phase. Spaces are mainly divided into three main zones. Either the central zone or the two side ones focus on an intricate design. In most cases, such partitioning emphasizes the qibla direction. This is usually the case in some qibla iwans and in some of the west iwans (Fig. 29-1, 30-1, 35-1,2).

B.3.2.b. Design of Panels

1. Design Elements*

This phase introduces a refinement to all the design elements that were used on the marble floors in the previous two phases. There are no

* Elements in bold within the text in this section refer to the patterns found (See Table 1).

real innovations except for the increased use of **multi-pointed stars** and especially the **twenty-pointed star** used at the complex of al-Ghuri. All the other elements were used before in the earlier phases (Pls. 34-15:17, 20).

The **roundels with interlacing offset rings** become the prototype pattern of this phase and covered corridors, vestibules and central panels (Pls. 26-1,3,4,17, 29-5,9).

Panels were covered with the different types of **Y-shaped pattern** and the different types of the **chevron motifs**. Different types of **cartouche shapes** were used in the borders used along with the modified and standard **S-shaped borders**.

The strip at the beginning of the qibla iwan of Abu Bakr Muzhir modified the **X-shaped Pattern** into a six-petal star-shape (Pl. 29-10). An **arabesque design** was used in the central panels of the same madrasa (Pls. 29-13:14), recalling those used in the earlier phase.

2. Central Panel

Central panels kept their emphasis in the marble paving of this phase. This emphasis was achieved in two ways. Firstly, by the contrast of colors compared to the surrounding panels as in the case of the sahn of the madrasa of Qaytbay at the northern cemetery, the madrasa of Abu Bakr Muzhir and the entrance vestibule of the complex of al-Ghuri (Pls. 26-4:5,

29-11:12, 34-1:5). Secondly, by the differentiation of the design, as in the case of the mausoleum of Qaytbay, the mausoleum of Qijmas al-Ishaqi and the sahn of Azbak al-Yusifi (Pls. 26-17:18, 30-8:10, 32-4).

Most of the central panels are constructed using several rounds of roundels, each with offset rings that interlace with those adjacent to them (Pl. 26-1) in a tradition that was introduced in 1395 on the floors of the madrasa of Mahmud al-Ustadar (Pl. 12-1). What differed are the central panel and the number of rounds of roundels used to form its design.

Other central panels show a rectangular array of octagons with triangles in between forming the design of the central panel, as in the mosque of Qaytbay (Pl. 27-1:2) and the mausoleum of Qijmas al-Ishaqi (Pls. 30-8:11).

3. Side Panels

A new trend of having relatively large side panels is a characteristic of the third phase. We find this trend in the mausoleum of Qaytbay at the, the sahn of the mosque of Qaytbay at Qal'at al-Kabsh, the west and qibla iwans of the madrasa of Abu Bakr Muzhir, the qibla iwan of the madrasa of Qijmas al-Ishaqi and the qibla and west iwan of the madrasa of al-Ghuri (Fig. 29-1, 30-1, 35-1).

Corner panels exhibit the now standard **octagons and triangles design** that was developed in the dikka in the entrance of the mosque of Qadi Yahya Zin al-Din (Pl. 24-1). This panels developed in the mosque of Azbak al-Yusifi (Pls. 32-6:7). It is worth noting the use of that design in a large area of the sahn of the madrasa al-Zahiriyya in Aleppo that dates as early 1216.¹⁵ If this is original, then it must have inspired the designers of the marble paving of this phase.

4. Borders

Compound and cartouche borders are the common patterns used in the borders. No real innovations were introduced in the borders of the third phase. The exceptions are those used at the qibla iwan of the madrasa of Qaytbay (Pls. 26-6:7) and at the west iwan of Abu Bakr Muzhir (Pl. 29-20:22). A really **advanced S-shaped border**, which alternates with eight pointed-stars (Pl. 34-19), is a modification of the S-shaped border.

The **8-shape borders** is the only innovation in the borders and was used in the sahn of Abu Bakr Muzhir (Pl. 29-7:9), and in one of the window bays of the mausoleum of al-Ghuri (Pl. 34-16).

B.3.3. Color Scheme

This phase is characterized by the use of formal colors rather than striking ones. We find that monochrome marble paving covered large

¹⁵ See catalog no. 36; Tabbaa, *Constructions of Power*, Figs. 121-122.

areas in most buildings, even if they had colorful panels on the same floor. This is a characteristic of most monuments of this phase. The only exception to this rule is the madrasa of Abu Bakr Muzhir with its overall colorful marble paving,¹⁶ the sabil of al-Ghuri , and the qibla and west iwans of the madrasa of al-Ghuri.

B.3.4. Execution Techniques

The complexity of the designs shows the perfection in the execution techniques. All the marble paving are mainly executed in either the juxtaposition technique or in the marble mosaic technique. The former was the most widely used technique, but the latter was used only a little less frequently.¹⁷

¹⁶ Recalling the previous phase.

¹⁷ The sabil of al-Ghuri is an excellent example for the use of such technique (Pl. 34-21).

Conclusion

The main purpose of this research was to compile a descriptive account of a major design element in the Mamluk period so as to provide the basis for analysis that may facilitate the comprehension of the complexities of styles and designs used by Mamluk artists.

The descriptive listing included in chapter two and the visual illustrations compiled in this respect supply the basic data needed by scholars and specialists wishing to examine in further detail the structures referred to.

The overview of the artistic traits of Mamluk marble floors, as contained in chapter three, is aimed to provide a macro-analytical method, a mental tool to approach and understand the process of progress and change in the entire Mamluk era. One has to remember, however, that all historic divisions are inherently arbitrary. The three phases I have proposed for the study of the Mamluk period are no exception. There are elements of continuity as well as discontinuity in each phase, but I have based the identification of the three phases on as much objective ground as the nature of artistic and historical judgement allows.

One interesting aspect of Mamluk marble work is how the scarcity of the material affected its use. Marble was never quarried or imported during the first six centuries of the Islamic conquest of Egypt. The rich

and powerful, therefore, had to reuse marble of earlier buildings, especially columns, even if they had to demolish these buildings. This practice was at first limited to pre-Islamic structures but in Mamluk times it extended to contemporary buildings as well.

By studying the spaces paved with marble in a building, the style of design, the color scheme and the execution techniques, and by compiling available historical evidence, we were able to pass judgement on which marble pavings are original and which may not be.

An important observation is that this study helps to illustrate how the use of marble became more diversified with time, with ornamentation purposes competing increasingly with the logical uses of such ornamentation. The number of spaces, in a single building, which had marble paving began to increase in the thirteenth century. This trend continued unabated in the buildings commissioned by emirs and sultans whose interest in ornamentation overruled considerations of functionality along with economy and scarcity. Examples of the increase of the overall use of marble floors can be seen in the buildings of Barquq, Barsbay, Qaytbay, Abu Bakr Muzhir and al-Ghuri.

The intricacy of design also underwent considerable change. In the first and third phases, patterns used on the floors were usually less intricate than those of the walls and mihrabs. The floors of the second phase, in

contrast, are more articulate than those of the walls and sometimes even of the mihrabs.

Stylistic maturity is another aspect of Mamluk floor art that witnessed marked change throughout the period of study. Although all phases introduced design innovations, the frequency of these innovations decreased with time as designers turned their attention to the refinement of earlier innovations. This become particularly clear in the third phase where innovations are kept at a minimum while refinements of earlier designs reaches a peak of artistry. Also, the marble designs used during the second phase are more colorful than those used in the first and third phases.

The complexity of design in the second phase may explain why a significant portion of the marble floors of this phase were lost. As floors aged with time, restorers may have found it difficult to restore such intricate designs.

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Marble Paving in Mamluk Cairo

CATALOG

**Marble Paving in Mamluk Cairo
CATALOG**

[I] Lists & Tables

List of Mamluk Buildings in Cairo
Extent Marble Pavings or Their Available Drawings
List (A)

Building	Date	Index #	Status
Bahri Mamluks			
1. Complex of Sultan Qalawun	1284-85	43	O
2. Complex of Sultan Baybars a-Jashankir	1309-10	32	O
3. Mosque of Al Malik al-Jukandar	1319	24	L/Dr
4. Mosque of Aslam al-Silahdar	1344-45	112	O
5. Mosque of Shaykhu	1349	147	O
6. Khanqah of Shaykhu	1355	152	O
7. Madrasa & Mausoleum of Amir Sarghatnish	1356	218	O
8. Madrasa of Tatar al-Hijaziyya	1348-60	36	O/M
9. Complex of Sultan Hasan	1356-62	133	O
10. Madrasa of Mithqal	1361-62	45	O/M
Circassian Mamluks			
1. Complex of Sultan Barquq	1384-86	187	O
2. Madrasa of Mahmud al-Ustadar	1395	117	R/Ph
3. Mamluk qa'a	14 th C.	----	O
4. Complex of Sultan Farag b. Barquq (mausoleums)	1400-11	149	O
5. Madrasa of Gamal al-Din Ustadar	1408	35	O
6. Mosque of Mu'ayyad Shaikh	1415-20	190	O
7. Al-Fakhriyyah madrasa (Masjid al-Banat)	1418	184	R/Ph + ?
8. Madrasa of Qadi 'Abd al-Basit	1420	60	O+L/Dr
9. Al-Madrasa al-Ashrafiyyah	1425	175	O+?
10. Ganibay mosque	1426-27	119	O
11. Madrasa of Jawhar al-Lala	1430	134	O+L
12. Complex of Sultan al-Ashraf Barsbay	1432	121	O
13. Al-Jawhariyyah madrasa at al-Azhar mosque	1440	97	O
14. Madrasa of Taghri Bardi	1440	209	L/Dr
15. Mosque of Qadi Yahia Zin al-Din	1444	182	O+L
16. Mosque of Timraz al-Ahmadi (Bahlul)	1472	216	O
17. Complex of Qaytbay at Northern Cemetery	1472-74	99	O
18. Mosque of Qaytbay	1475	223	O+L
19. Dome of Amir Yashbak	1477-78	----	O
20. Madrasa of Abu Bakr Muzhir	1479-80	49	O
21. Madrasa of Qijmas al-Ishaqi	1480-81	114	O
22. Mosque of Sultan Abu al-'Illa	1485	340	L/Dr
23. Madrasa of Azbak al-Yusifi	1494-95	211	O
24. Mausoleum of Tarabay al-Sharifi	1503-04	255	L/Dr
25. Complex of al-Sultan al-Ghuri	1504-05	65	O
26. Madrasa of al-Sultan al-Ghuri	1504-05	189	O

Legend

O	Original marble pavings
R/Ph	Undergoing restoration but we have earlier photos
M	Slight modifications when compared to earlier drawings or photos
L	Lost part of its marble pavings
L/Dr	Lost its marble pavings but we have earlier drawings
L/Ds	Lost its marble pavings but we have earlier descriptions
?	Not clear if the marble pavings are original or a later addition

List of Mamluk Buildings in Cairo
Now-Lost Marble Pavings
No Available Drawings
List (B)

Building	Date	Index #	Status
Barid Mamluks			
Madrasa of Amir Taybars at al-Azhar mosque	1309-10	97	L/Ds
Madrasa of Amir Aqbugha at al-Azhar mosque	1309-10	97	L
Mosque of al-Nasir Muhammad	1335	143	L
Madrasa of Umm al-Sultan Sha'ban	1368-69	125	L
Qasbi Mamluks			
Zawyah & sabil of Sultan Faraj b. Barquq	1408	203	L
Madrasa of Qaraquga al-Hasani	1441-2	206	L
Khanqah of Sultan Inal	1451-6	158	L
Mosque of Shaikh Madyan	1465	82	L
Complex of Qurqunas	1506-7	162	L

List of Mamluk Buildings in Cairo
Suspected Marble Pavings
No Available Drawings or Descriptions
List (C)

Building	Date	Index #	Status
Barid Mamluks			
Mosque of al-Zahir Baybars	1266-9	1	S
Mosque of Ulmas al-Hajib	1329-30	130	S
Mosque of Bishtak	1336	205	S
Madrasa of al-Ashraf Sha'ban (Now not extant)	1377	Sawwa	S

Legend	
L	Lost its marble pavings
L/Ds	Lost its marble pavings but we have earlier descriptions
S	Suspected to have had marble pavings

**Tabulation of Patterns
Used in
Marble Paving of the Mamluks
[Table #1]**

PATTERNS	PHASE ONE 1250-1400	PHASE TWO 1400-1472	PHASE THREE 1472-1516
-----------------	--------------------------------	--------------------------------	----------------------------------

Panels

Simple geometric	***	***	**
Mihrab shape	***	**	*
Octagons/Hexagons	***	**	***
Gear-shape roundel	**	*****	*
Medallion	**	***	**
Zigzag/unequal width	**	**	**
Zigzag/acute angled/unequal width	*	**	***
Zigzag/equal width	**	**	*****
Zigzag/acute angled/equal width	*	**	***
Y-shape	*	**	*
Y-shape/acute angled	*	*	**
Mafrughah	**	**	*
Sun-shape	**	*	*
Arabesque	*	*****	**
Multi-tier Roundel	*	***	*****

Borders

Plain linear border	***	**	**
Simple geometric border	***	***	**
Zigzag border	*	*	**
S-shape border	**	*****	***
S-shape/compound border	*	***	*****
Y-shape border	**	***	*
Cartouche border	***	***	***
Cartouche border/compound	*	*****	***
Braided border	*	***	***
Roundel/medallion Border	***	***	***
Split arrow	****	**	*****

Legend

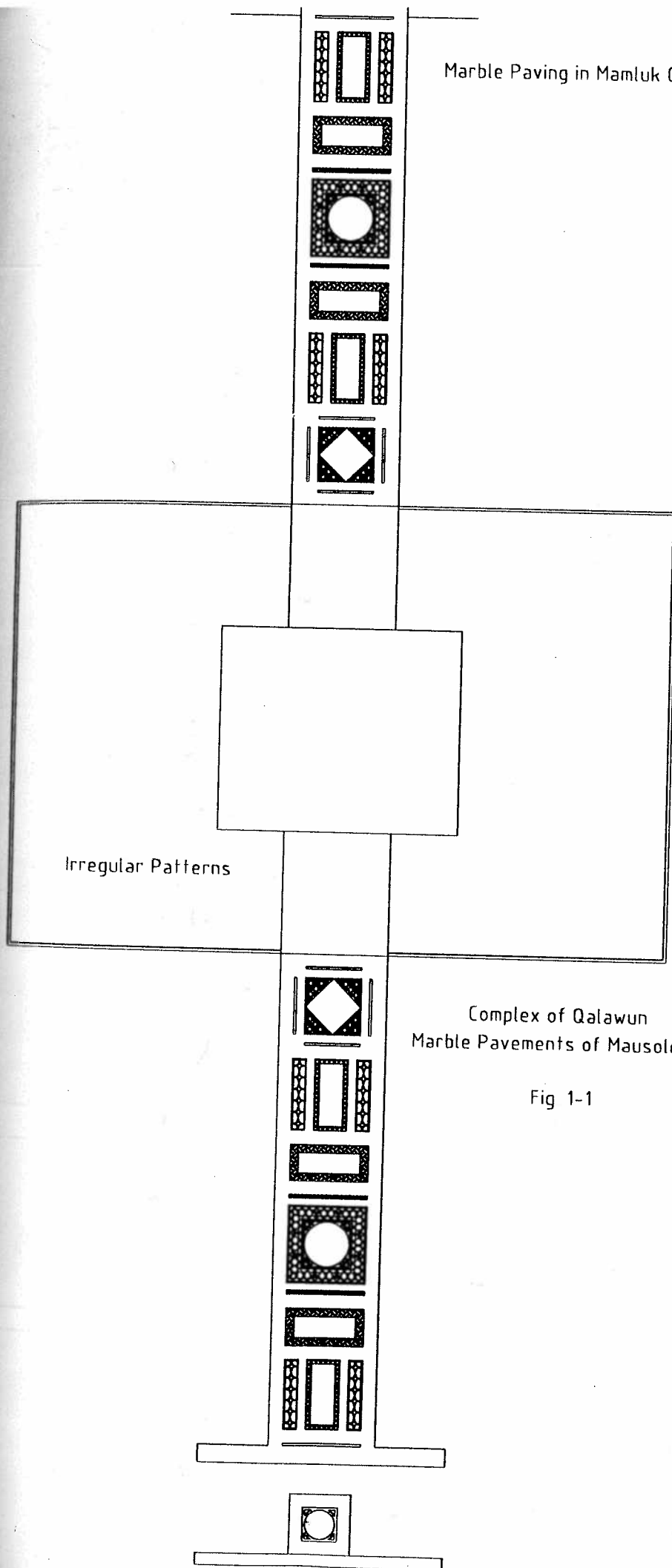
SYMBOL	
*	Not used in the phase
**	Rarely used in the phase
***	Commonly used in the phase
****	A dominating pattern in this phase

Marble Paving in Mamluk Cairo
CATALOG

[II] Figures

Figures are marked as follows: "Building's catalog #-Figure #"
e.g. 9-1 is figure #1 in building #9 which is Complex of Sultan Hasan

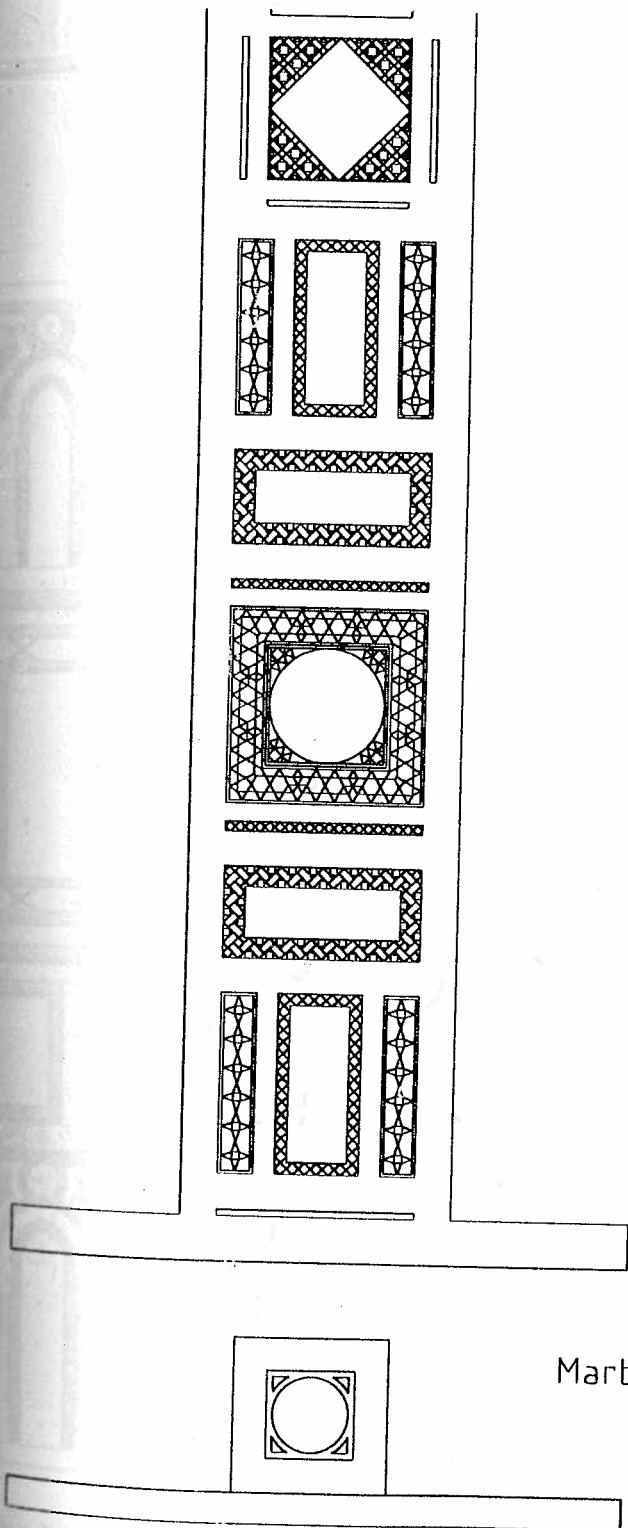
Marble Paving in Mamluk Cairo



Complex of Qalawun
Marble Pavements of Mausoleum

Fig 1-1

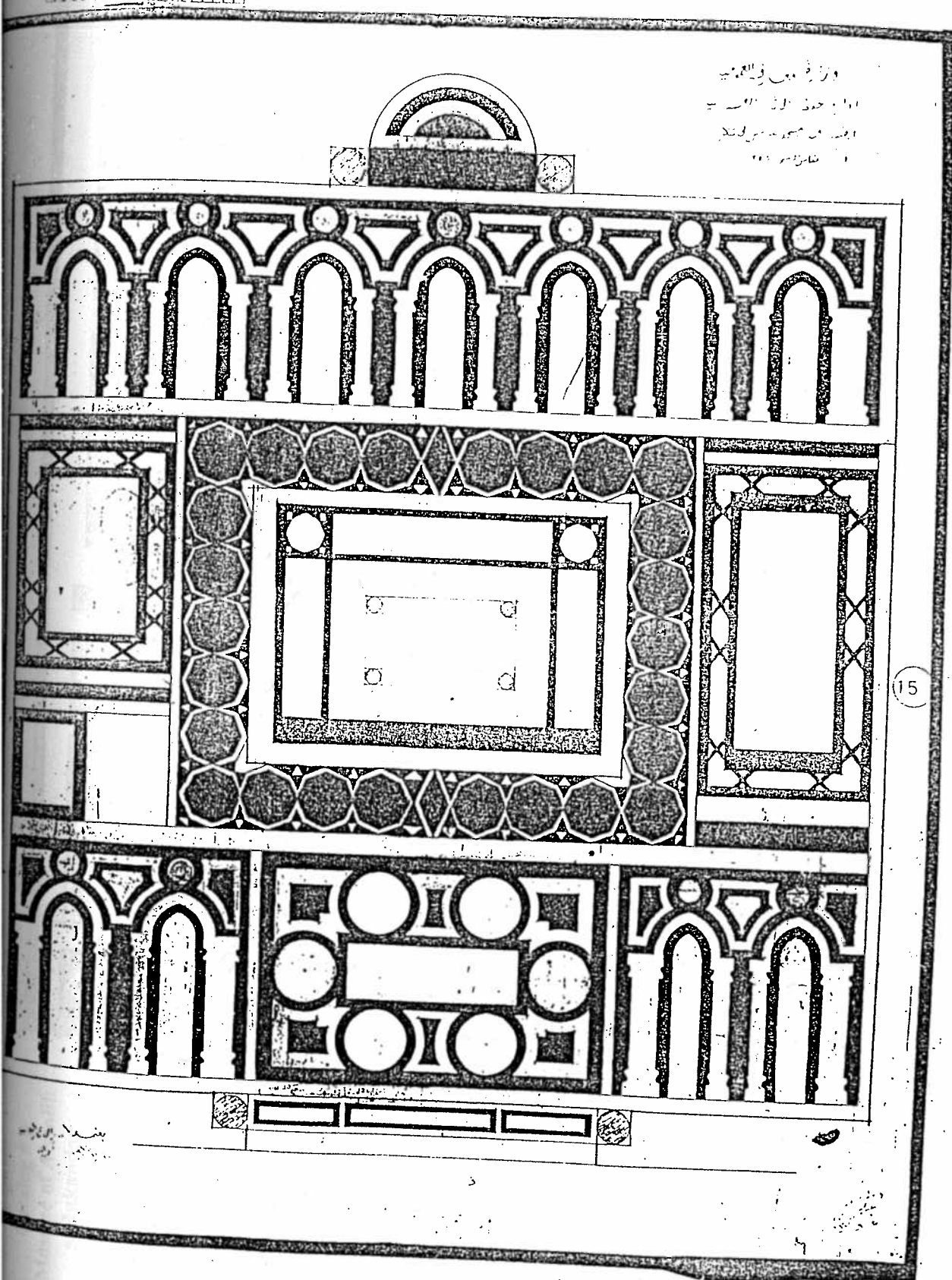
Marble Paving in Mamluk Cairo



Complex of Qalawun
Marble Pavements of Mausoleum

Fig. 1-2

Fig. 2-1 (1940)



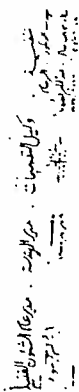


Fig. 3-1 (1972)

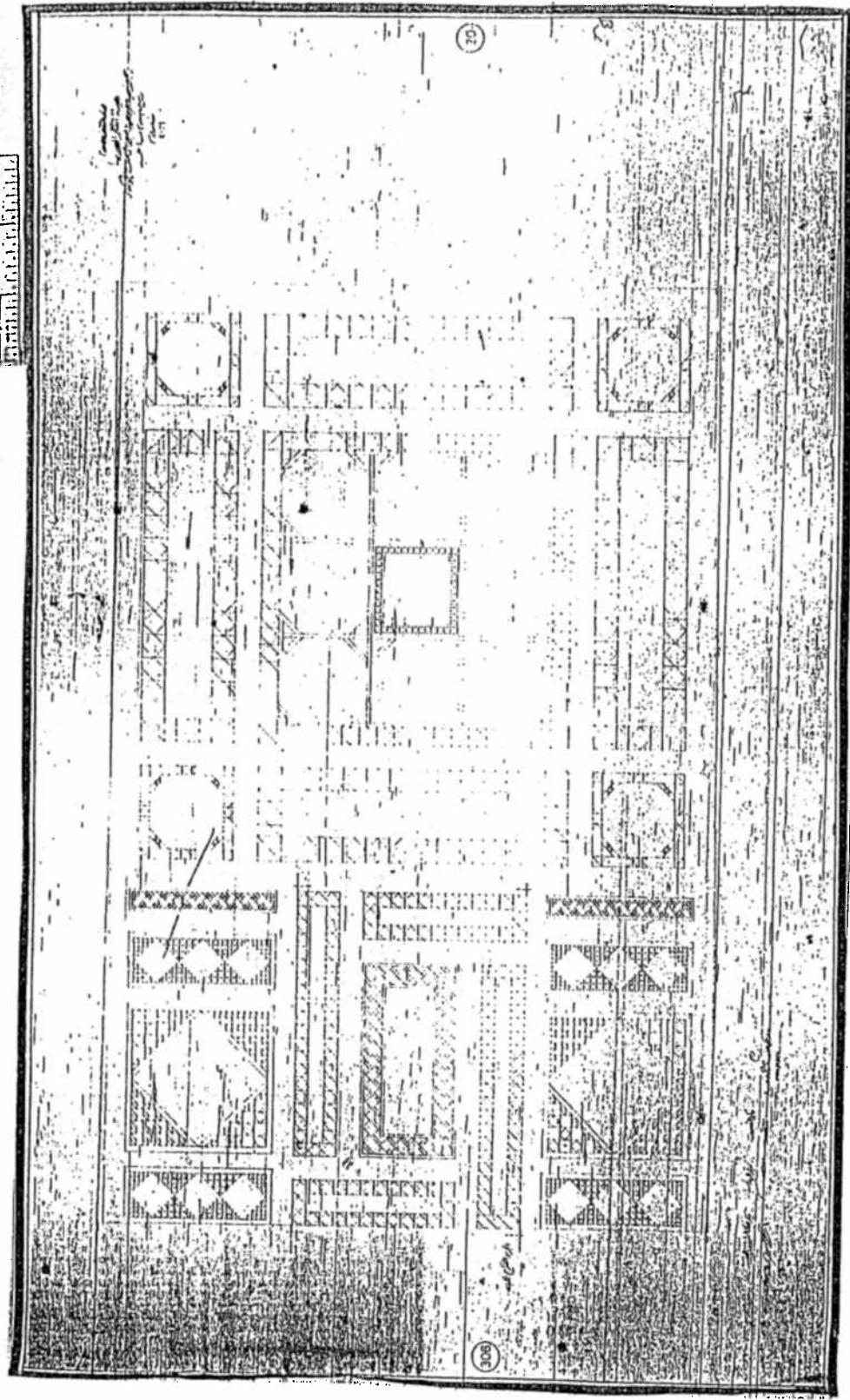
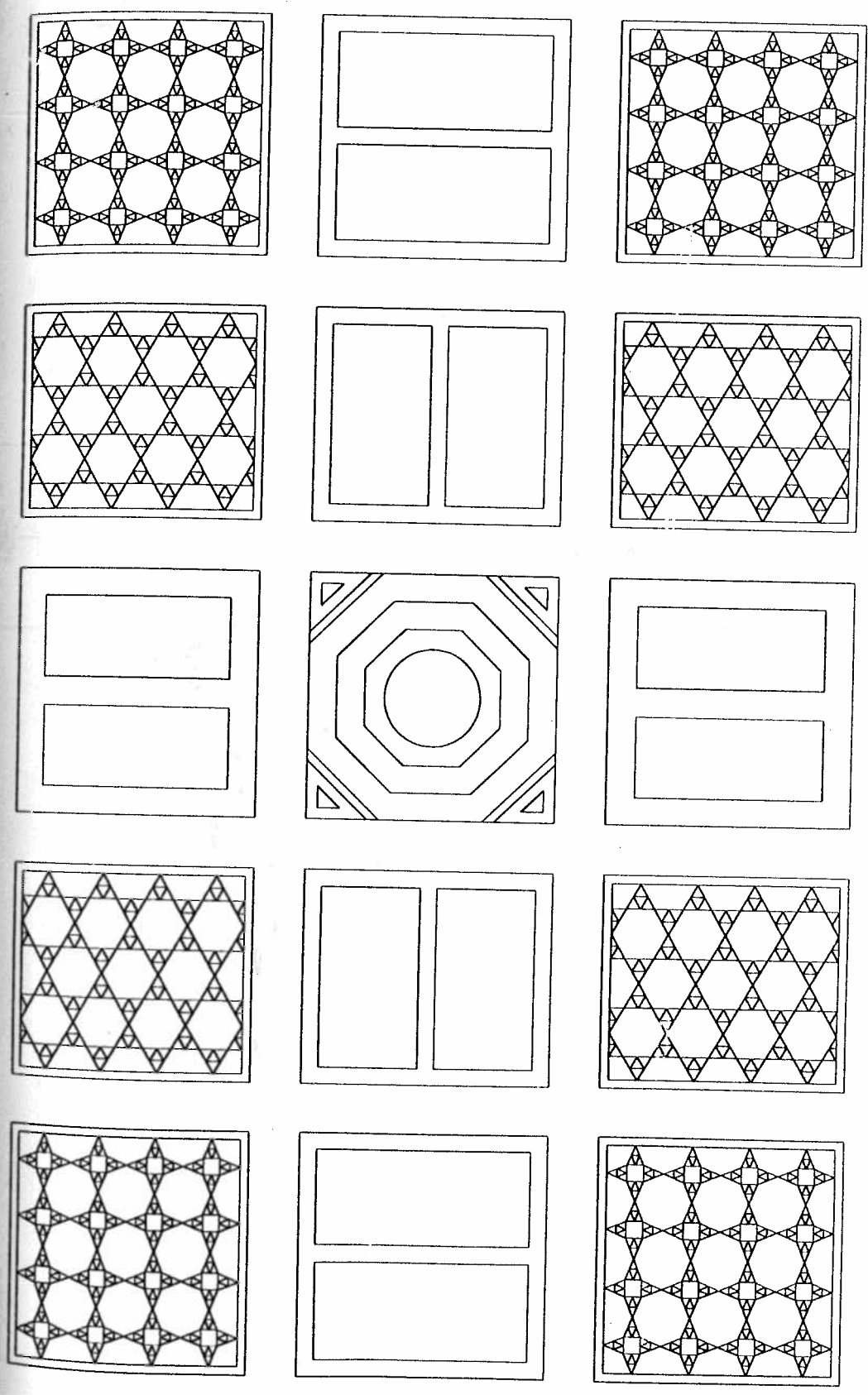


Fig. 3-2 (1972)



Mosque of Shaykhu
Marble Pavements of Sahn
Fig 5-1

سازمان اسناد و کتابخانه ملی
جمهوری اسلامی ایران

وزارت فرهنگ و ارشاد اسلامی
جمهوری اسلامی ایران

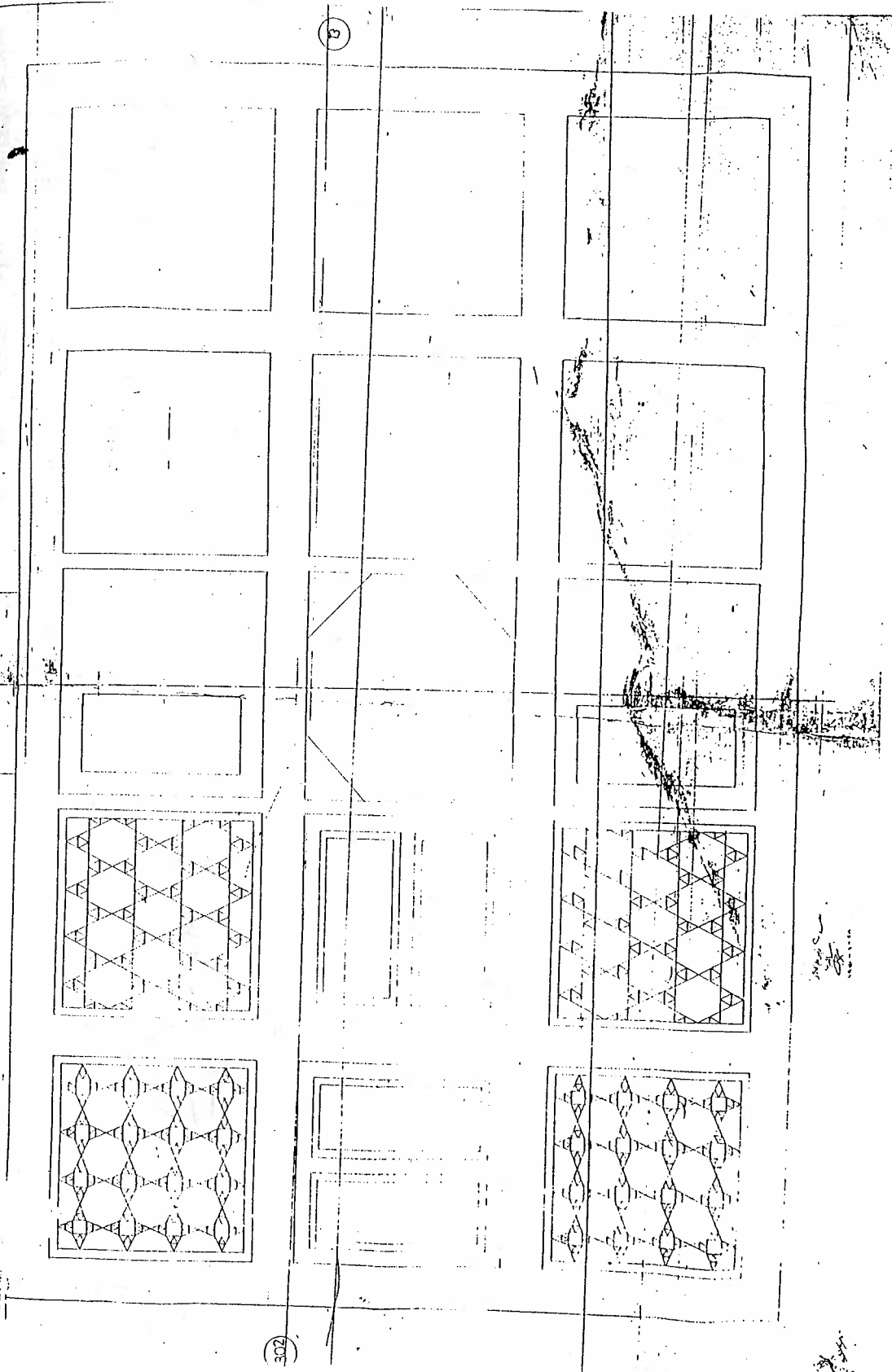


Fig. 5-2 (1930)

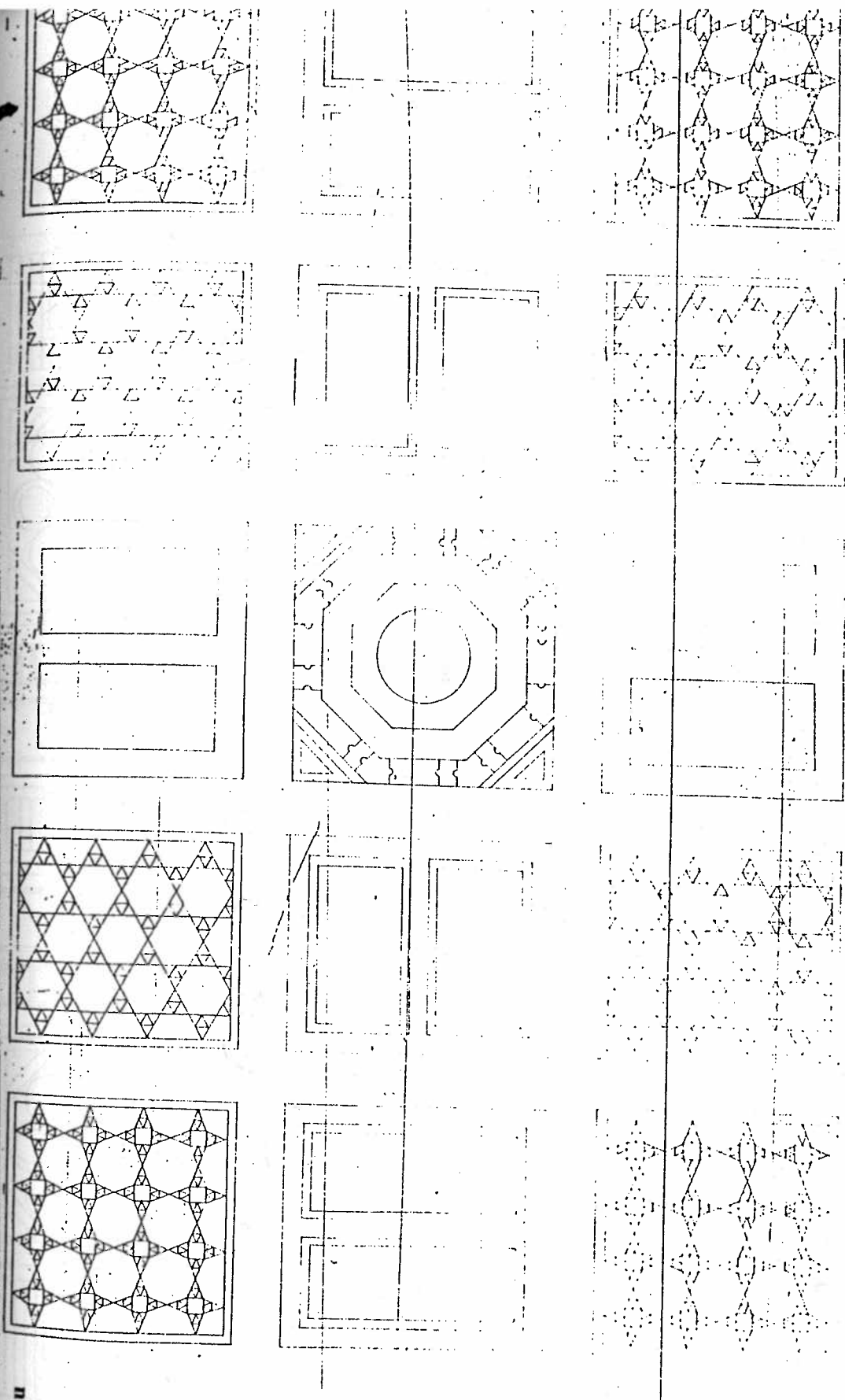
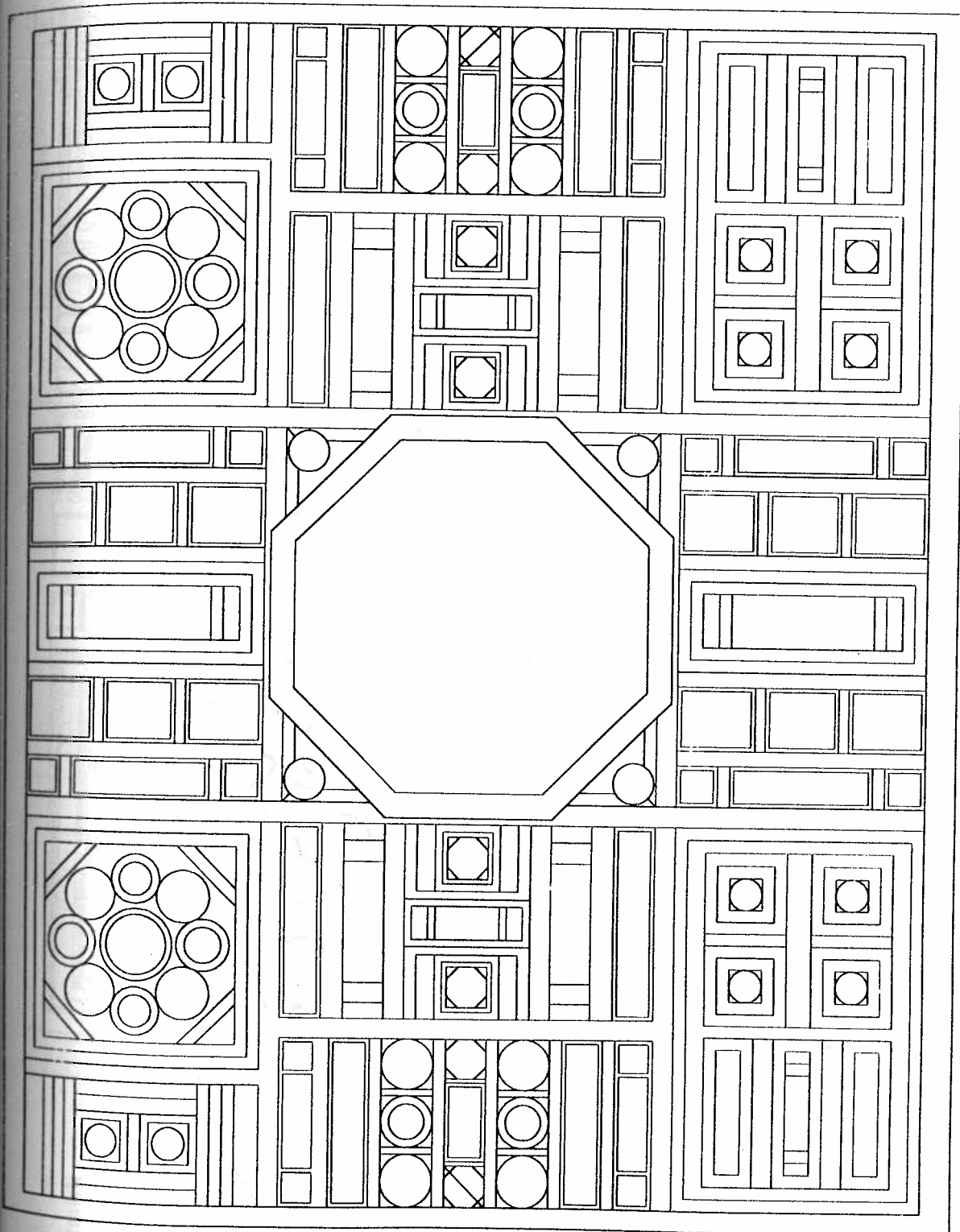


Fig. 5-3



Madrasa of Sargharmish
Sahn
Fig 7-1

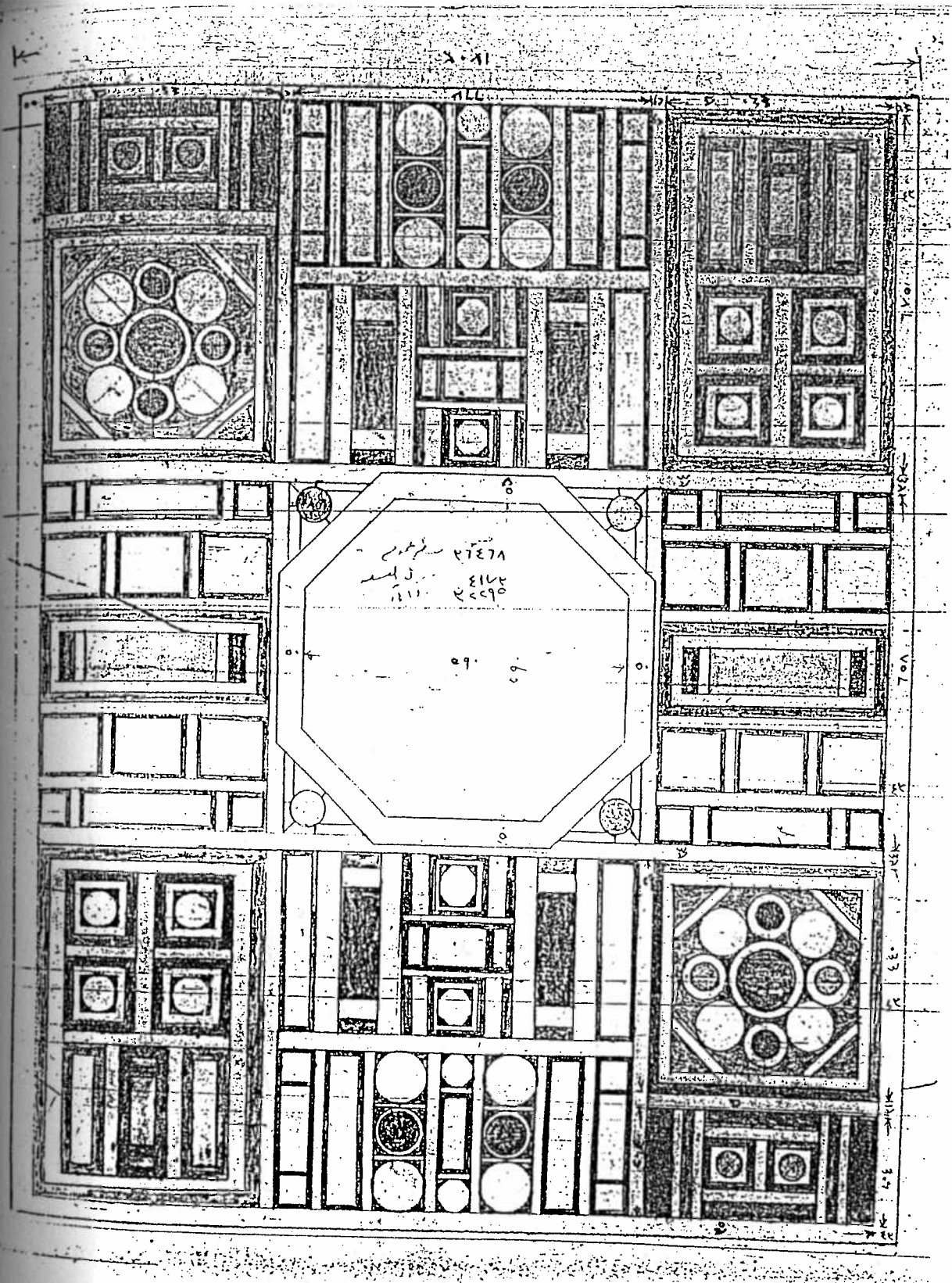


Fig. 7-2 (1979)

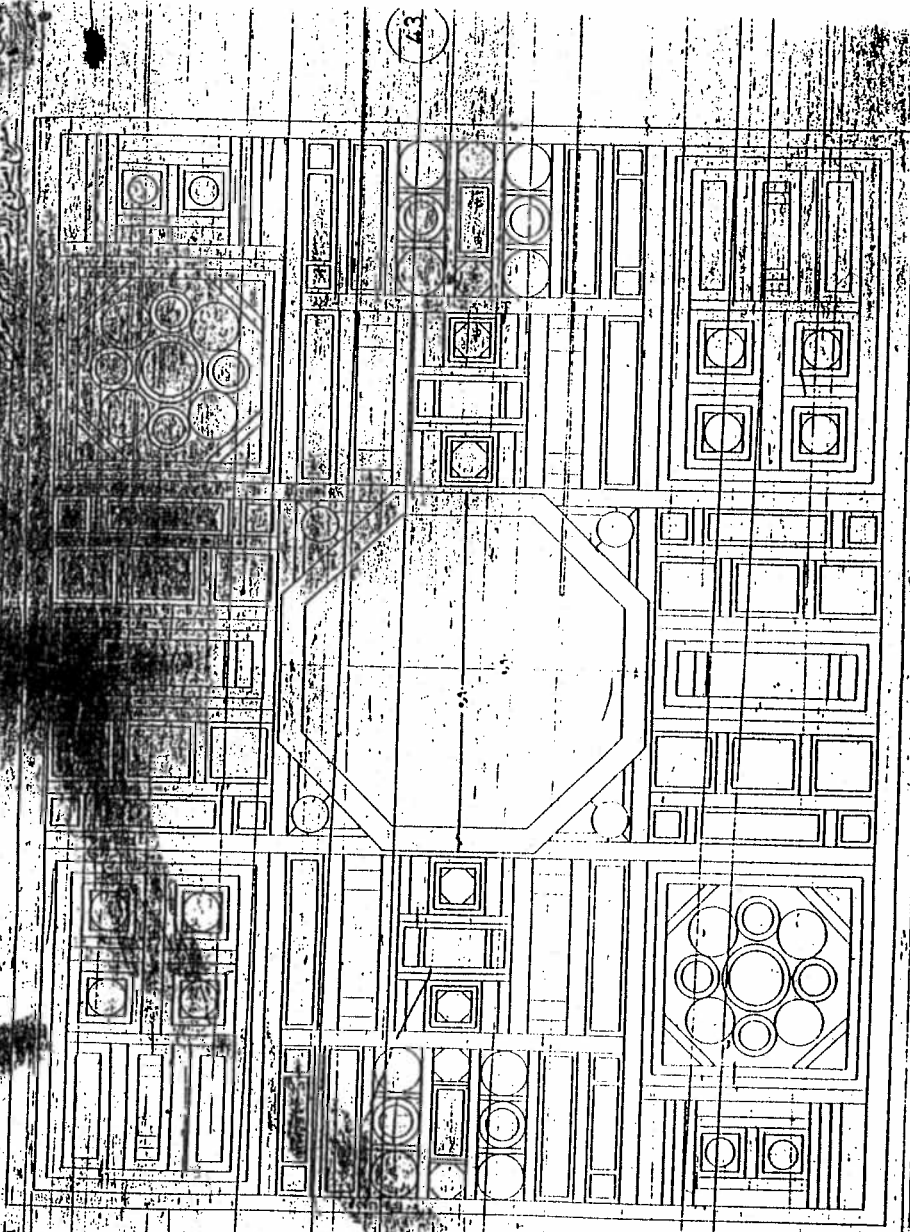
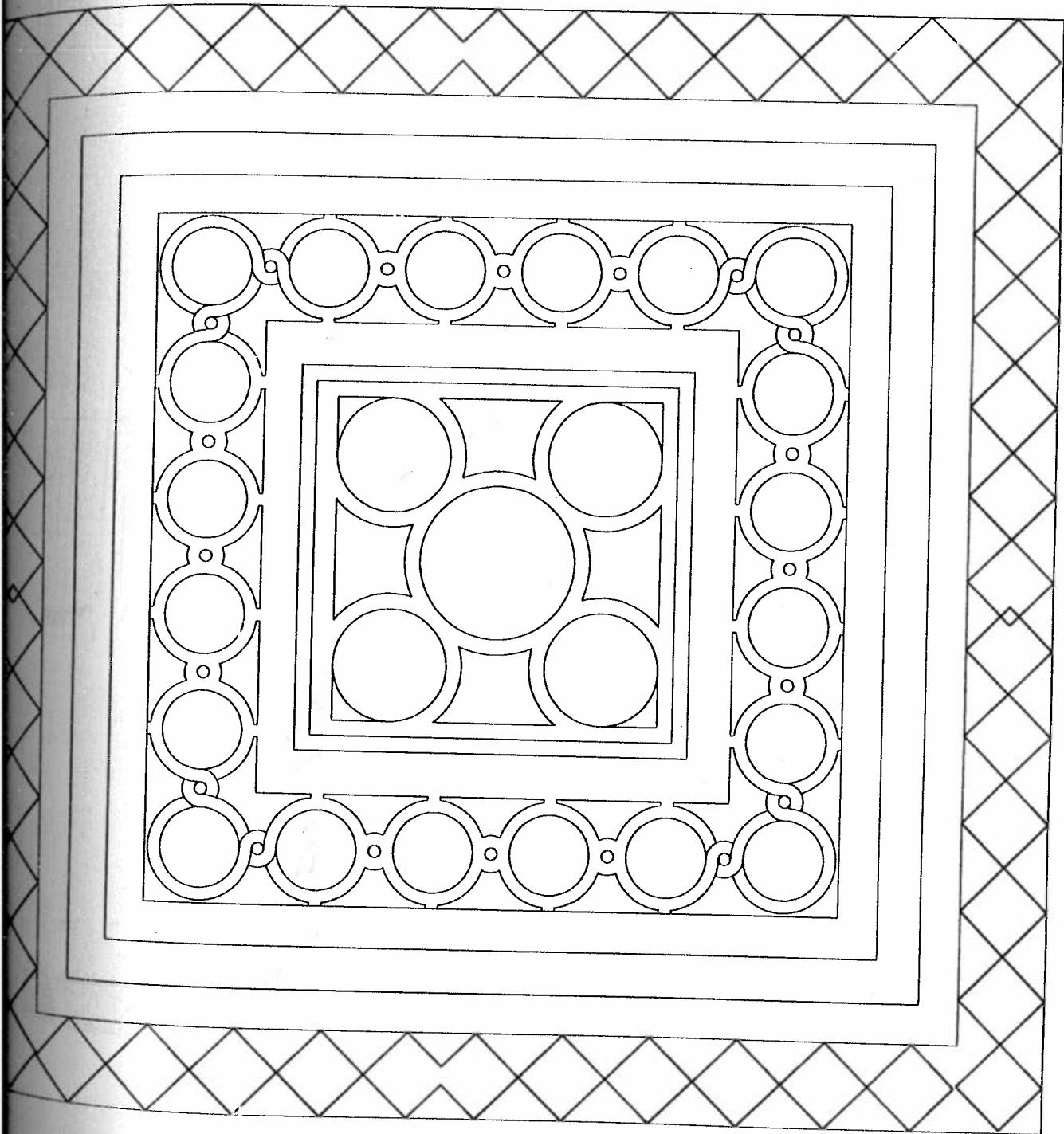


Fig. 7-3



Mausoleum of Sarghatmish
Marble Pavements of Floor

Fig. 7-4
Incomplete

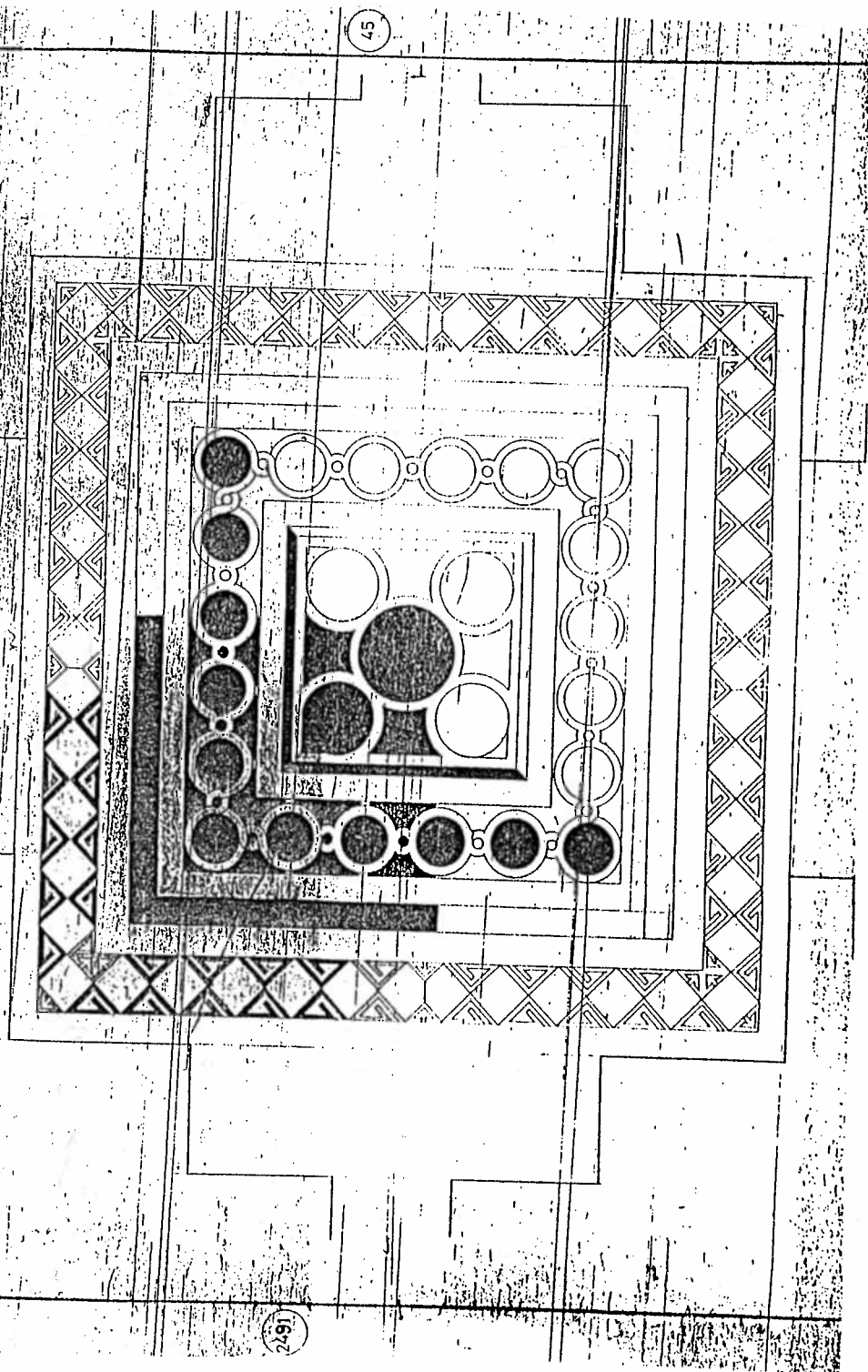


Fig. 7-5

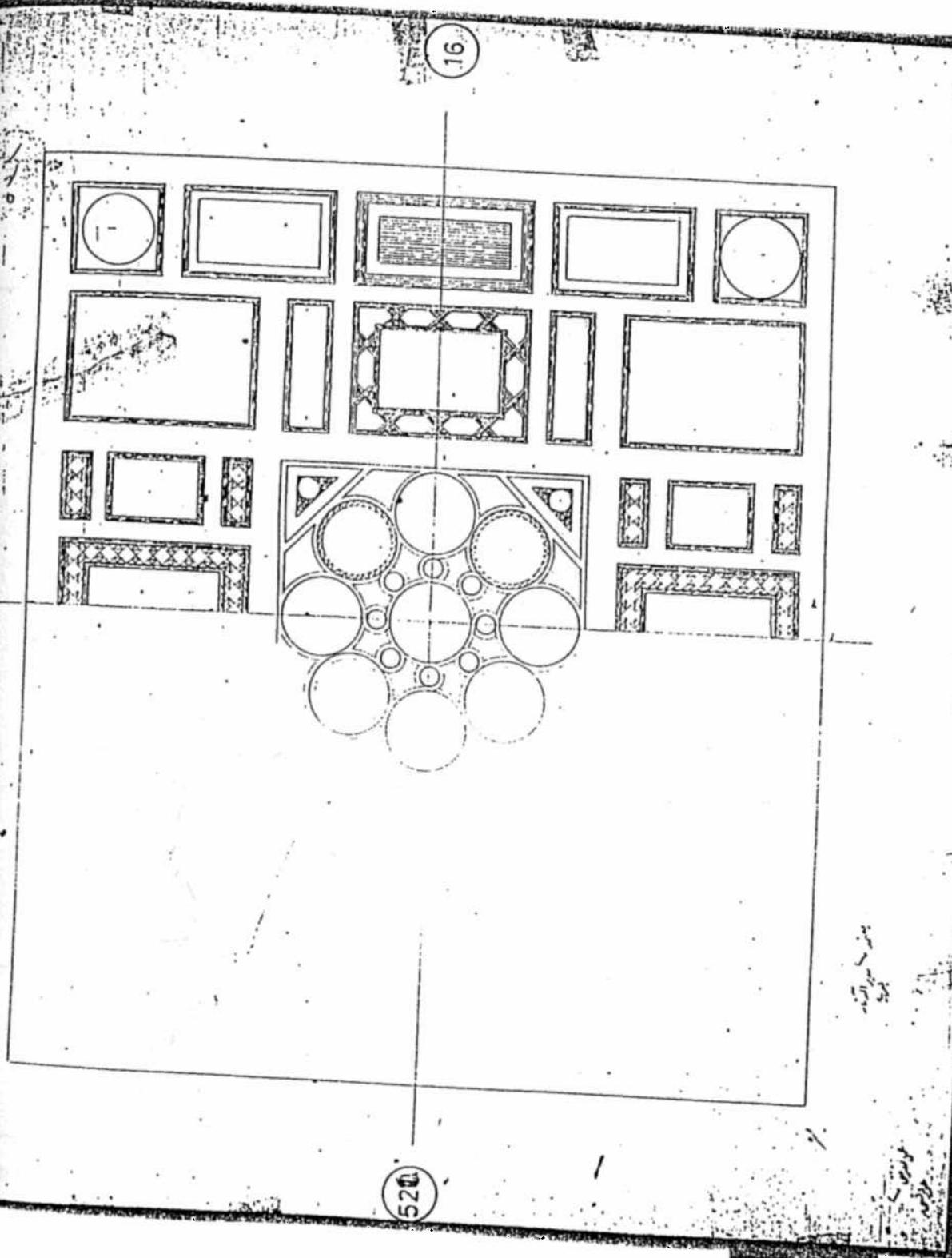
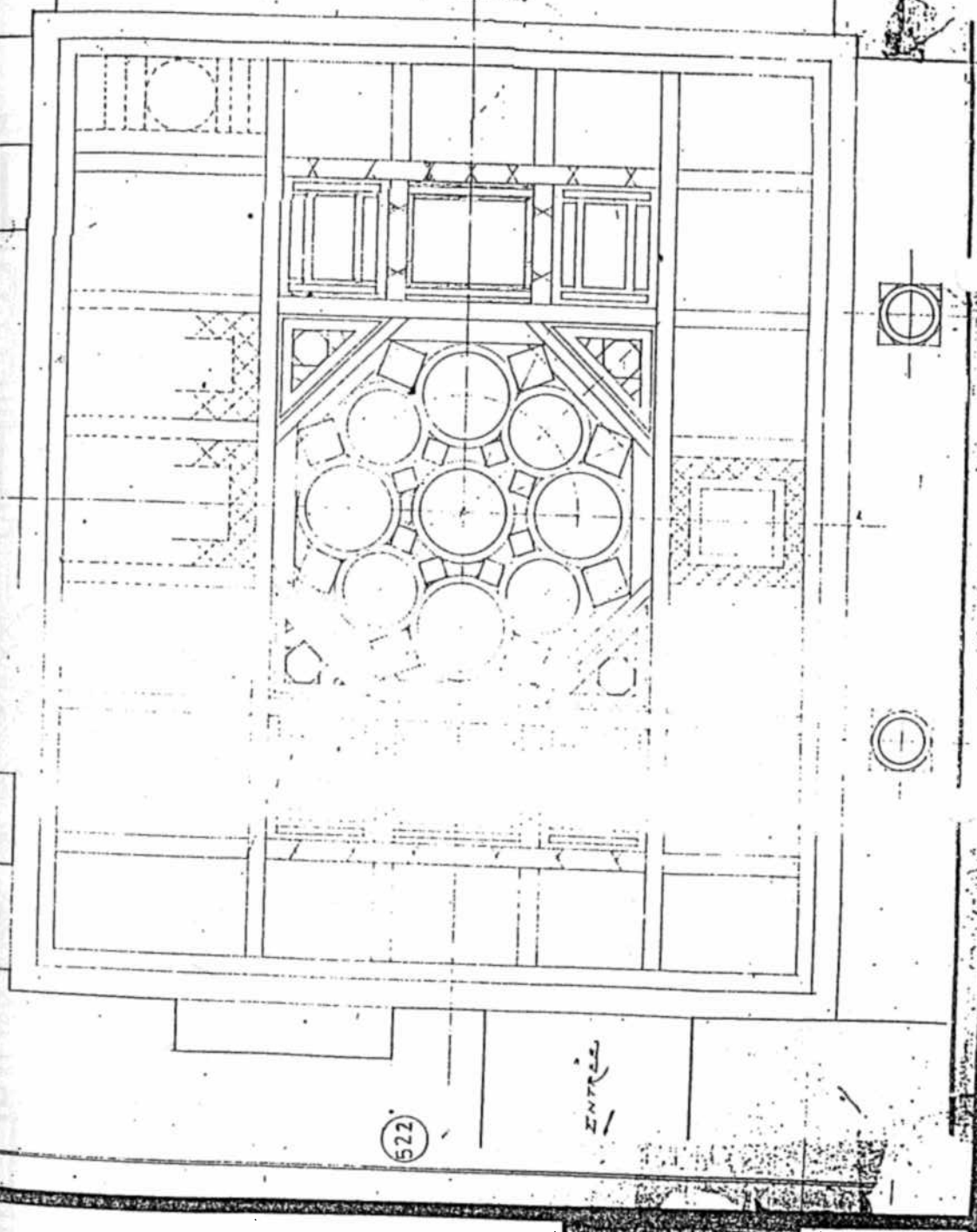


Fig. 8-1



522

Fig. 8-2 (1911)

Fig. 9-1

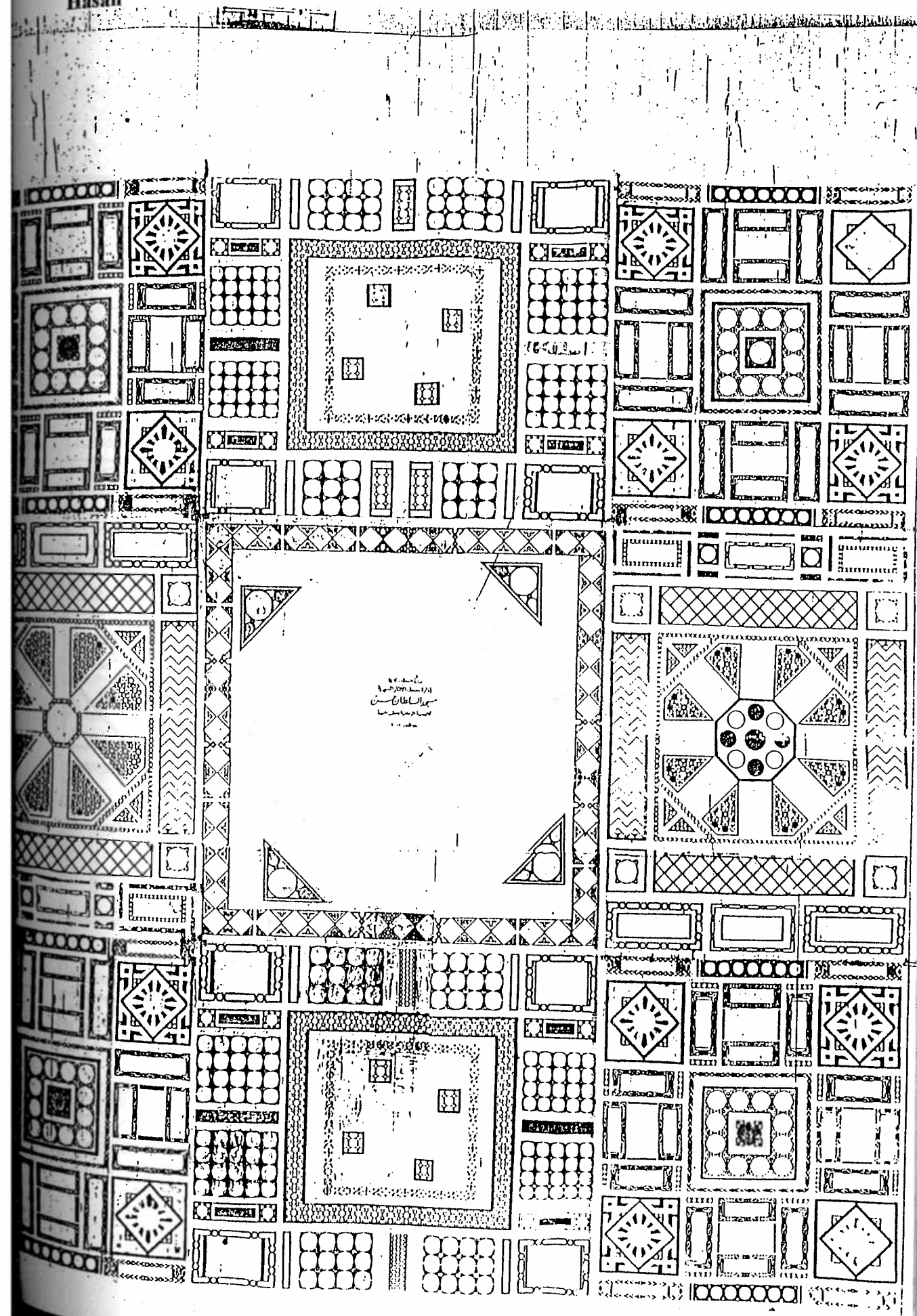


Fig. 9-2

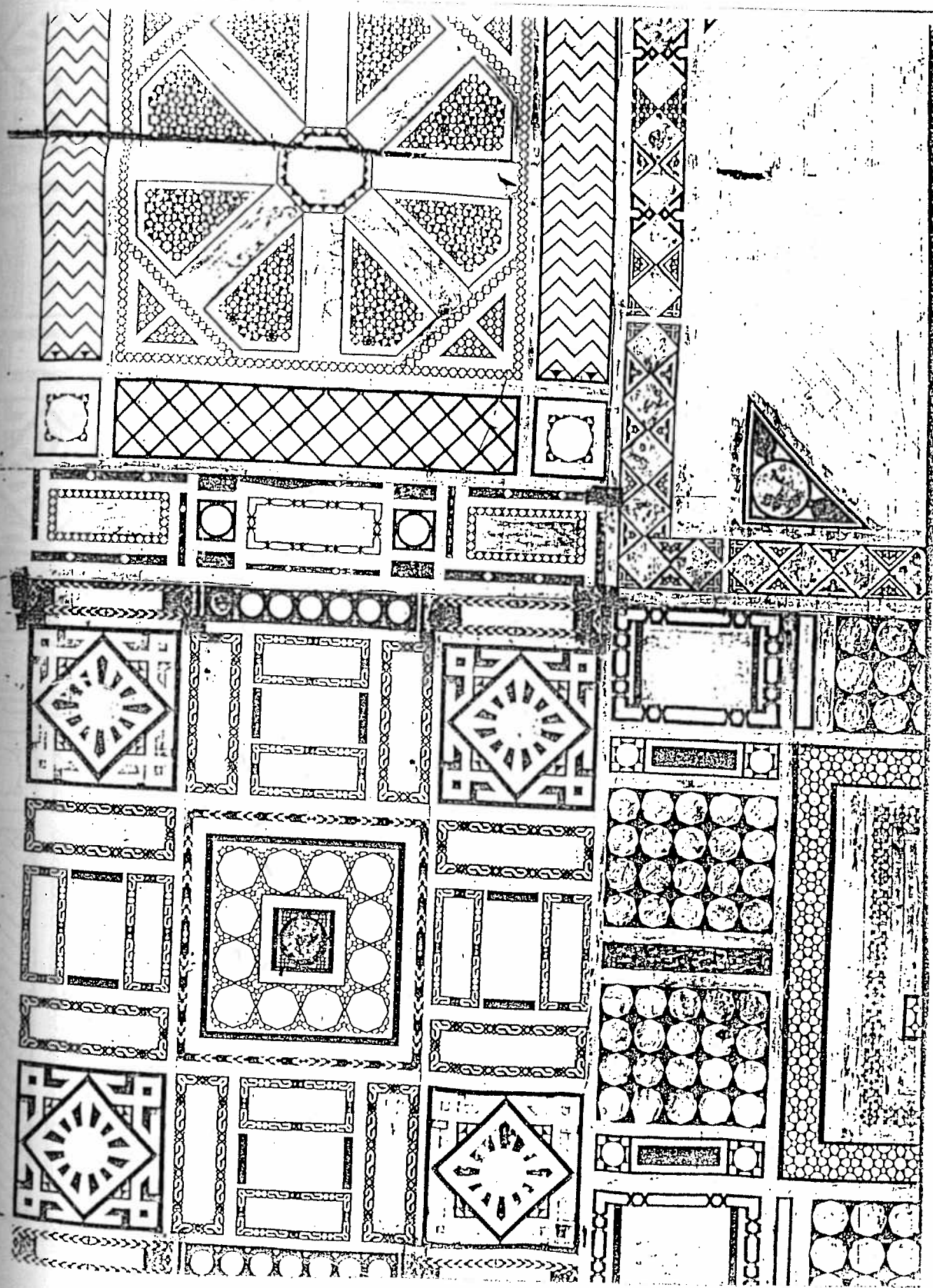


Fig. 9-3

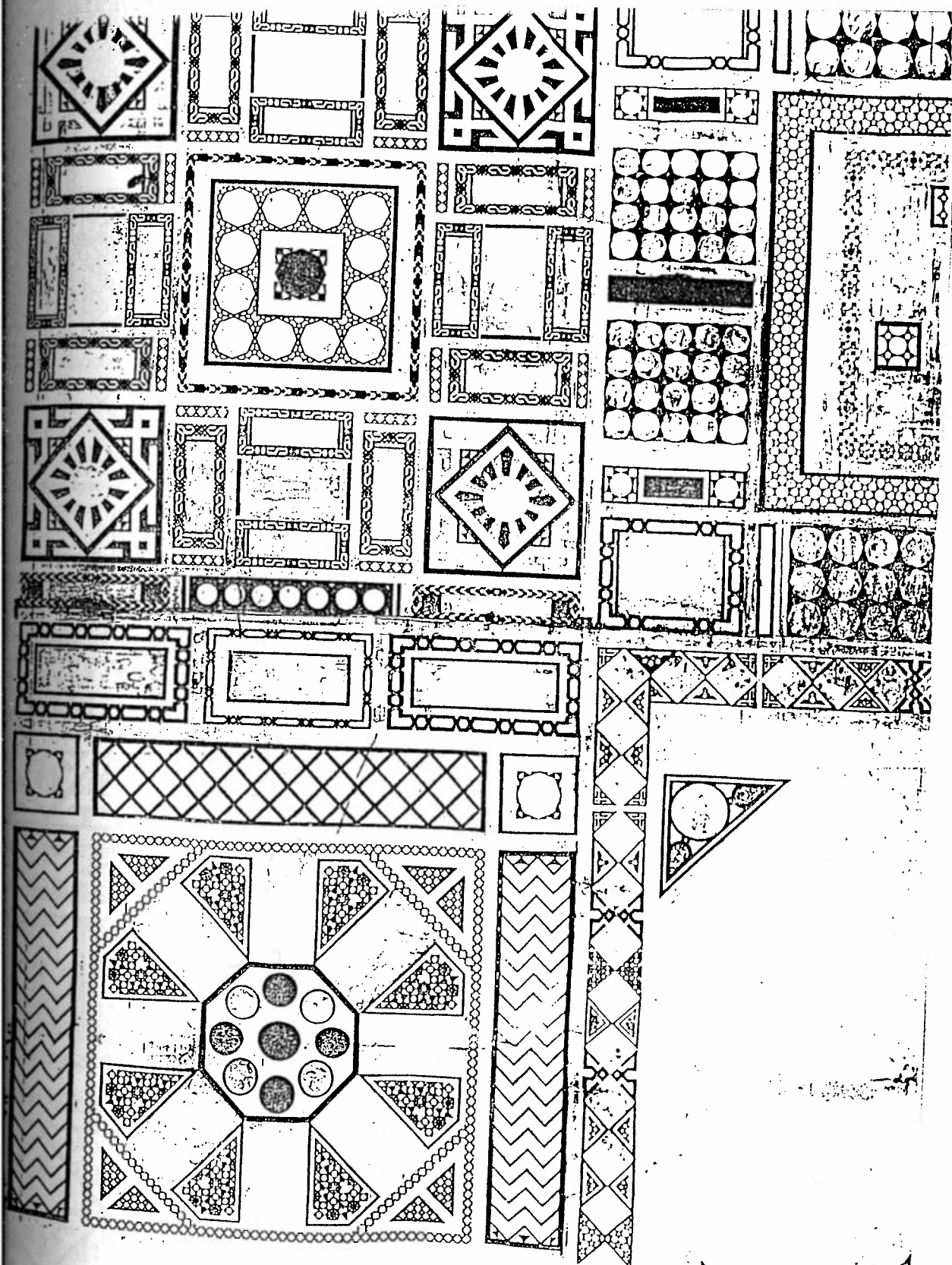


Fig. 9-4

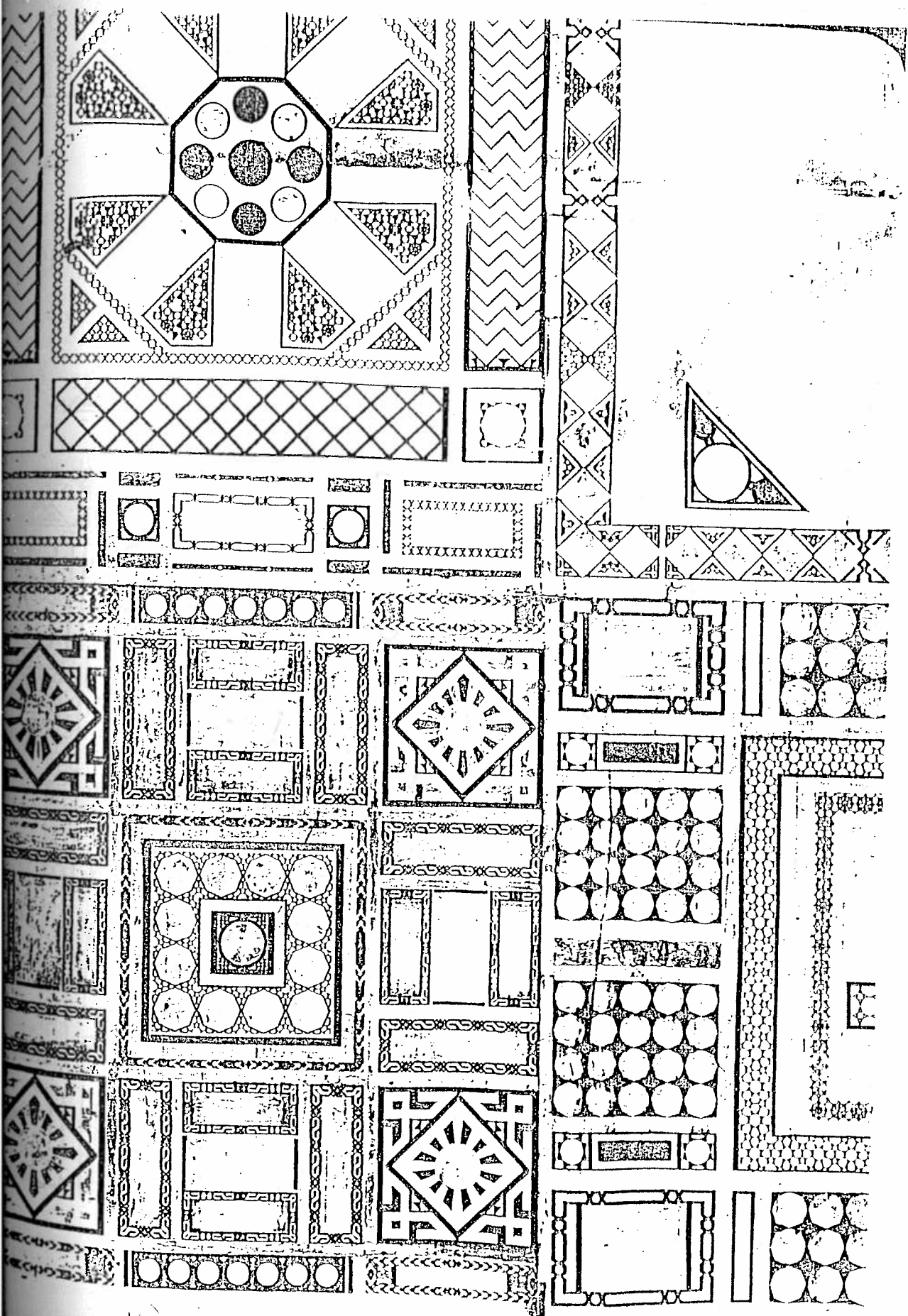
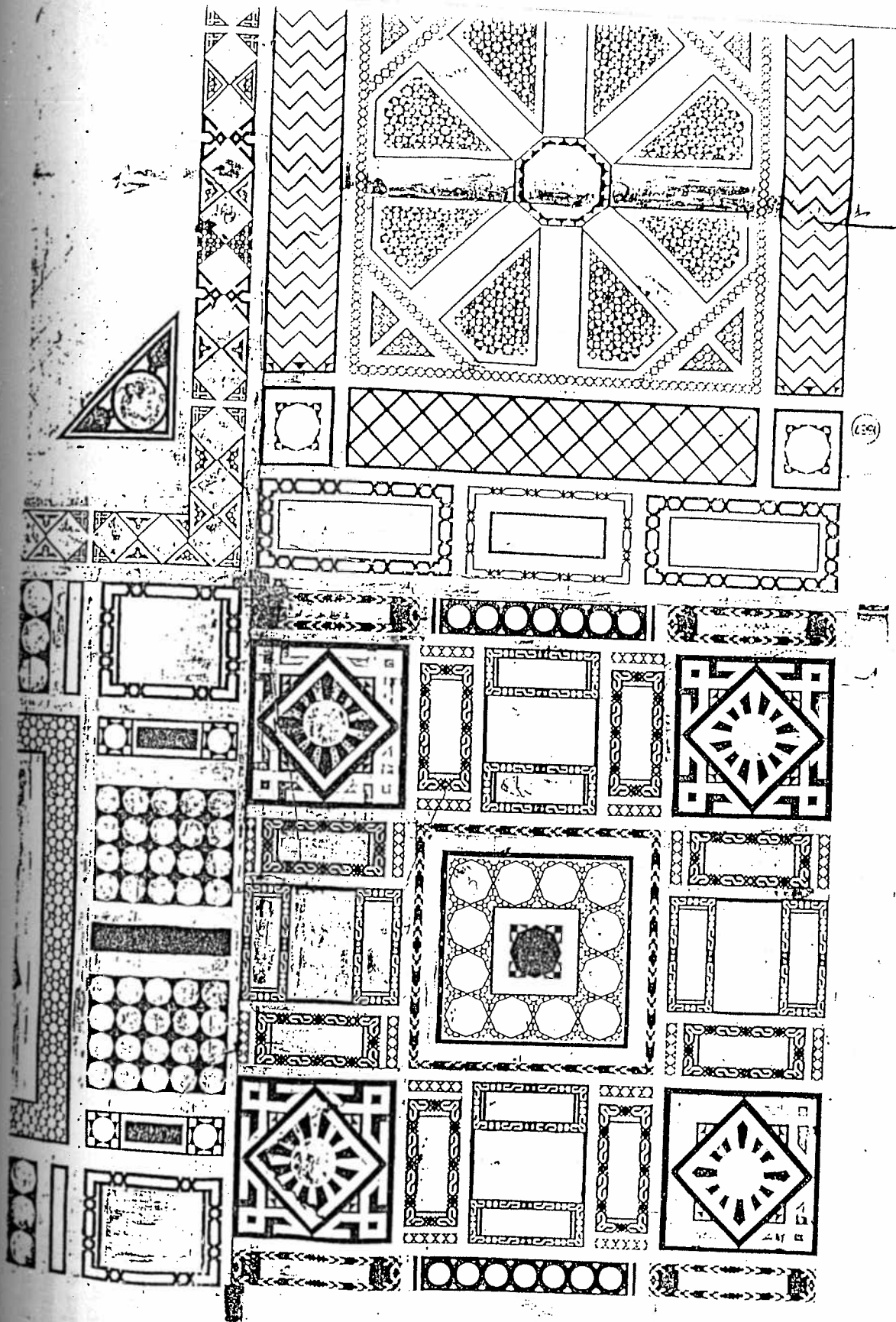


Fig 9-4

Fig. 9-5



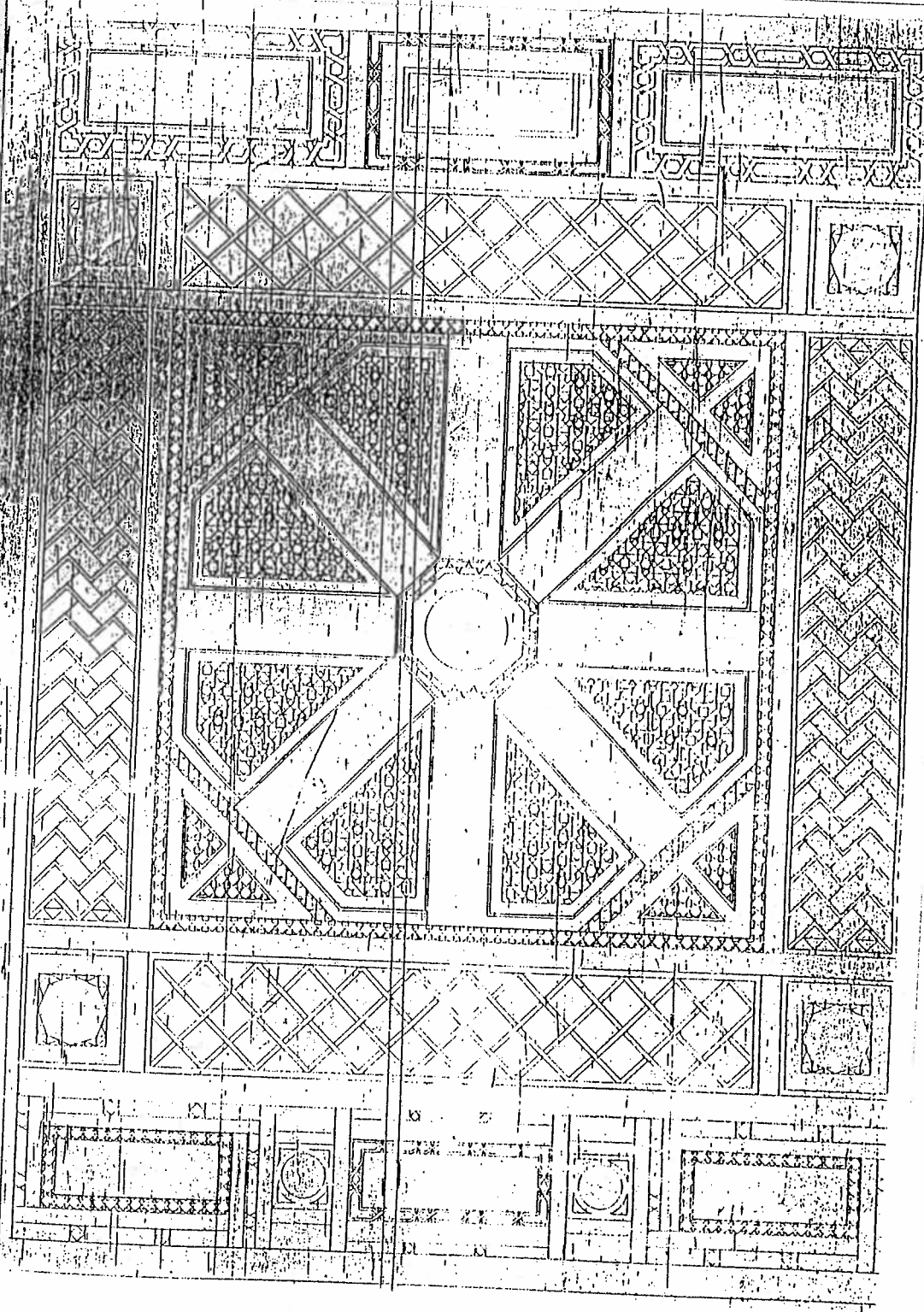


Fig. 9-6

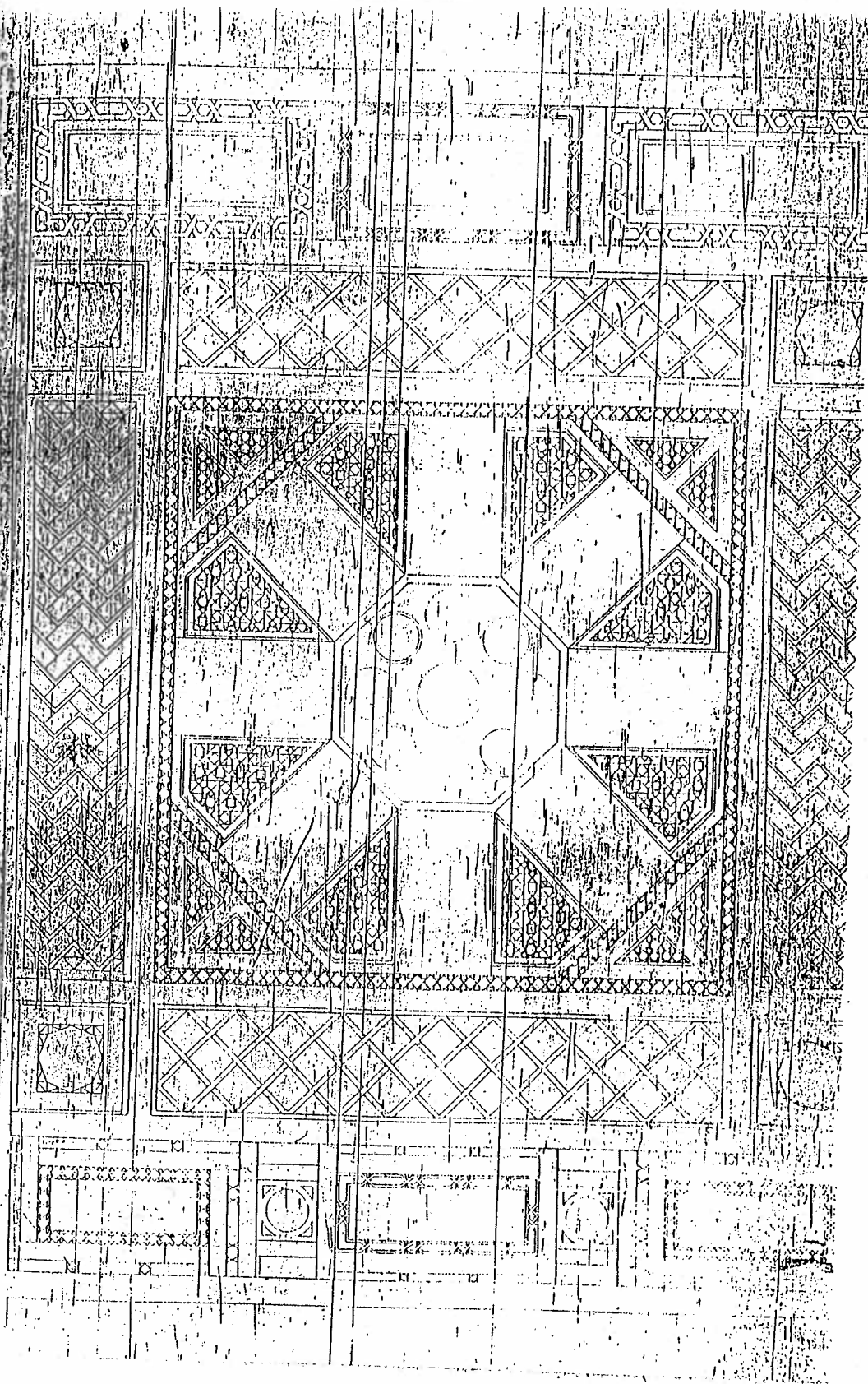


Fig. 9-7

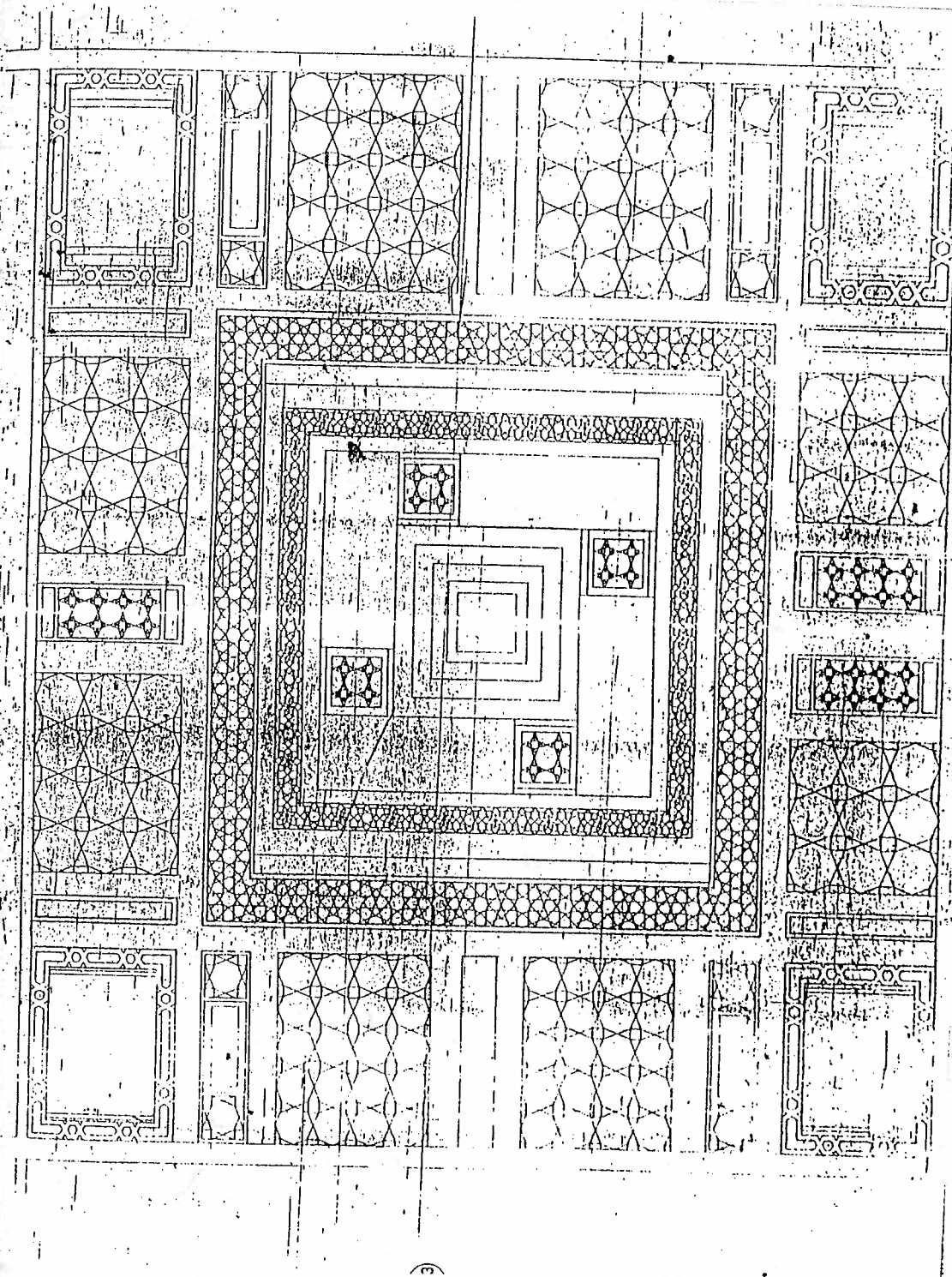


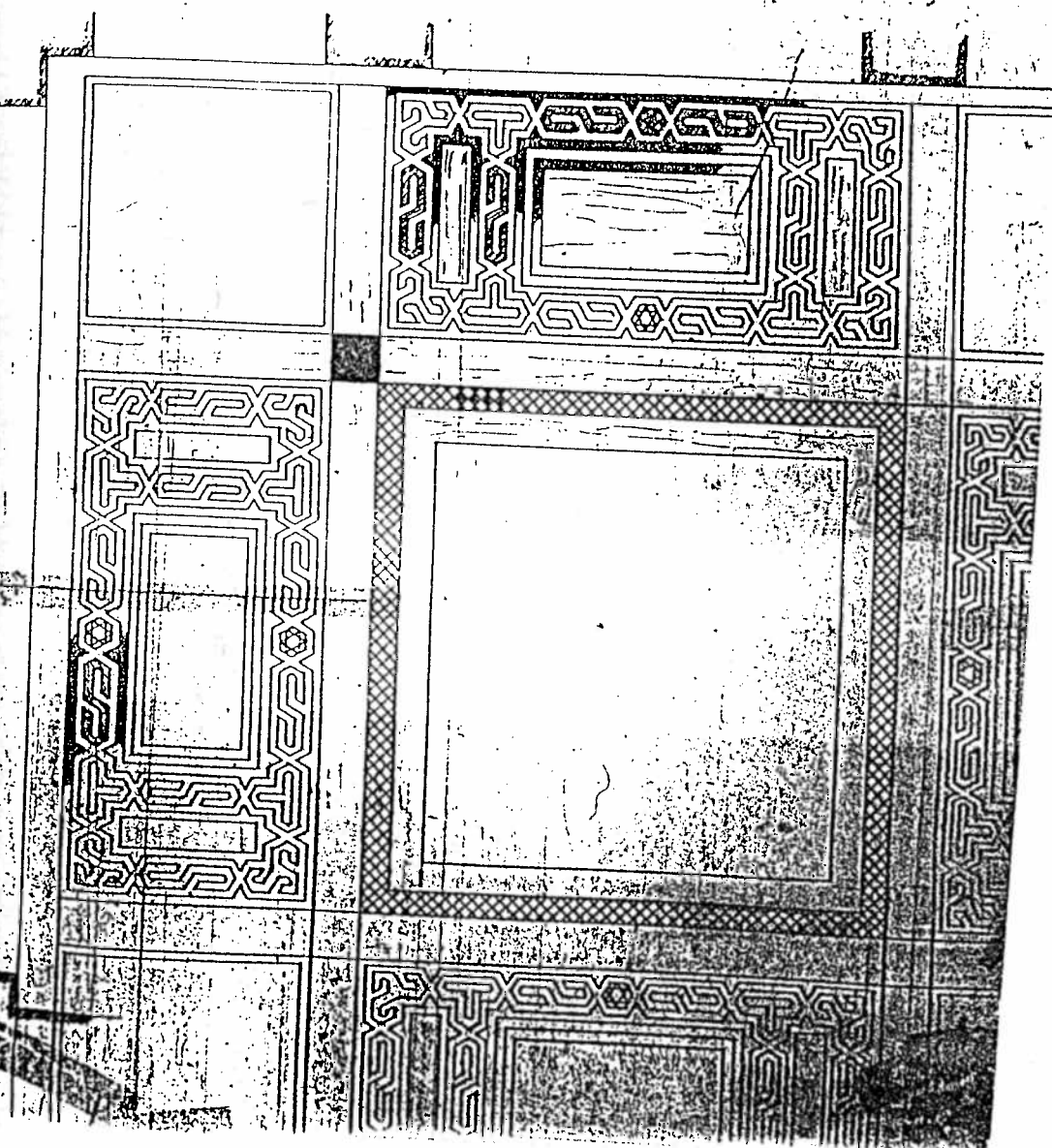
Fig. 9-8

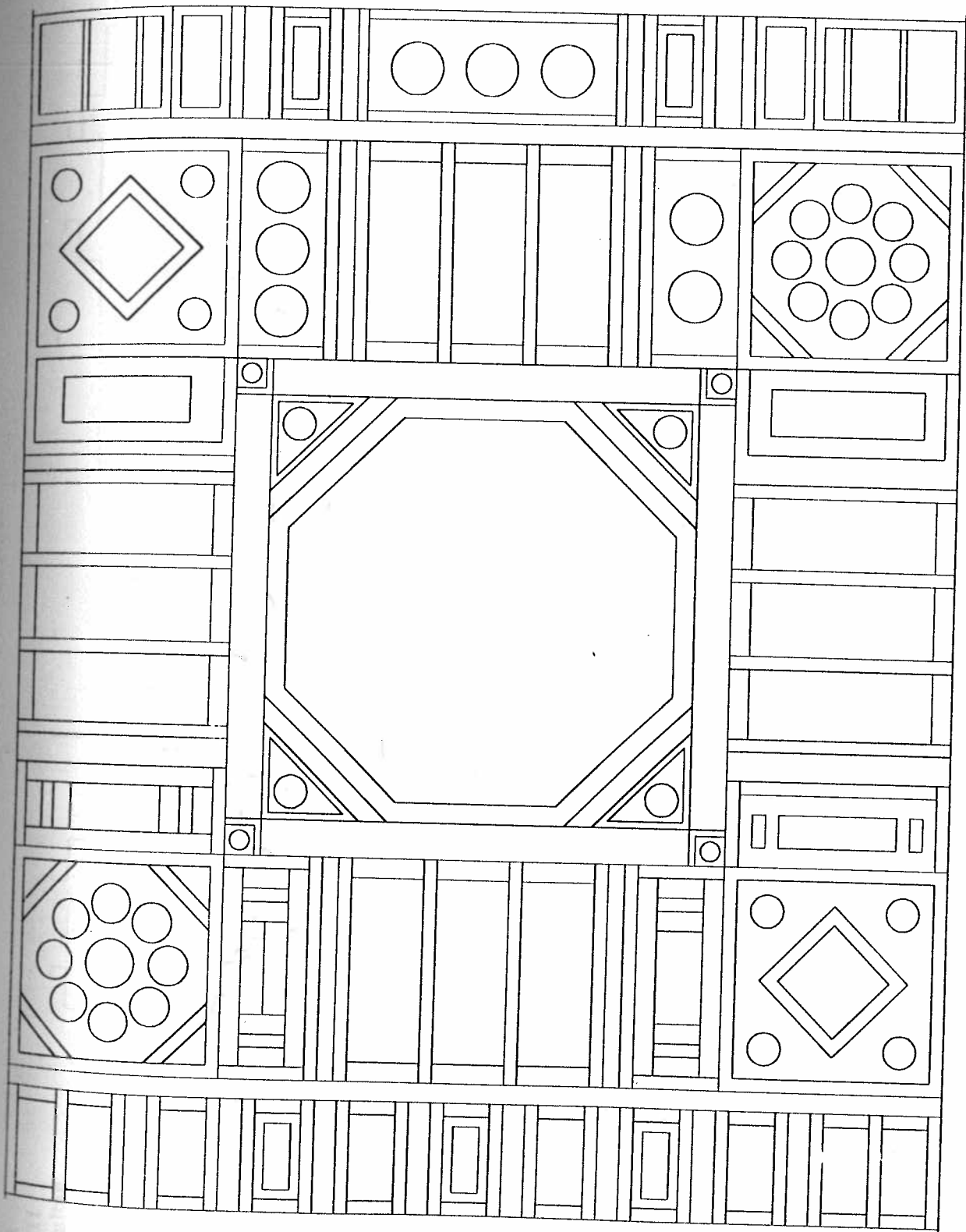
Fig. 10-1 (1934)

يقعد
مدير الاثار العربية

تظهر

الظاهر في ١٩٢١-١٩٢٠
من رجب





Madrasa of Barquq
Marble Pavements of Sahn

Fig. 11-1

Figures
Catalog # 11
Complex of Sultan
Barquq

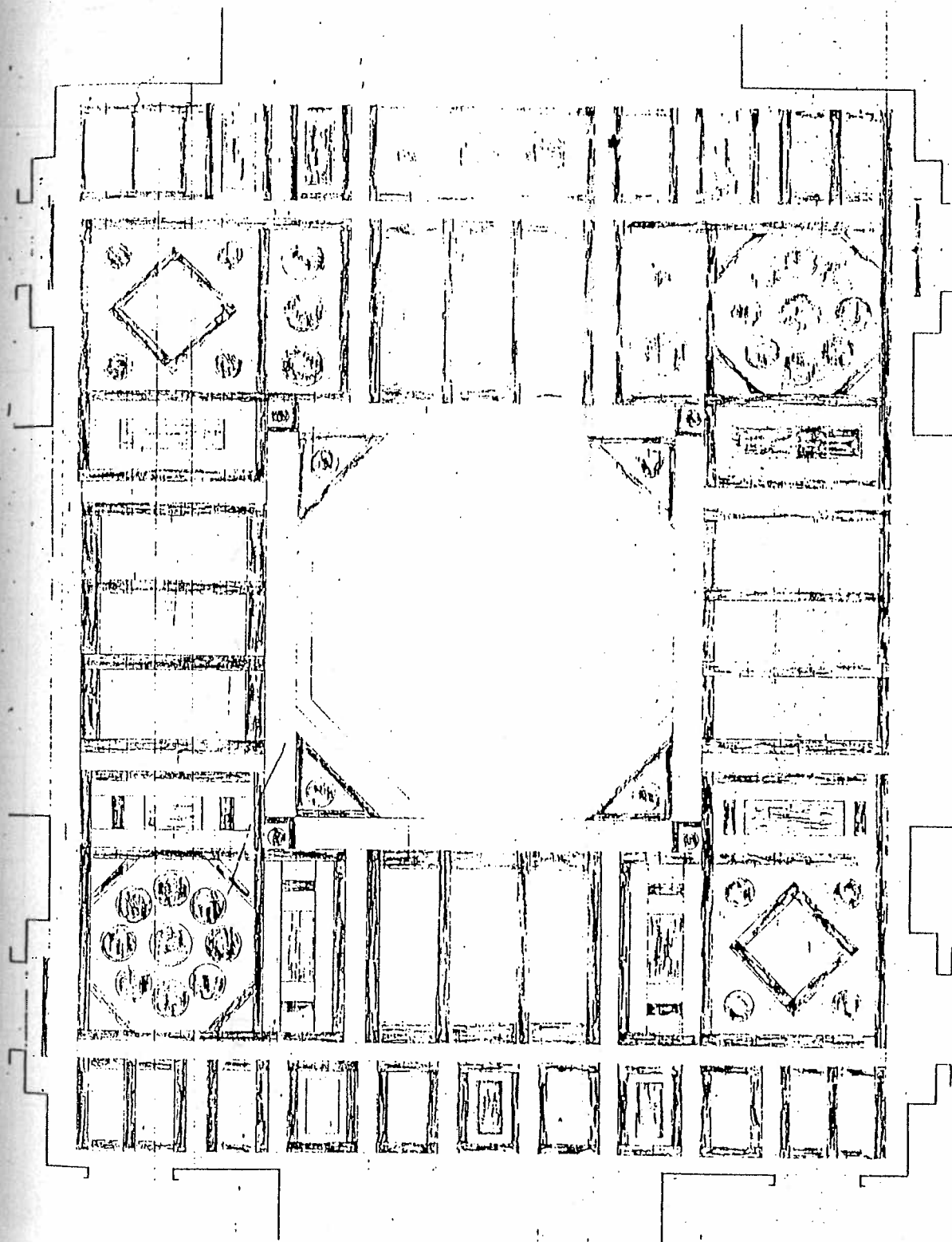


Fig. 11-2

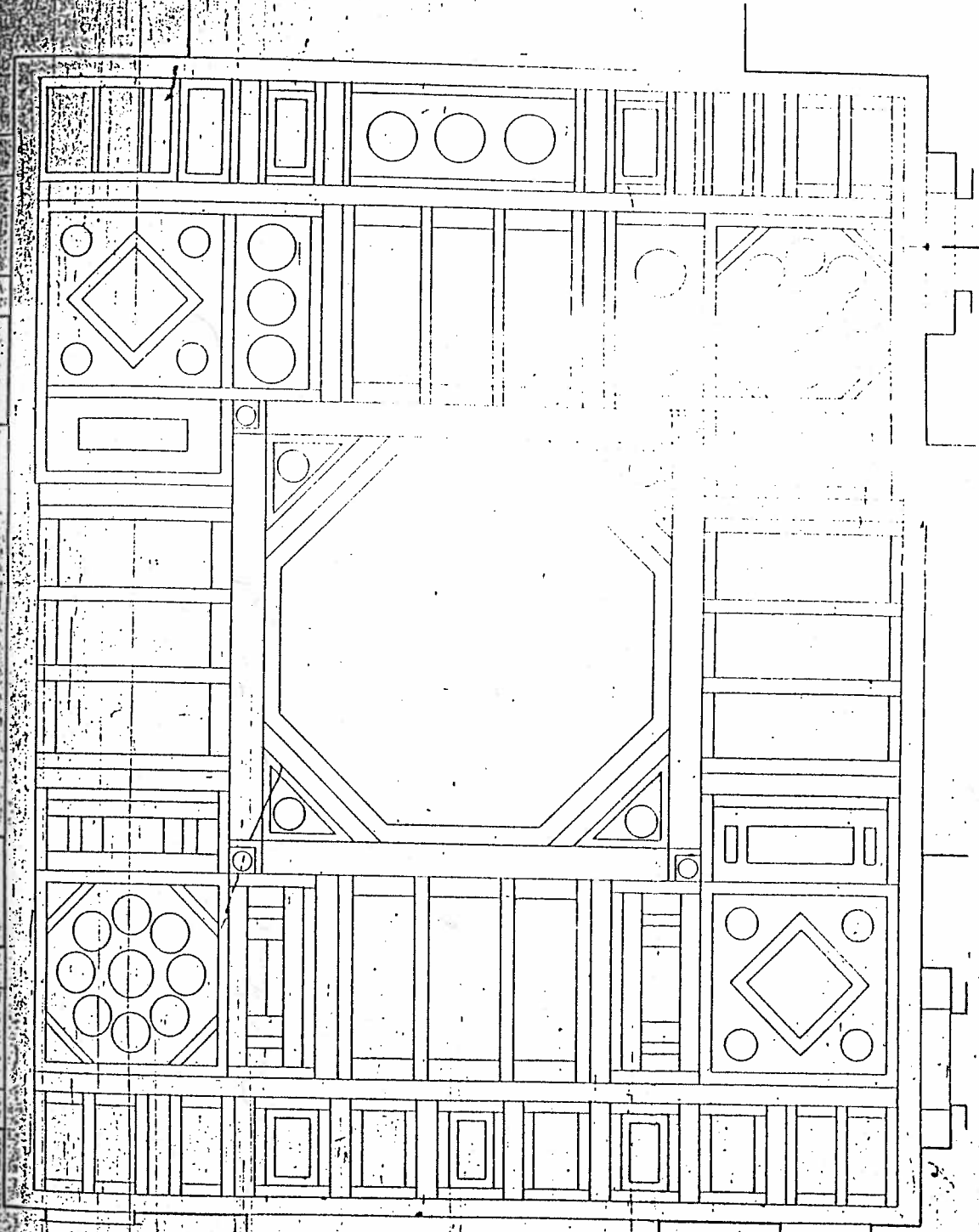
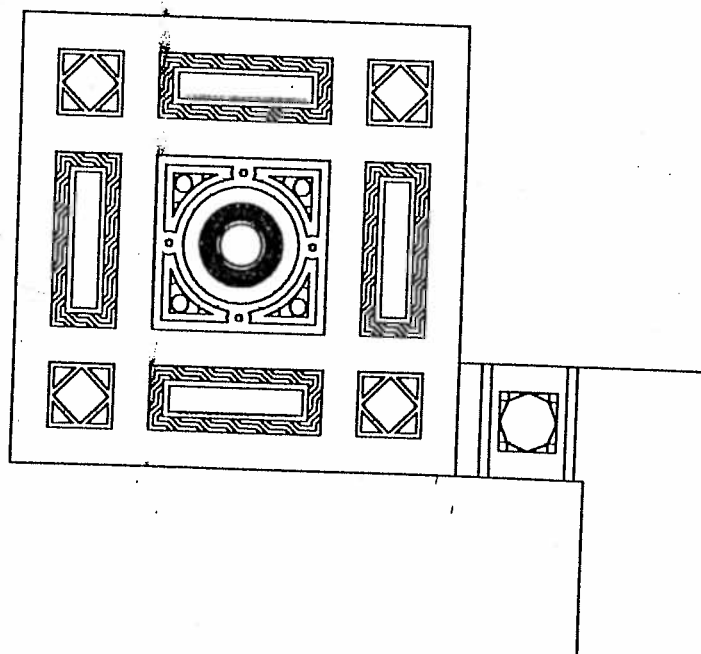
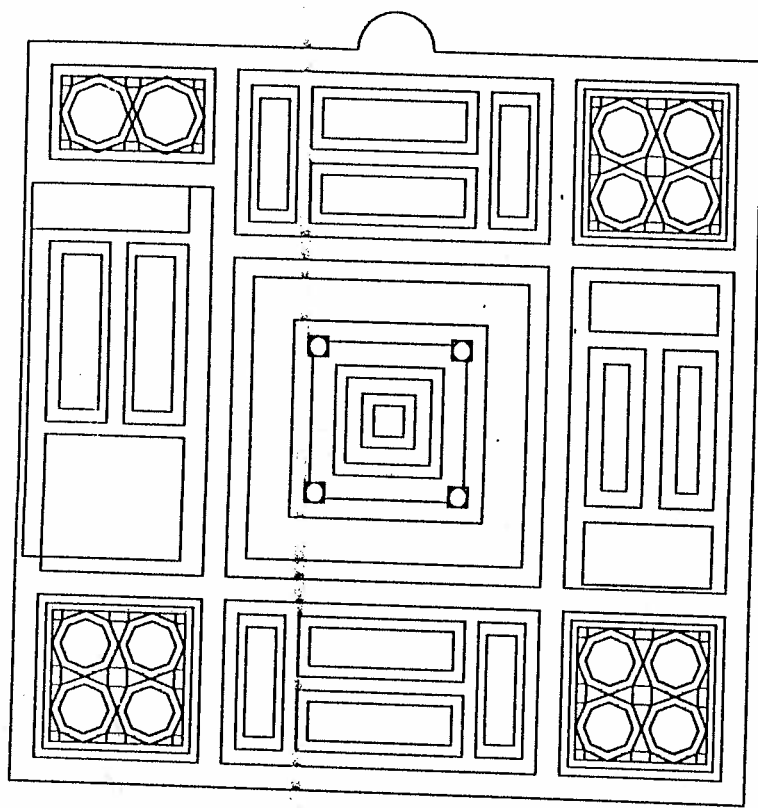


Fig. 11-3

Fig. 11-4 (1996)



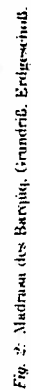
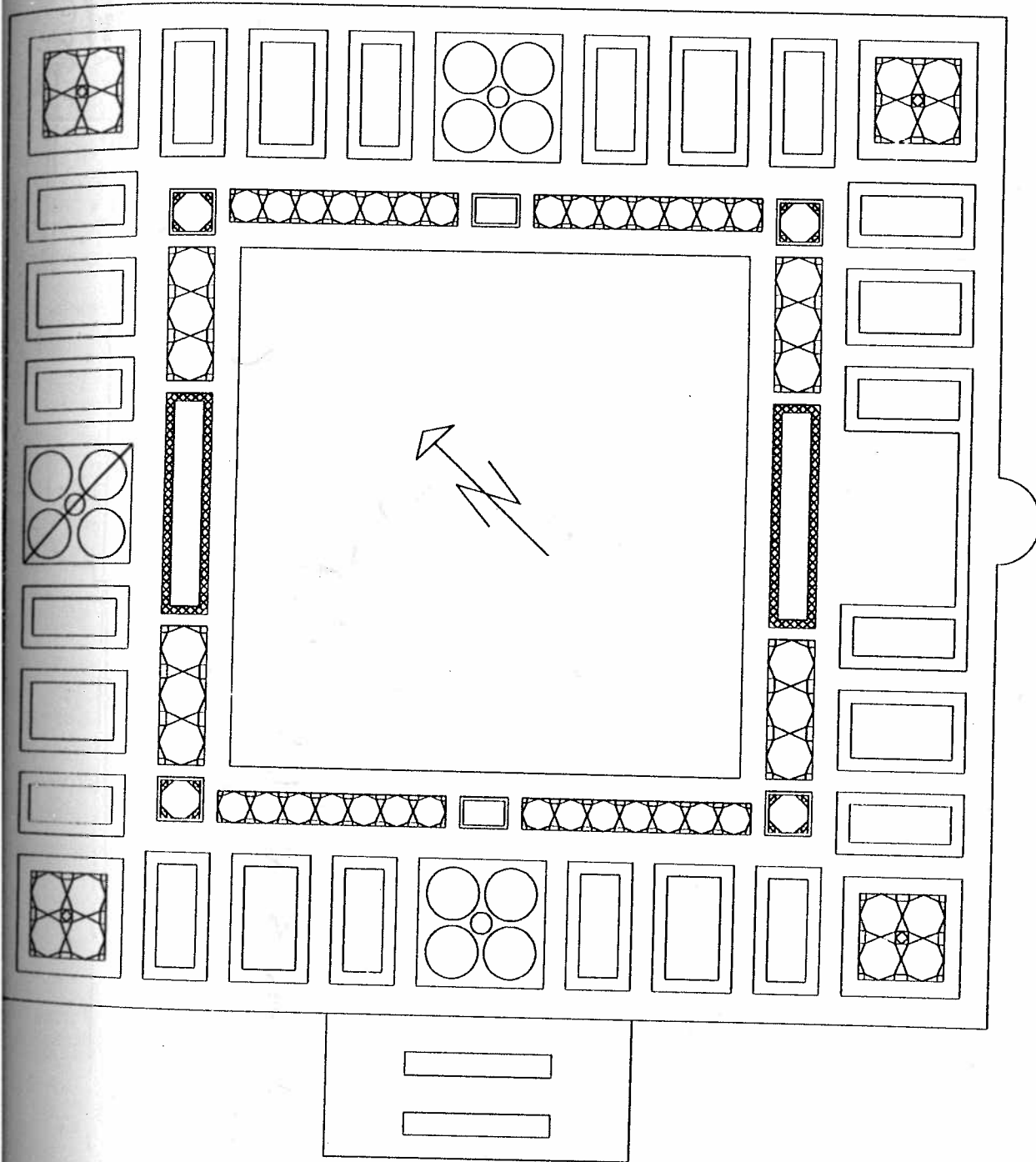


Fig. 11-5 (Mostafa)



North-East Mausoleum
Khanqah of Farag b. Barquq

Fig. 13-1

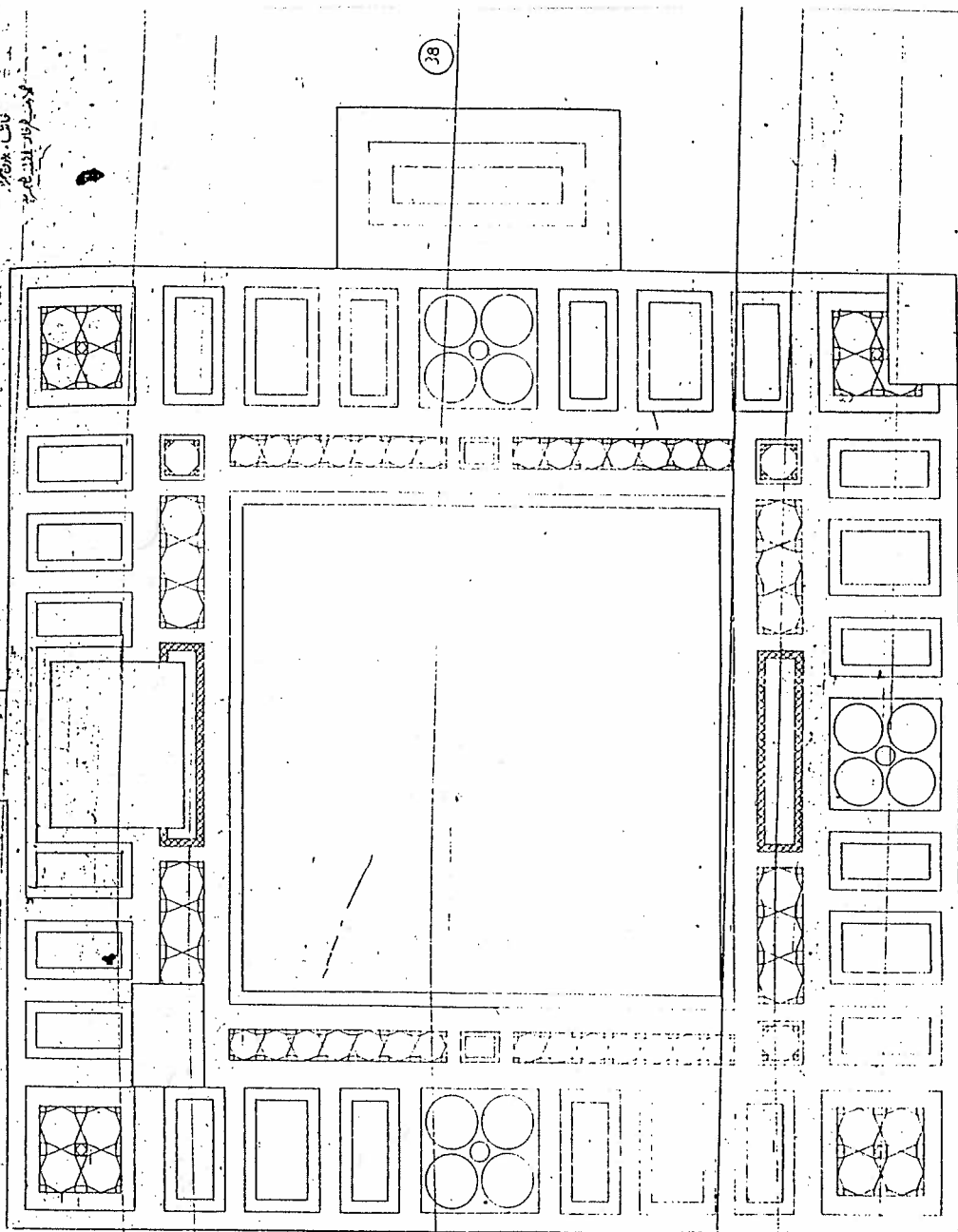
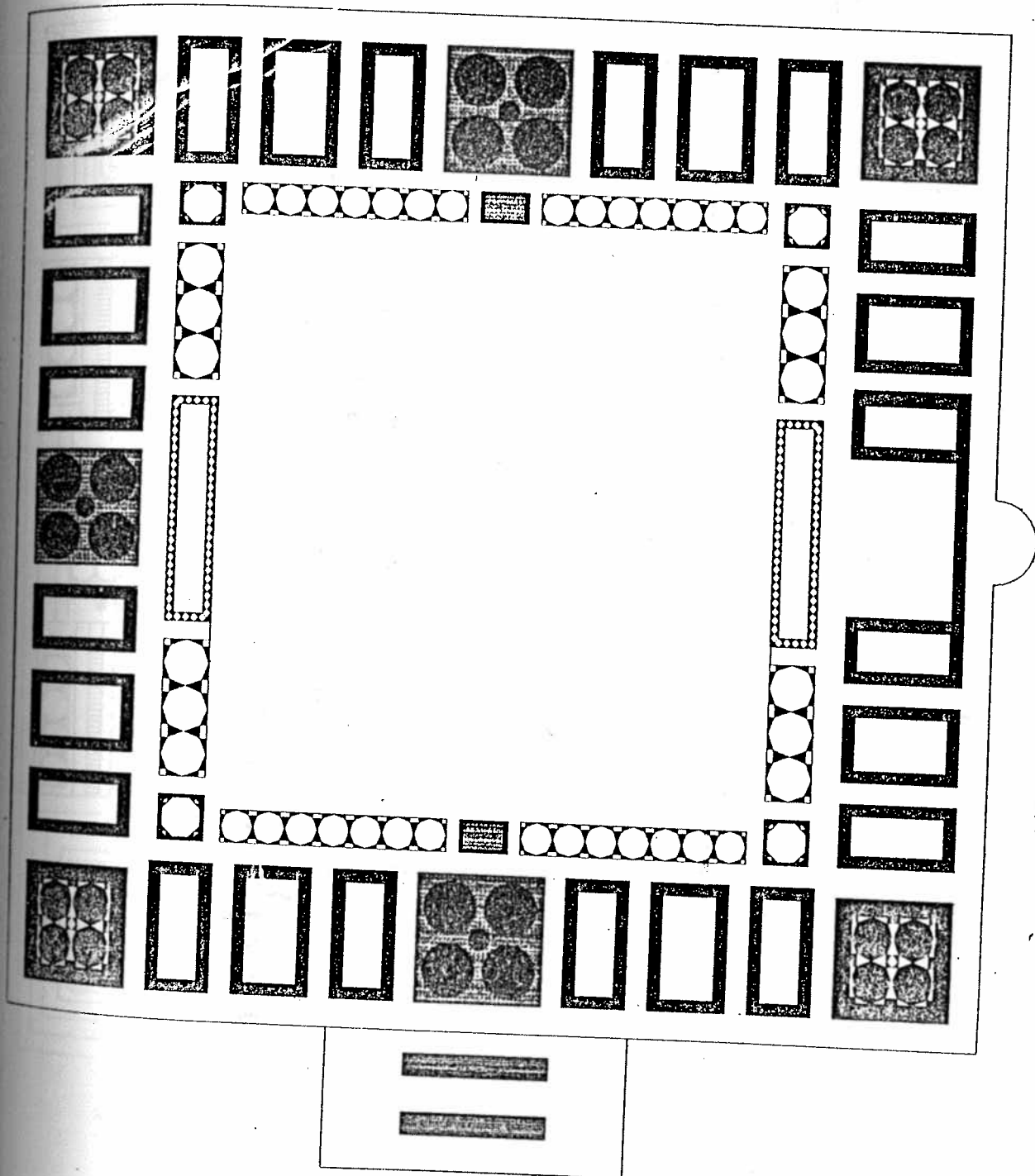


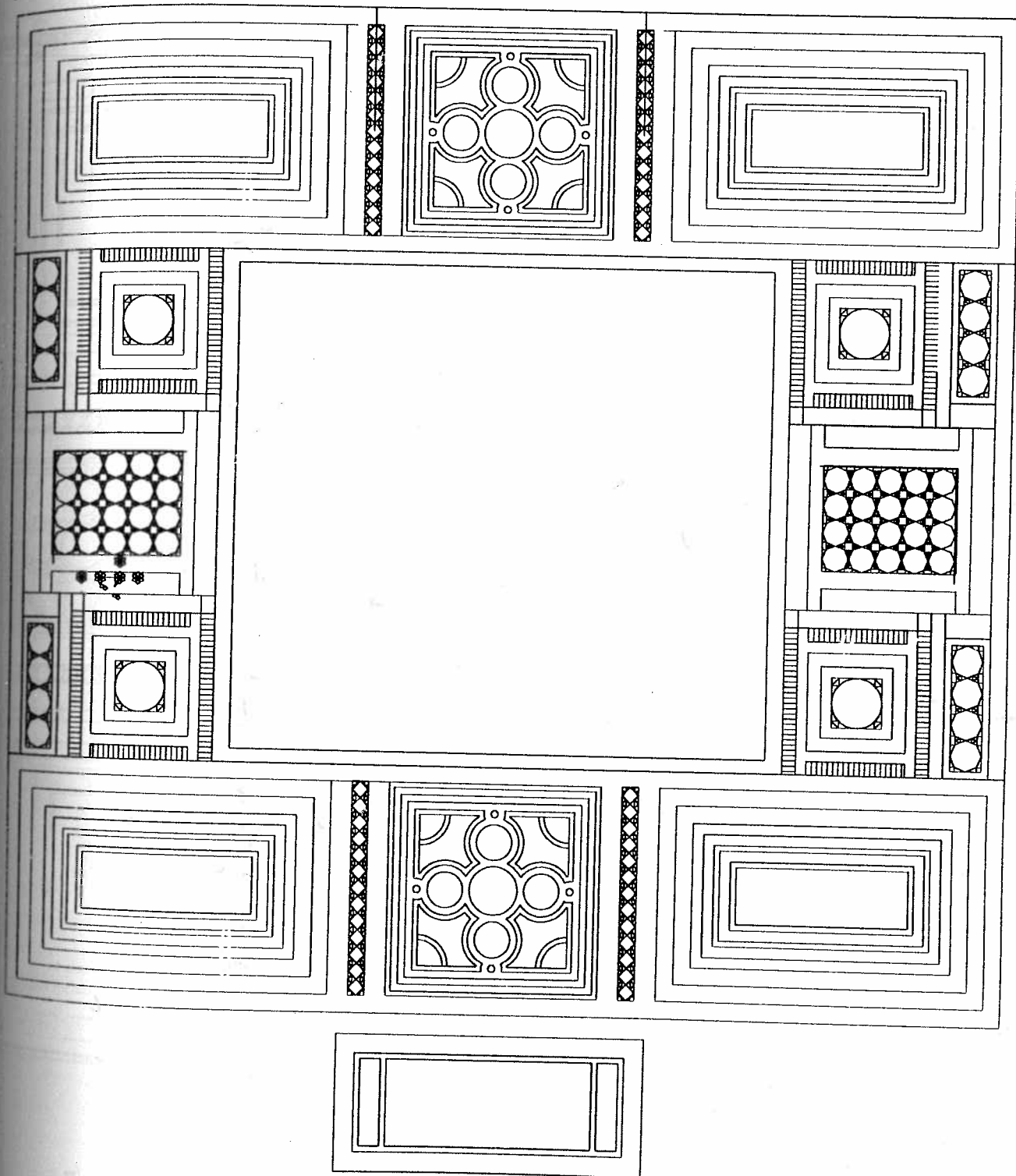
Fig. 13-2 (1910)



*Khanga of Farag b. Barquq
North Mausoleum*

Marble Pavement

Fig. 13-3



South-East Mausoleum
Farag b. Barquq Complex

Fig. 13-4

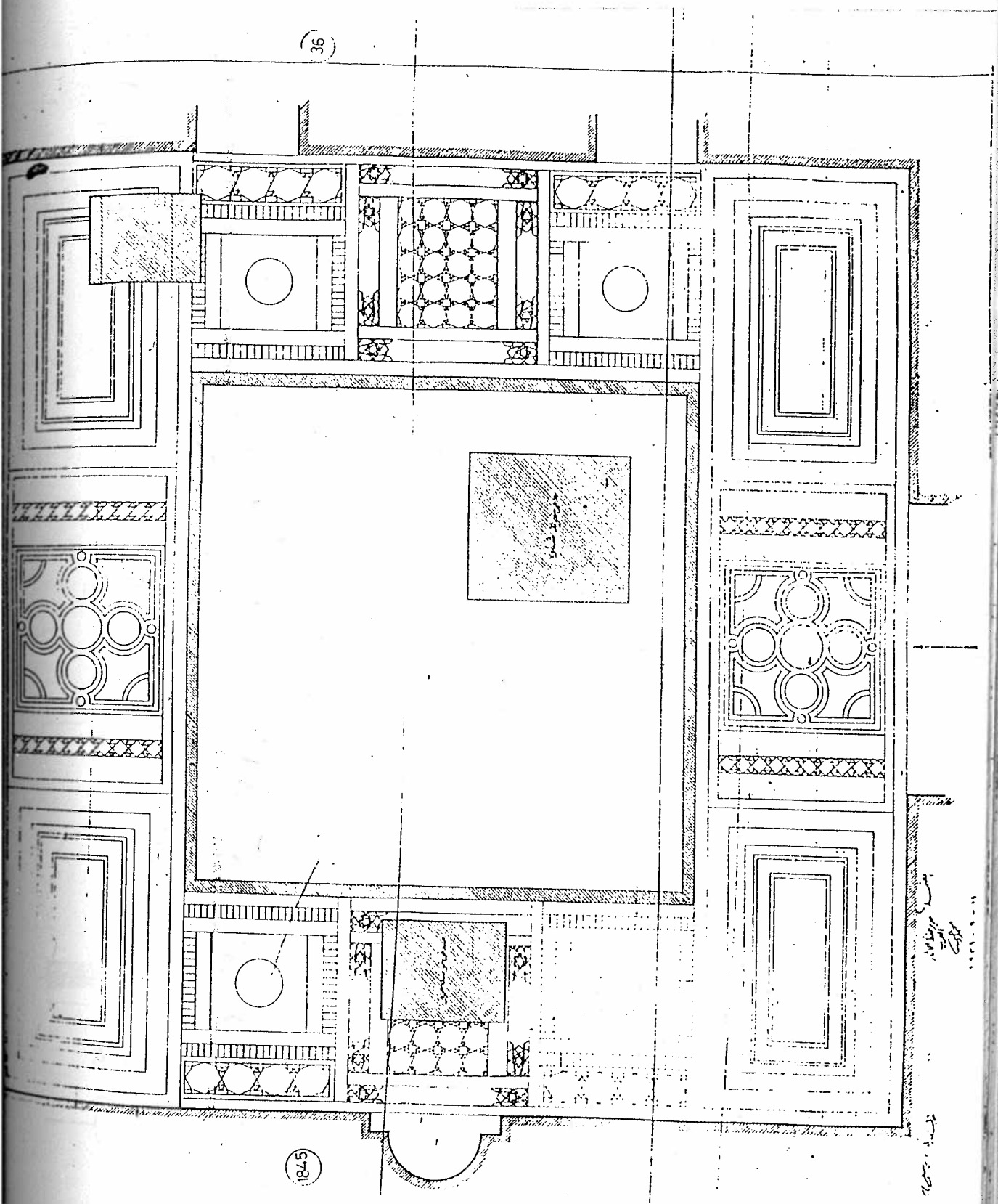
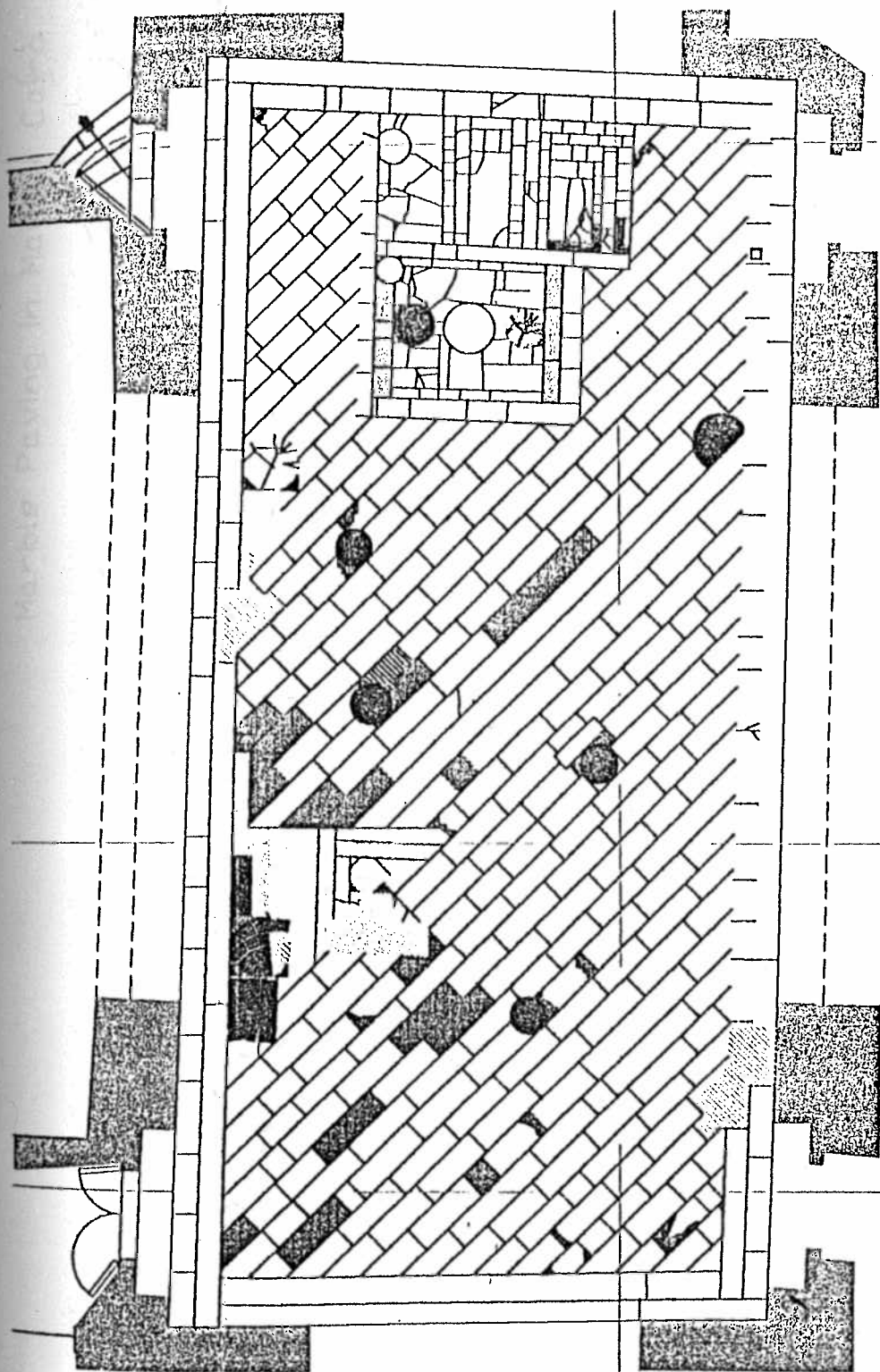
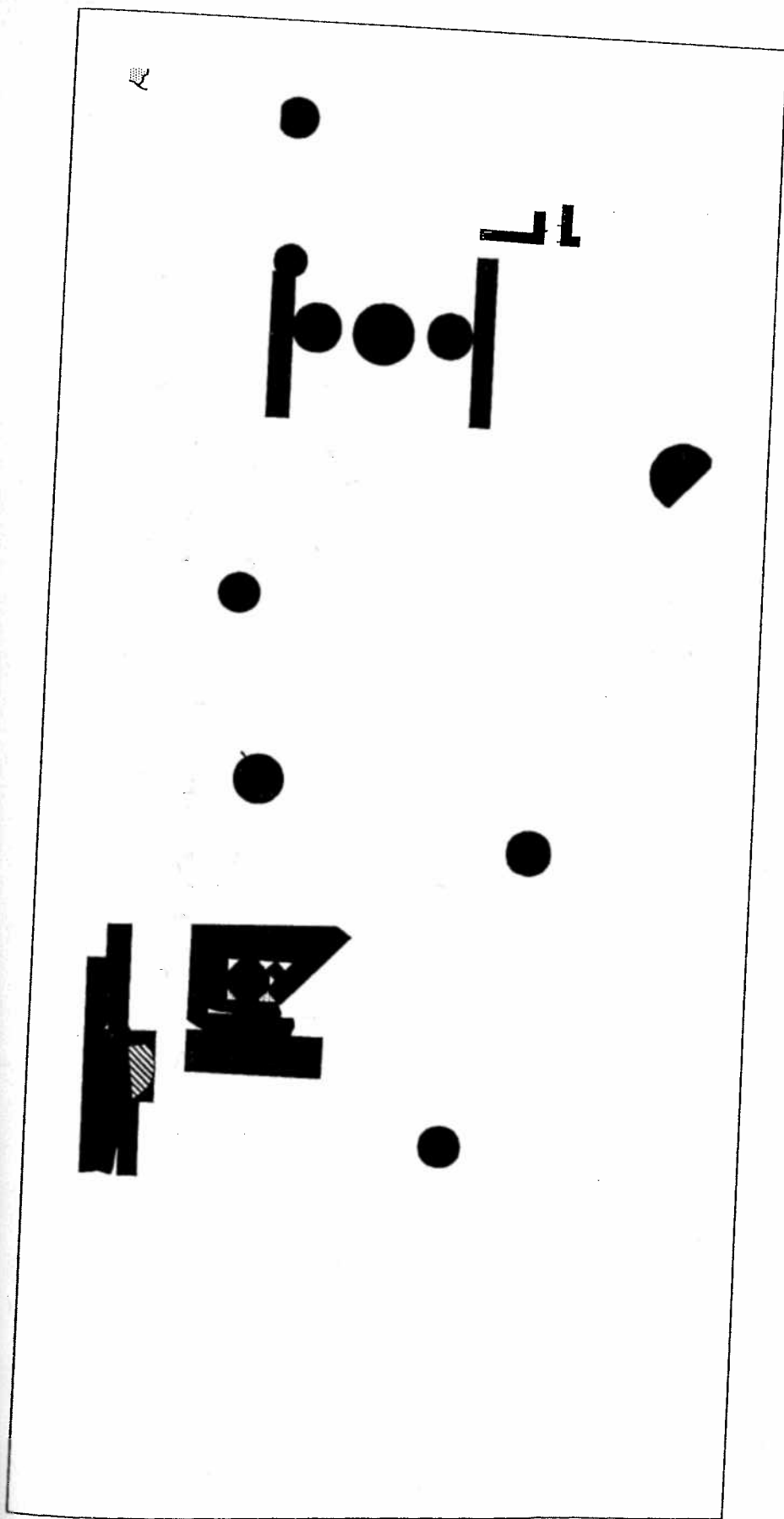


Fig. 13-5 (1939)

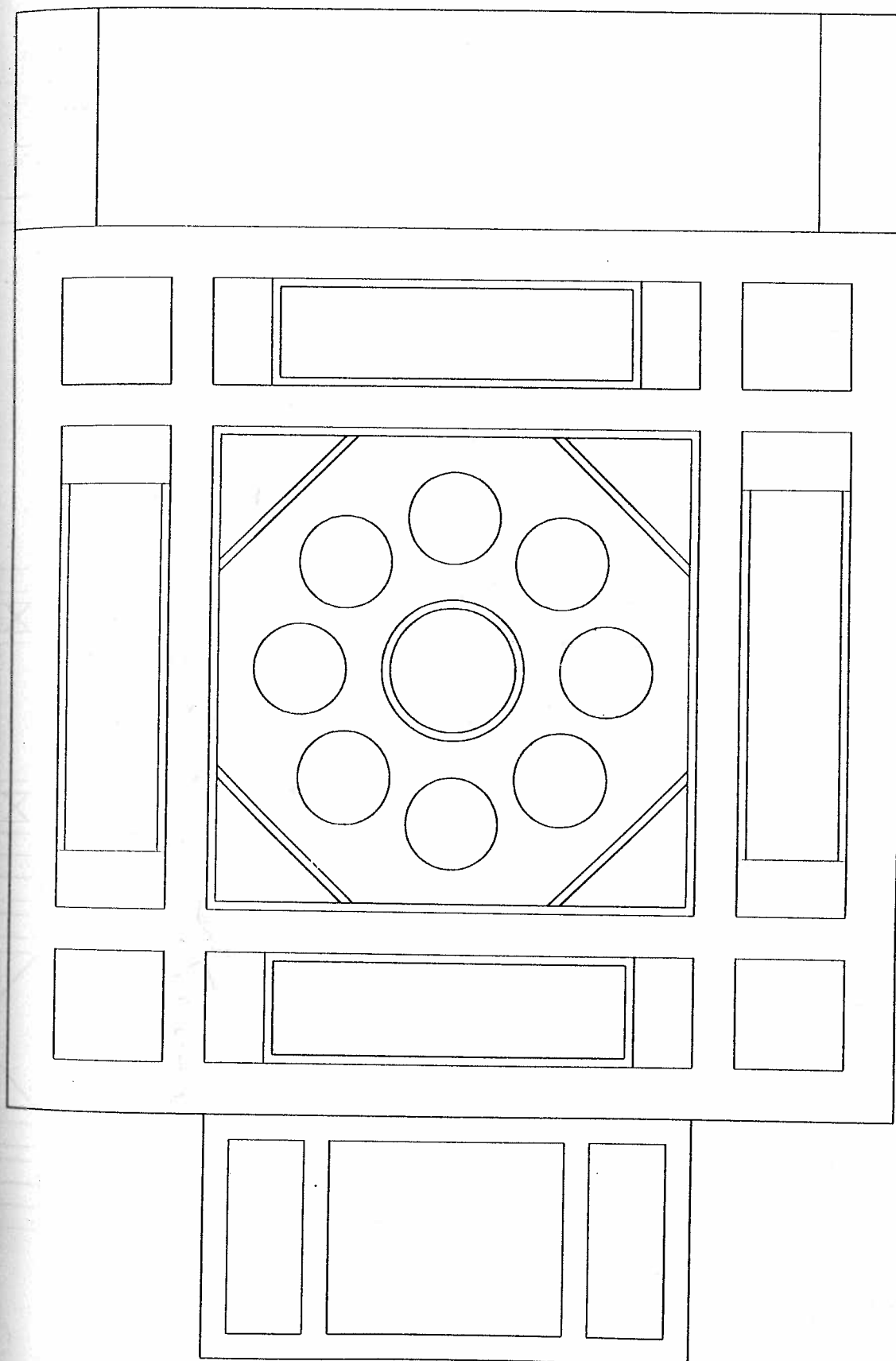


14-1

1997

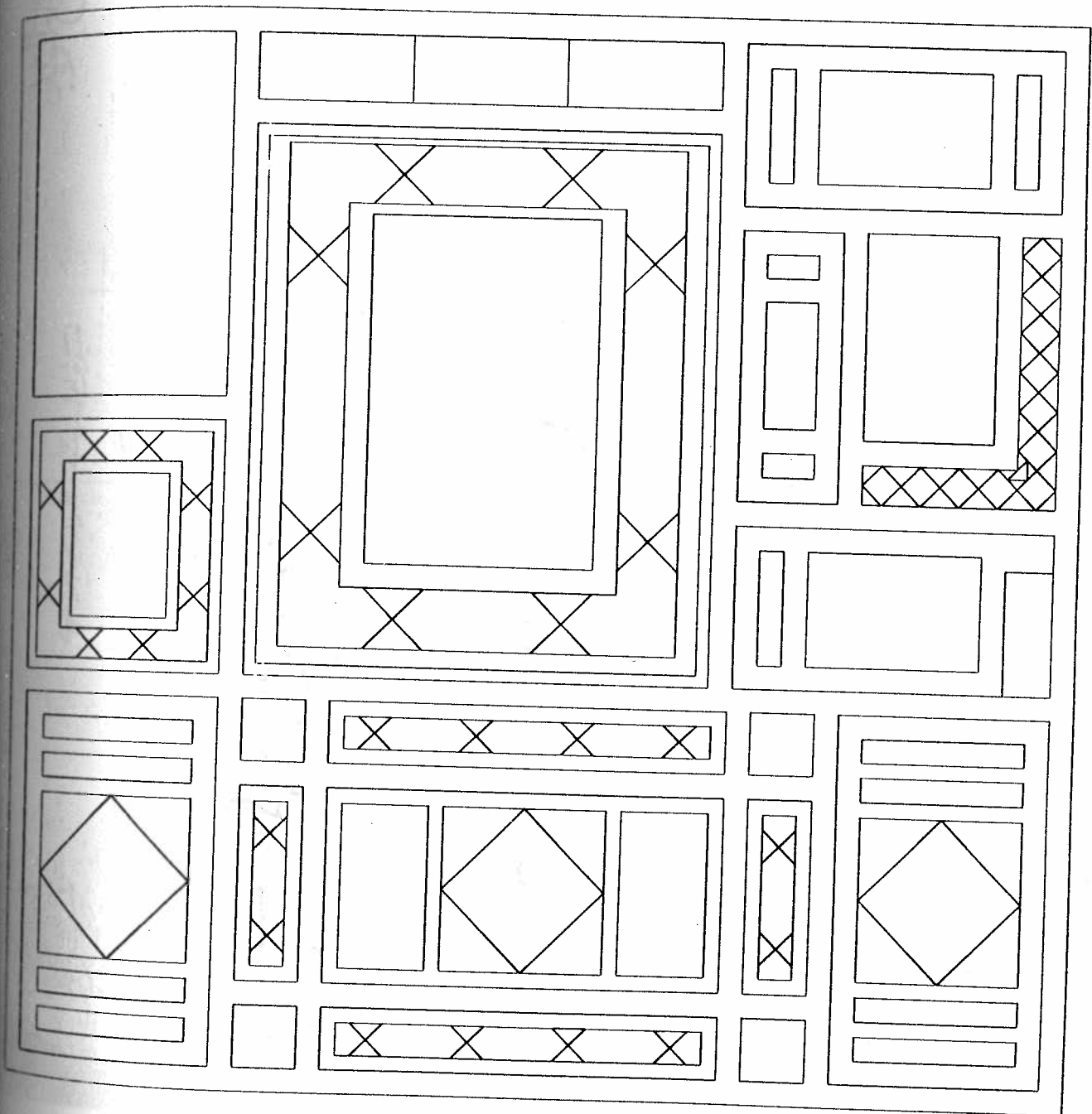


Fragments of Marble Paving
Madrasa of Gamal al-Din Ustadar
Fig. 14-2



Mosque of Mua'yyad Sheikh
Entrance Vestibule

Fig. 15-1



Mua'yyad Sheikh Mosoleum
Marble Pavements of the Dome

Fig. 15-2

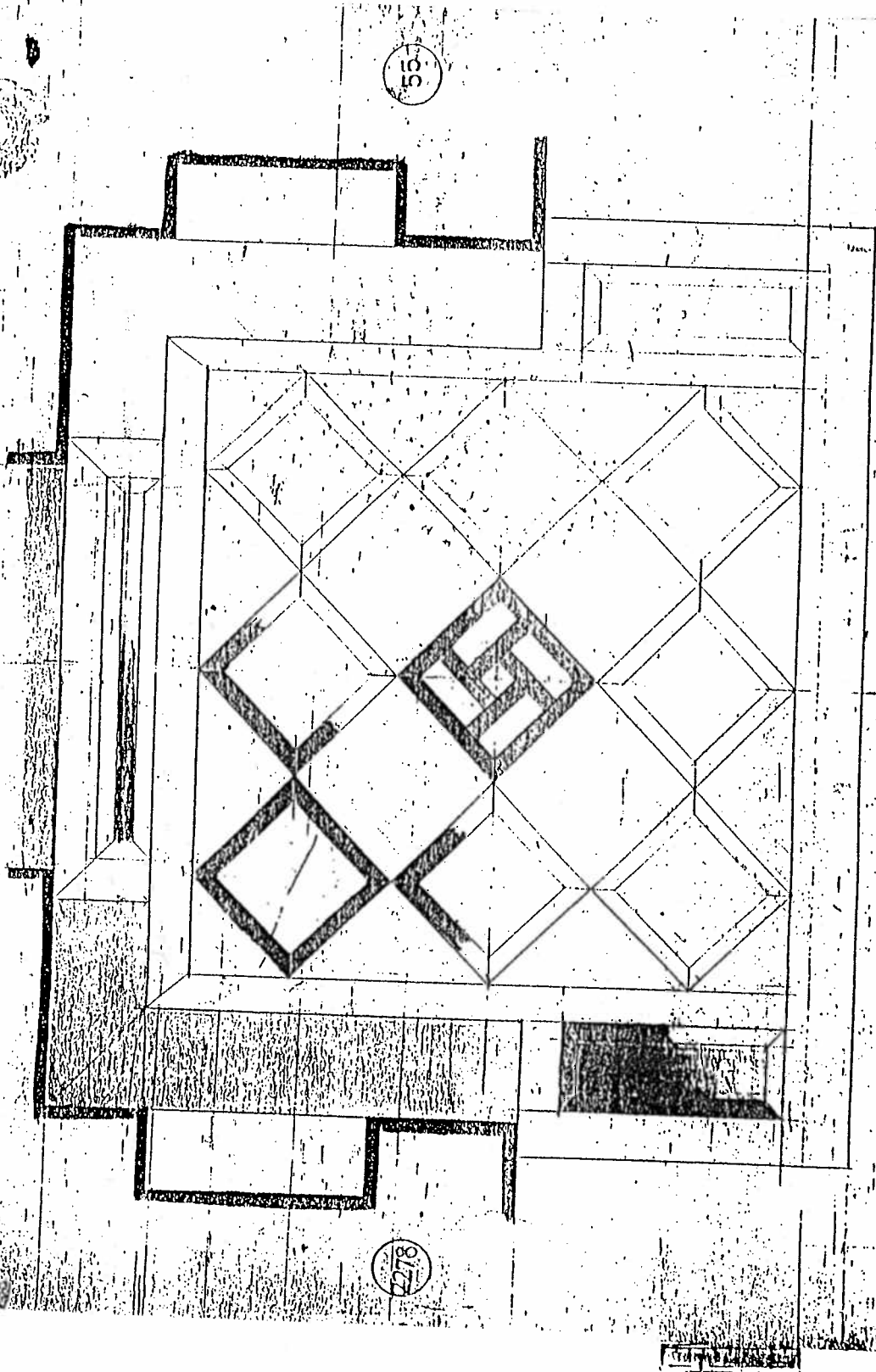


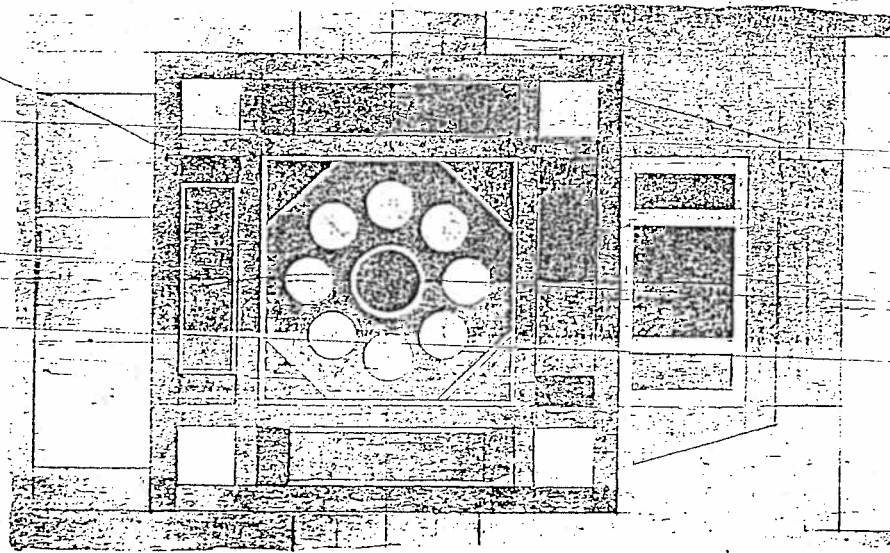
Fig. 15-3 (1940)

المسجد = مسجد الشيخ

المسجد = مسجد الشيخ

Projet pour le cloître de l'entrée marbre et cuivre

رسول رضية الذكر



2283

60

2477 le 29/10/1890

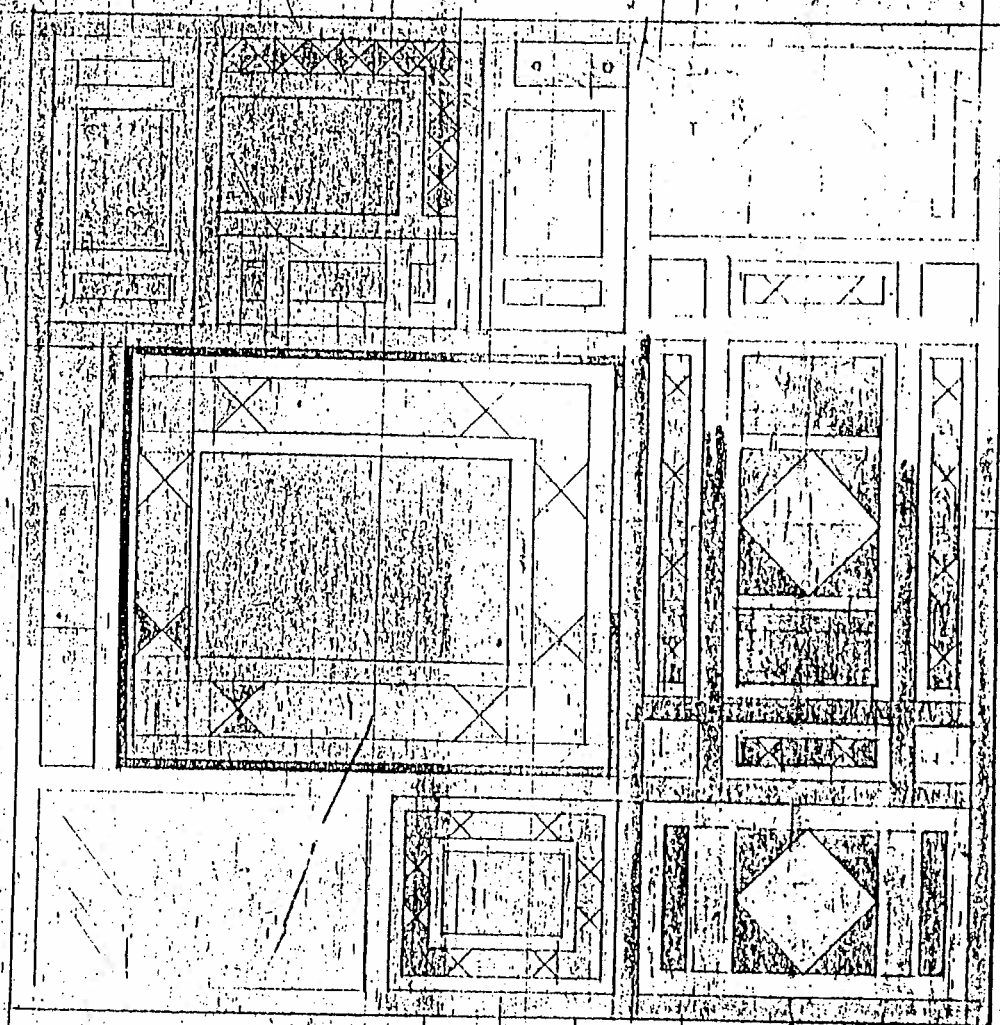
2477 le 29/10/1890

Fig. 15-4 (1890)

مسجد الشيخ - الموعظ

Projet pour le village de la Goutte en matière de construction

مسجد الشيخ - الموعظ



Casse 19 sept. 50

schelle 7 cl. max. nat.

Fig. 15-5 (1890)

Figures
Catalog # 15
Mosque of al-Mu'ayyad
Shaikh

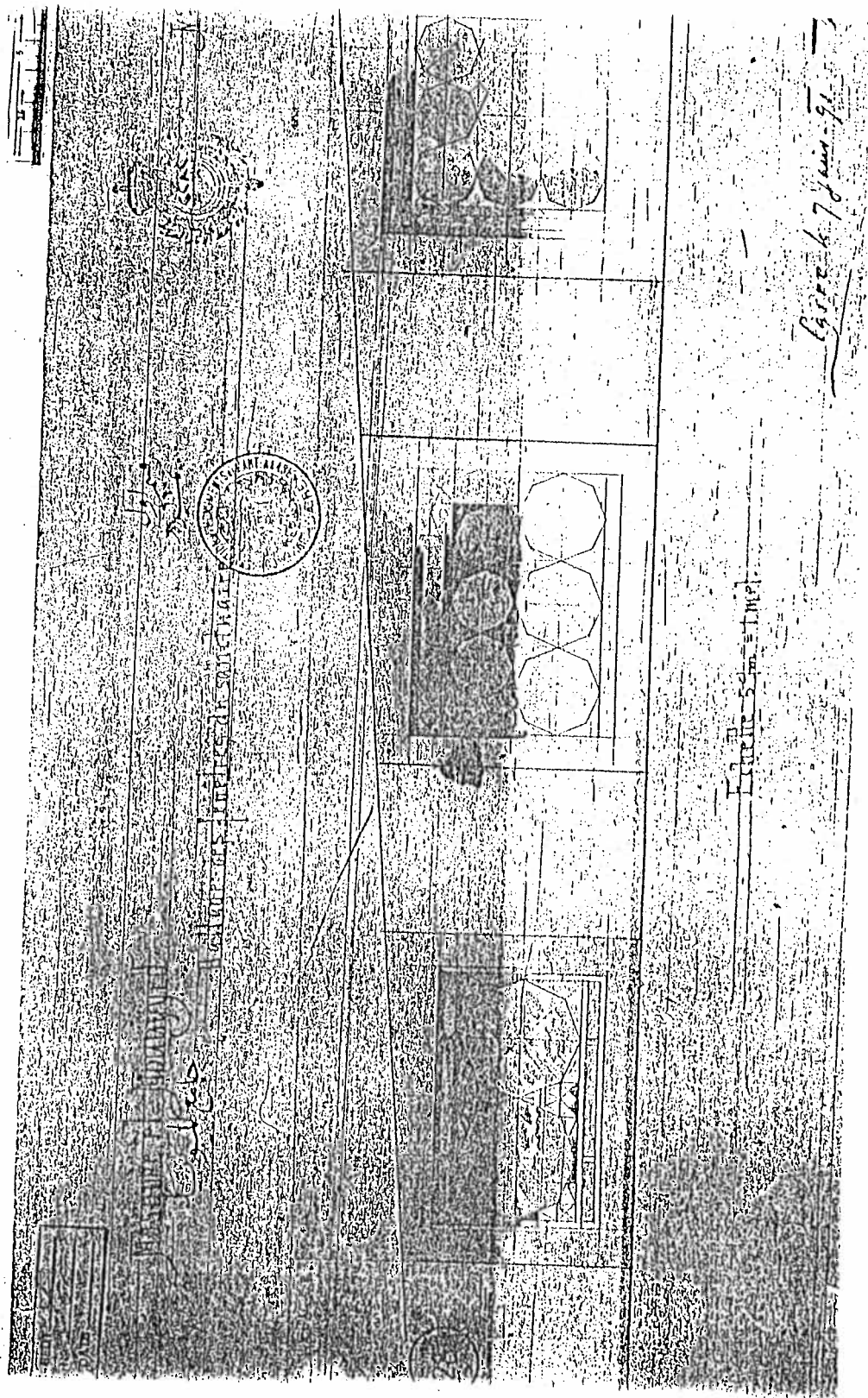
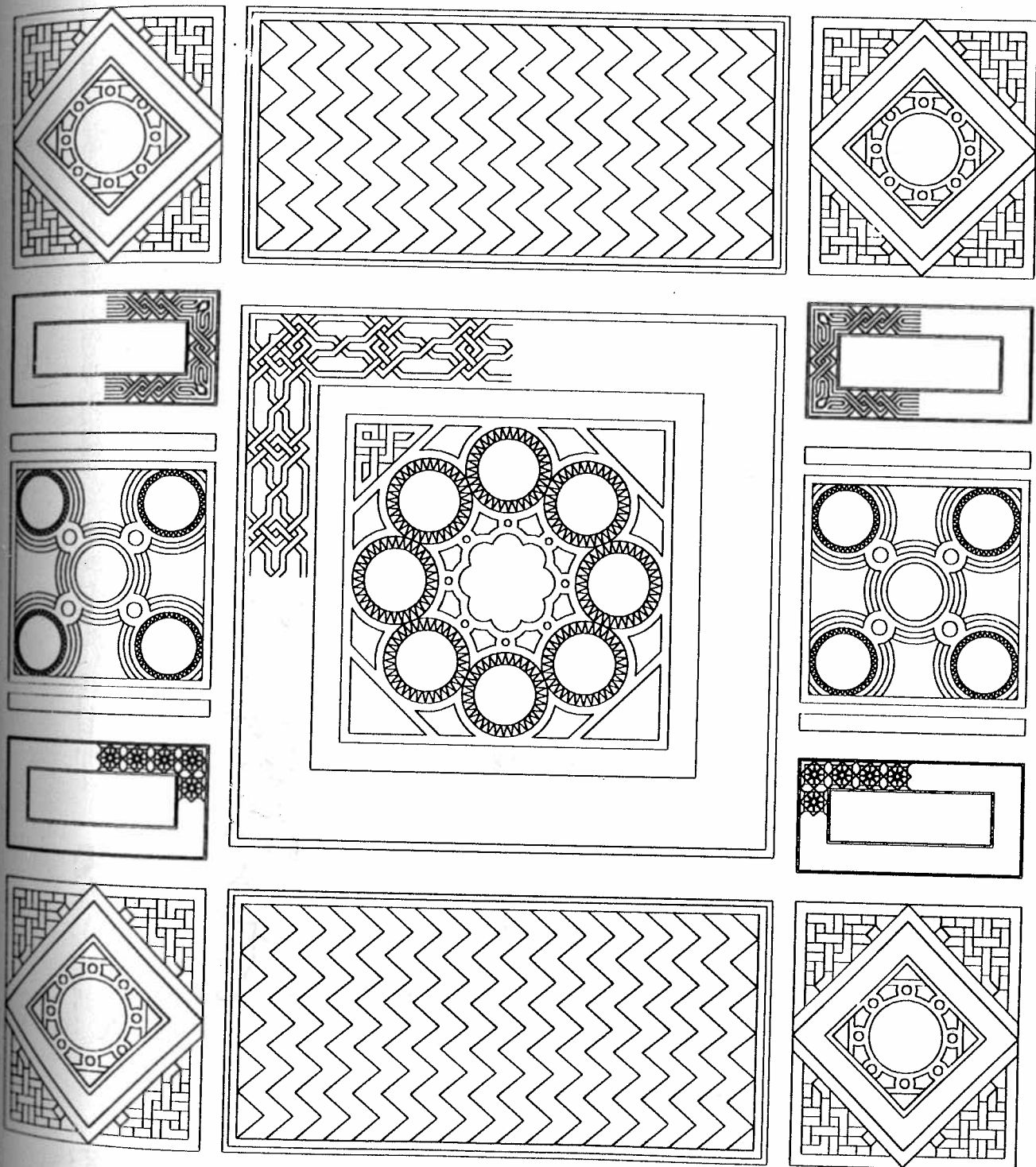


Fig. 15-6 (1891)



Qibla Iwan
Madrasa of Qadi Abd al-Bassit

Fig. 17-1

Figures
Catalog # 17
Madrasa of Qadi 'Abd
al-Basit

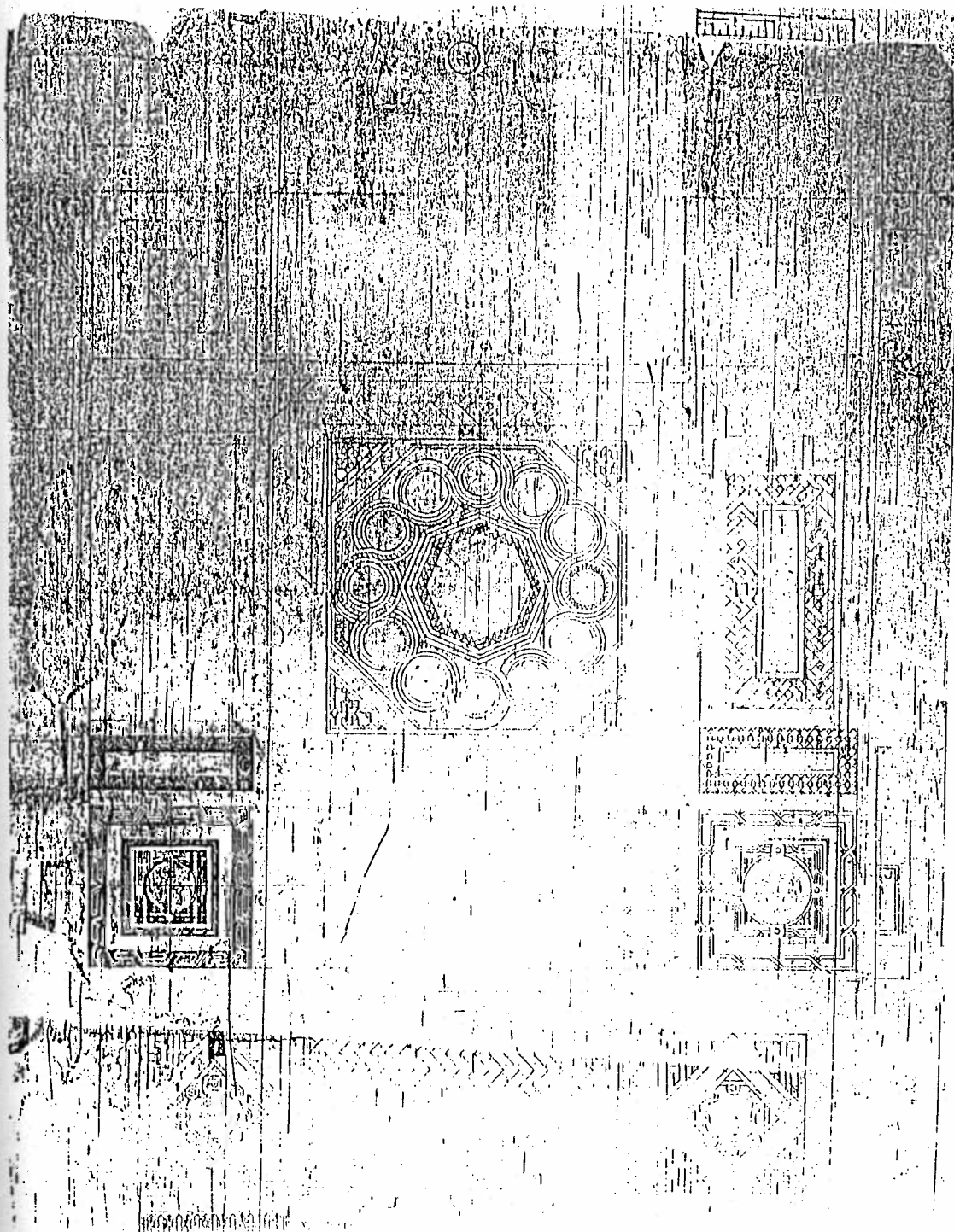


Fig. 17-2

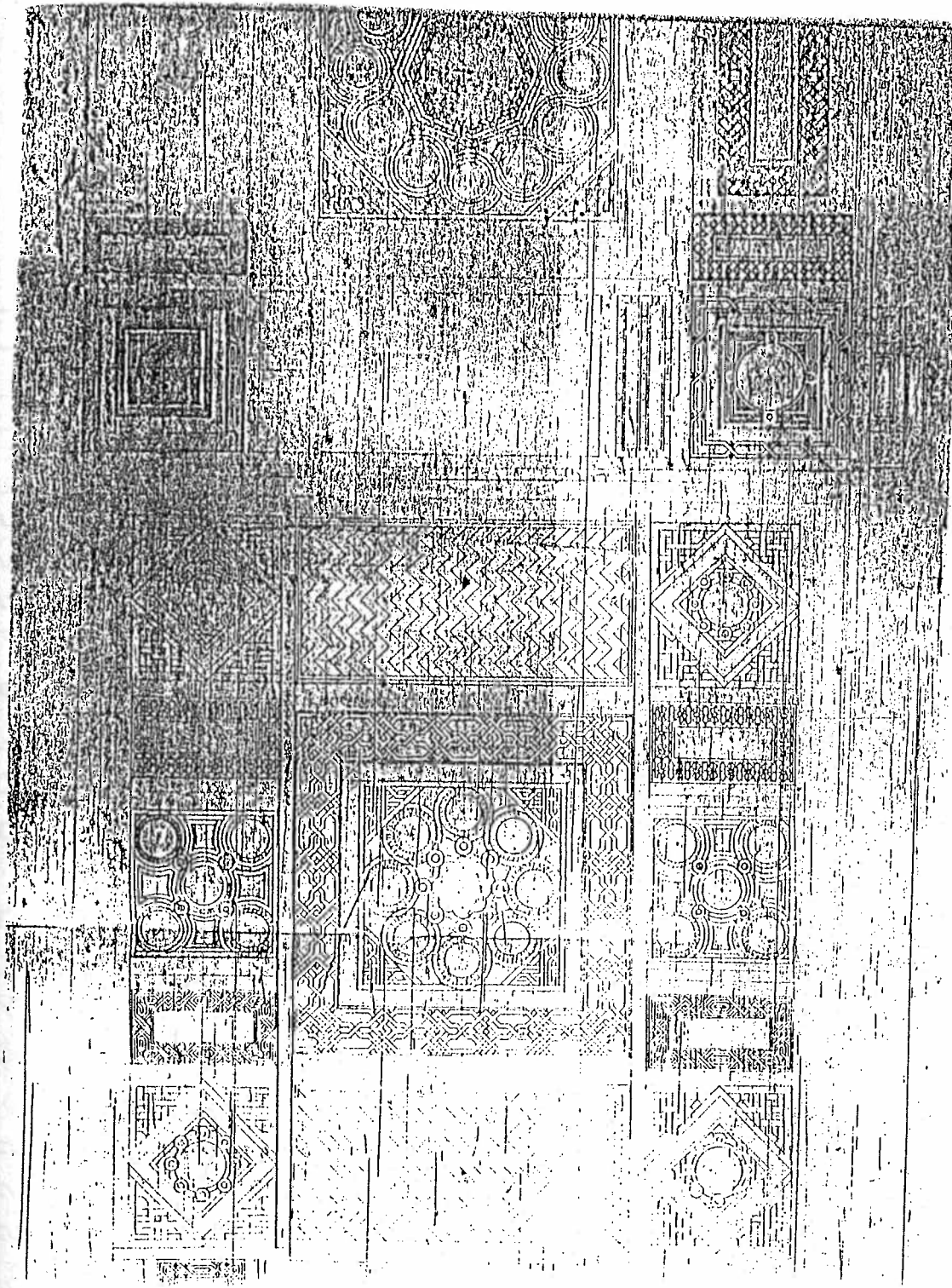


Fig. 17-3

Fig. 18-1

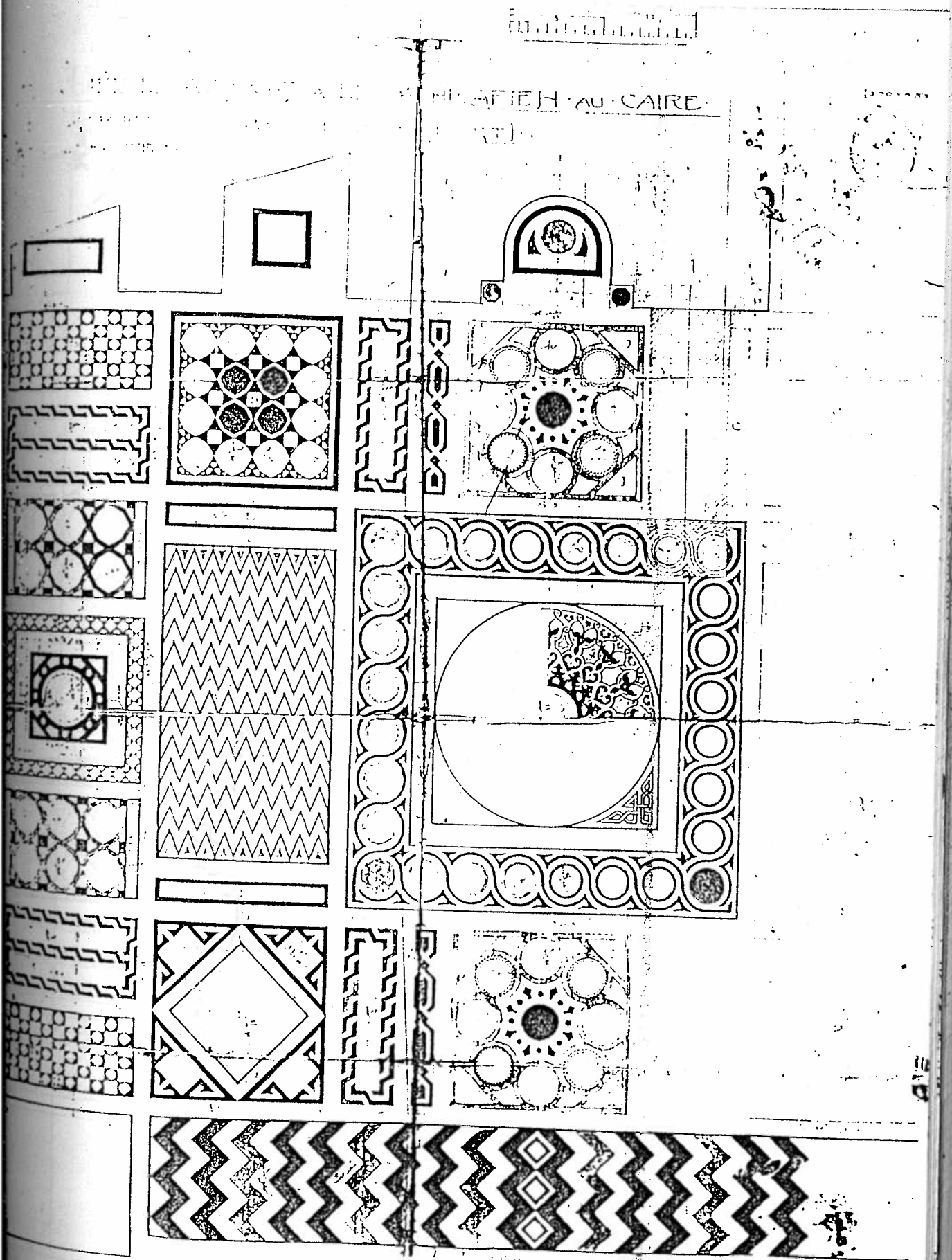
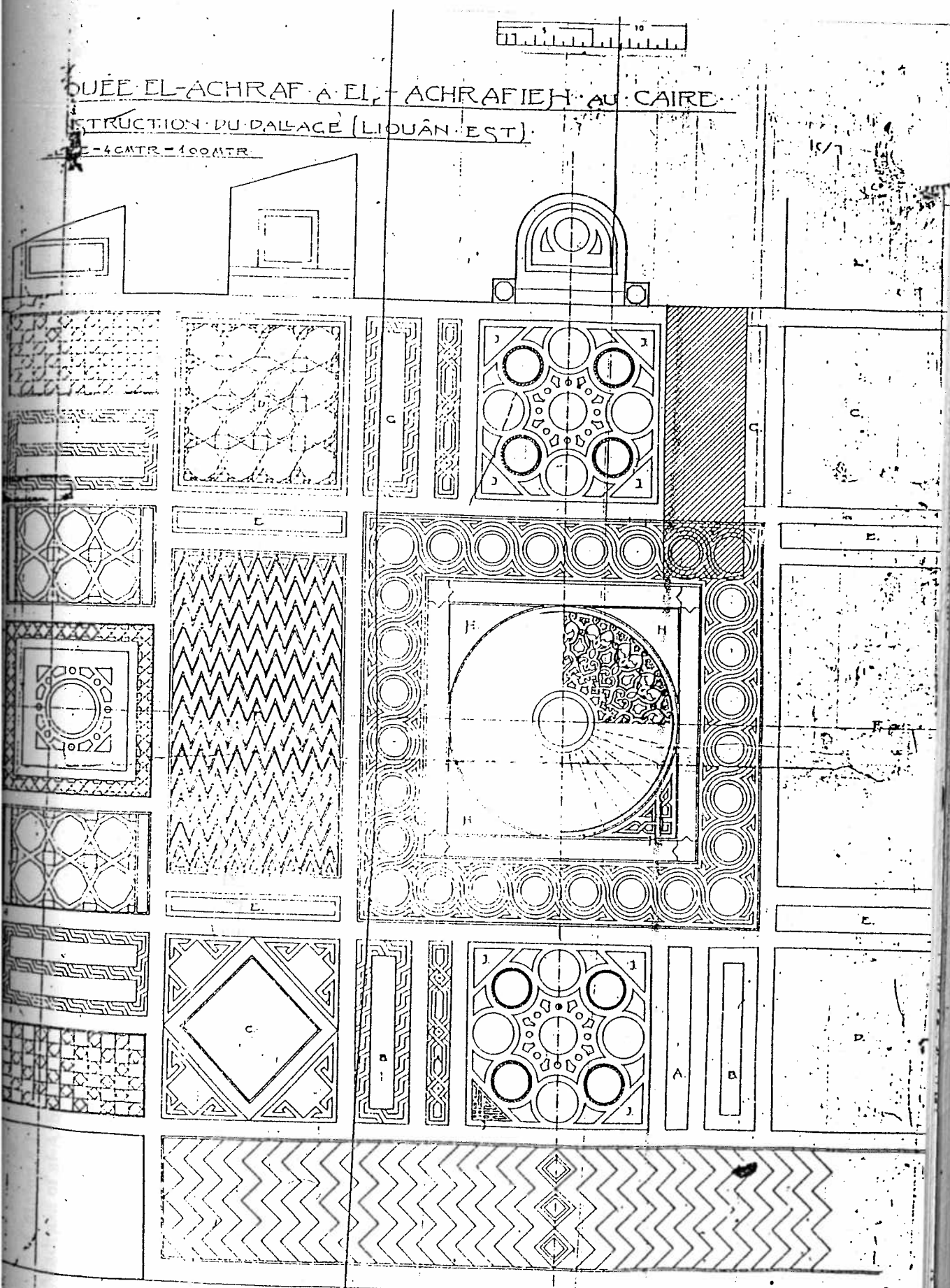


Fig. 18-2



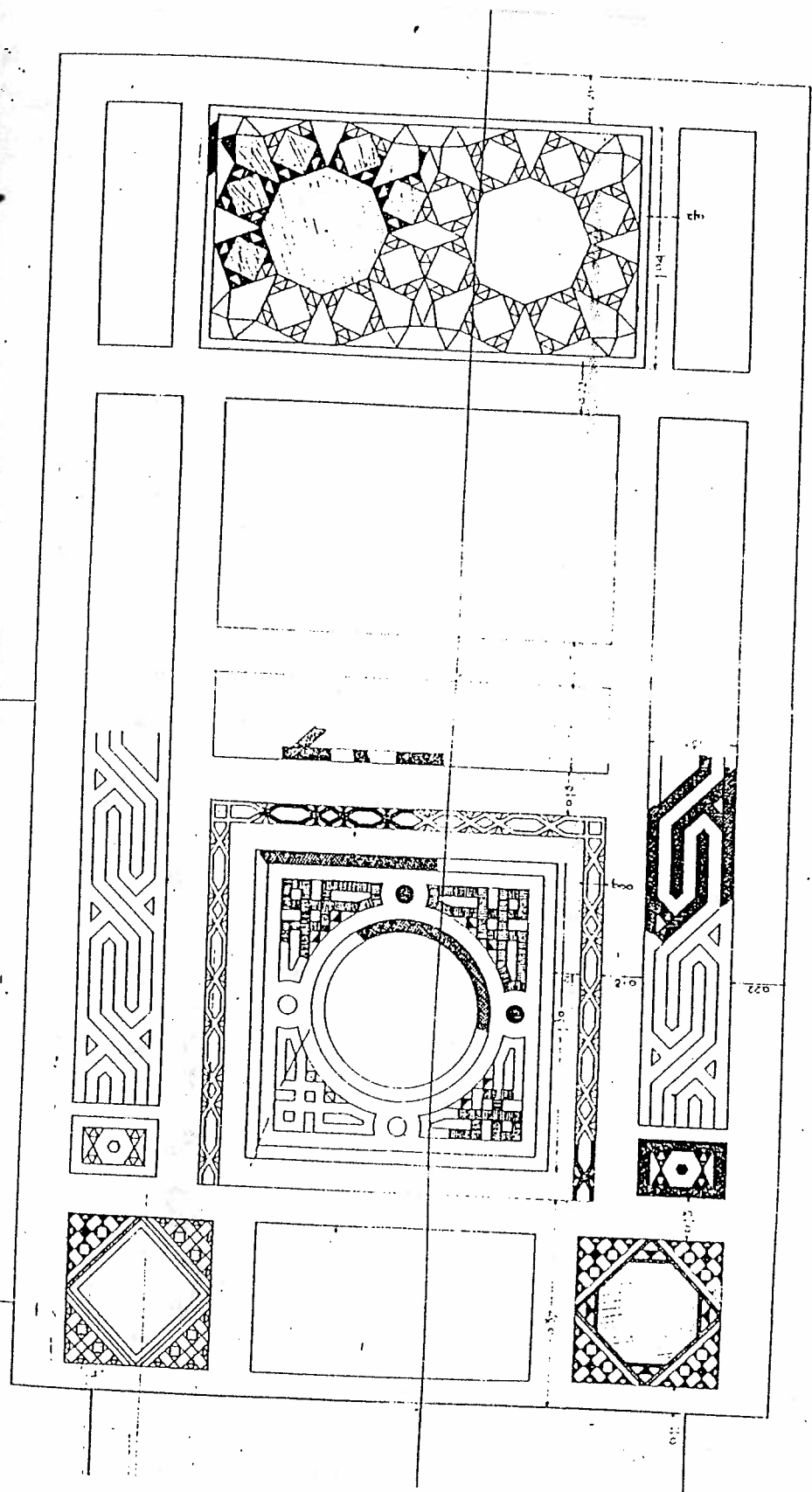


Fig. 18-3 (1920)

Rossi
 3.3.1920.

Figures
Catalog # 18

Madrasa of al-Ashraf
Barsbay

Barsbay al-Ashraf, al-Ashraf al-Ma'mun
Cibik, Egypt, 1420-1421, al-Ashraf al-Ma'mun
Cibik, Egypt, 1420-1421, al-Ashraf al-Ma'mun

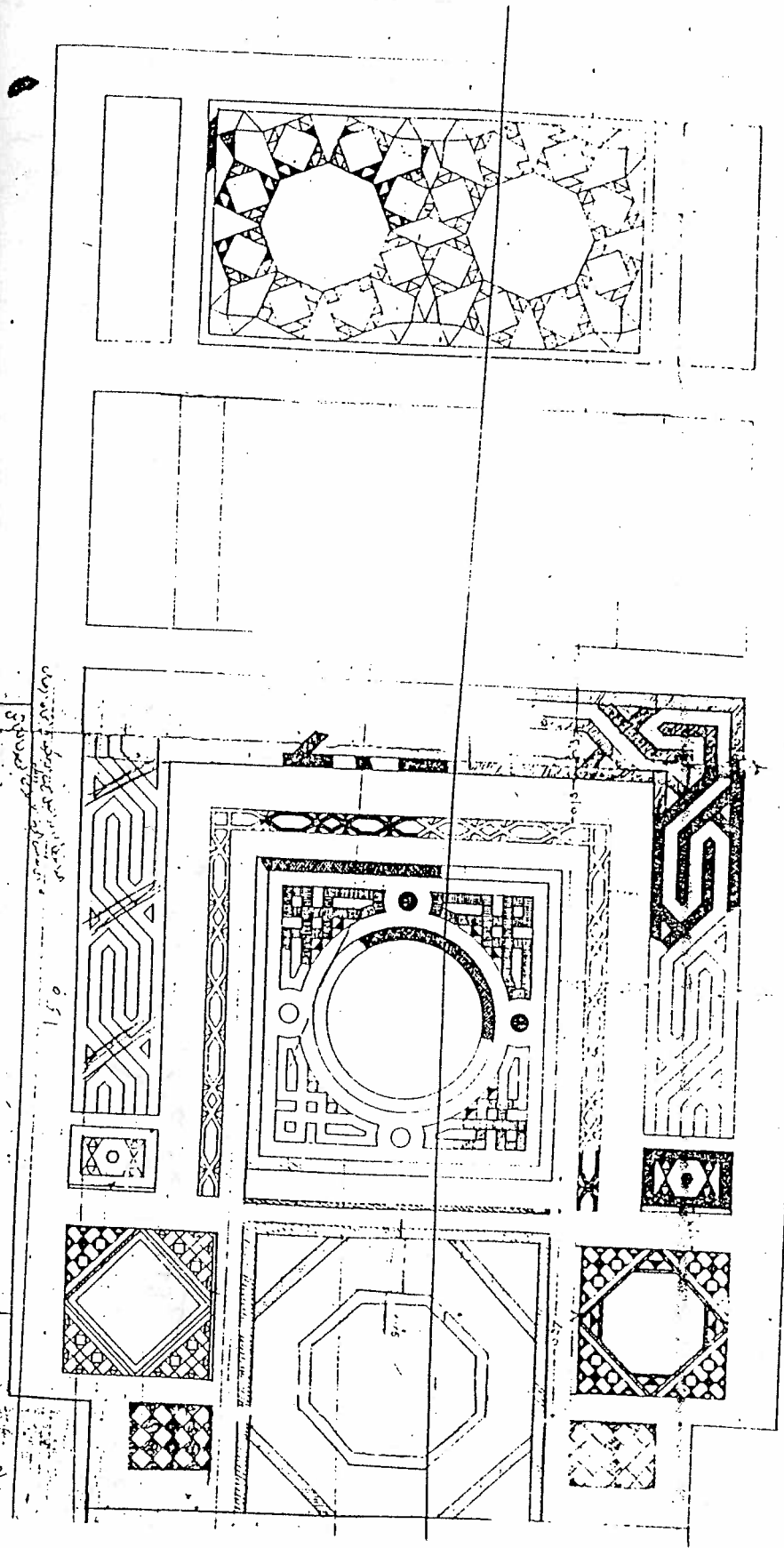


Fig. 18-4
(1920 with comments)

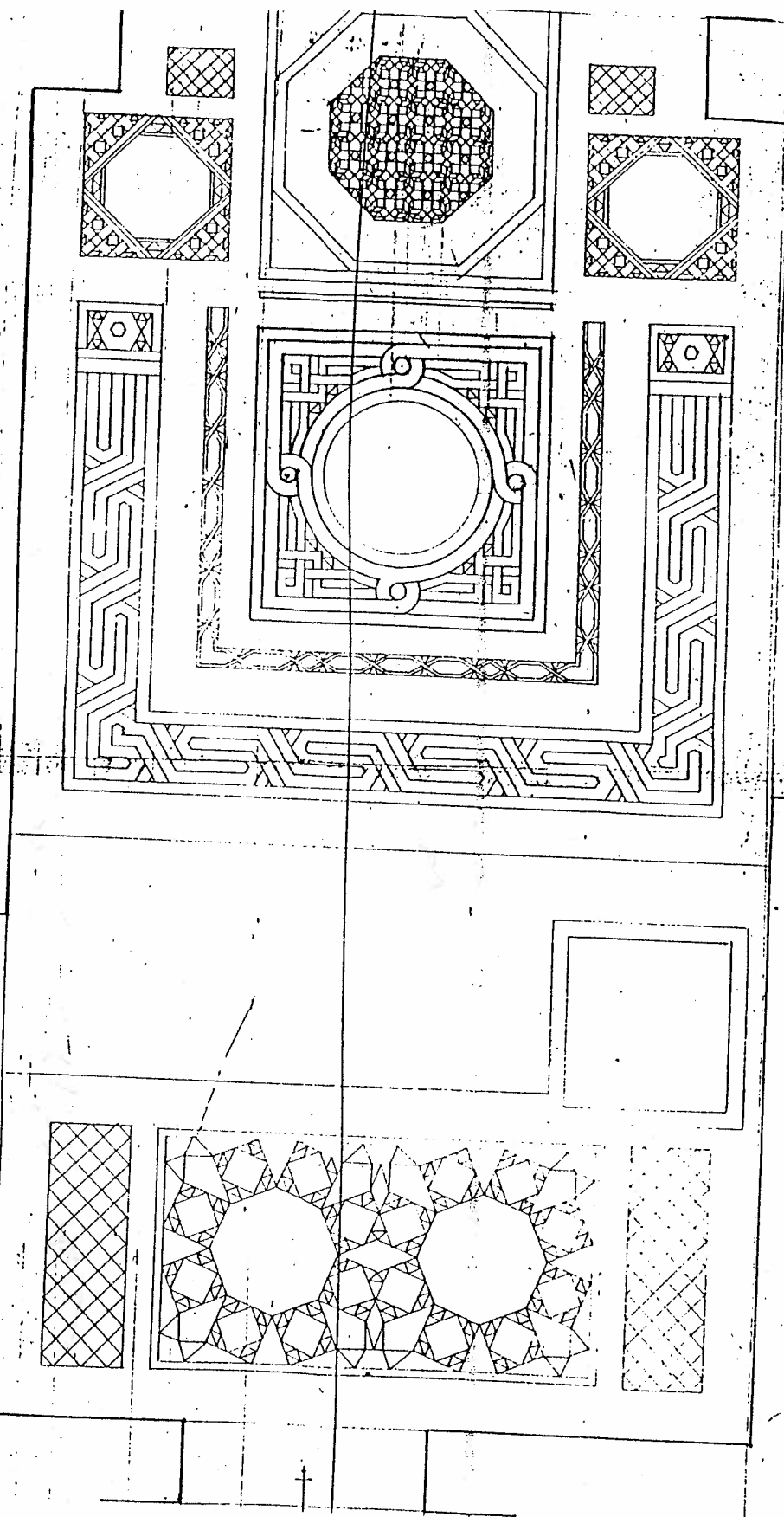
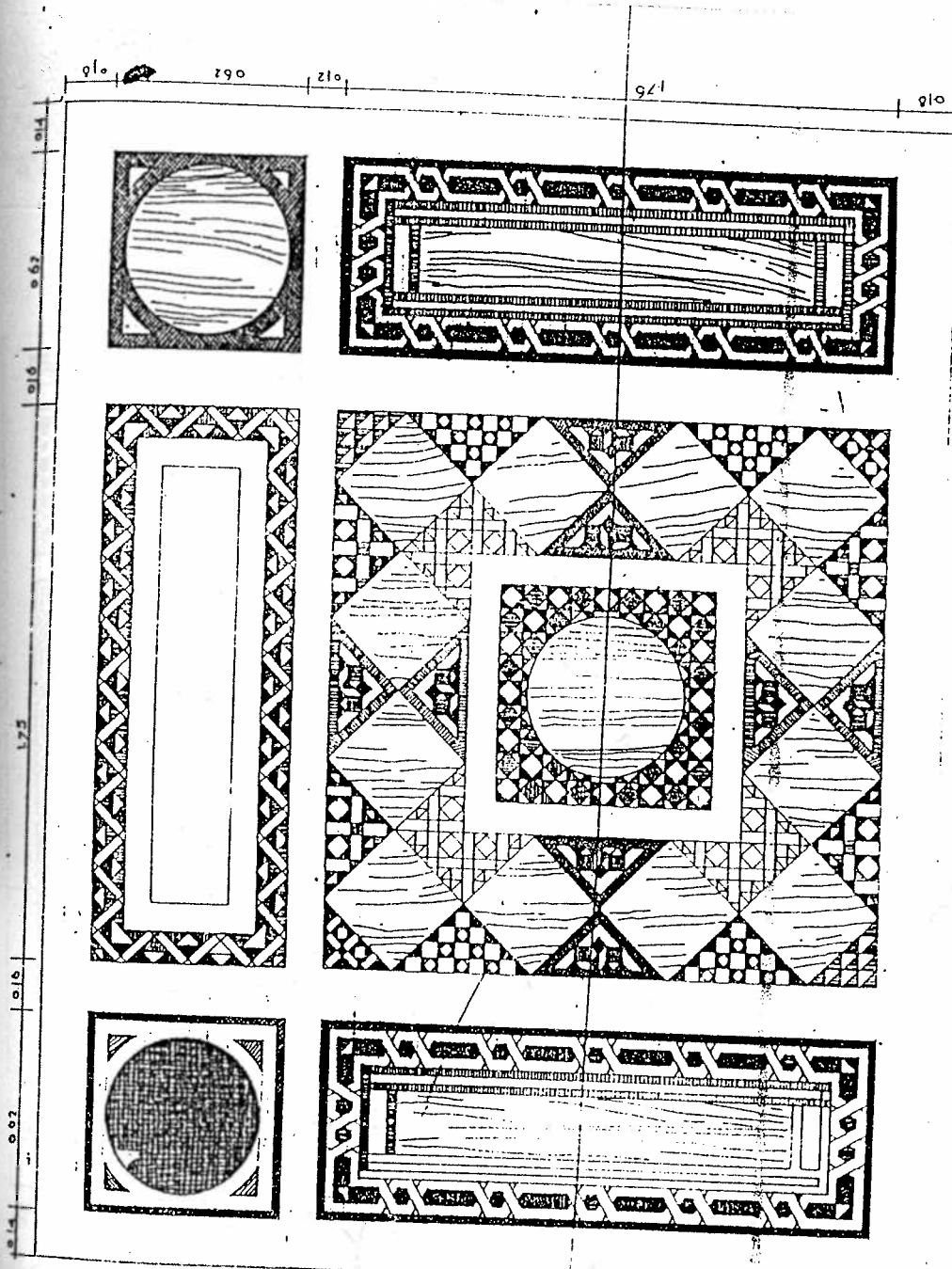


Fig. 18-5 (1930)

مدرسة الأشرف

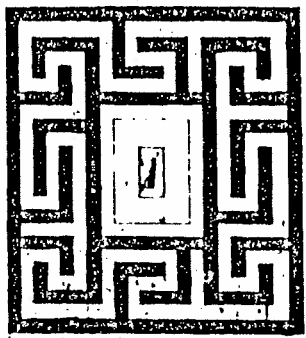
مدرسة
الأشرف



Mosquée d'Abou al-Hasan. (Madrassa)
Dessiné de la Qa'ah-conligue au-Sibul-Resurrection.
Ech. 1:10. p.mtr.

Al-Ashraf

Fig. 18-6 (1920)



(58)

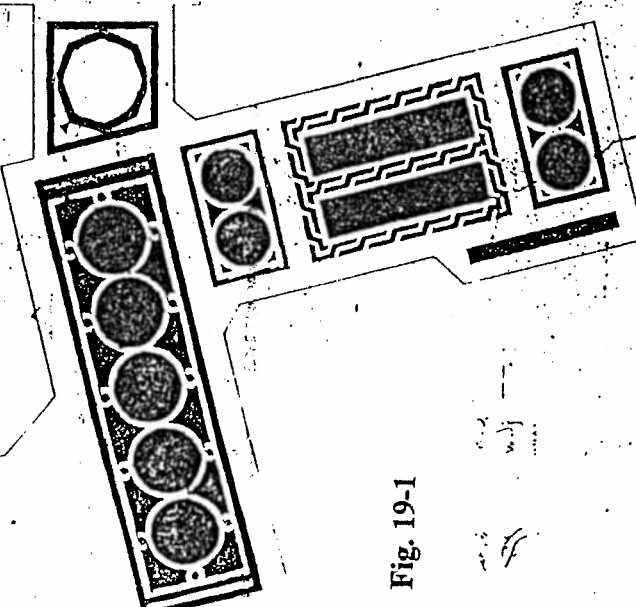
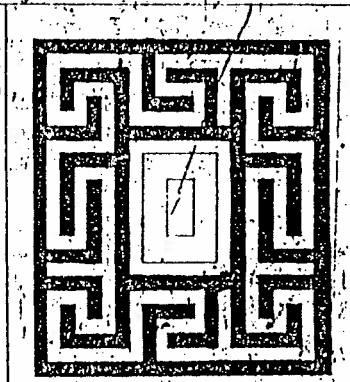
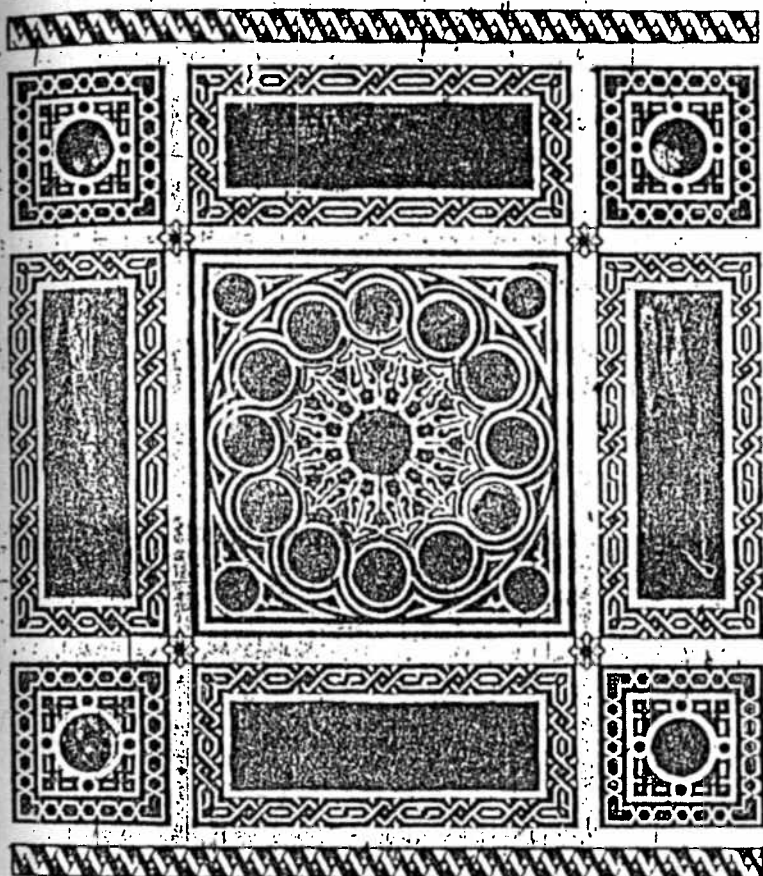


Fig. 19-1

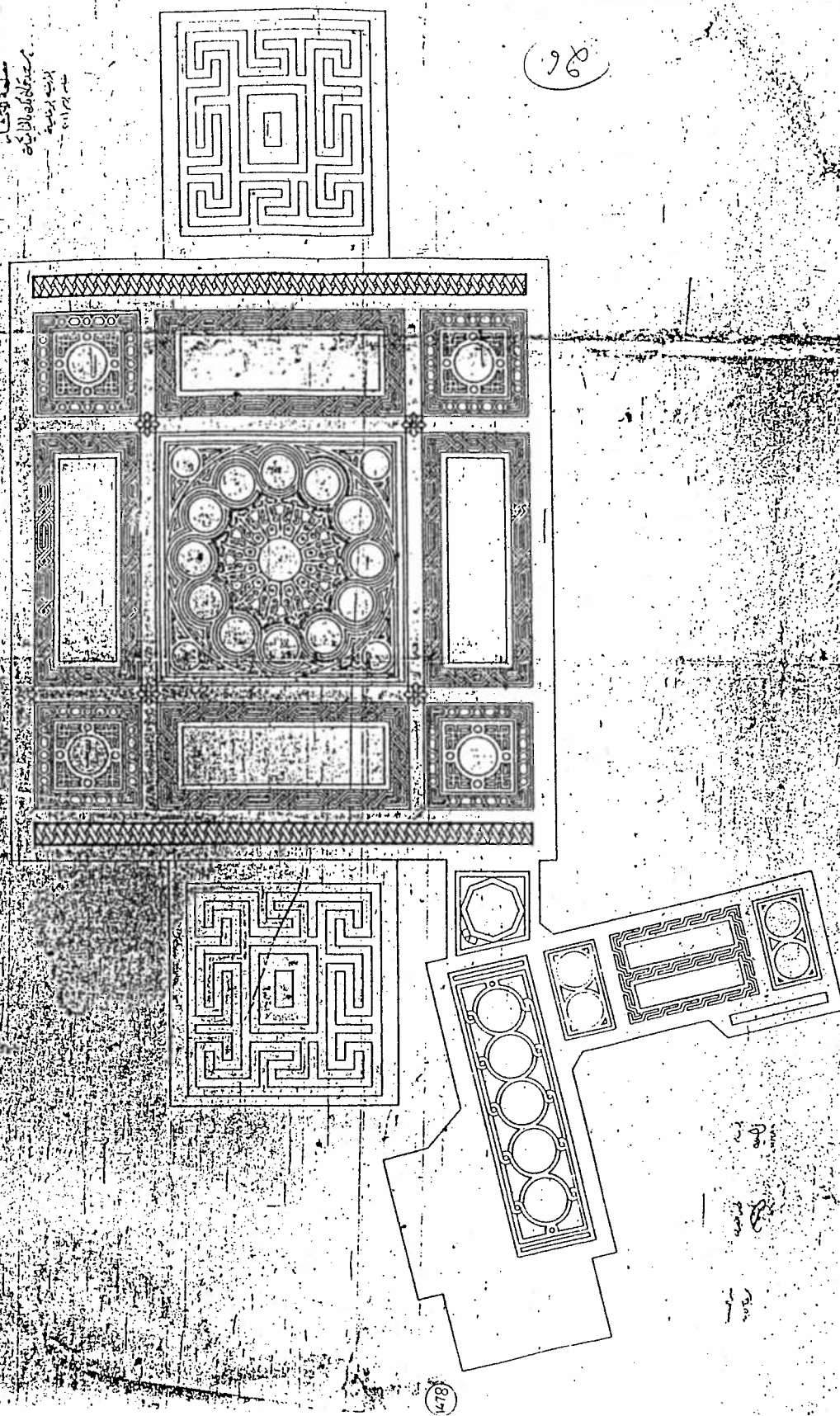
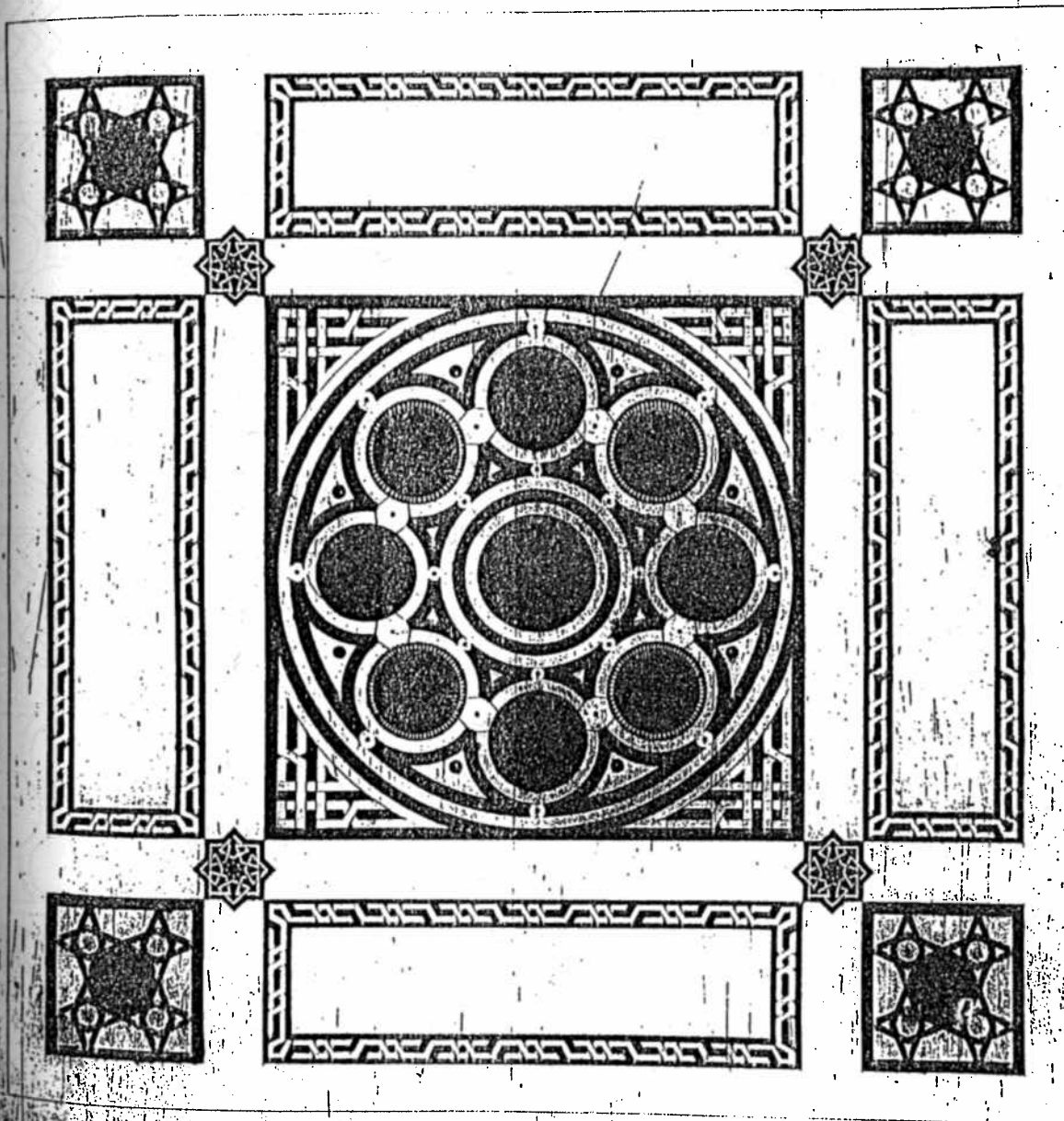


Fig. 19-2

Fig. 20-1

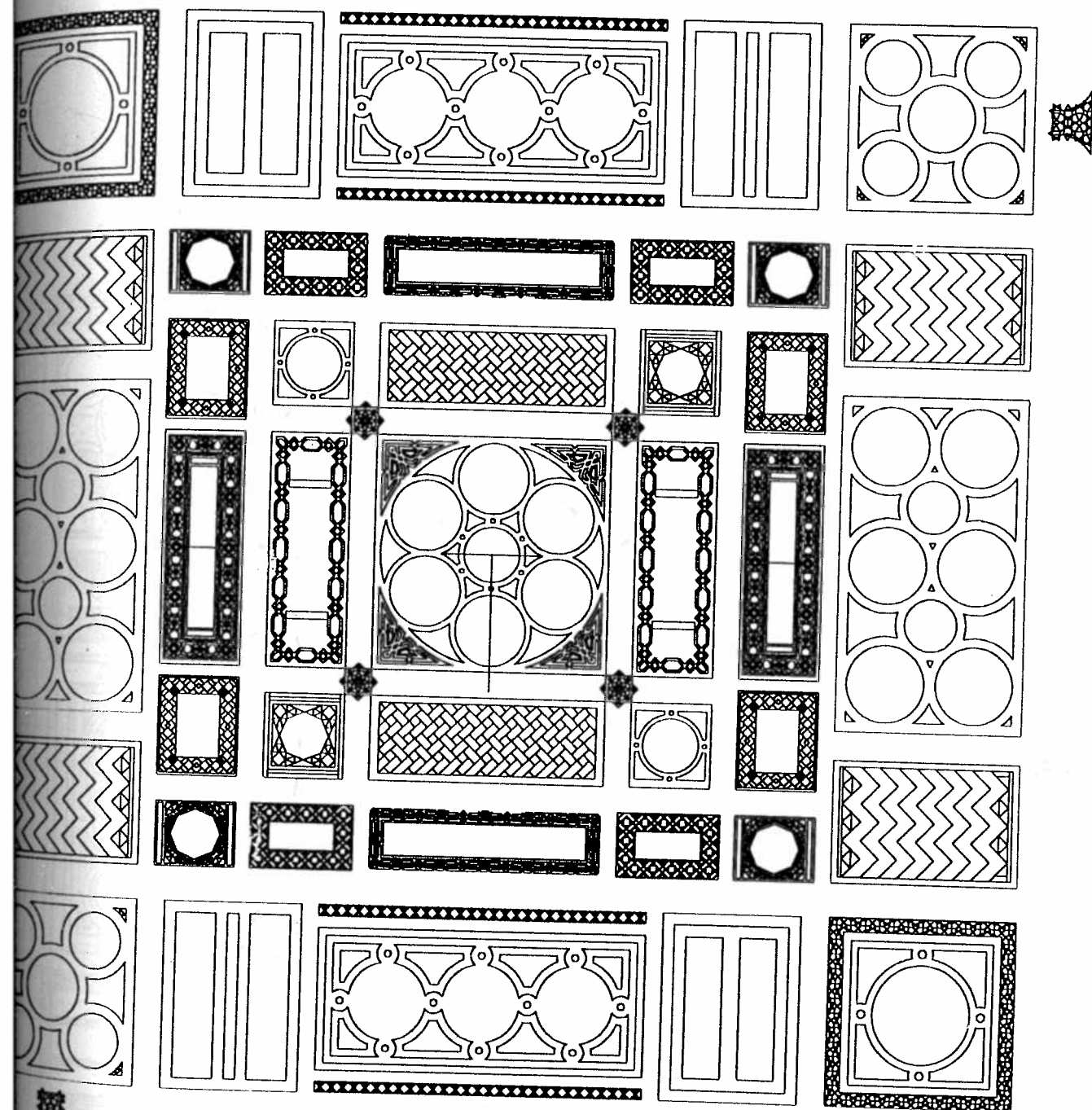
Figures
Catalog # 20
Madrasa of Jawhar
al-Lala

وزارة الثقافة
مصلحة الآثار
الأرضية الرقائعية لصحن مسجد محمد الدال بالقلعة
مقياس الرسم : ١ : ١٠



2

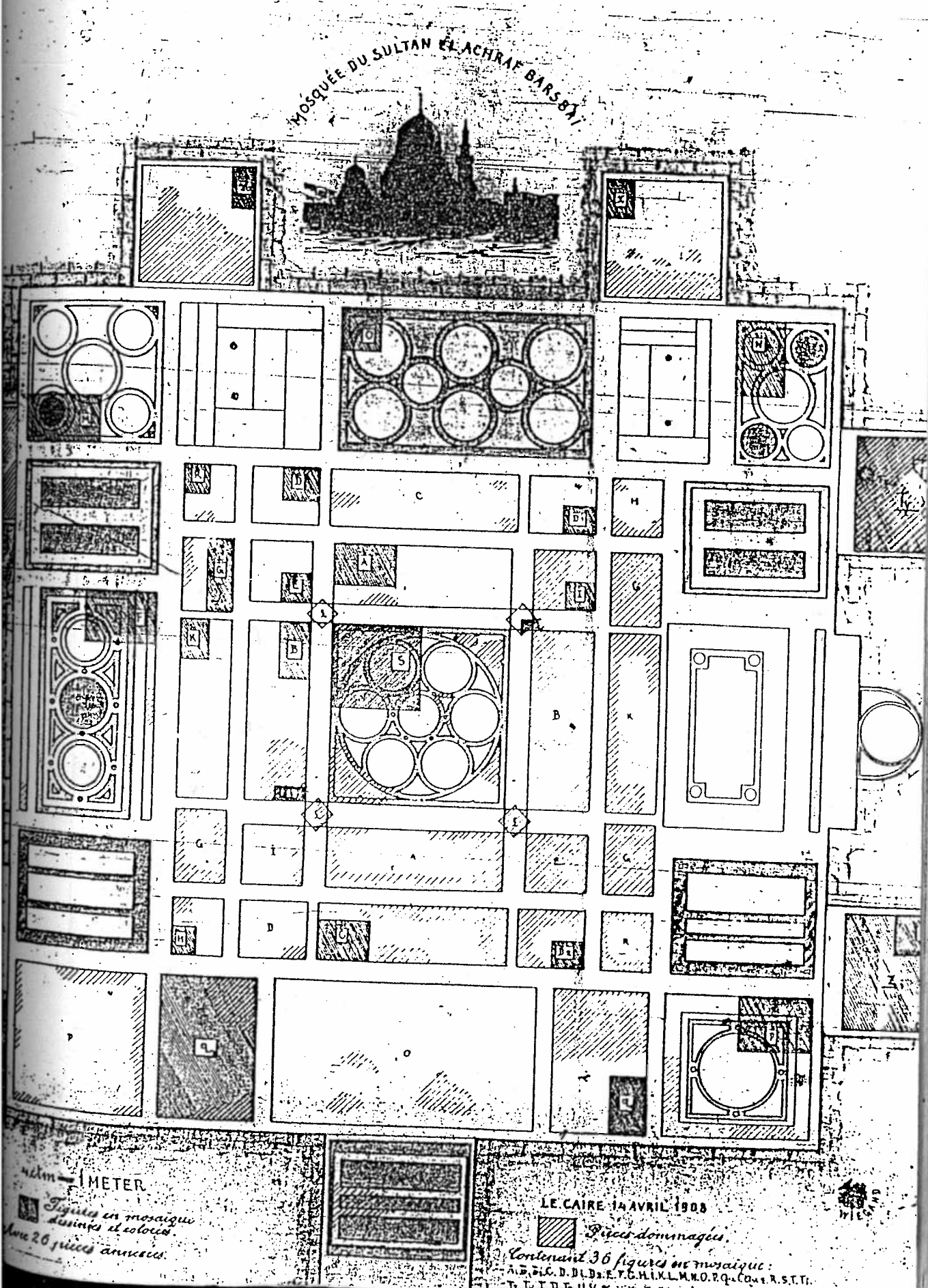
الرسالة
دكتوراه في الآداب
الاسلامية



Complex of as-Ashraf Barsbay
Marble Pavement of mausoleum
North Cemetery

Fig. 21-1

Fig. 21-2



[illegible]

Figures
Catalog # 21
Complex of al-Ashraf
Barsbay

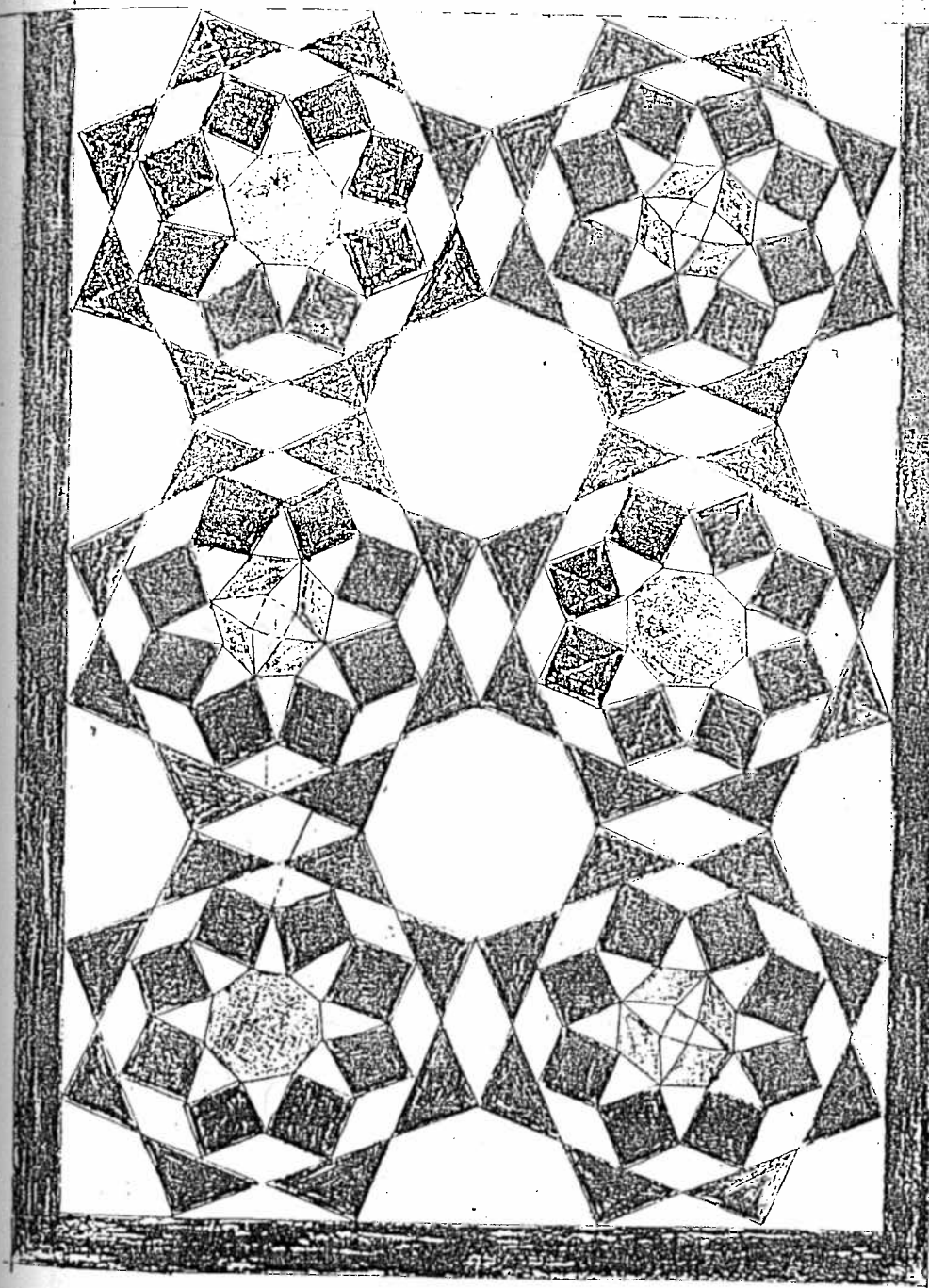


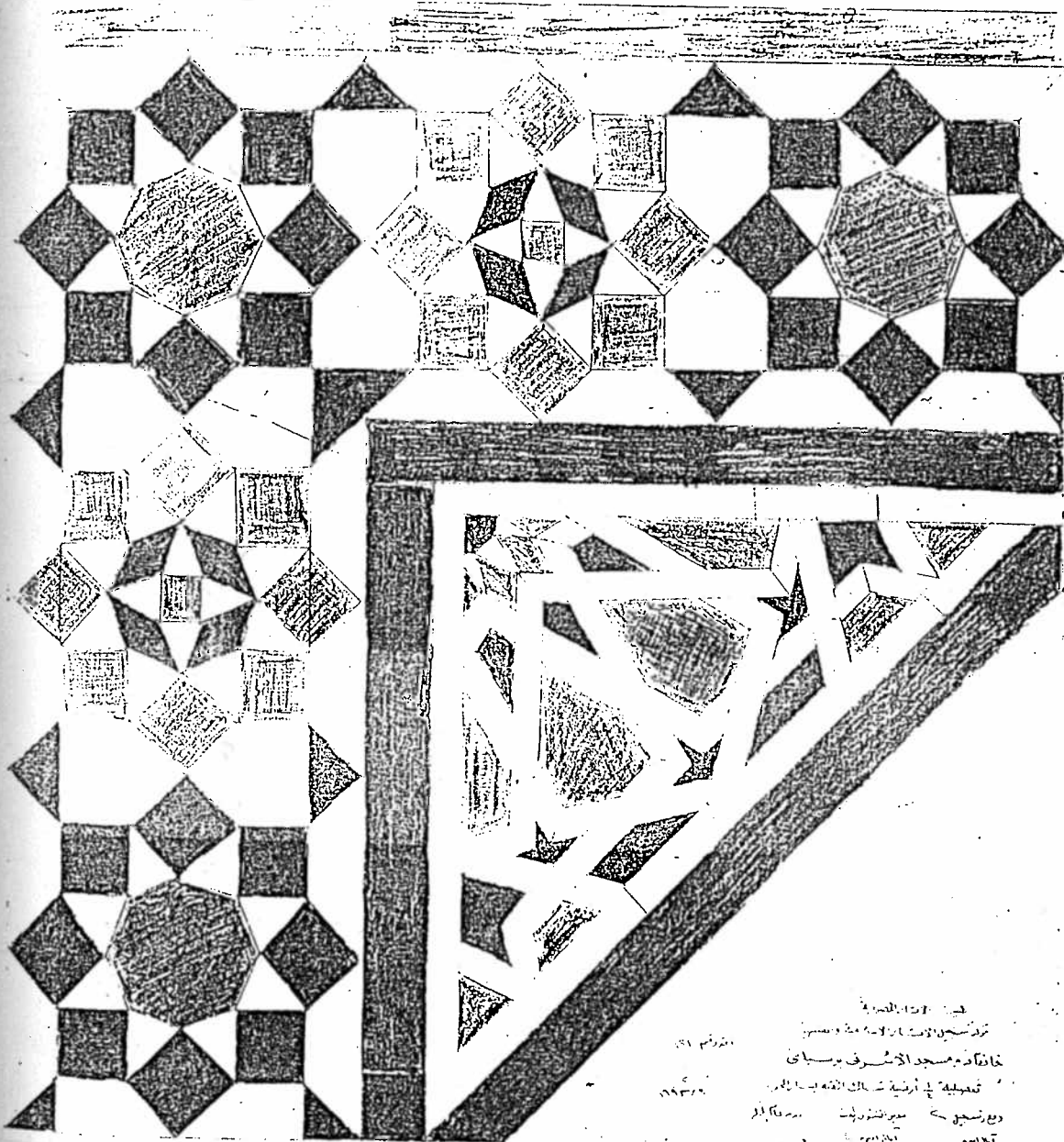
Fig. 21-4 (1993)

هذه الأختام بالصورة
مركزية الأختام بالأسود والفضة
خاتمة وشجر الشرف بربسباي
أرضية شباك صحن المسجد في دار الخراج
منه راسم
تعداد
الاسم
الرقم
الاسم
الرقم
الاسم
الرقم



مجلسه التوفيق بالحدودية
تفسير الآيات الاصلاحية والحدودية
خاتمة تفسير التوفيق برسائلي

Fig. 21-6



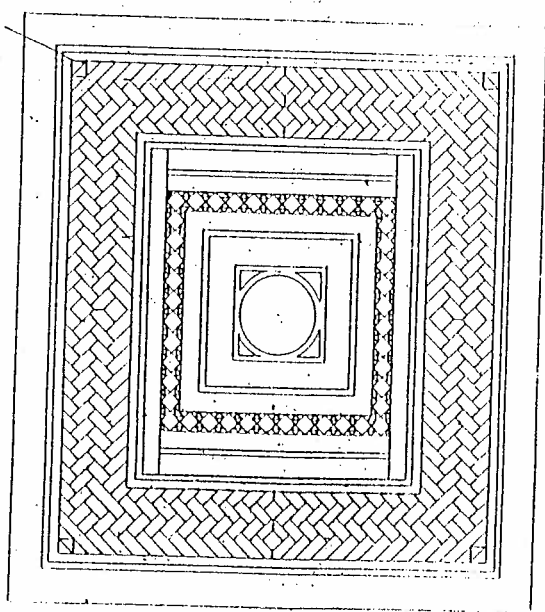
هذا نقش من الرخام
في مسجد الأشرف برسباي
في مدينة القاهرة
في سنة ٨٥٠ هـ
١٤٥٠ م

(27)

14 13 12 11 10 9 8 7 6 5 4 3 2 1

1 meter

14 13 12 11 10 9 8 7 6 5 4 3 2 1



وزارت معارف و اوقاف و صنایع مستظرفه
مجلس شورای معارف
تجدید فکری بردی
المسلمه
مشرع زین العابدین
میرزا علی
مقامات

29.

Figures
Catalog # 25
Mosque of Timraz al-
Ahmadi

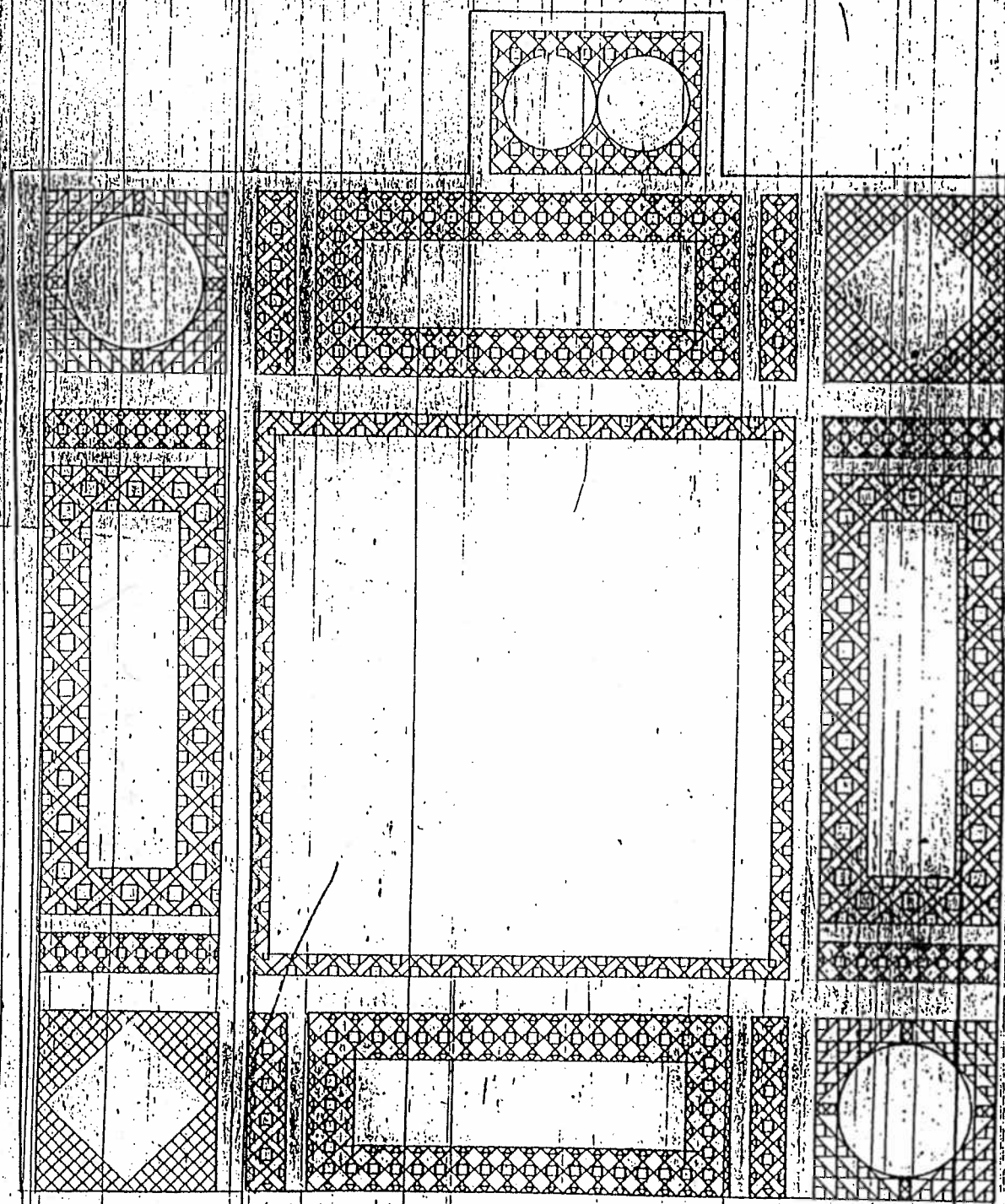


Fig. 25-1

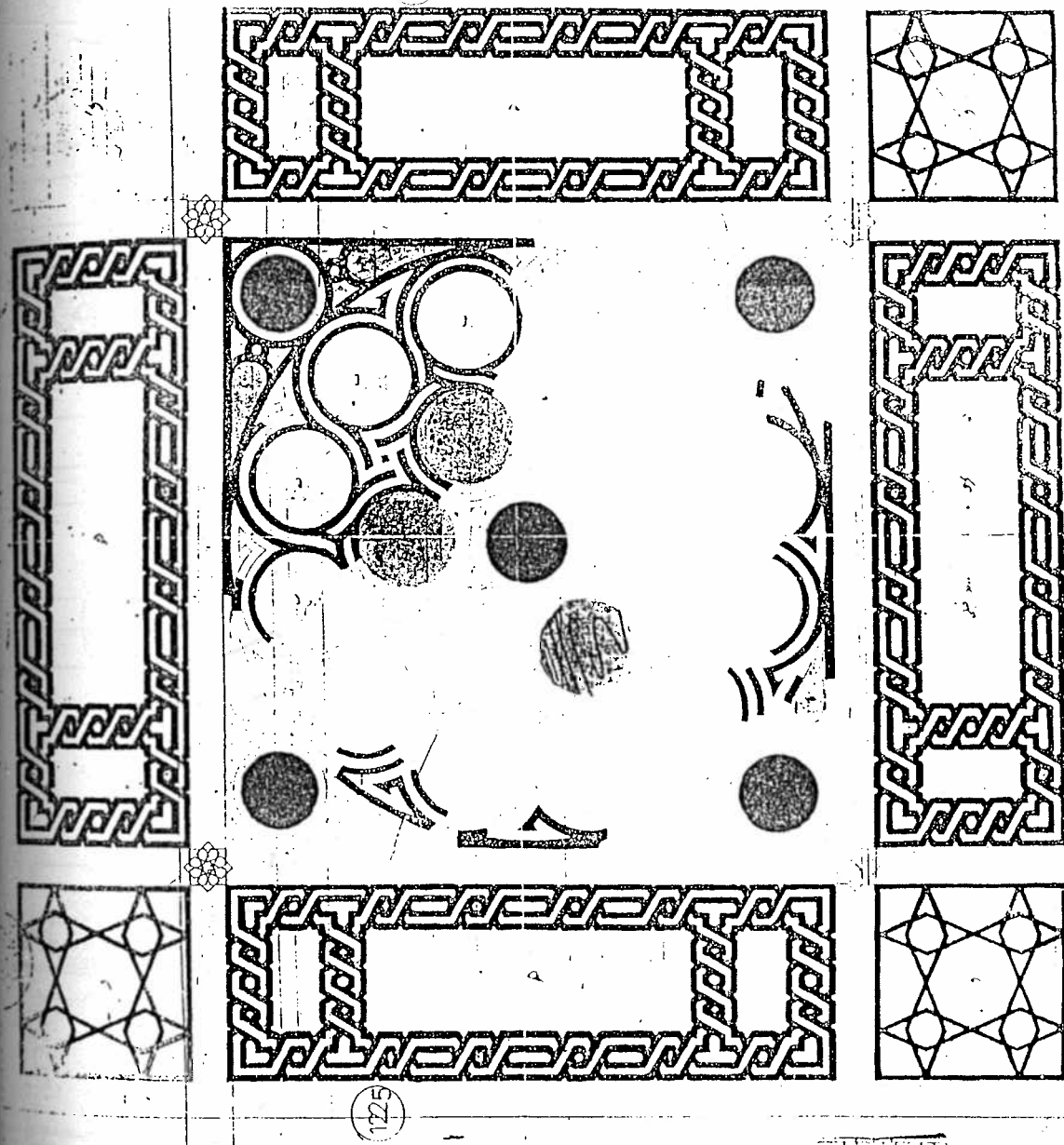


Fig. 26-1 (1903)

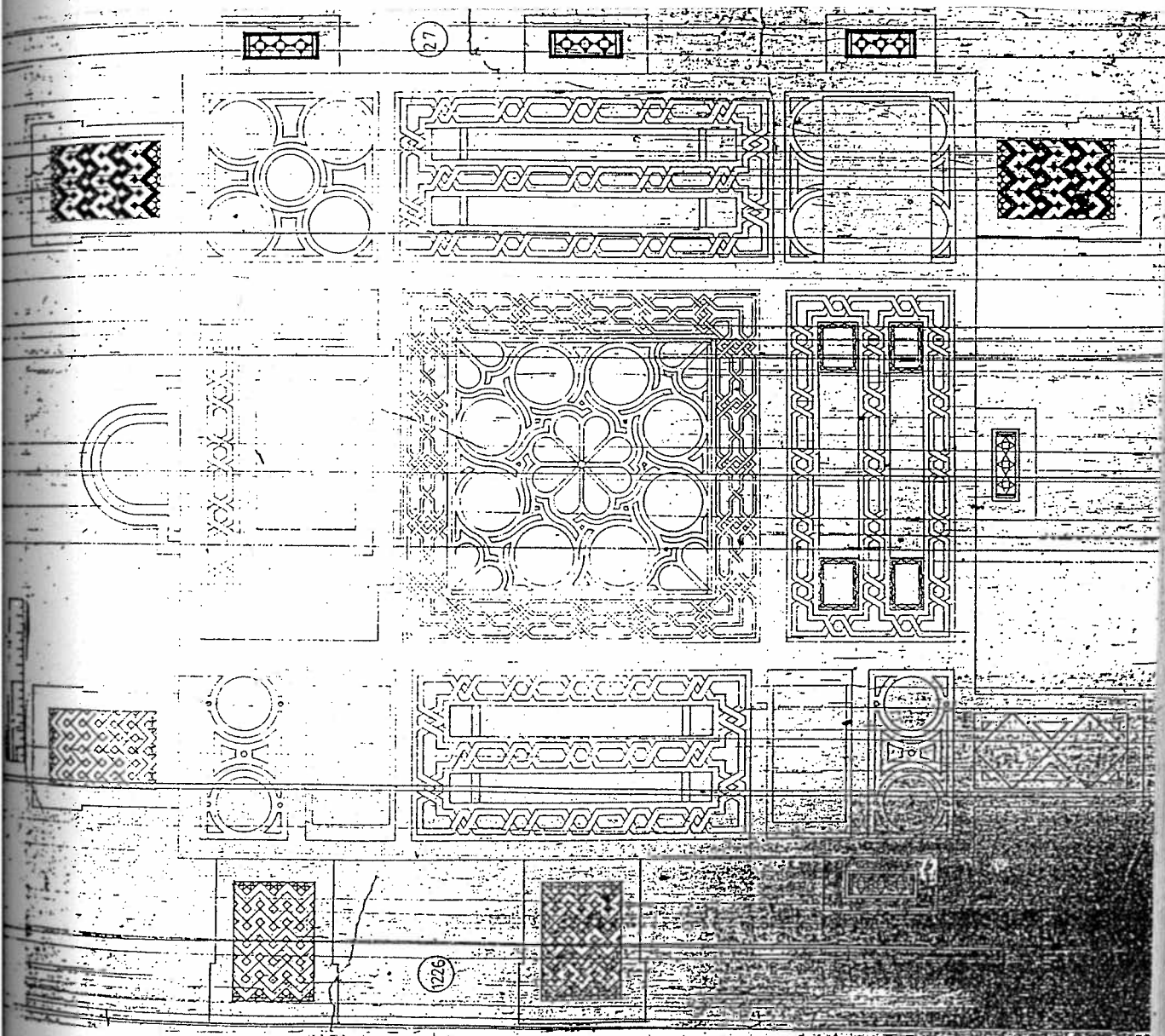


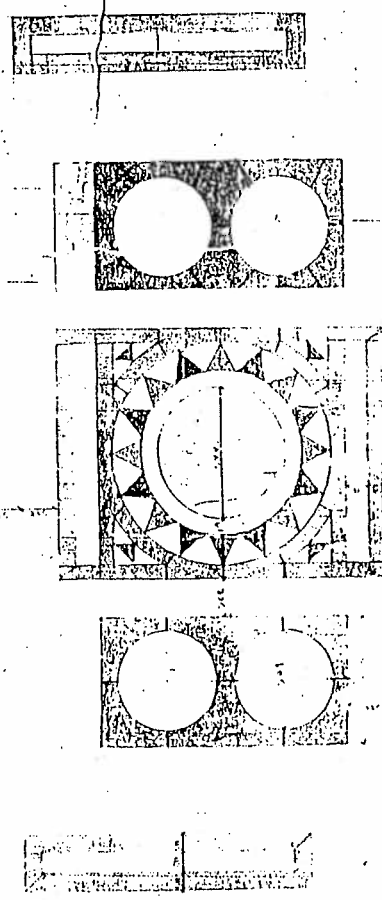
Fig. 26-2

ضرب اول
ملا

تصوير على السور الخارج ولا حصة اذنا الى النوبة البري

ضرب اول
ملا

تصوير الطير



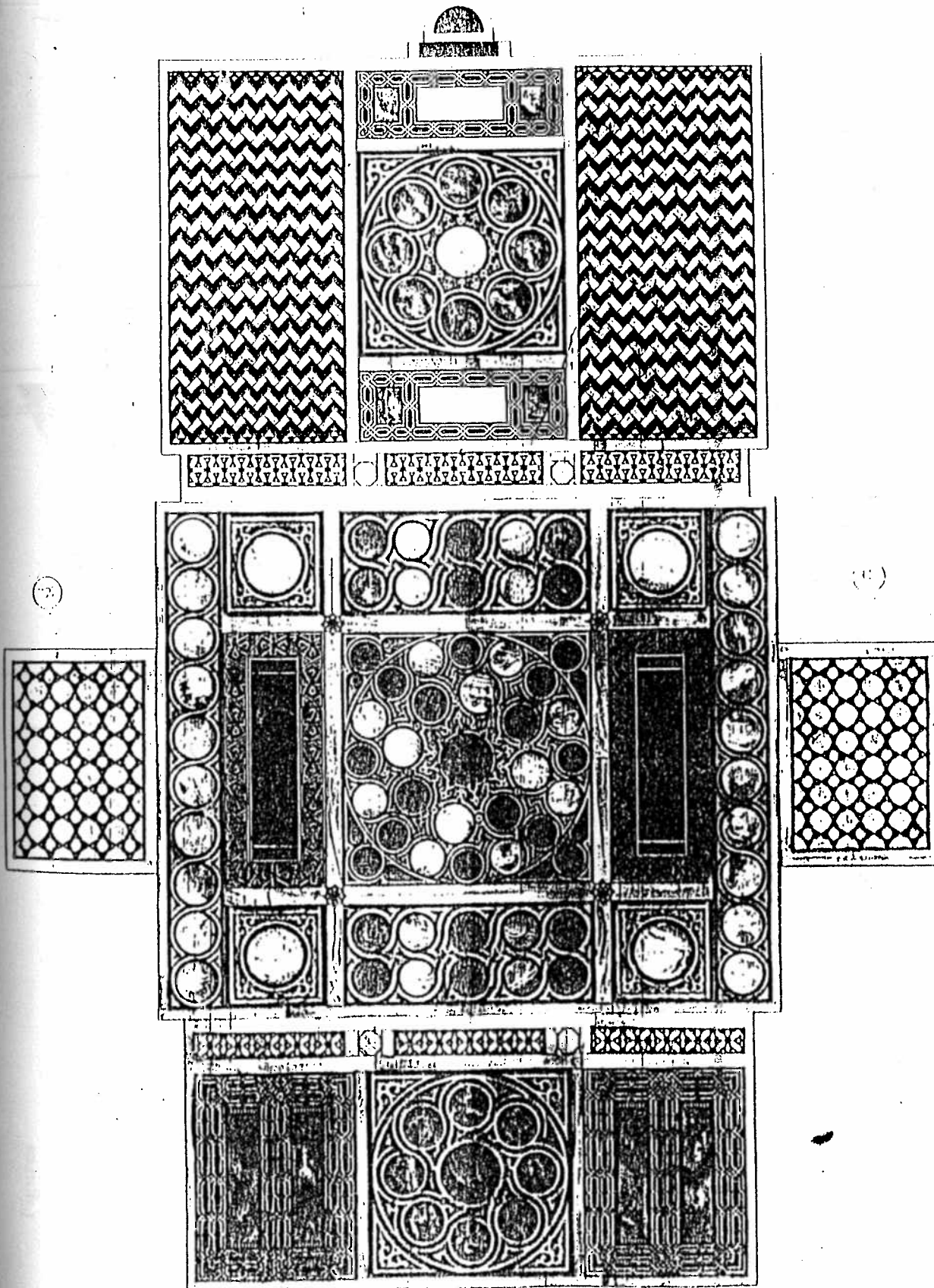
33

سقا فنى

Fig. 28-1

Fig. 29-1 (1910)

وزارة المعارف
مصر



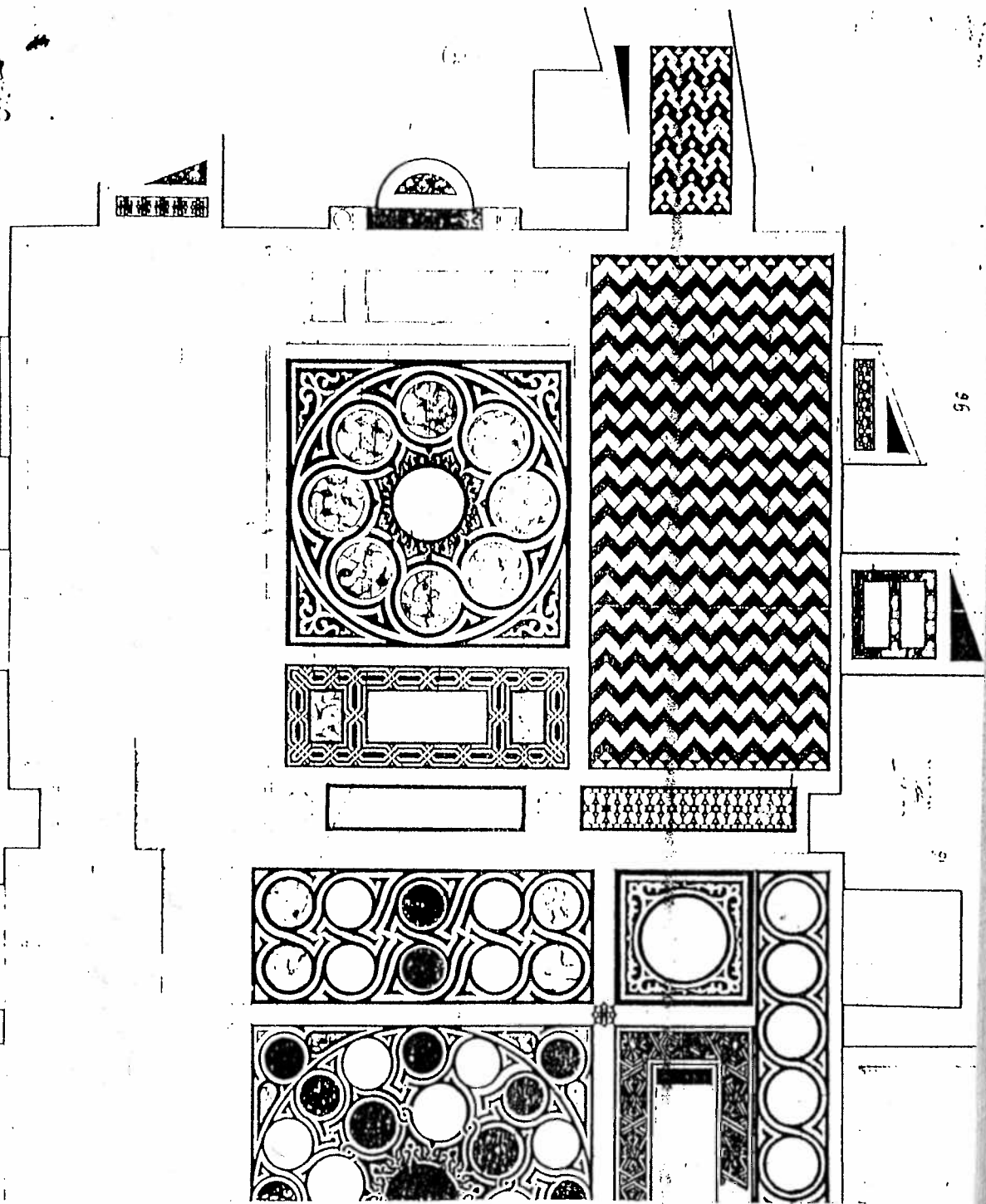


Fig. 29-2 (1930)

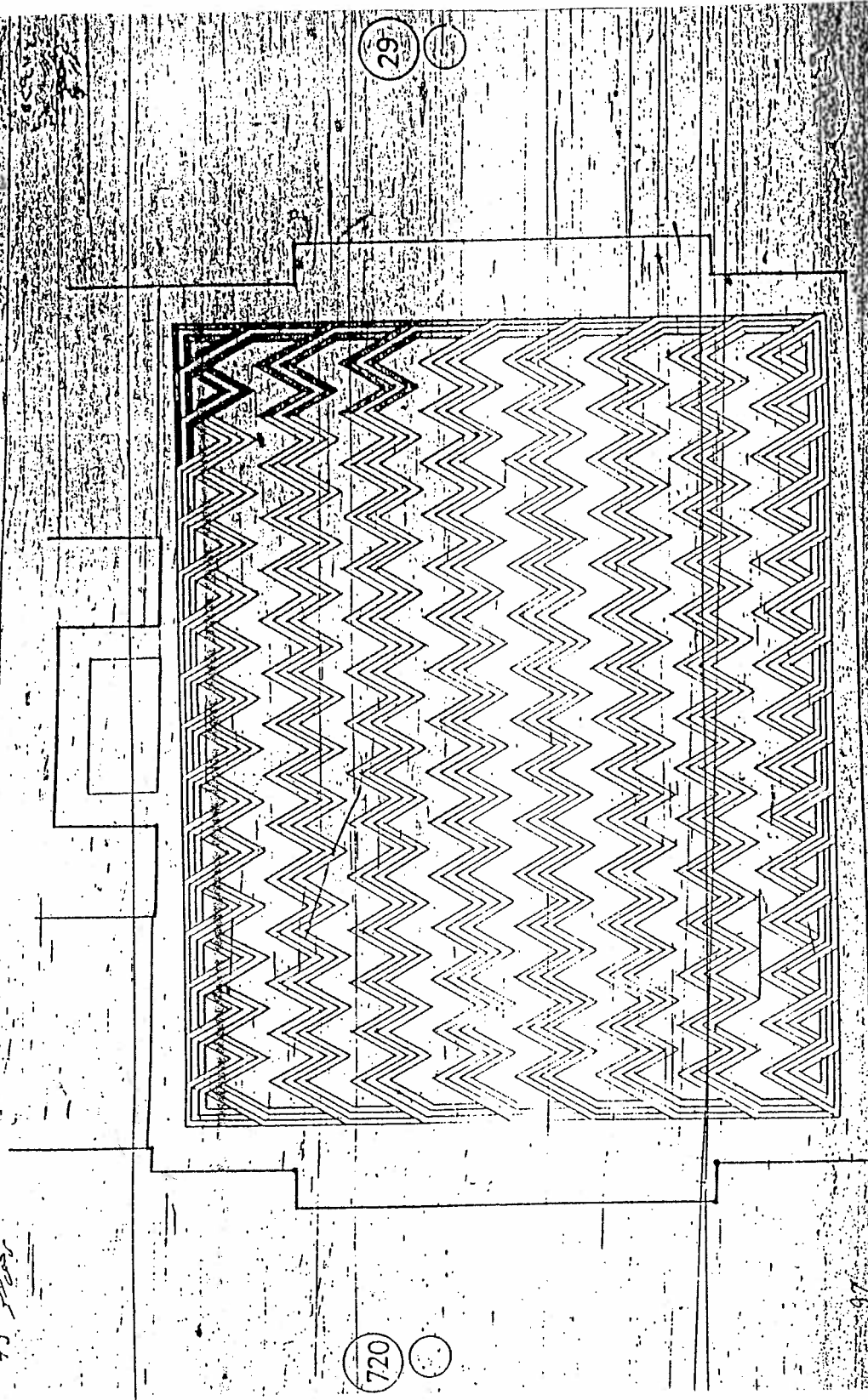


Fig. 29-3 (1930)

Figures
Catalog # 30
Madrasa of Qijmas
al-Ishaqi

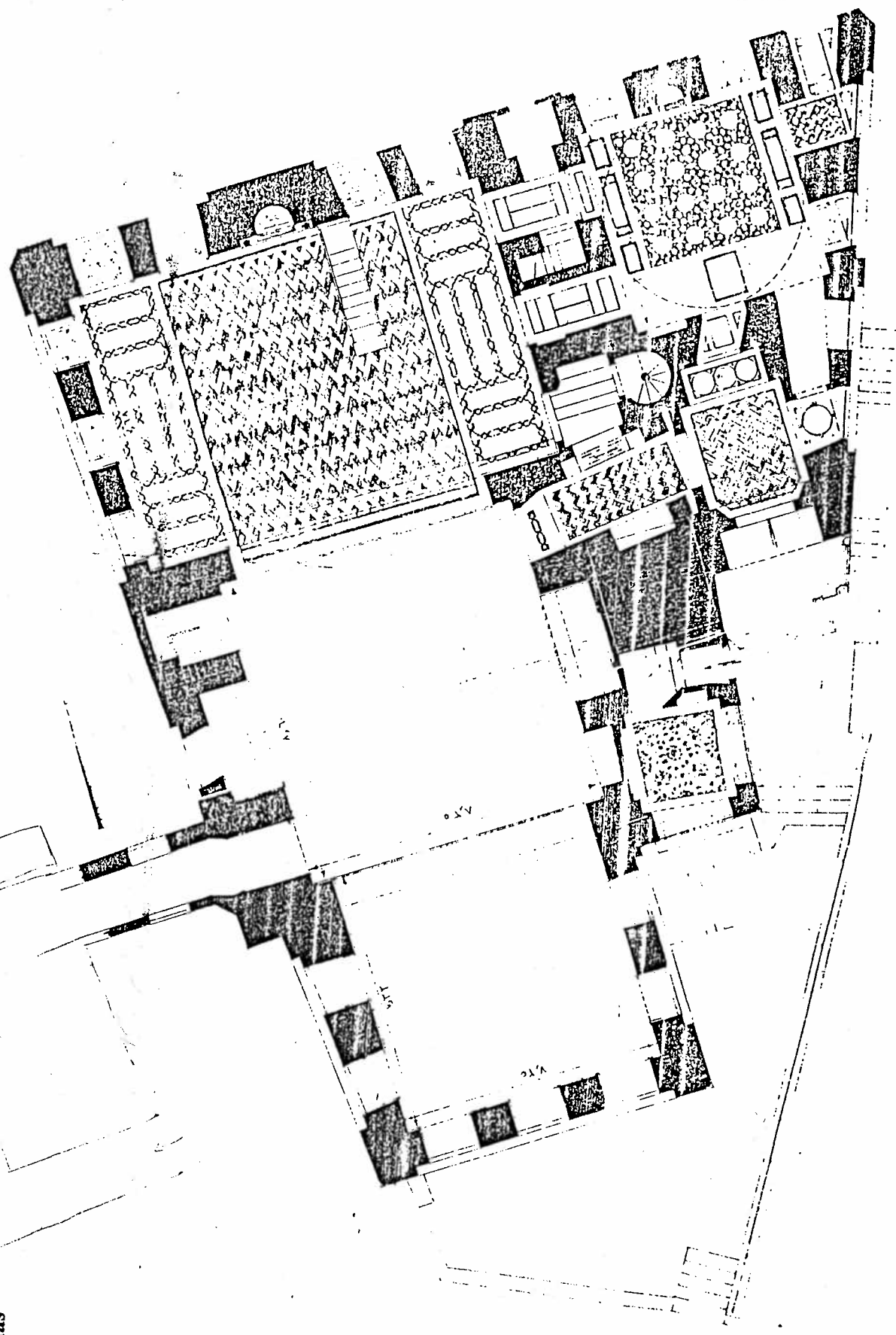


Fig. 30-1

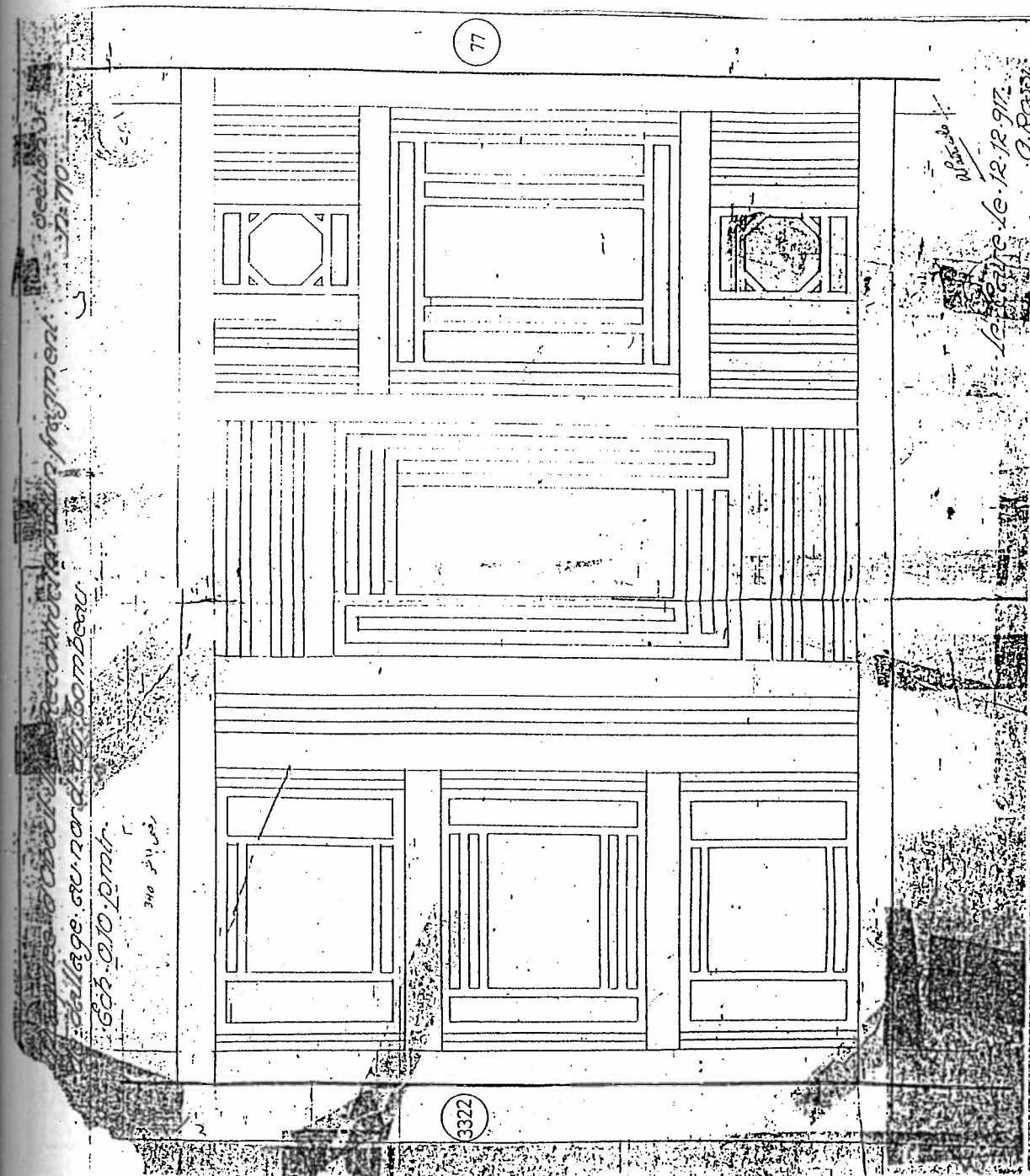
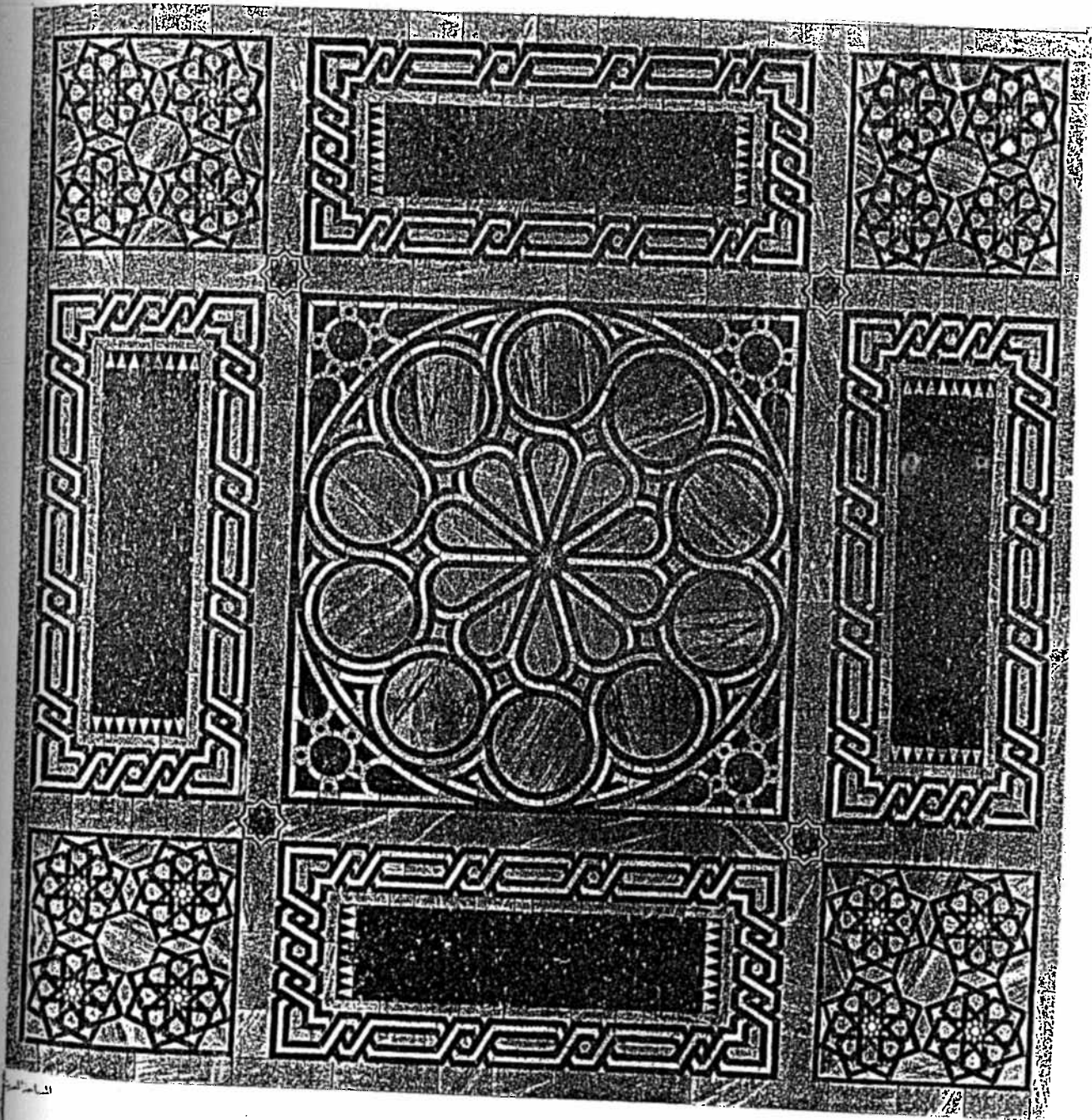


Fig. 31-1 (1917)

Fig. 32-1 (1946)



رضية رخامية

مسجد الأمير ألبك السلي
(٩٥٠/١٤٩٤) ٥٩٠٠

Figures
Catalog # 33
Mausoleum of Tarabay
al-Sharifi

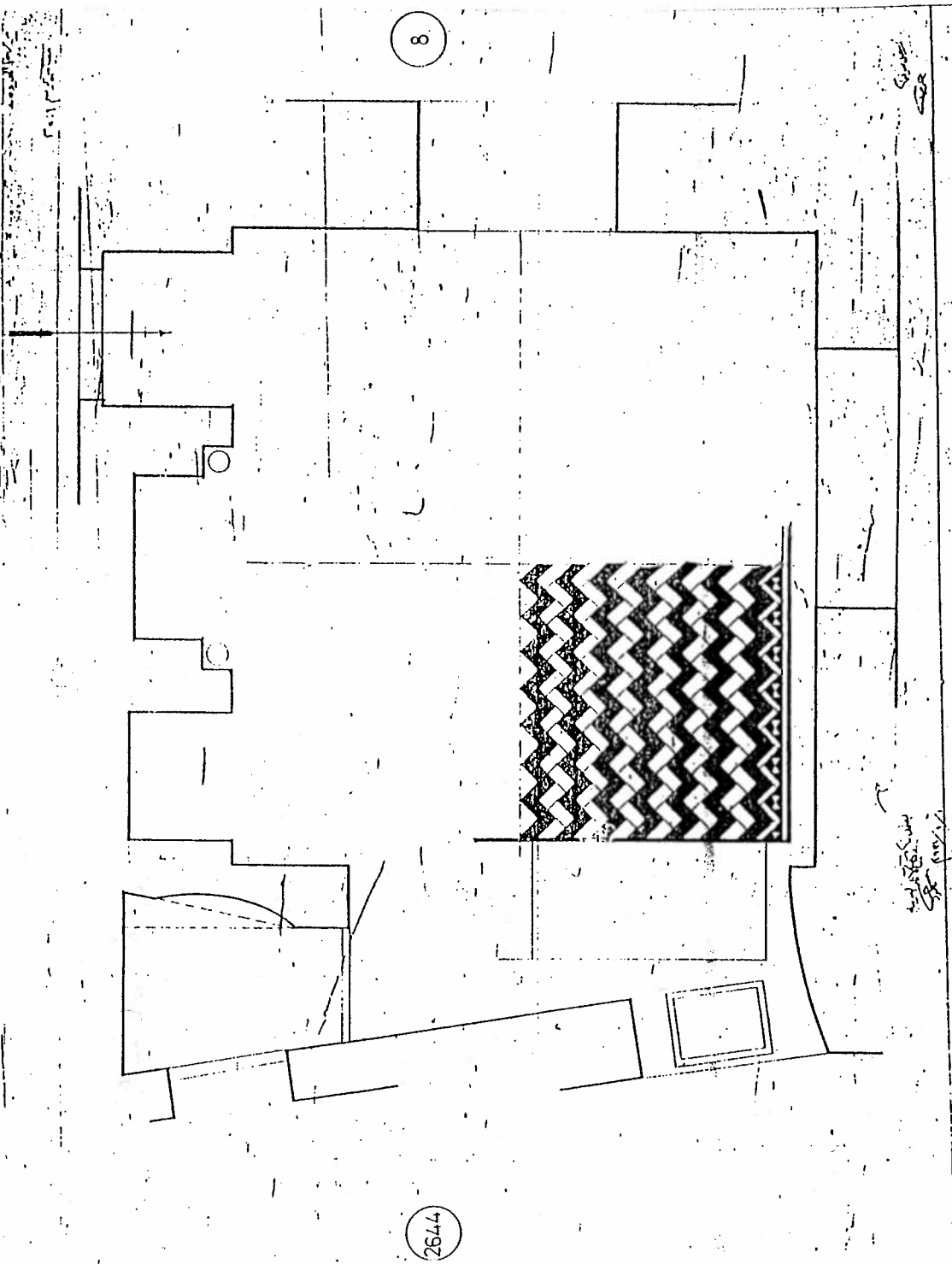


Fig. 33-1 (1931)

قبة الغوري بالقرية
مسجد الغوري
مسجد الغوري بالقرية
مسجد الغوري بالقرية
مسجد الغوري بالقرية

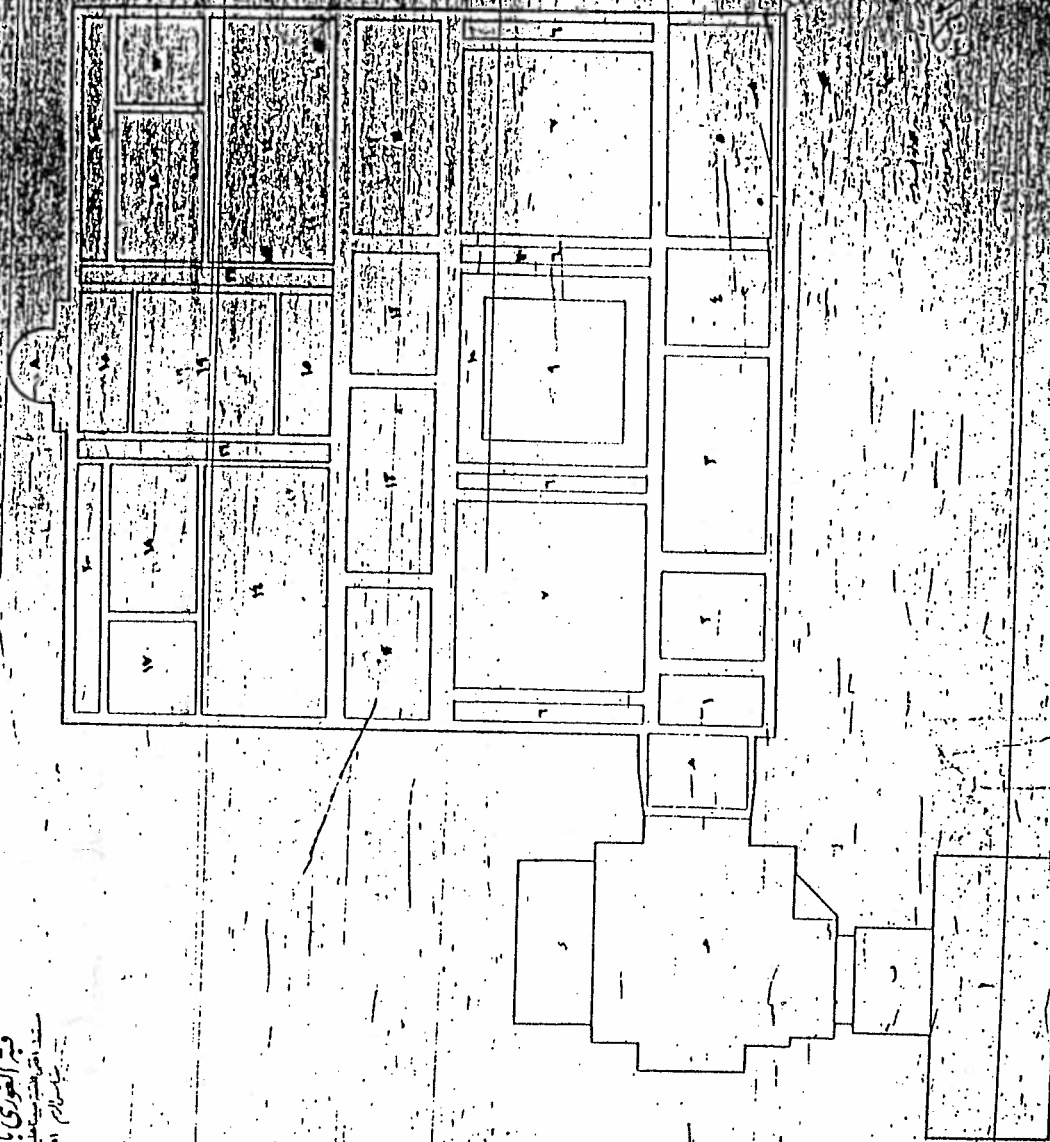


Fig. 34-1

Fig. 34-2

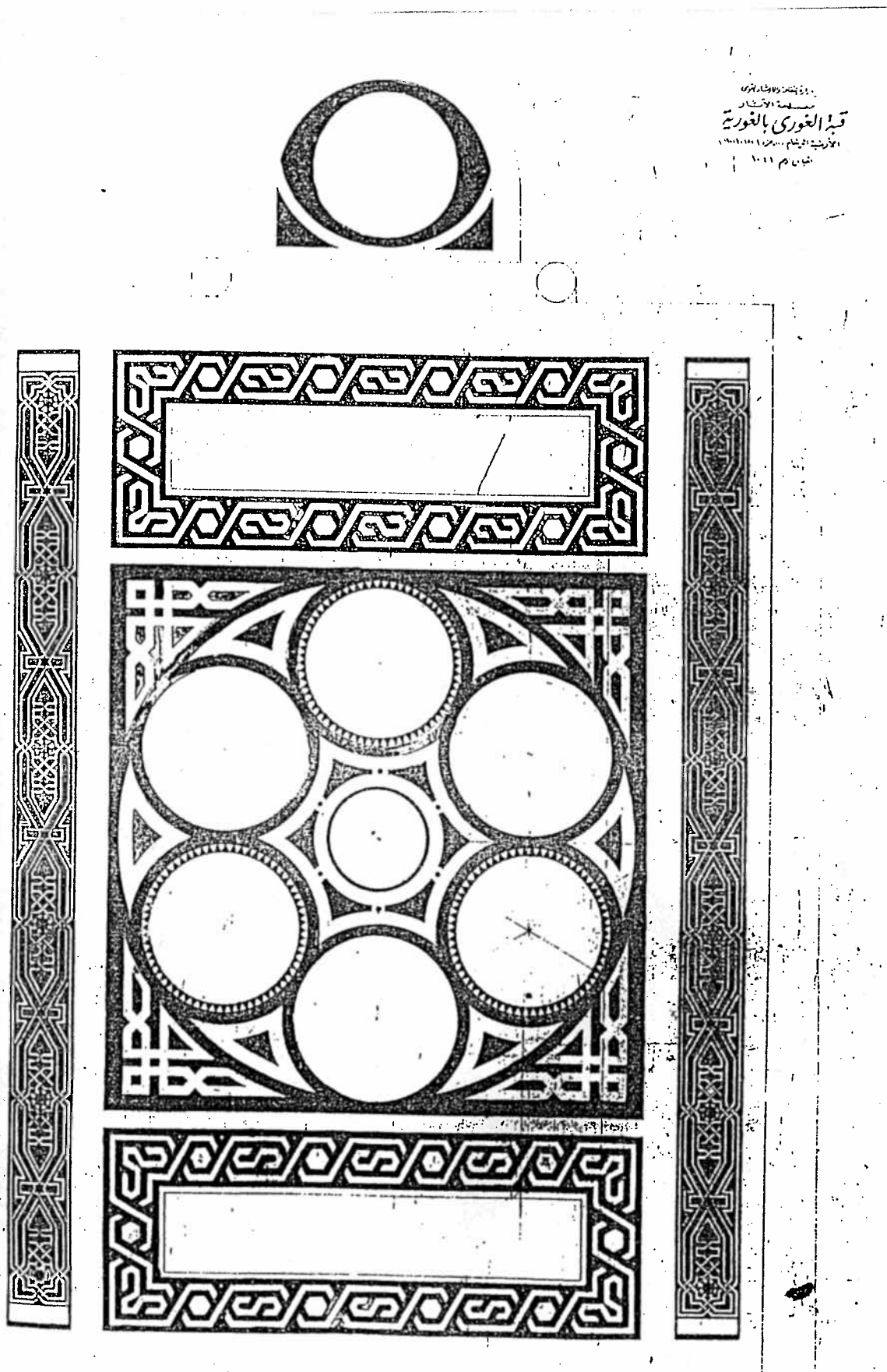
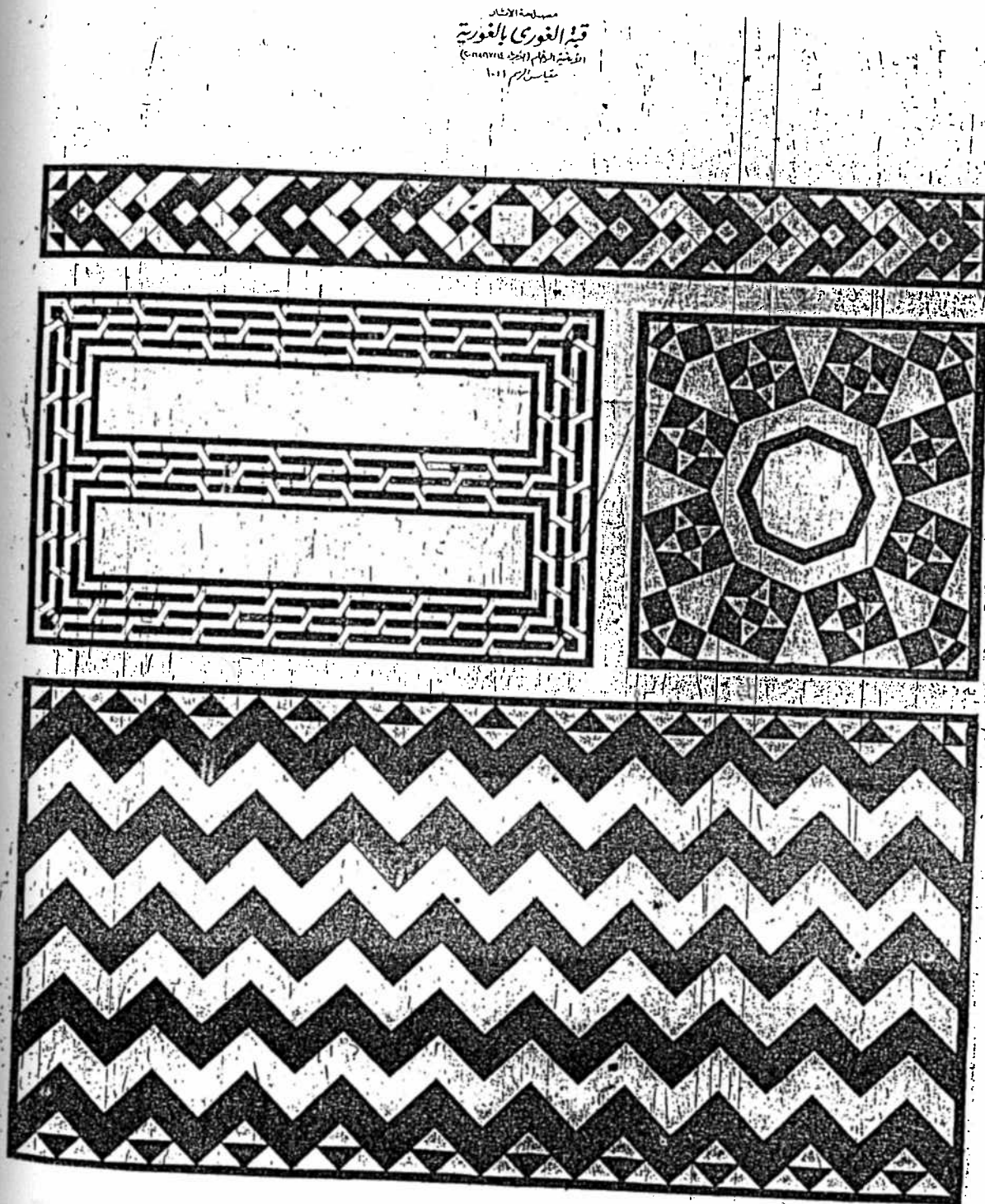
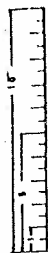


Fig. 34-3



Figures
Catalog # 34
Complex of al-Ghuri



مجمع القوري بالقرية
مساحة ١٠٠٠ م.
١٩٨٨

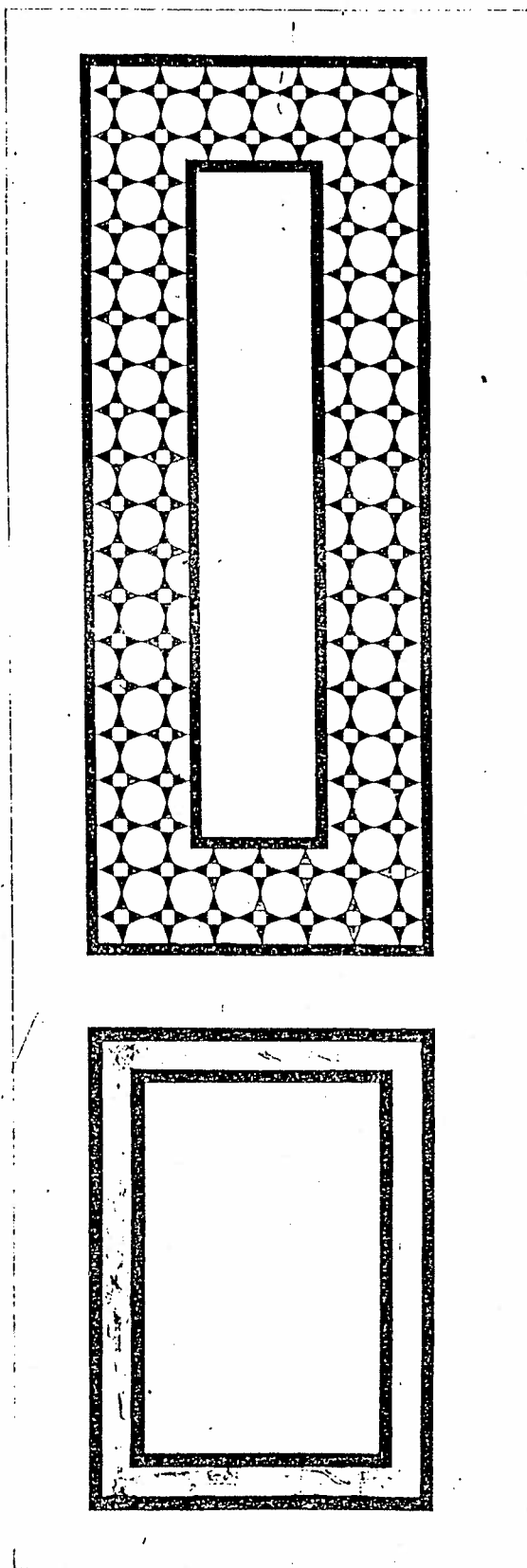
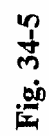
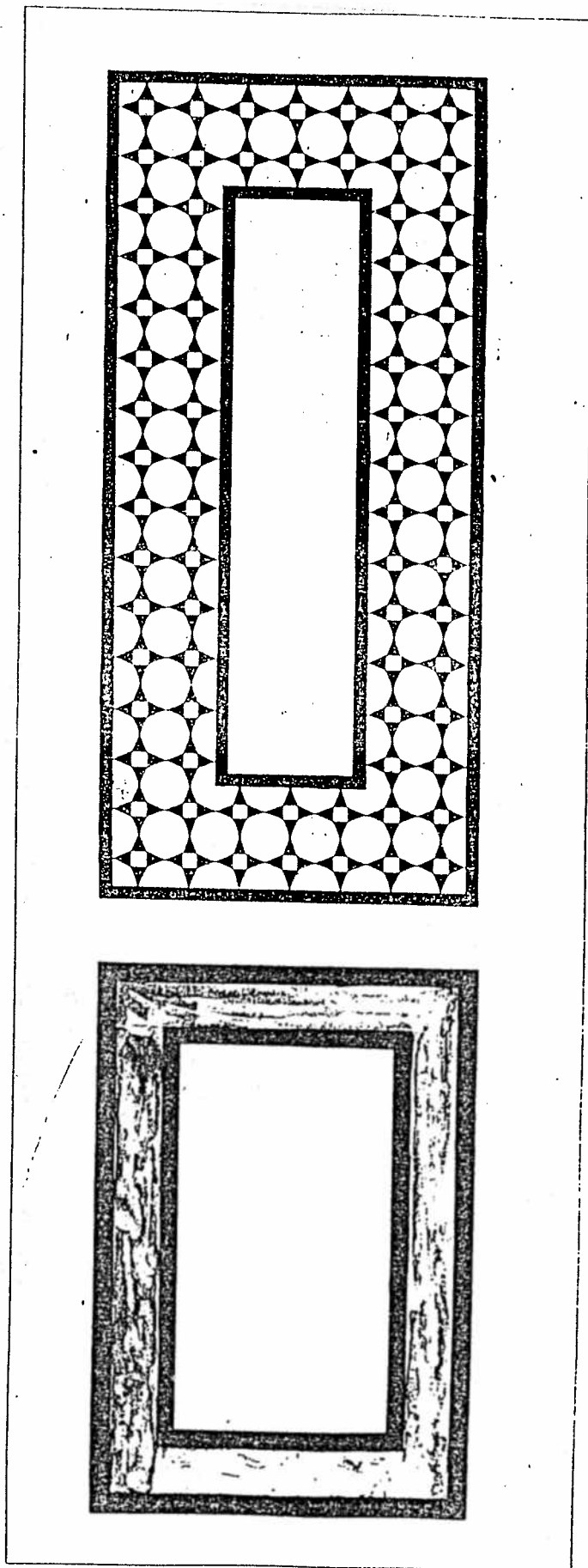


Fig. 34-4

قصة الغوري بالغورية
ممسلة الأشهر
دخان النور محمد بن علي
شهر ١٤٠٢ هـ
طبعة الأولى ١٣٩٧ هـ





نقوش
القرن الرابع عشر

Fig. 34-6

مجمع القوري بالبحري
مساحة الأرض
تحت القوري بالبحري
المنطقة المحيطة (البحري ١٩٩٩)

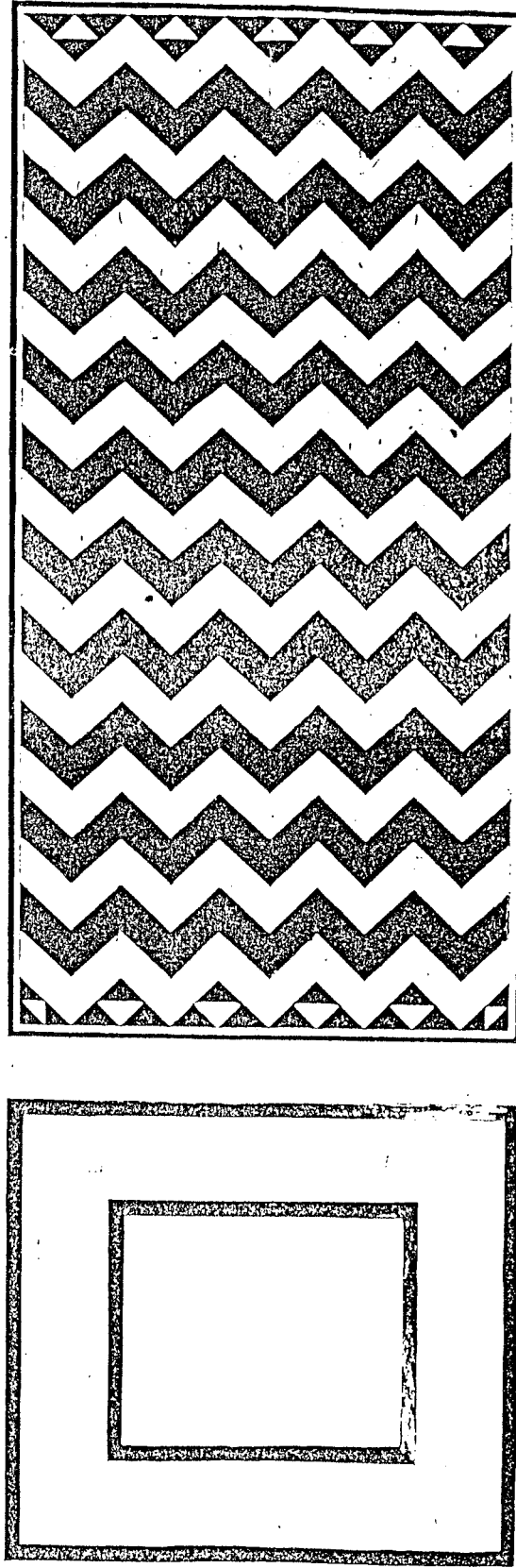


Fig. 34-7

وزارة الثقافة والارشاد
مصلحة الآثار
مبنى القوي بالقرية
الاسم (مبنى القوي)
١٠١١

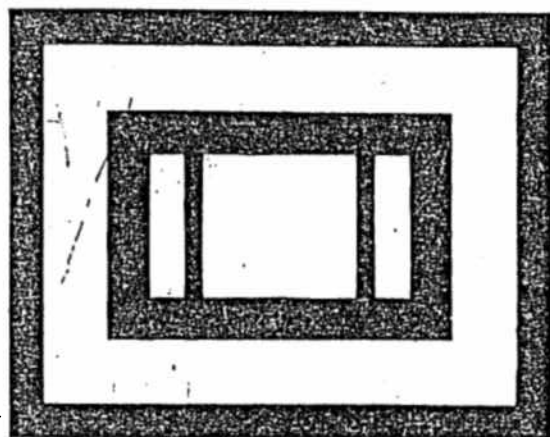
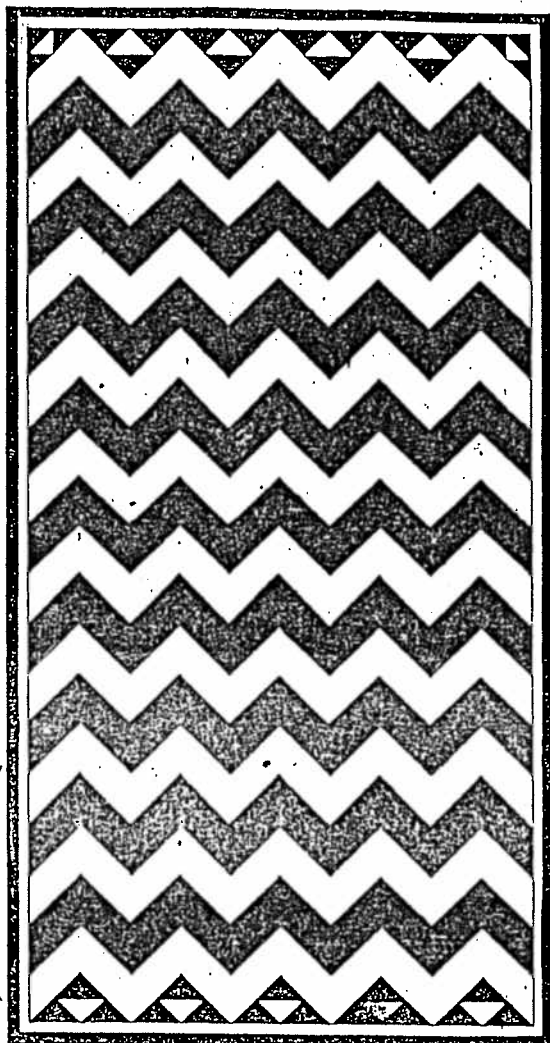
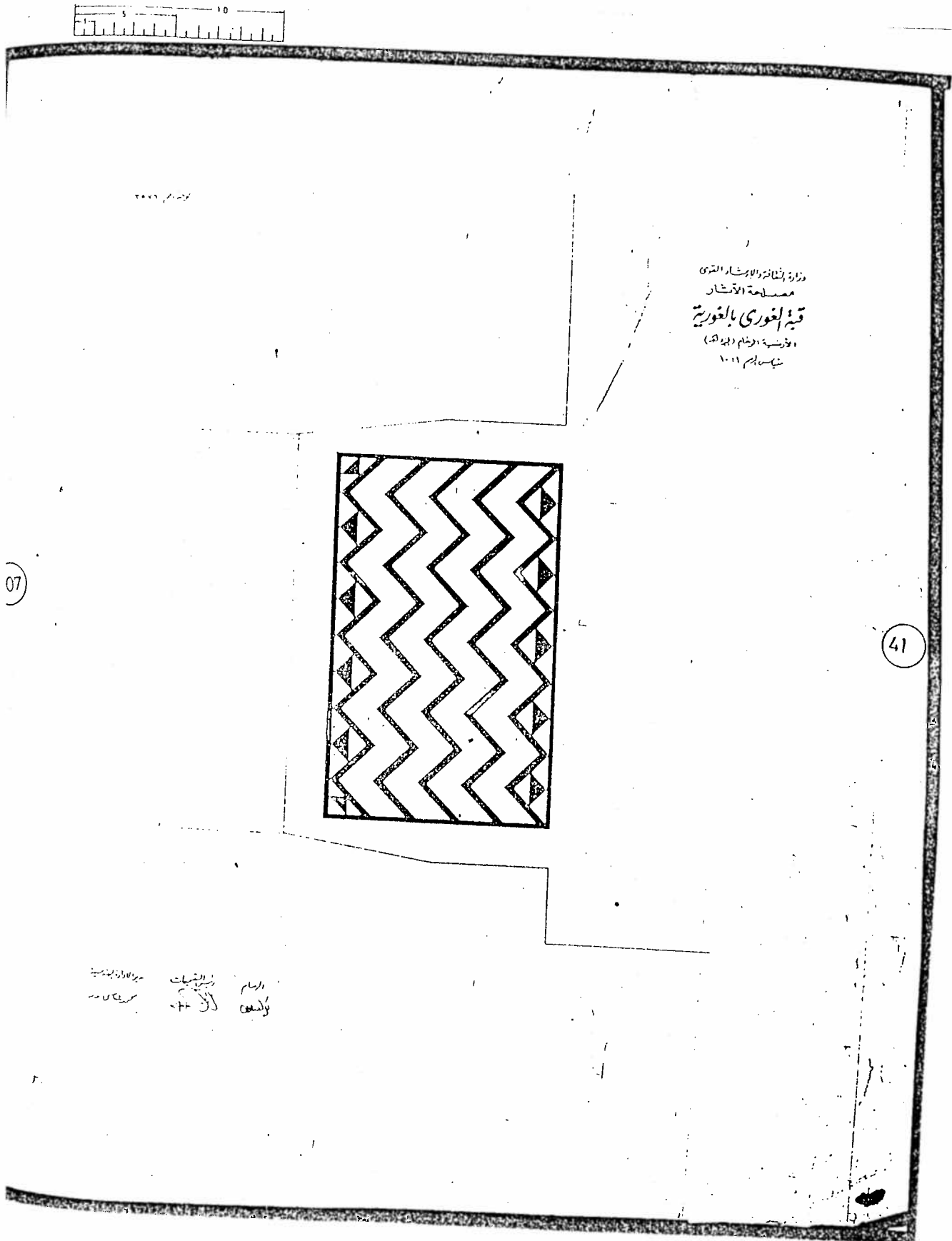


Fig. 34-8

Fig. 34-9



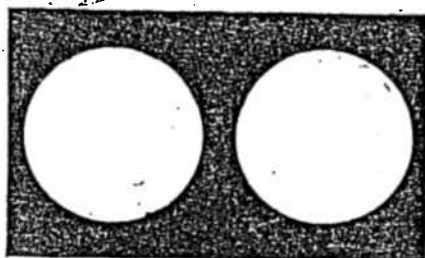
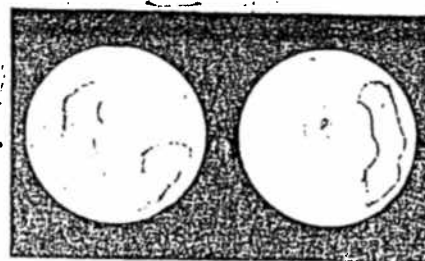


Fig. 34-10

المنطقة الحضرية

المنطقة الحضرية

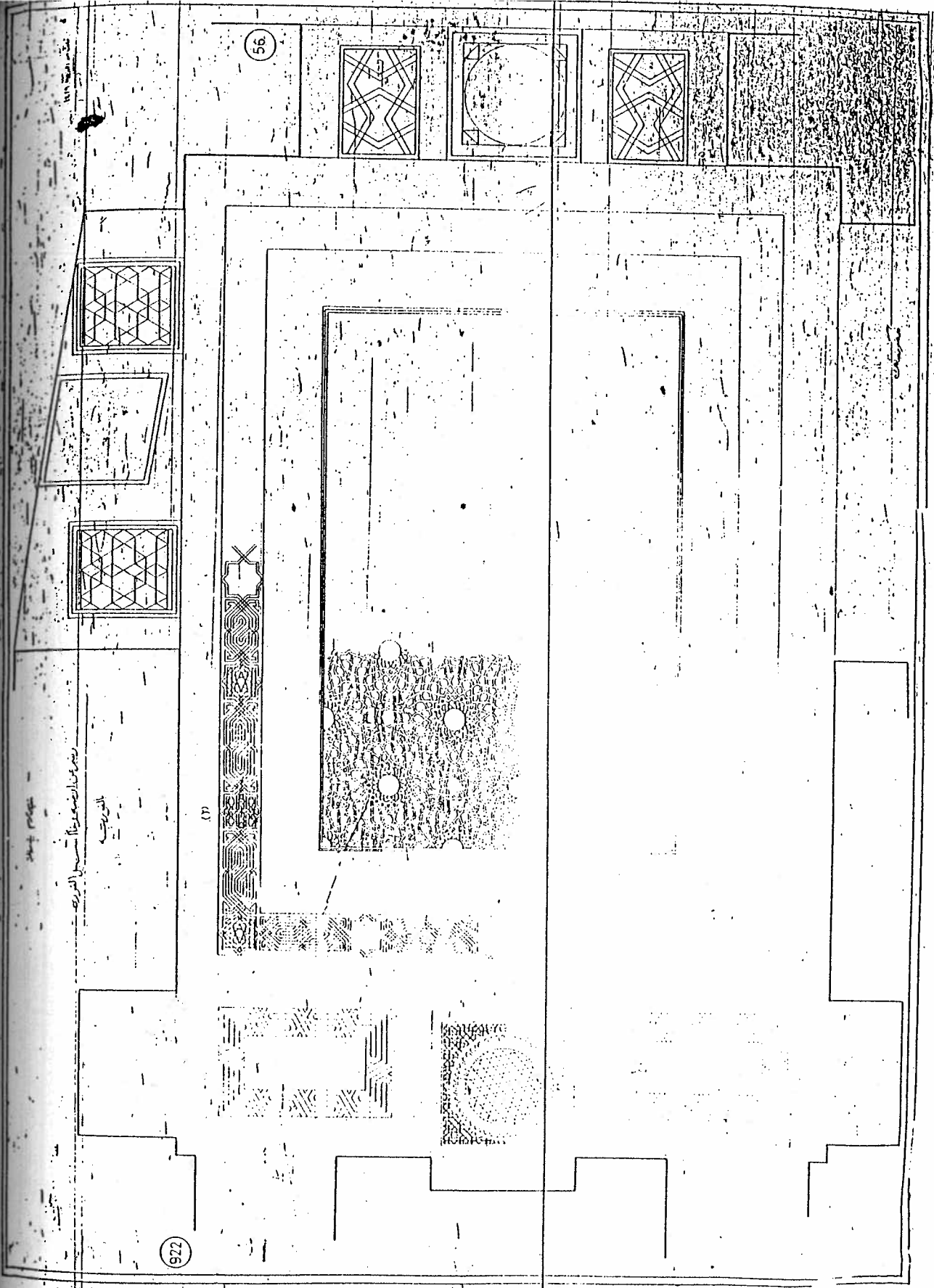


Fig. 34-11

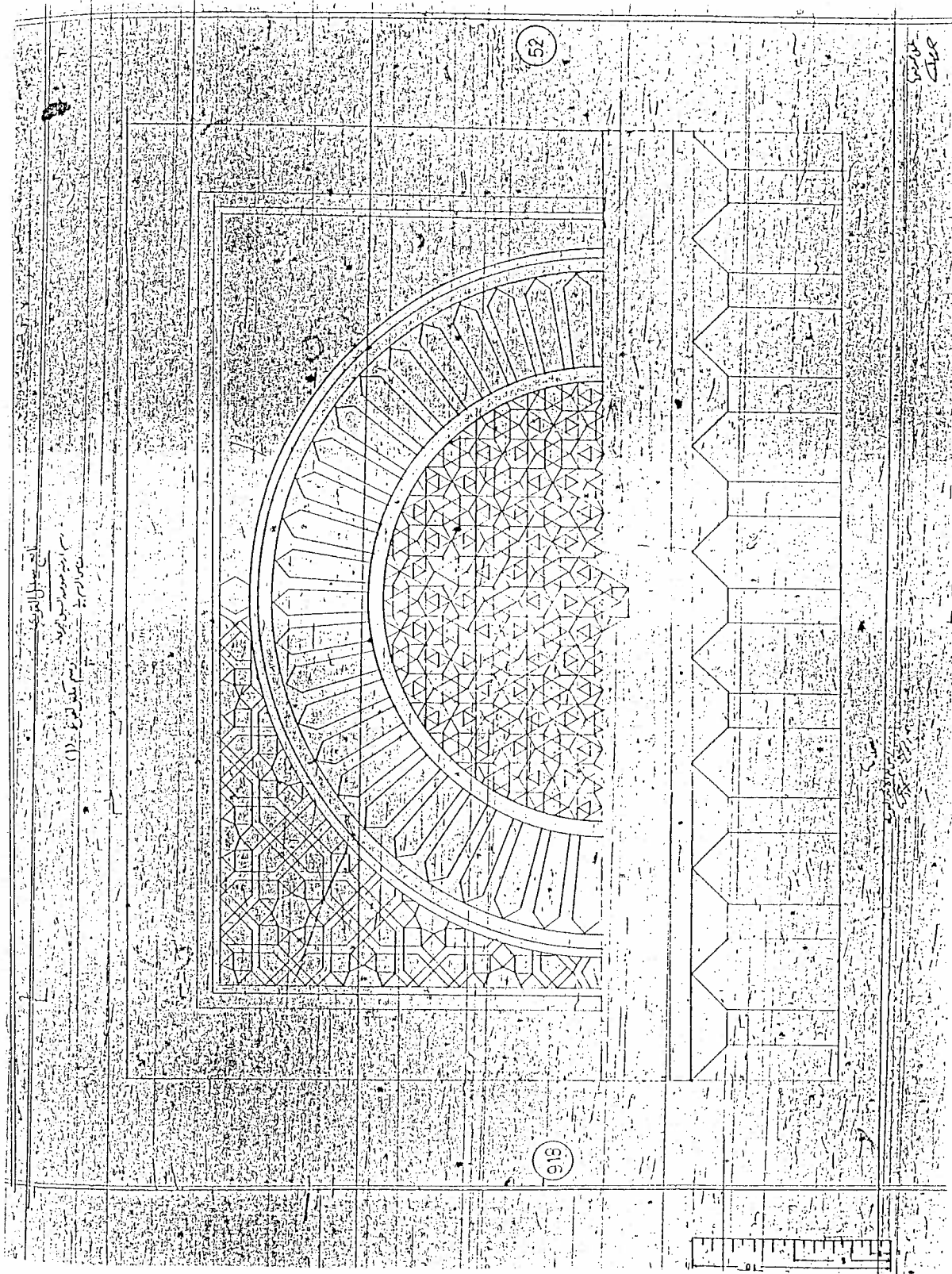
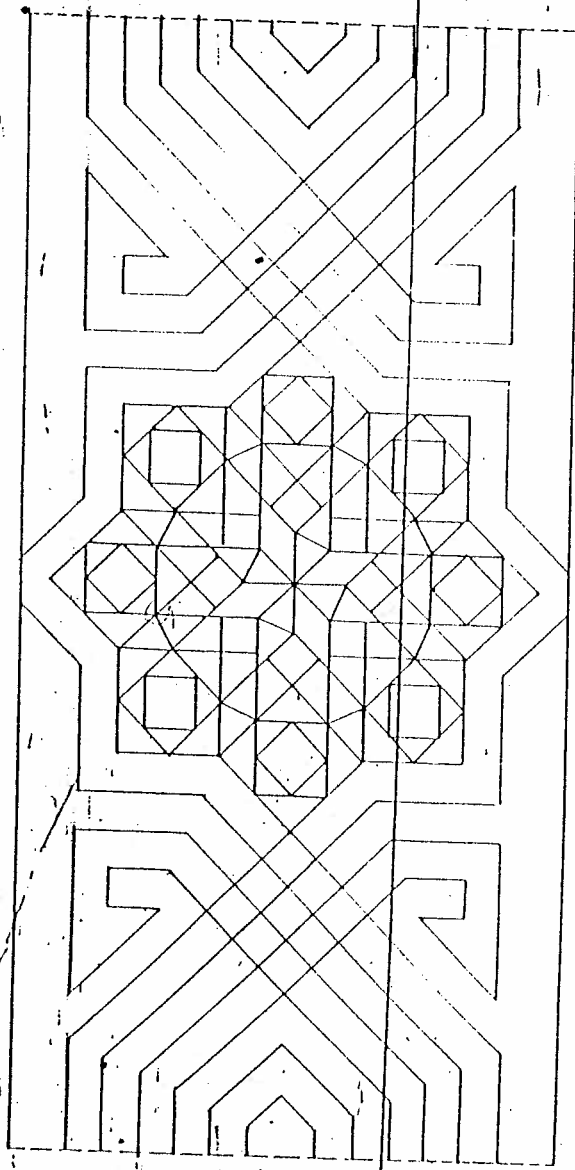


Fig. 34-12 (1930)

مسجد القوري
مسجد الرسم في مائة
مسجد المئذنة (٢)



مسجد
مسجد المئذنة
مسجد الرسم في مائة

مسجد
مسجد المئذنة

Fig. 34-13 (1930)

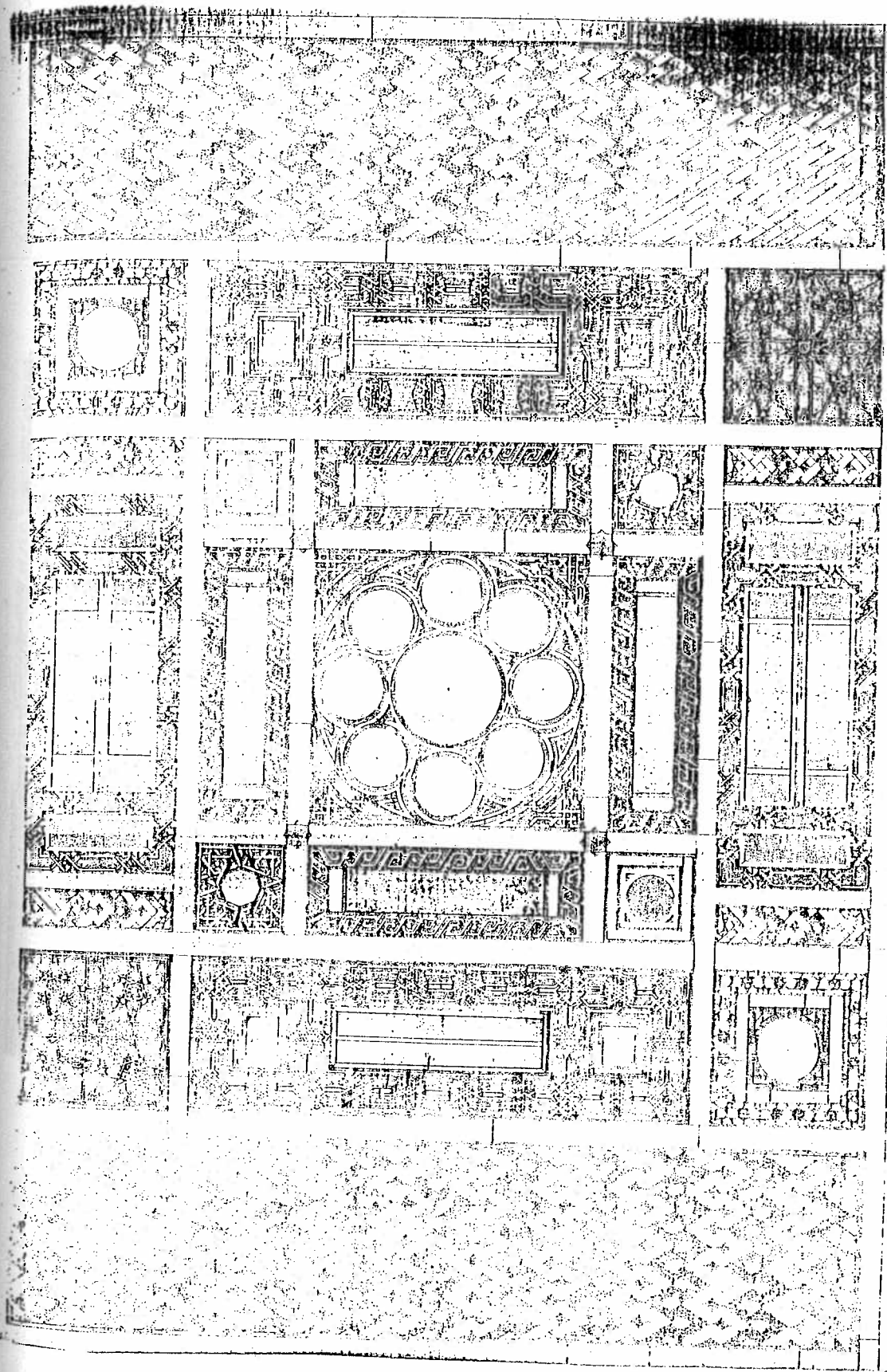


Fig. 35-1 (1989)

Fig 35-1

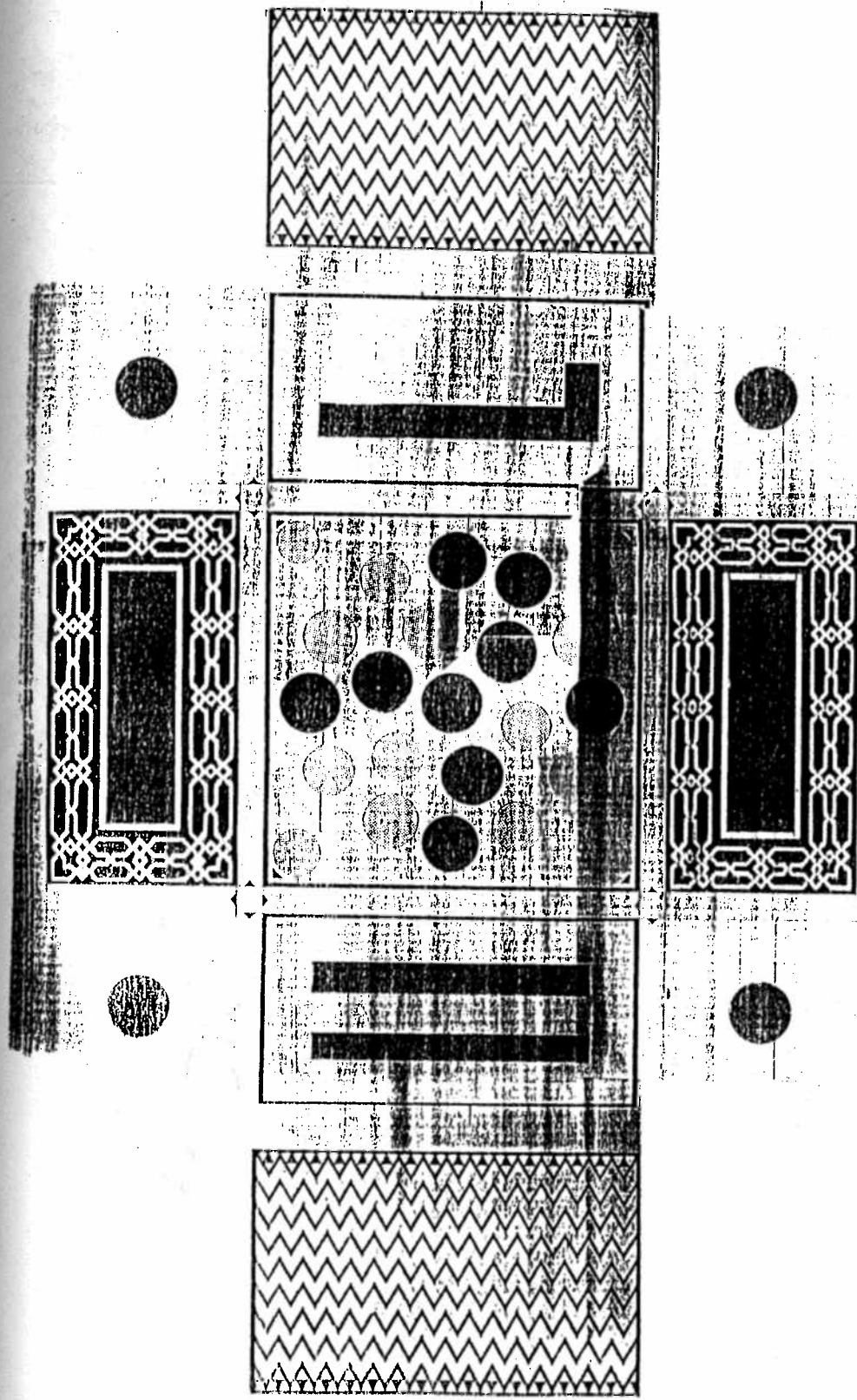


Fig. 35-2 (1989)

Fig 35-2

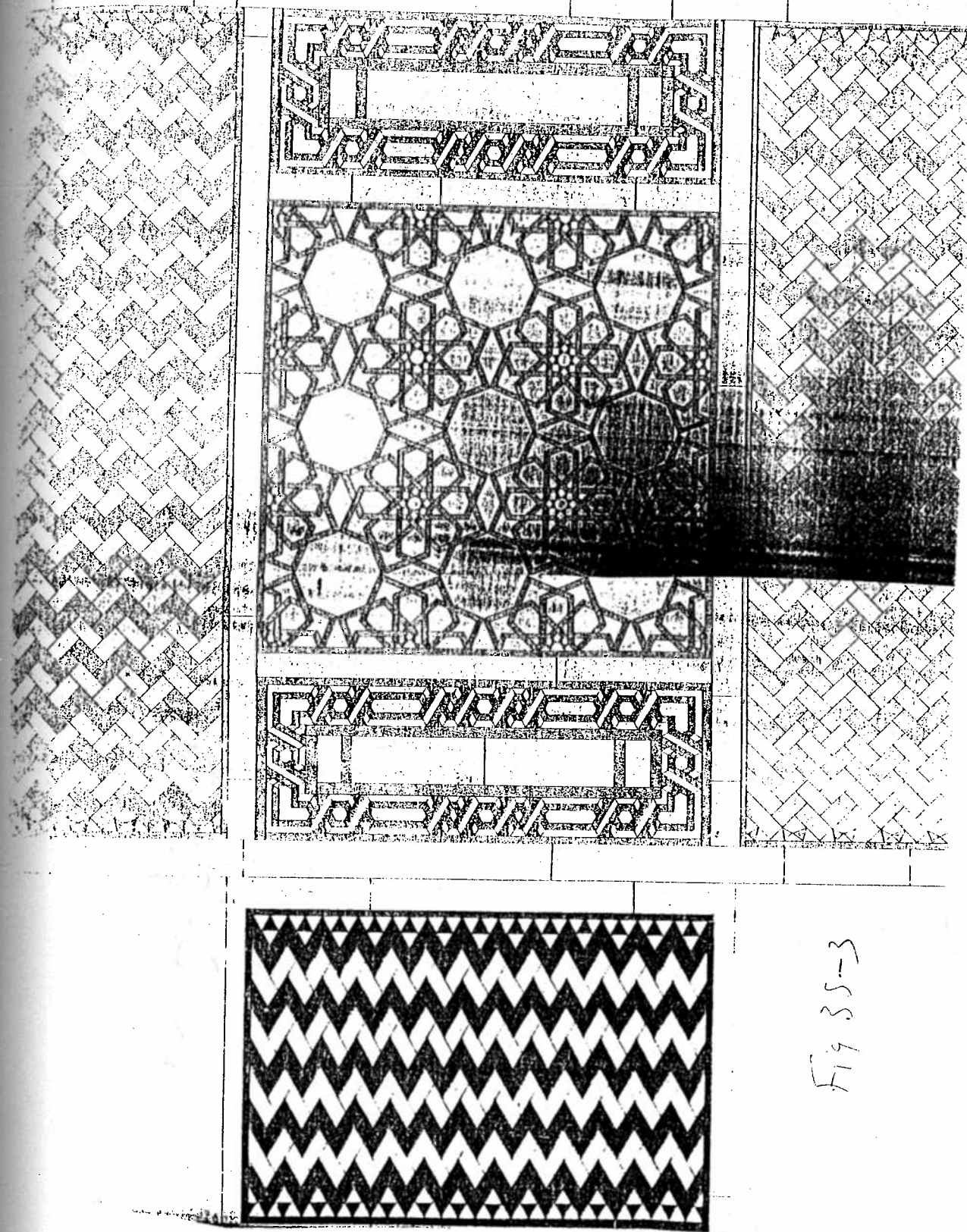


Fig. 35-3(1989)

Fig 35-3

Marble Paving in Mamluk Cairo
CATALOG

[III] Plates

Plates are marked as follows: "Building's catalog #-Plate #"

e.g.: 9-5 is plate #5 in building #9 which is Complex of Sultan Hasan

Marble paving in Mamluk Cairo
Plates
Catalog # 1
Complex of Sultan Qalawun

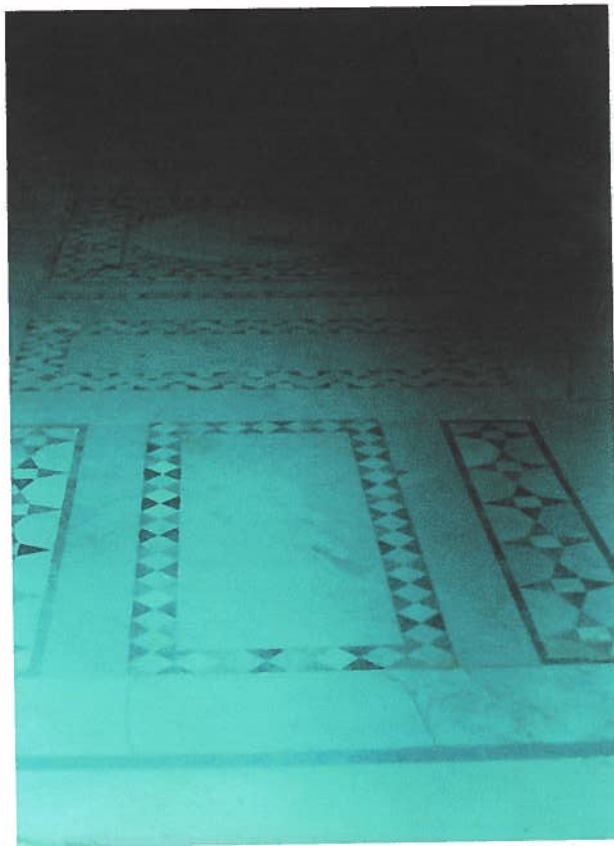


Plate 1-1



Plate 1-2

Plate 1-4

Marble paving in Mamluk Cairo
Plates



Plate 1-3



Plate 1-4

Marble paving in Mamluk Cairo
Plates



Plate 1-5



Plate 1-6

Marble paving in Mamluk Cairo
Plates



Plate 1-7



Plate 1-8

Marble paving in Mamluk Cairo
Plates

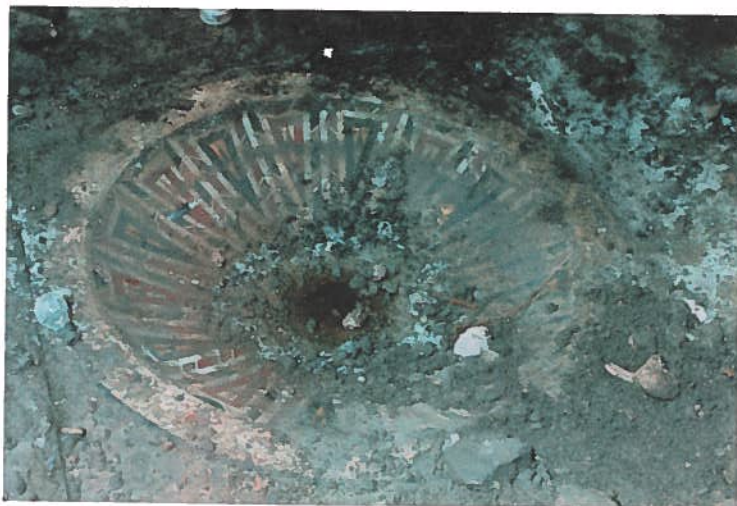


Plate 1-9

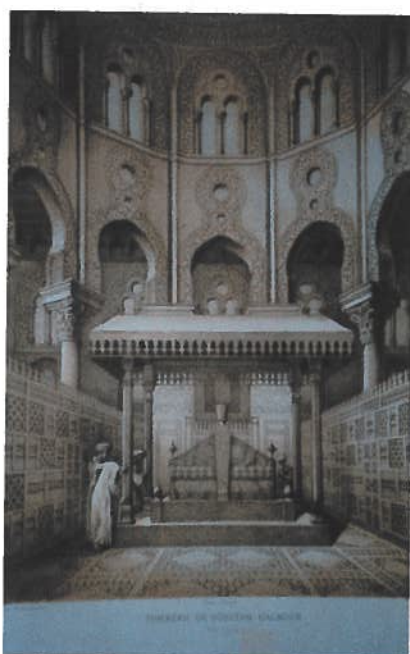


Plate 1-10 (Prisse d'Avennes)

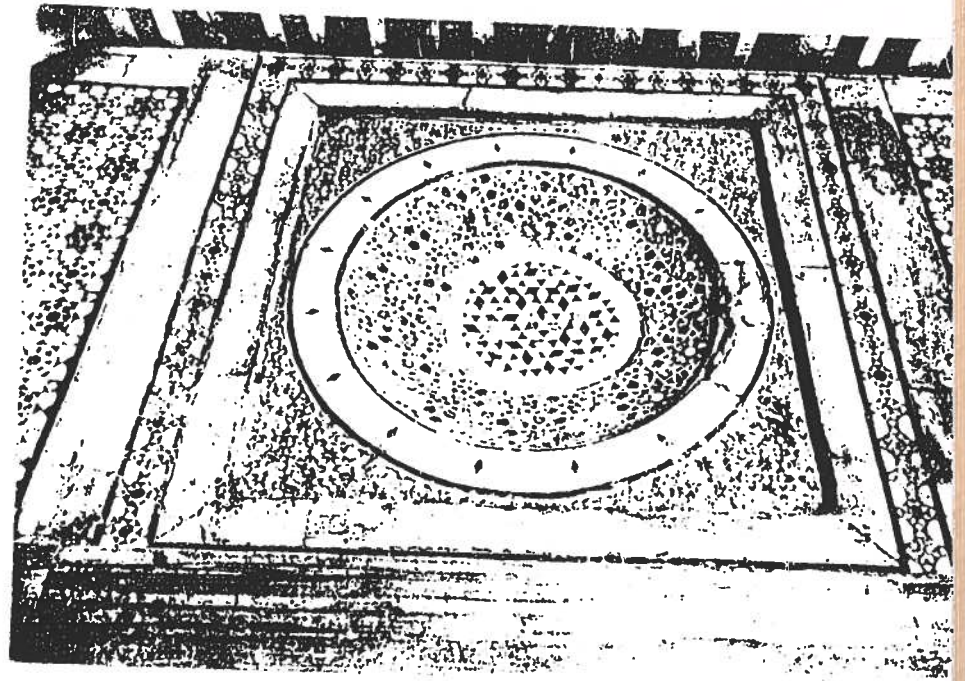


Plate 1-11 (Prisse d'Avennes)

Marble Paving in Mamluk Cairo
Plates



(a)

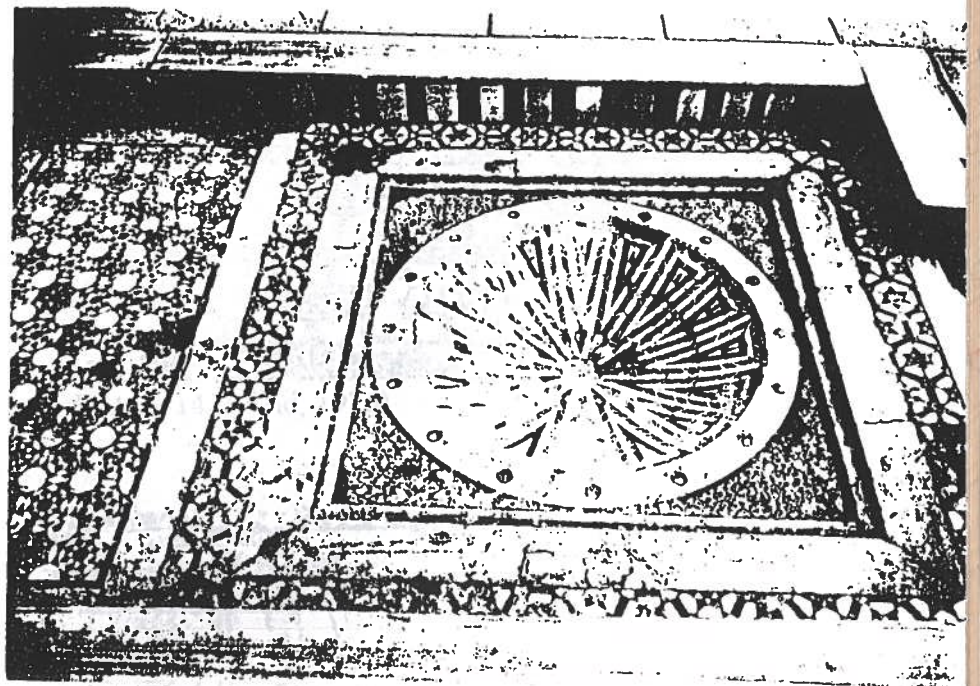


(b)

Plate 1-12 (Creswell, MAE, 2:Pl. 63)



(a)



(b)

Plate 1-13 (Creswell, MAE, 2:Pl. 63)

Marble Paving in Mamluk Cairo
Plates

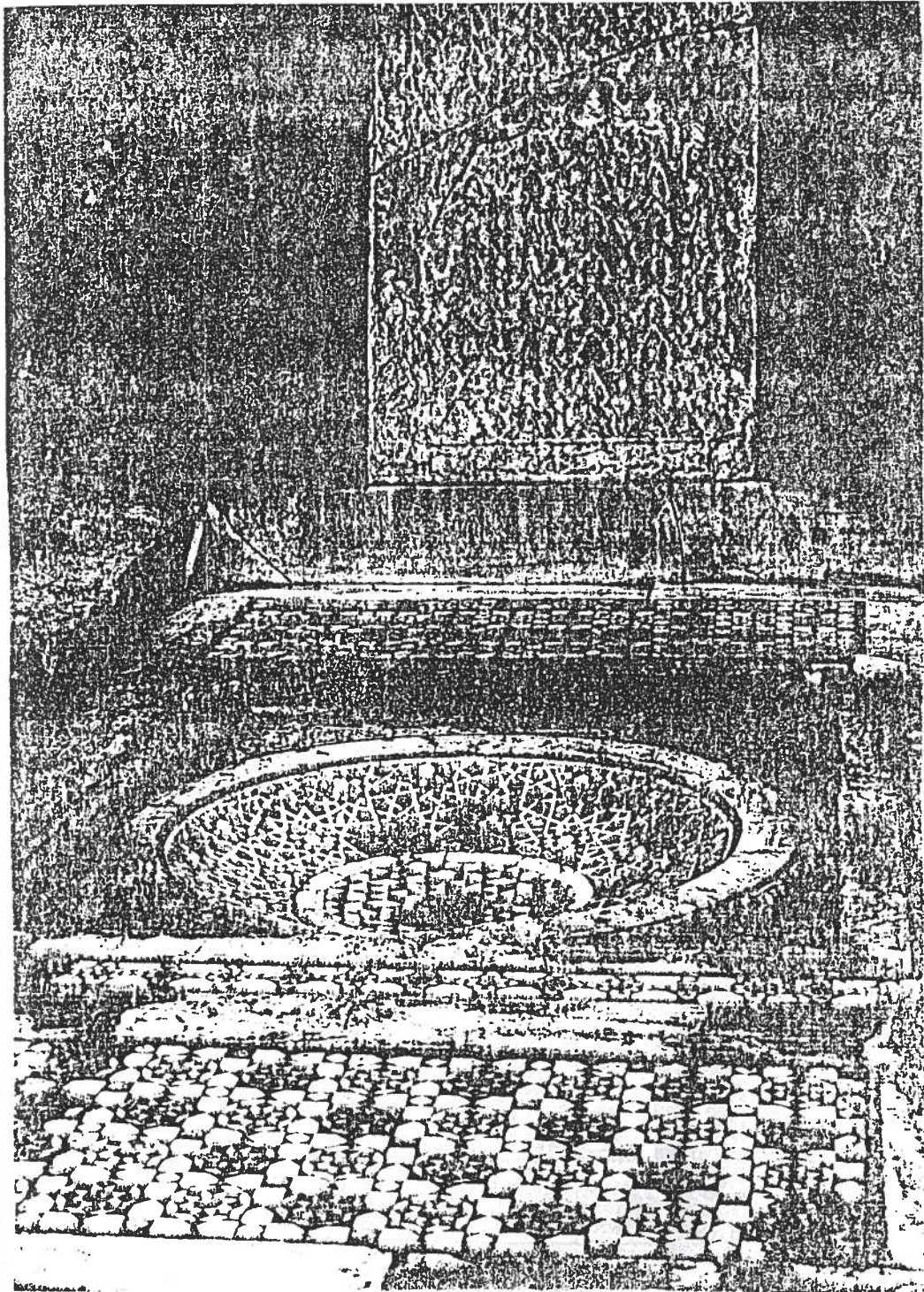


Plate 1-14 (Ebeid, 1976)

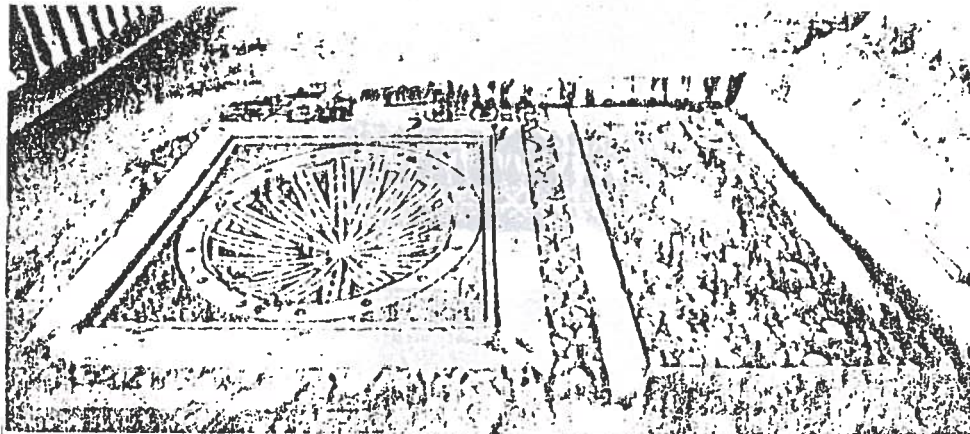


Plate 1-15 (Herz, 1919)

Marble Paving in Mamluk Cairo
Plates



Plate 1-16 (Meinecke)

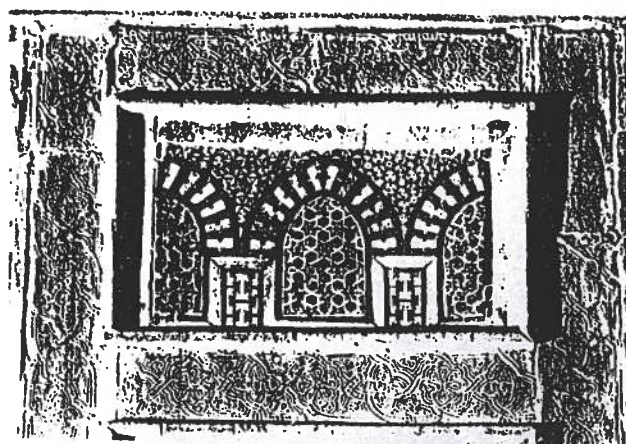


Plate 1-17 (Meinecke)

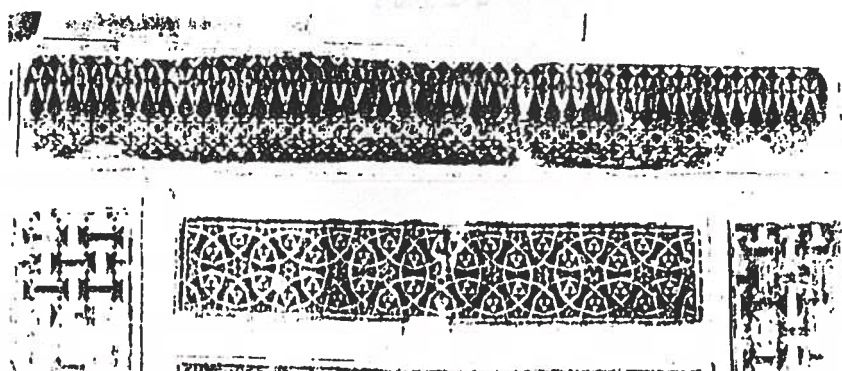


Plate 1-18 (Meinecke)

Marble paving in Mamluk Cairo
Plates
Catalog # 2
Complex of Sultan Baybars al-Jashankir



Plate 2-1



Plate 2-2

Plate 2-4

Marble paving in Mamluk Cairo
Plates



Plate 2-3



Plate 2-4

Plate 2-5

Marble paving in Mamluk Cairo
Plates



Plate 2-5



Plate 2-6

Marble paving in Mamluk Cairo
Plates



Plate 2-7



Plate 2-8

Marble paving in Mamluk Cairo
Plates



Plate 2-9



Plate 2-10

Marble paving in Mamluk Cairo
Plates



Plate 2-11



Plate 2-12

Marble paving in Mamluk Cairo
Plates



Plate 2-13



Plate 2-14

Marble paving in Mamluk Cairo
Plates



Plate 2-15



Plate 2-16

Marble Paving in Mamluk Cairo
Plates

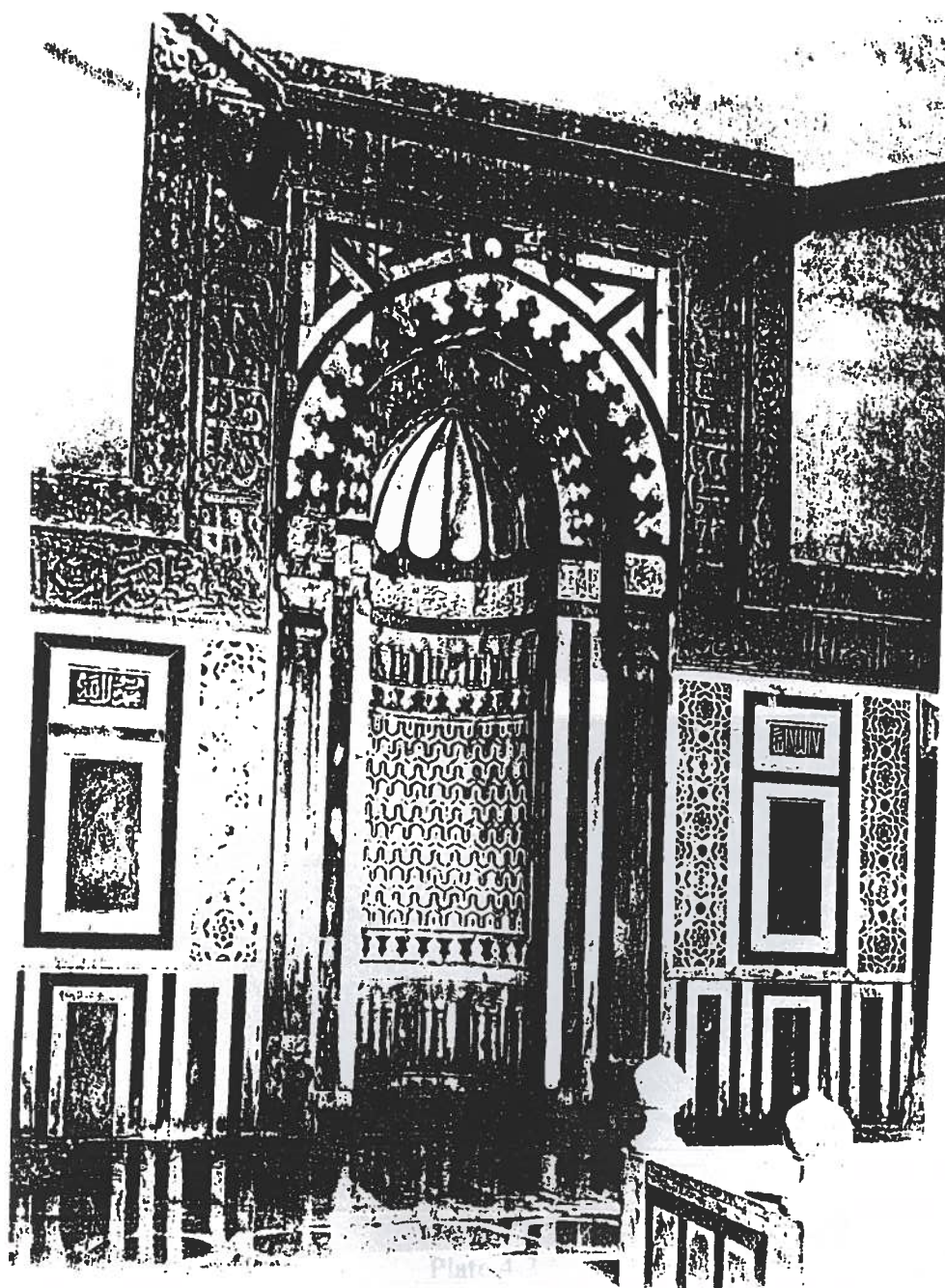


Plate 2-17 (Creswell, MAE, 2:Pl. 113a)

Marble paving in Mamluk Cairo
Plates
Catalog # 4
Mosque of Aslam al-Silahdar



Plate 4-1



Plate 4-2



Plate 4-3

Marble paving in Mamluk Cairo
Plates



Plate 4-4



Plate 4-5

Marble paving in Mamluk Cairo
Plates
Catalog # 5
Mosque of Shaykhu



Plate 5-1



Plate 5-2

Marble paving in Mamluk Cairo
Plates



Plate 5-3



Plate 5-4

Plate 5-4

Marble paving in Mamluk Cairo
Plates



Plate 5-5



Plate 5-6

Marble Paving in Mamluk Cairo
Plates

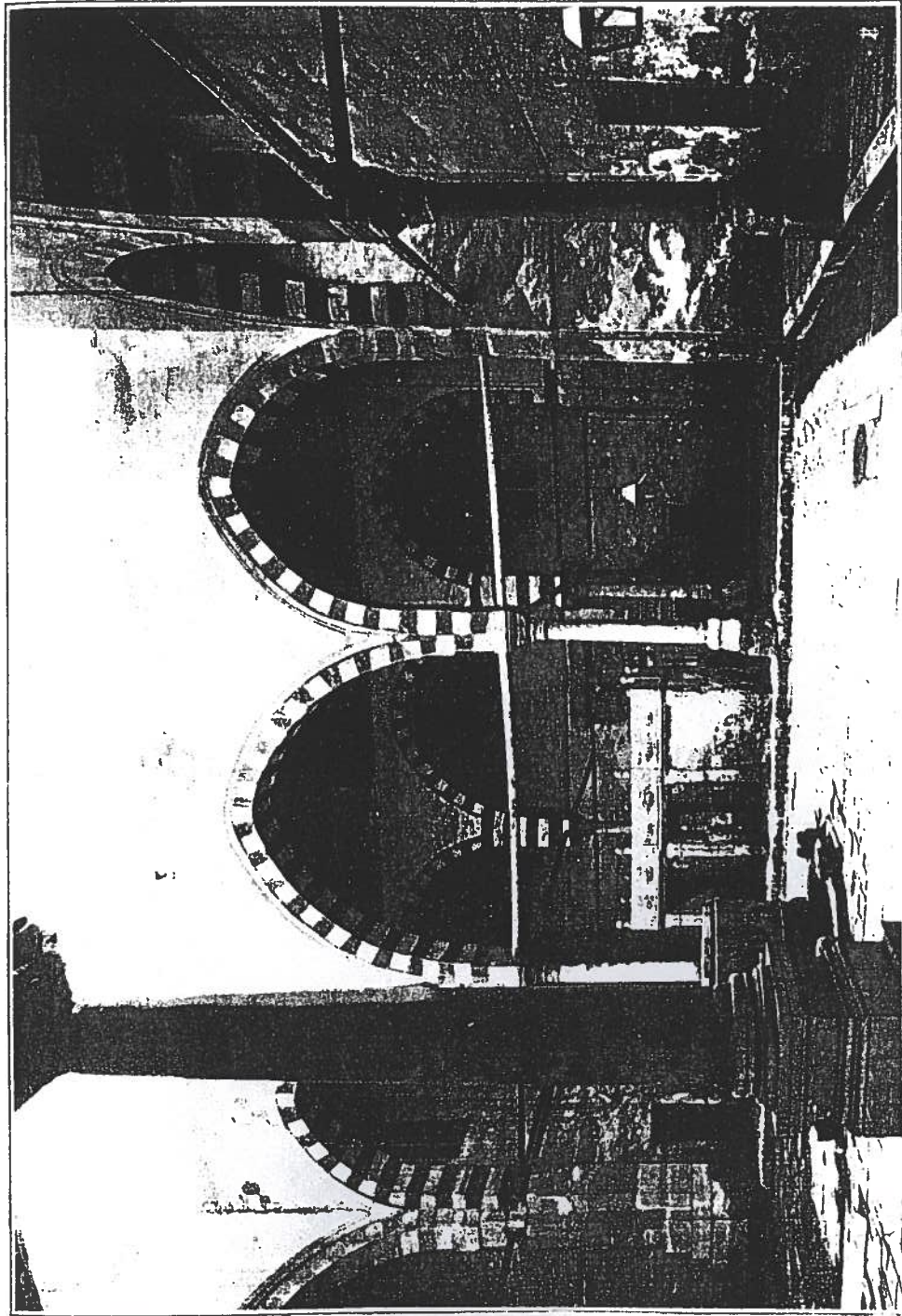


Plate 5-7 (Comité, 1915-19)

Marble paving in Mamluk Cairo
Plates
Catalog # 6
Khanqa of Shaykhu



Plate 6-1



Plate 6-2

Marble paving in Mamluk Cairo
Plates



Plate 6-3



Plate 6-4

Marble paving in Mamluk Cairo
Plates



Plate 6-5



Plate 6-6

Marble Paving in Mamluk Cairo
Plates

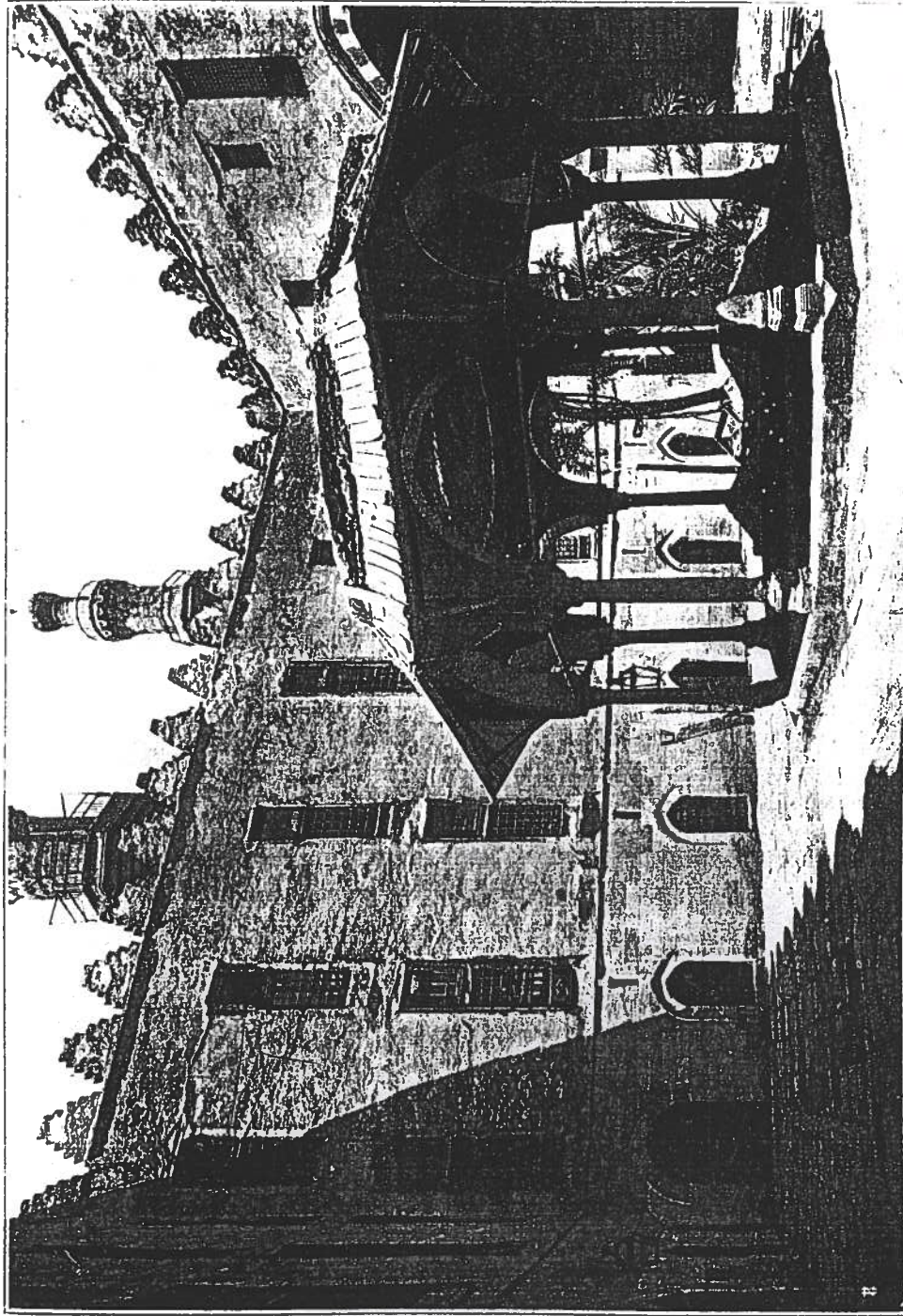


Plate 6-7 (Comité, 1915-19)

Marble paving in Mamluk Cairo
Plates
Catalog # 7
Madrasa of Sarghatmish



Plate 7-1



Plate 7-2

Marble paving in Mamluk Cairo
Plates



Plate 7-3



Plate 7-4

Plate 7-5

Marble paving in Mamluk Cairo
Plates



Plate 7-5



Plate 7-6

Marble Paving in Mamluk Cairo
Plates

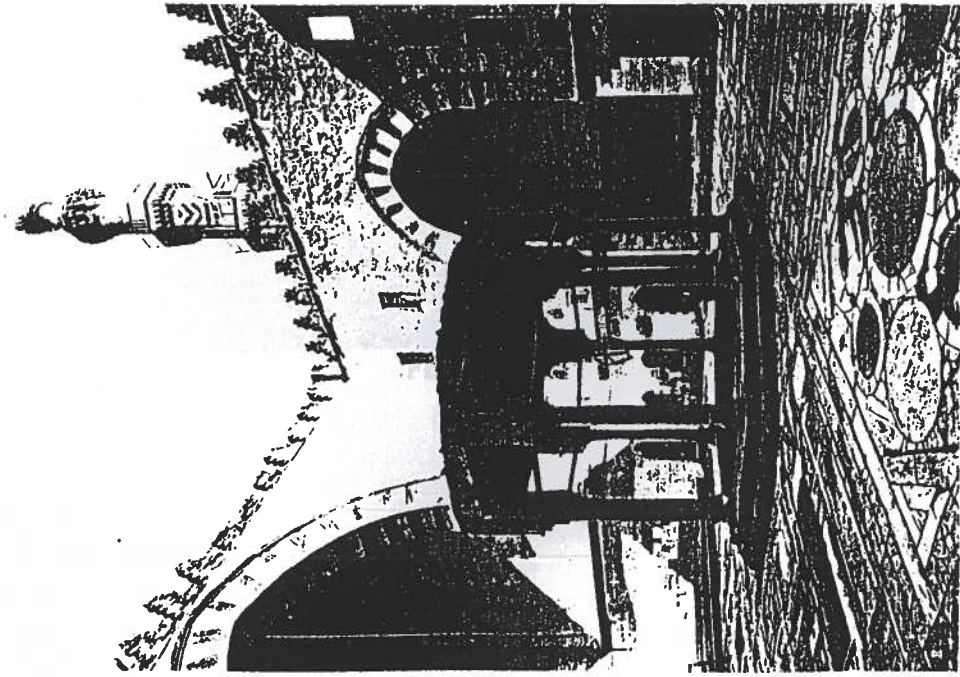


Plate 7-7 (Comité, 1915-19)

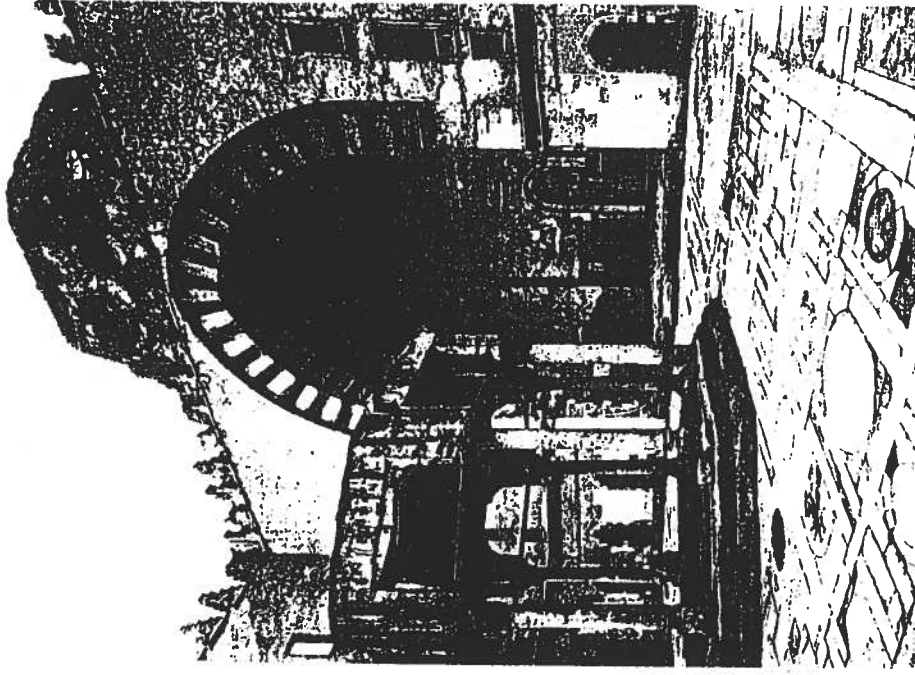


Plate 7-8 (Comité, 1915-19)

Marble paving in Mamluk Cairo
Plates



Plate 7-9



Plate 7-10

Plate 7-12

Marble paving in Mamluk Cairo
Plates



Plate 7-11



Plate 7-12

Marble paving in Mamluk Cairo
Plates



Plate 7-13



Plate 7-14

Marble paving in Mamluk Cairo
Plates



Plate 7-15

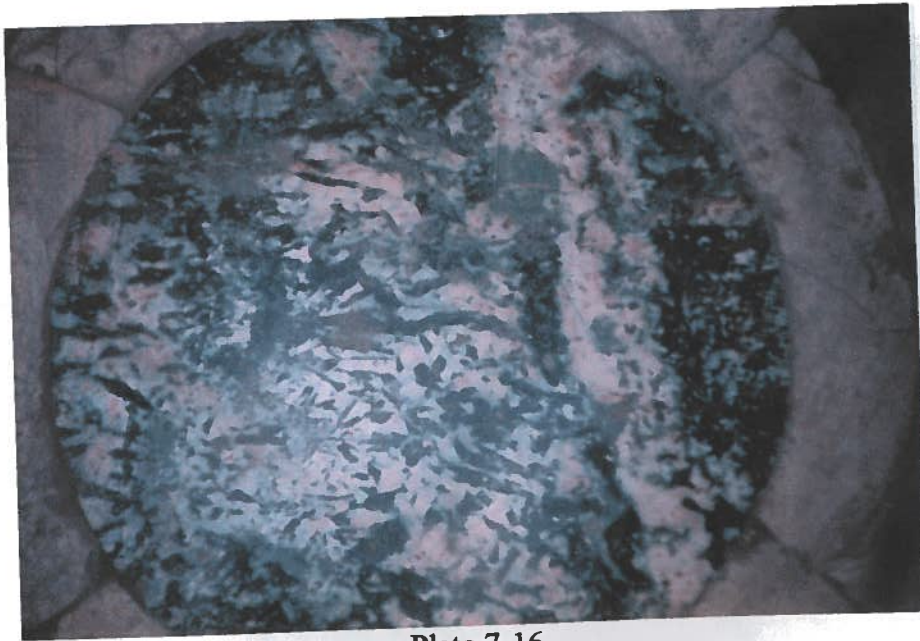


Plate 7-16

Plate 8-2

Marble paving in Mamluk Cairo
Plates
Catalog # 8
Madrasa of Tatar al-Hijaziyya



Plate 8-1



Plate 8-2

Marble paving in Mamluk Cairo
Plates



Plate 8-3



Plate 8-4

Plate 8-4

Marble paving in Mamluk Cairo
Plates



Plate 8-5



Plate 8-6

Marble Paving in Mamluk Cairo
Plates

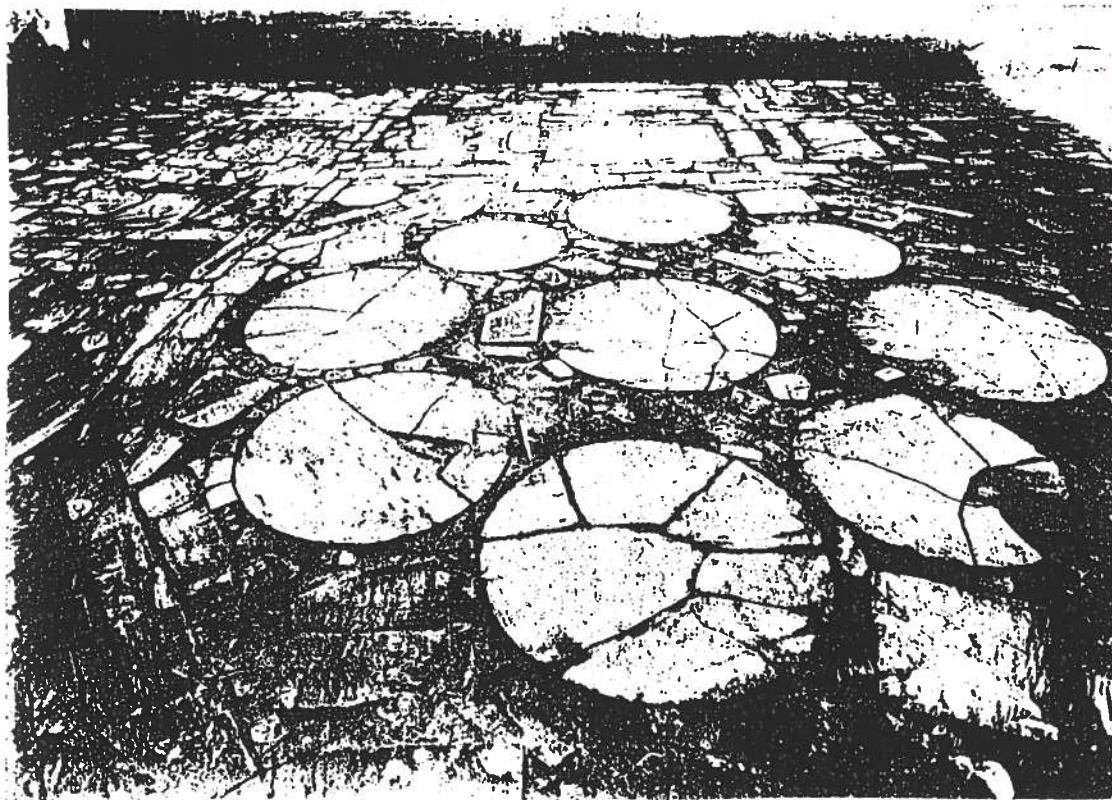


Plate 8-7 (Comité, 1925-26)

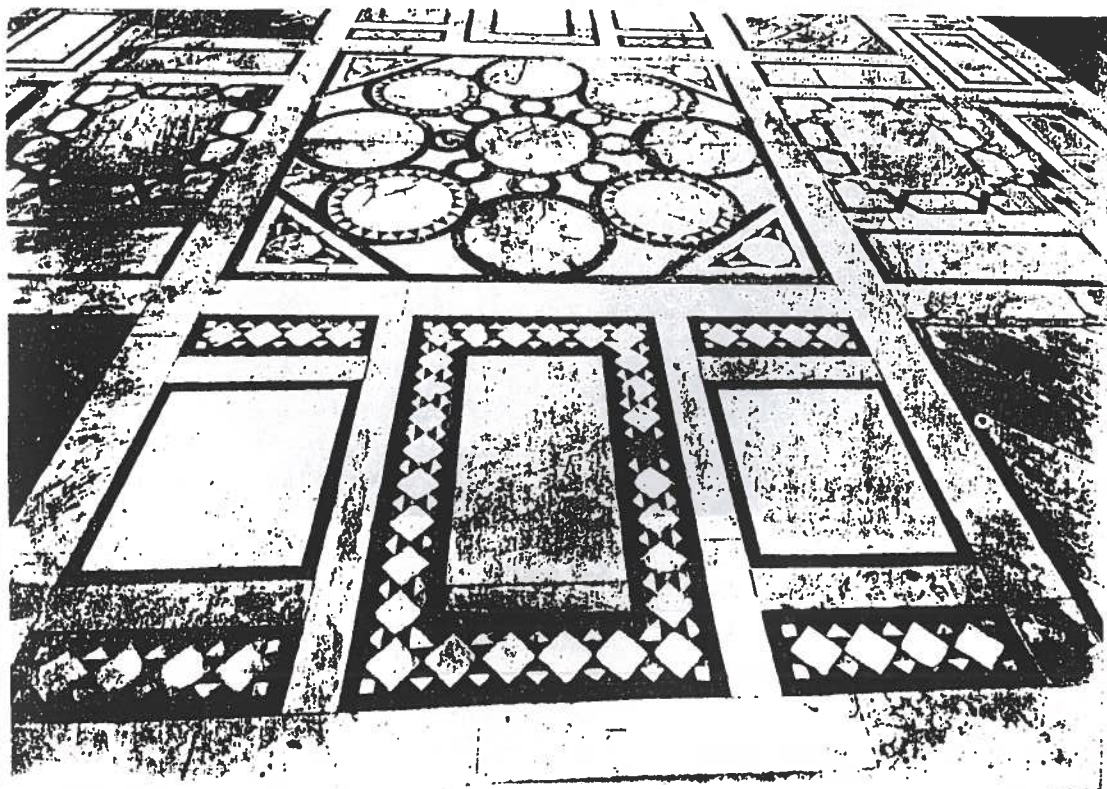


Plate 8-8 (Comité, 1925-26)

Marble paving in Mamluk Cairo
Plates
Catalog # 9
Complex of Sultan Hasan



Plate 9-1



Plate 9-2

Marble paving in Mamluk Cairo
Plates



Plate 9-3



Plate 9-4

Marble paving in Mamluk Cairo
Plates



Plate 9-5



Plate 9-6

Marble paving in Mamluk Cairo
Plates



Plate 9-7



Plate 9-8

Marble paving in Mamluk Cairo
Plates



Plate 9-9



Plate 9-10

Plate 9-12

Marble paving in Mamluk Cairo
Plates

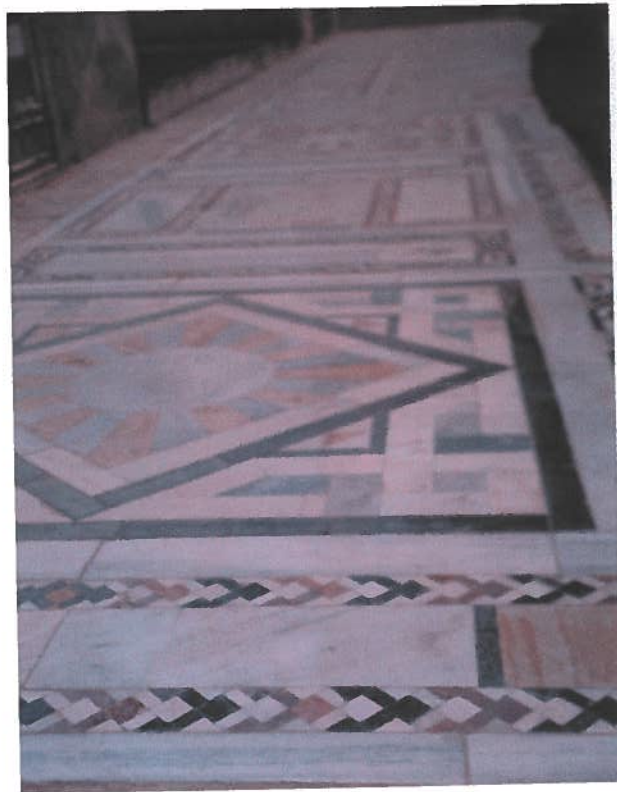


Plate 9-11



Plate 9-12

Marble paving in Mamluk Cairo
Plates



Plate 9-13 (Coste)



Plate 9-14 (Roberts)

Marble Paving in Mamluk Cairo
Plates

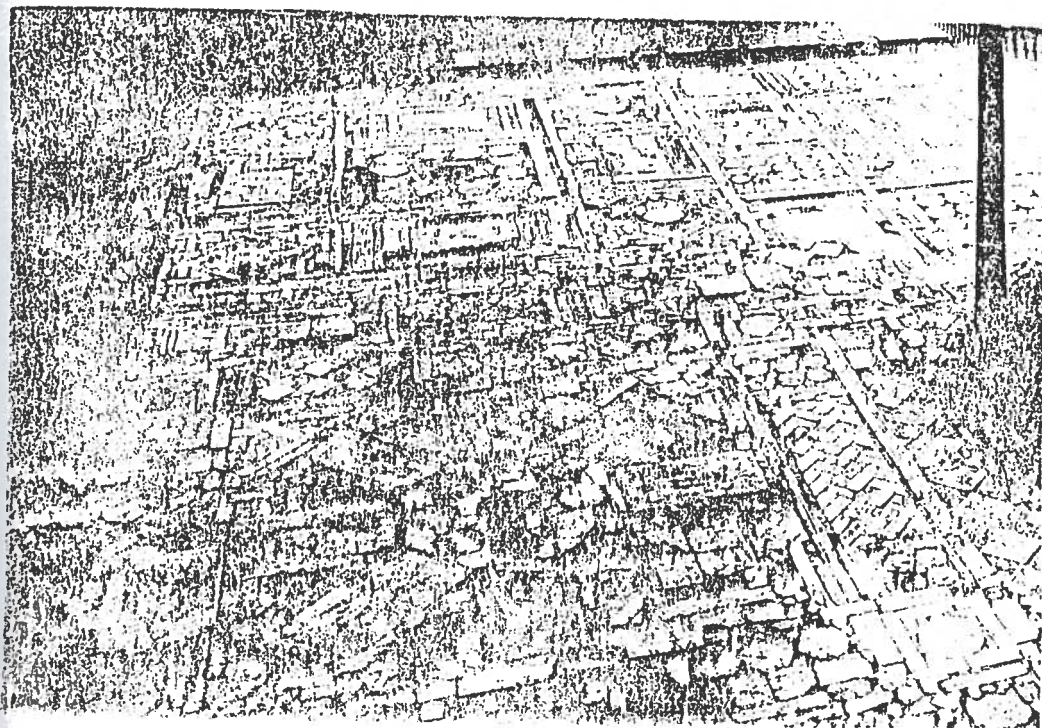


Plate 9-15 (Comité, 1914)

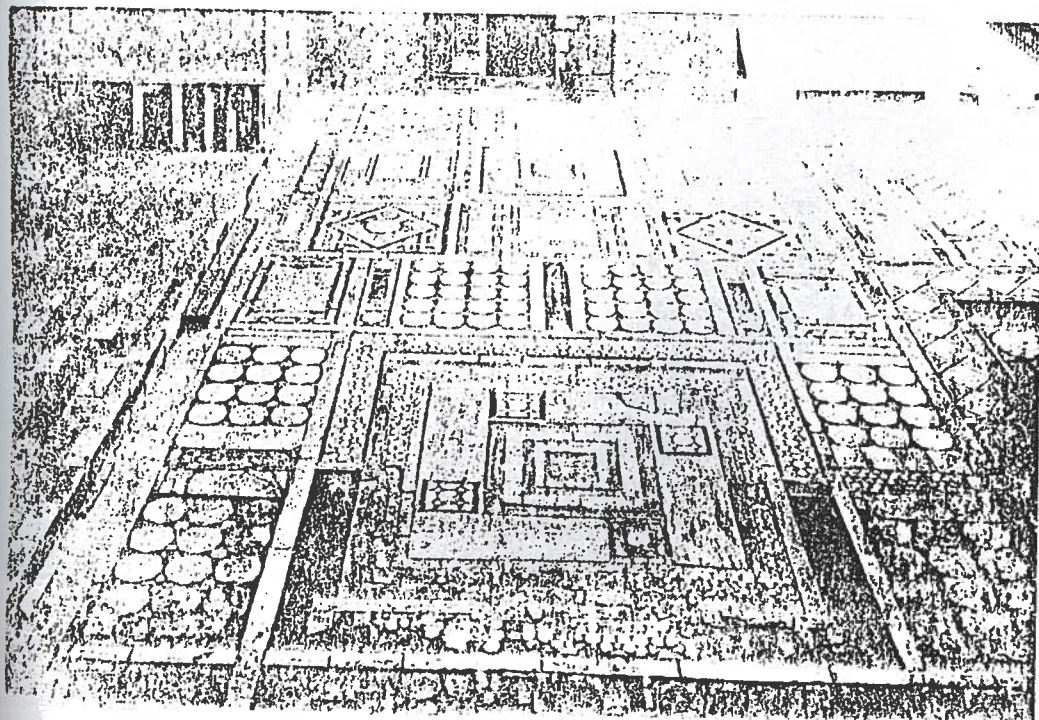


Plate 9-16 (Comité, 1914)

Marble paving in Mamluk Cairo
Plates
Catalog # 10
Madrasa of Mithqal



Plate 10-1

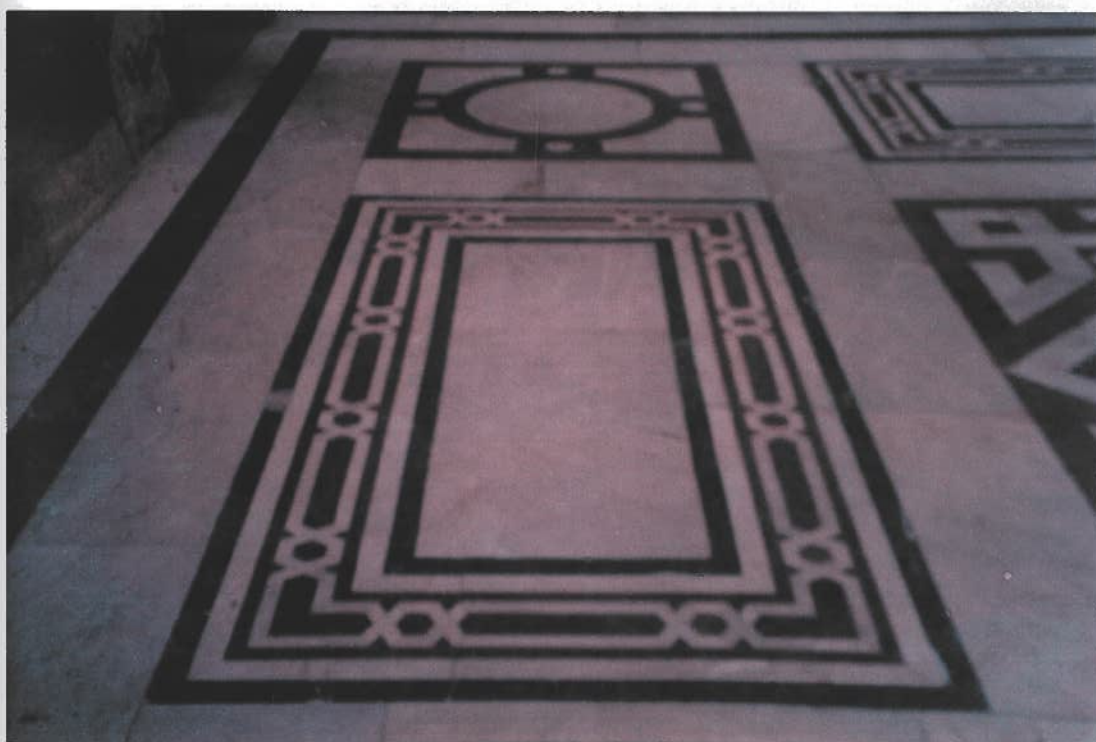


Plate 10-2

Marble paving in Mamluk Cairo
Plates



Plate 10-3



Plate 10-4

Marble paving in Mamluk Cairo
Plates
Catalog # 11
Madrasa of Barquq



Plate 11-1

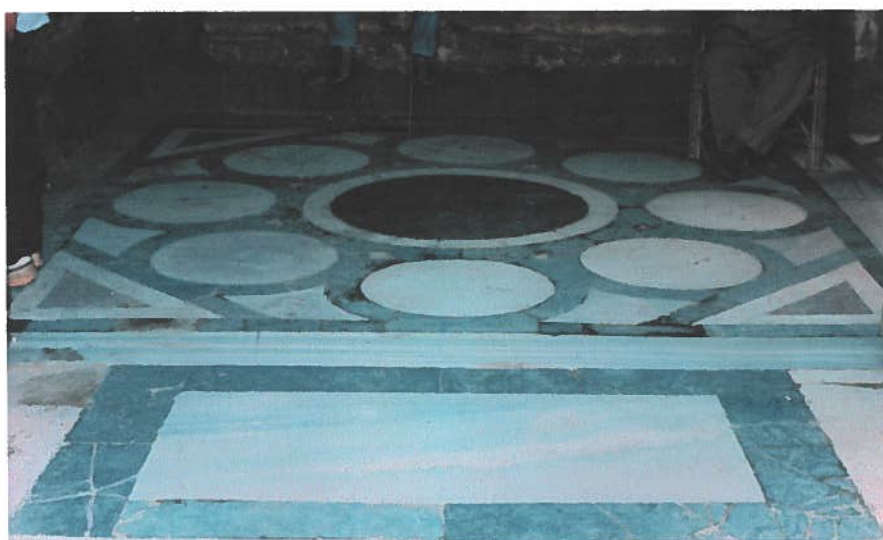


Plate 11-2

Marble paving in Mamluk Cairo
Plates



Plate 11-3



Plate 11-4

Marble paving in Mamluk Cairo
Plates

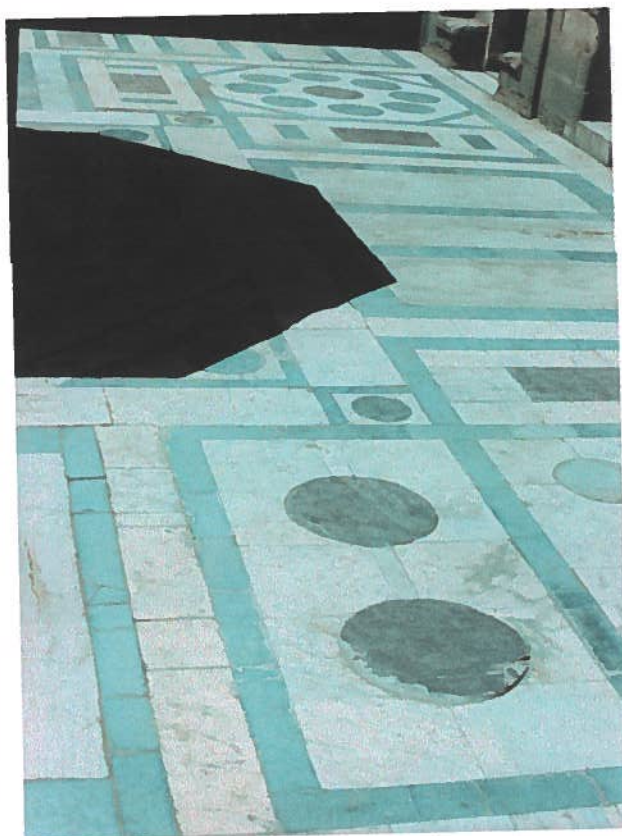


Plate 11-5



Plate 11-6

Marble paving in Mamluk Cairo
Plates



Plate 11-7

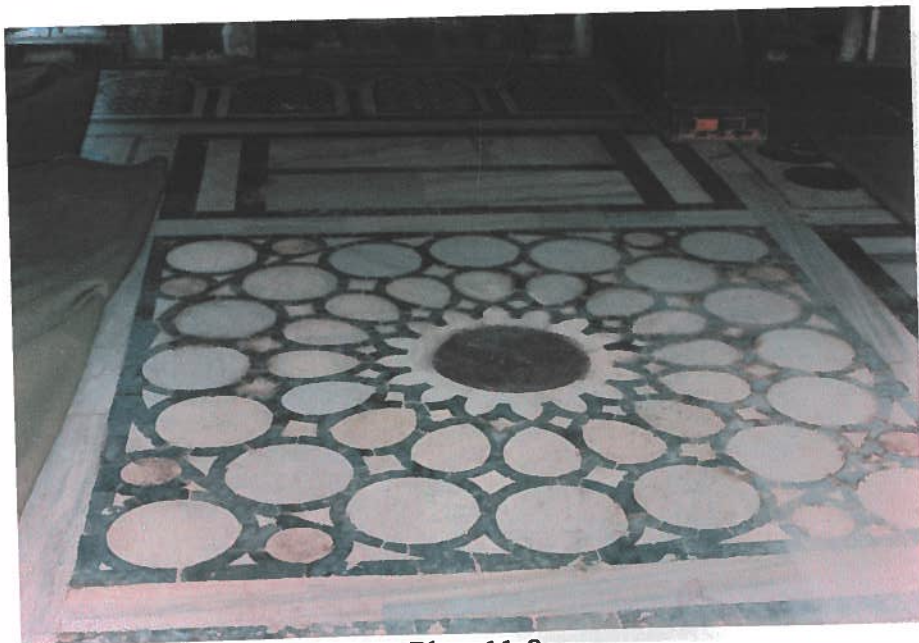


Plate 11-8

Marble paving in Mamluk Cairo
Plates



Plate 11-9



Plate 11-10

Plate 11-11

Marble paving in Mamluk Cairo
Plates



Plate 11-11



Plate 11-12

Marble paving in Mamluk Cairo
Plates



Plate 11-13



Plate 11-14

Marble paving in Mamluk Cairo
Plates



Plate 11-15



Plate 11-16

Plate 11-18

Marble paving in Mamluk Cairo
Plates



Plate 11-17



Plate 11-18

Marble paving in Mamluk Cairo
Plates

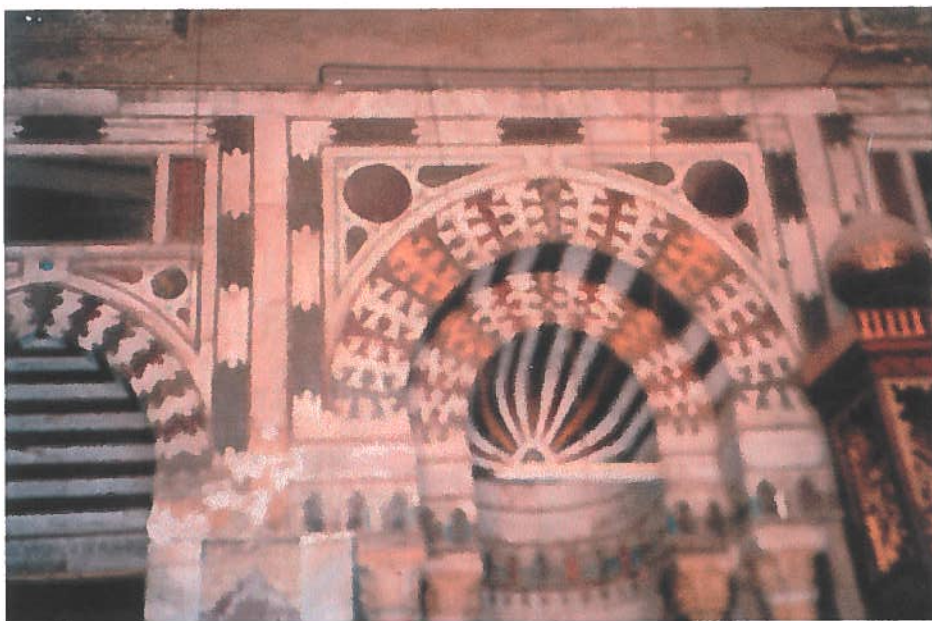


Plate 11-19



Plate 11-20

Marble Paving in Mamluk Cairo
Plates
Catalog # 12
Madrasa of Mahmud al-Ustadar (al-Kurdi Mosque)

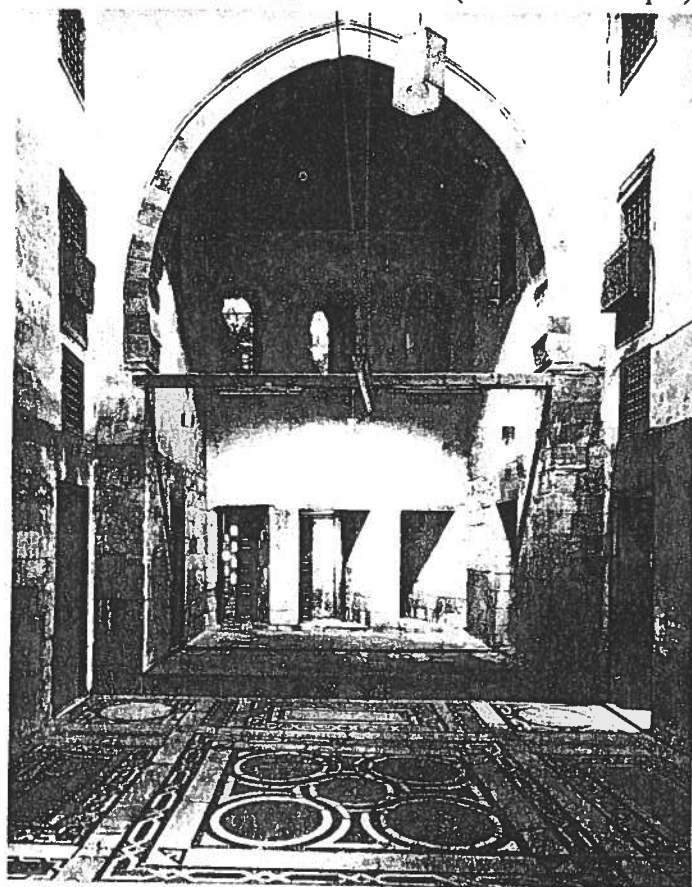


Plate 12-1 (Mustafa)

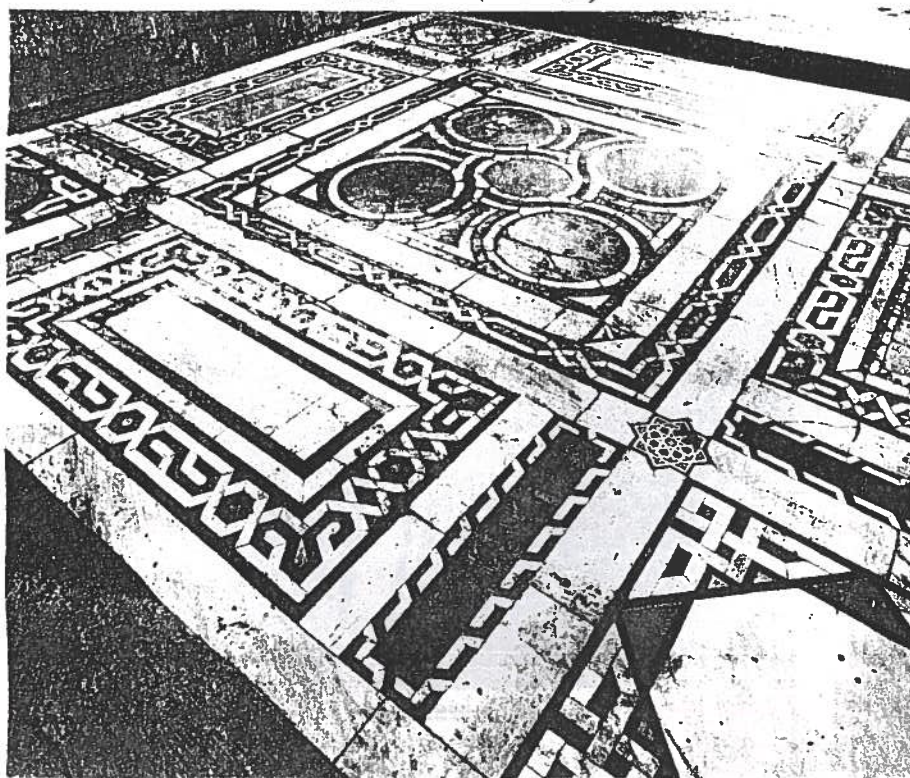


Plate 12-2 (Mustafa)

Marble paving in Mamluk Cairo
Plates
Catalog # 12a
Mamluk Qa'a in the Islamic Museum



Plate 12a-1

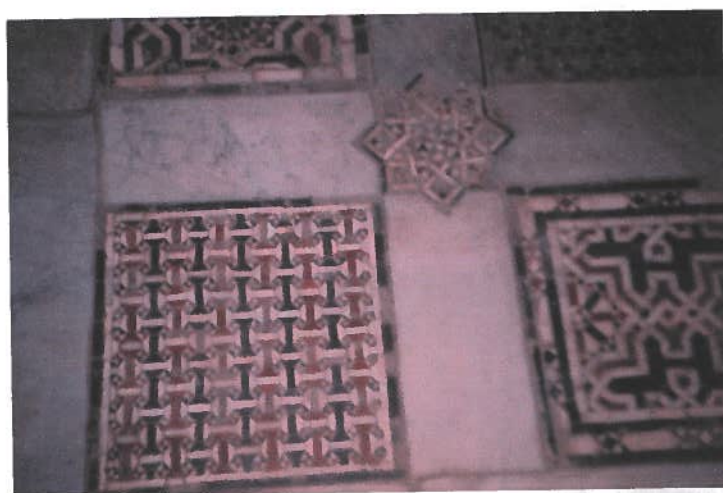


Plate 12a-2



Plate 12a-3

Marble paving in Mamluk Cairo
Plates
Catalog # 13
Complex of Faraj ibn Barquq



Plate 13-1

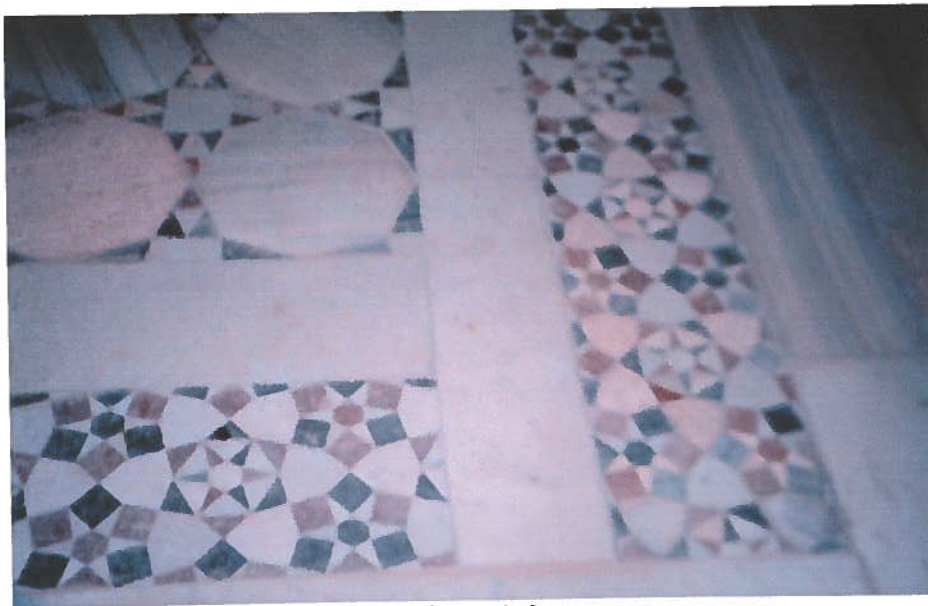


Plate 13-2

Marble paving in Mamluk Cairo
Plates



Plate 13-3



Plate 13-4

Marble paving in Mamluk Cairo
Plates
Catalog # 14
Madrasa of Gamal al-Din Ustadar



Plate 14-1



Plate 14-2

Marble paving in Mamluk Cairo
Plates

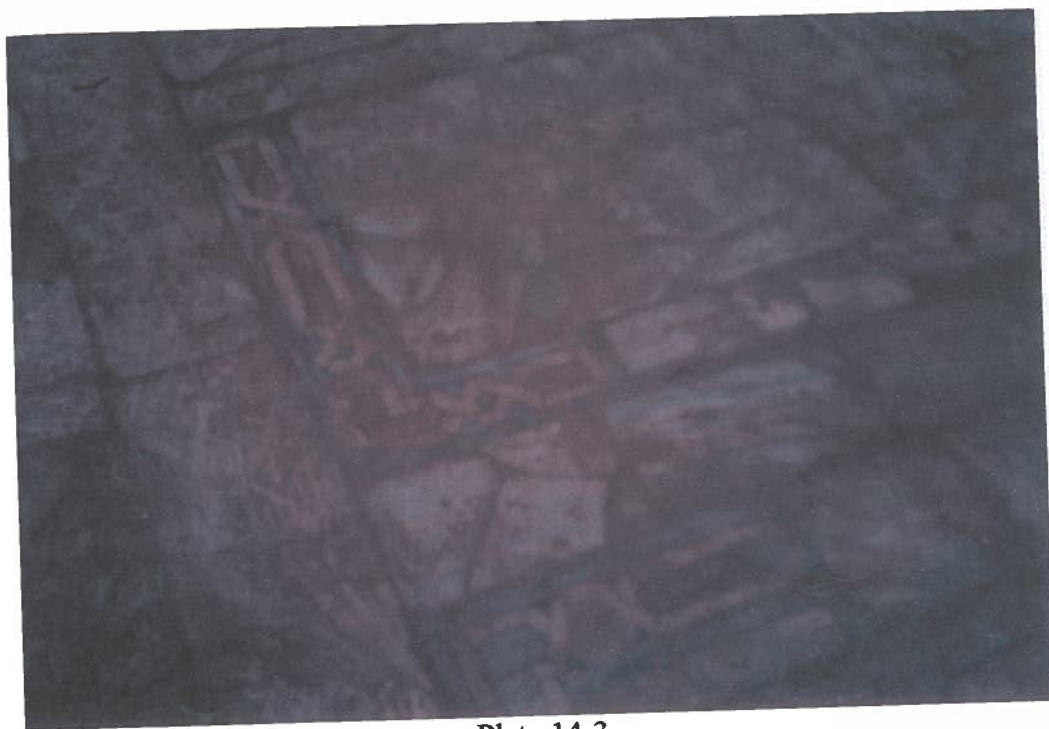


Plate 14-3



Plate 14-4

Marble paving in Mamluk Cairo
Plates



Plate 14-5



Plate 14-6

Marble paving in Mamluk Cairo
Plates



Plate 14-7



Plate 14-8



Plate 14-9

Marble paving in Mamluk Cairo
Plates
Catalog # 15
Mosque of Mua'yyad Shaikh

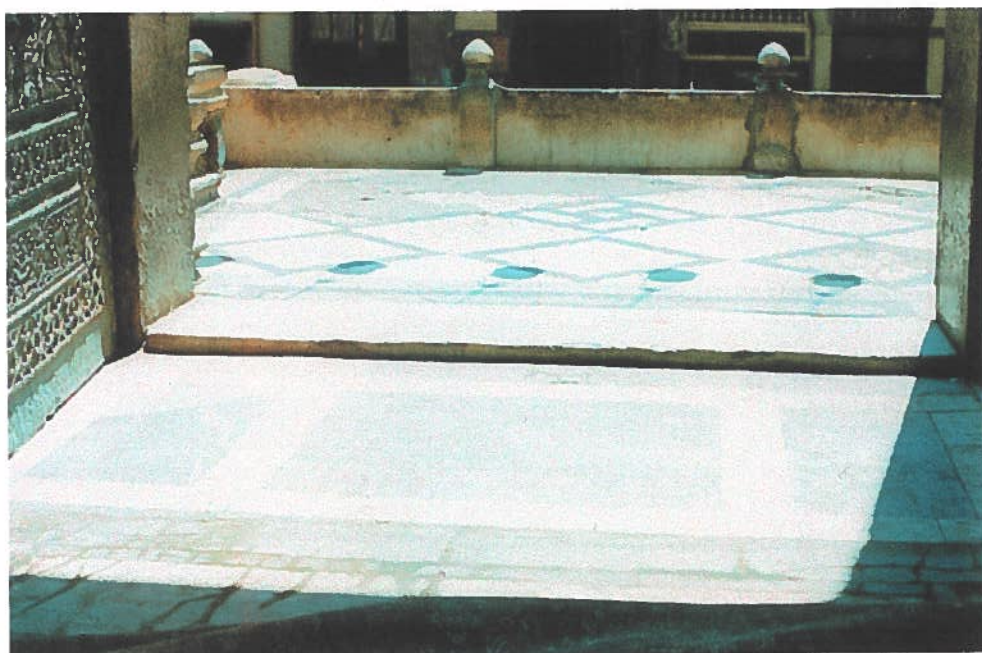


Plate 15-1



Plate 15-2

Marble paving in Mamluk Cairo
Plates



Plate 15-3



Plate 15-4

Plate 15-5

Marble paving in Mamluk Cairo
Plates

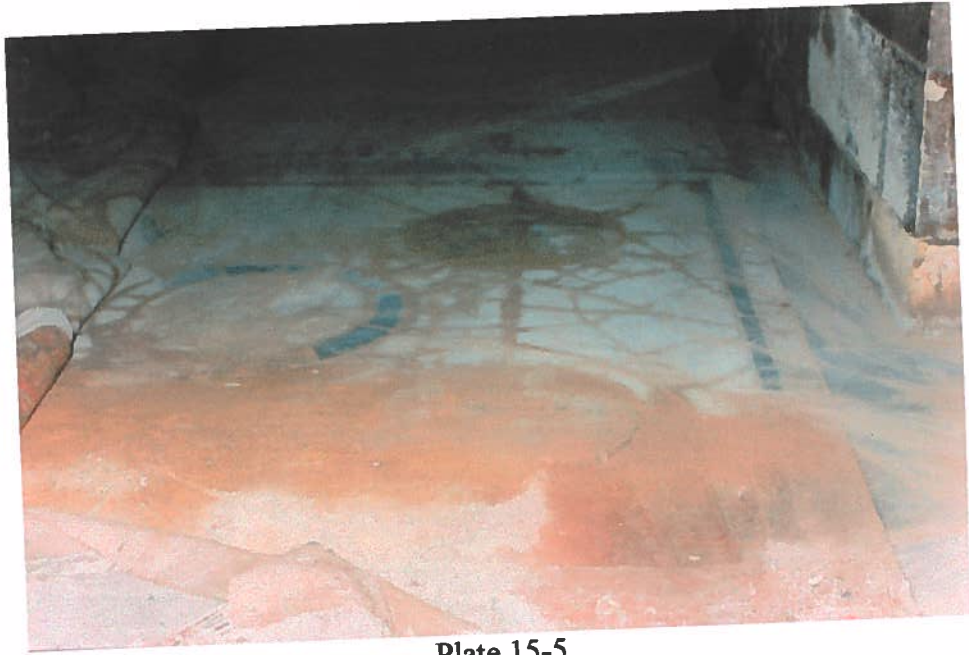


Plate 15-5



Plate 15-6

Marble paving in Mamluk Cairo
Plates



Plate 15-7



Plate 15-8

Marble paving in Mamluk Cairo
Plates



Plate 15-9



Plate 15-10

Marble paving in Mamluk Cairo
Plates



Plate 15-11



Plate 15-12

Marble paving in Mamluk Cairo
Plates

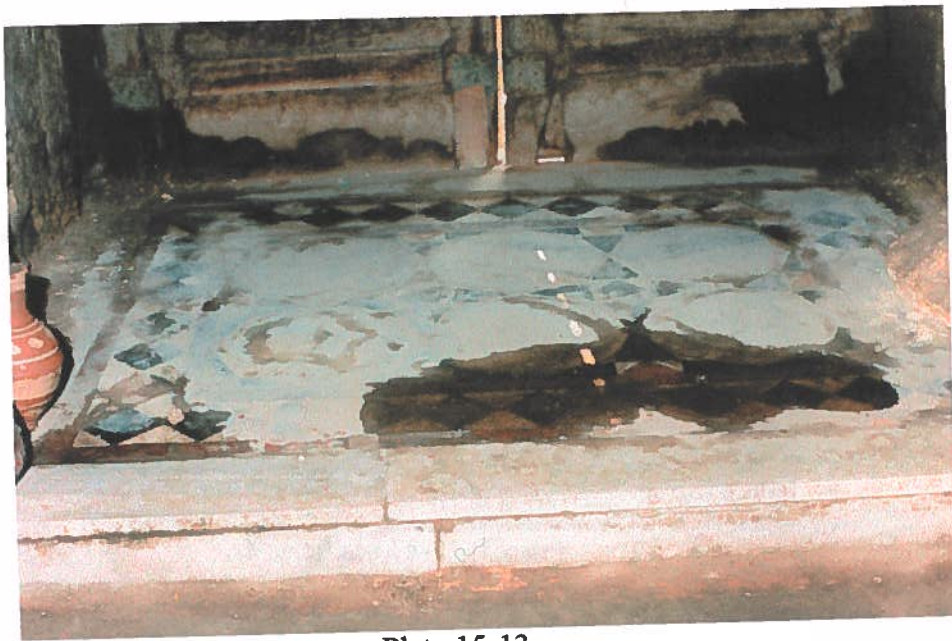


Plate 15-13



Plate 15-14

Marble paving in Mamluk Cairo
Plates

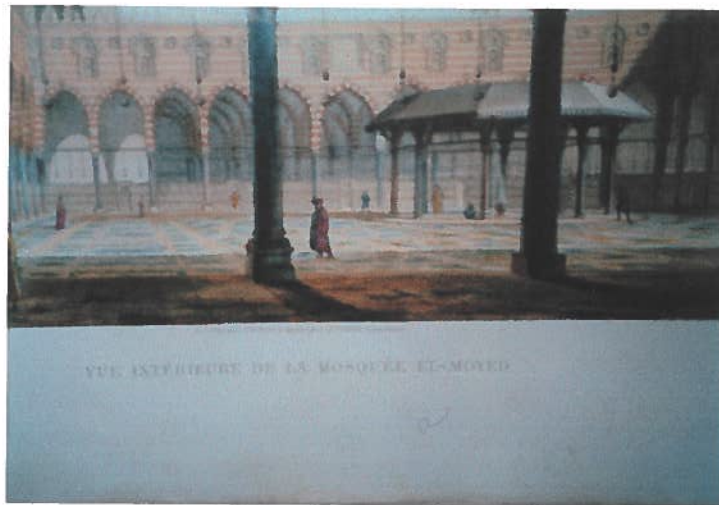


Plate 15-15 (Coste)

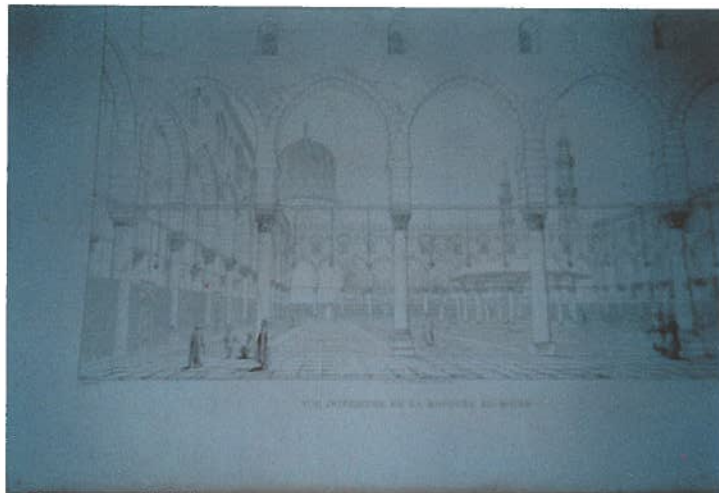


Plate 15-16 (Coste)

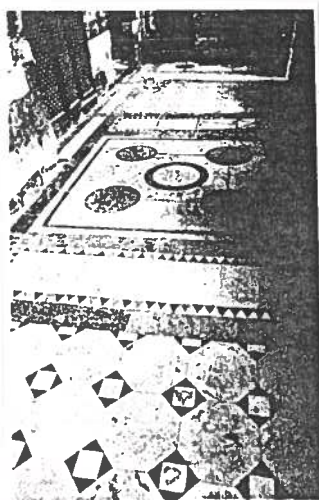


Plate 15-17 (Sewilleme)

Marble paving in Mamluk Cairo
Plates
Catalog # 16
Al-Fakhriyya Madrasa (Masjid al-Banat)



Plate 16-1



Plate 16-2



Plate 16-3

Marble paving in Mamluk Cairo
Plates



Plate 16-4



Plate 16-5

Marble paving in Mamluk Cairo
Plates

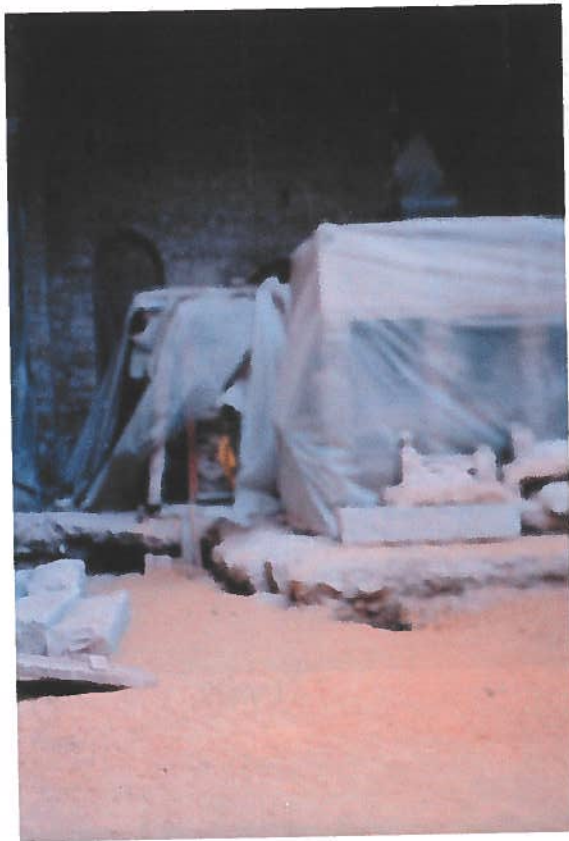


Plate 16-6



Plate 16-7

Marble paving in Mamluk Cairo
Plates
Catalog # 17
Madrasa of Qadi 'Abd al-Basit



Plate 17-1



Plate 17-2

Marble paving in Mamluk Cairo
Plates



Plate 17-3



Plate 17-4

Marble paving in Mamluk Cairo
Plates



Plate 17-5



Plate 17-6

Marble paving in Mamluk Cairo
Plates



Plate 17-7



Plate 17-8

Marble Paving in Mamluk Cairo
Plates

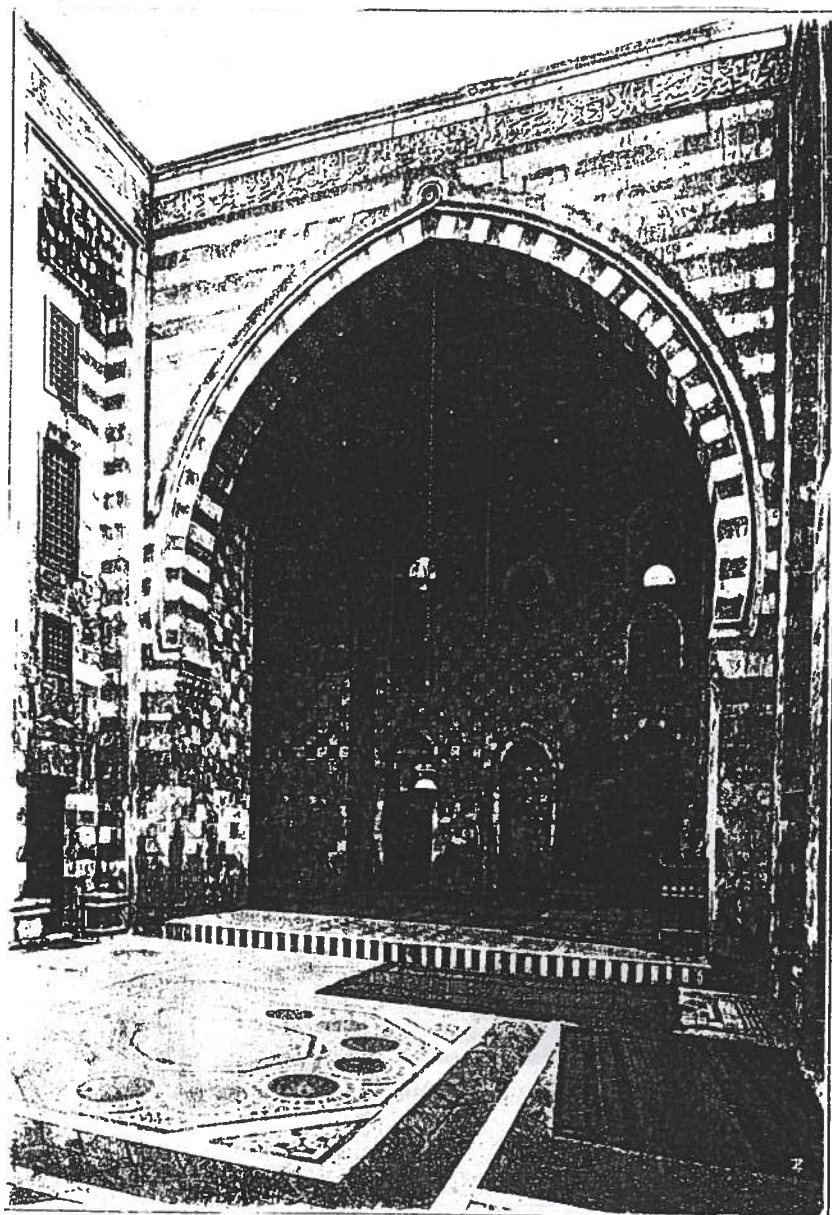


Plate 17-9 (Comité, 1919)

Marble paving in Mamluk Cairo
Plates
Catalog # 18
Madrasa of al-Ashraf Barsbay



Plate 18-1



Plate 18-2

Marble paving in Mamluk Cairo
Plates



Plate 18-3



Plate 18-4

Marble paving in Mamluk Cairo
Plates



Plate 18-5



Plate 18-6

Marble paving in Mamluk Cairo
Plates



Plate 18-7



Plate 18-8

Marble paving in Mamluk Cairo
Plates



Plate 18-9



Plate 18-10

Marble paving in Mamluk Cairo
Plates



Plate 18-11



Plate 18-12

Marble paving in Mamluk Cairo
Plates



Plate 18-13



Plate 18-14



Plate 18-15

Marble paving in Mamluk Cairo
— Plates
Catalog # 19
Ganibay Mosque

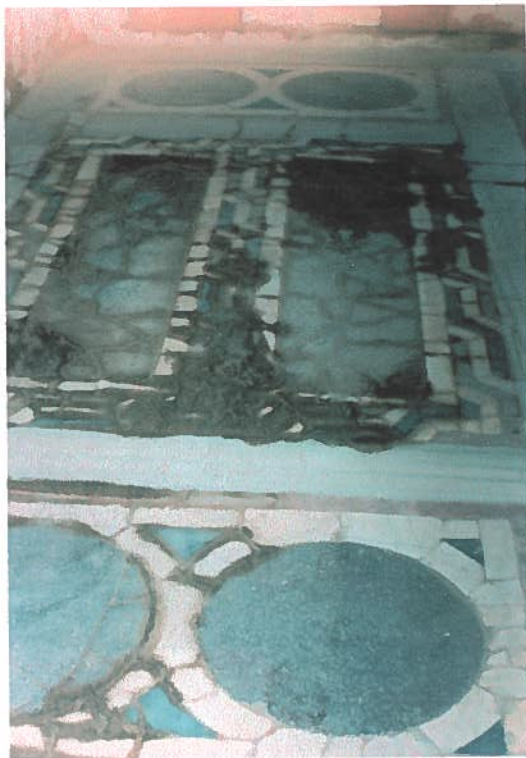


Plate 19-1



Plate 19-2

Marble paving in Mamluk Cairo
Plates



Plate 19-3



Plate 19-4

Marble paving in Mamluk Cairo
Plates



Plate 19-5



Plate 19-6

Marble Paving in Mamluk Cairo
Plates

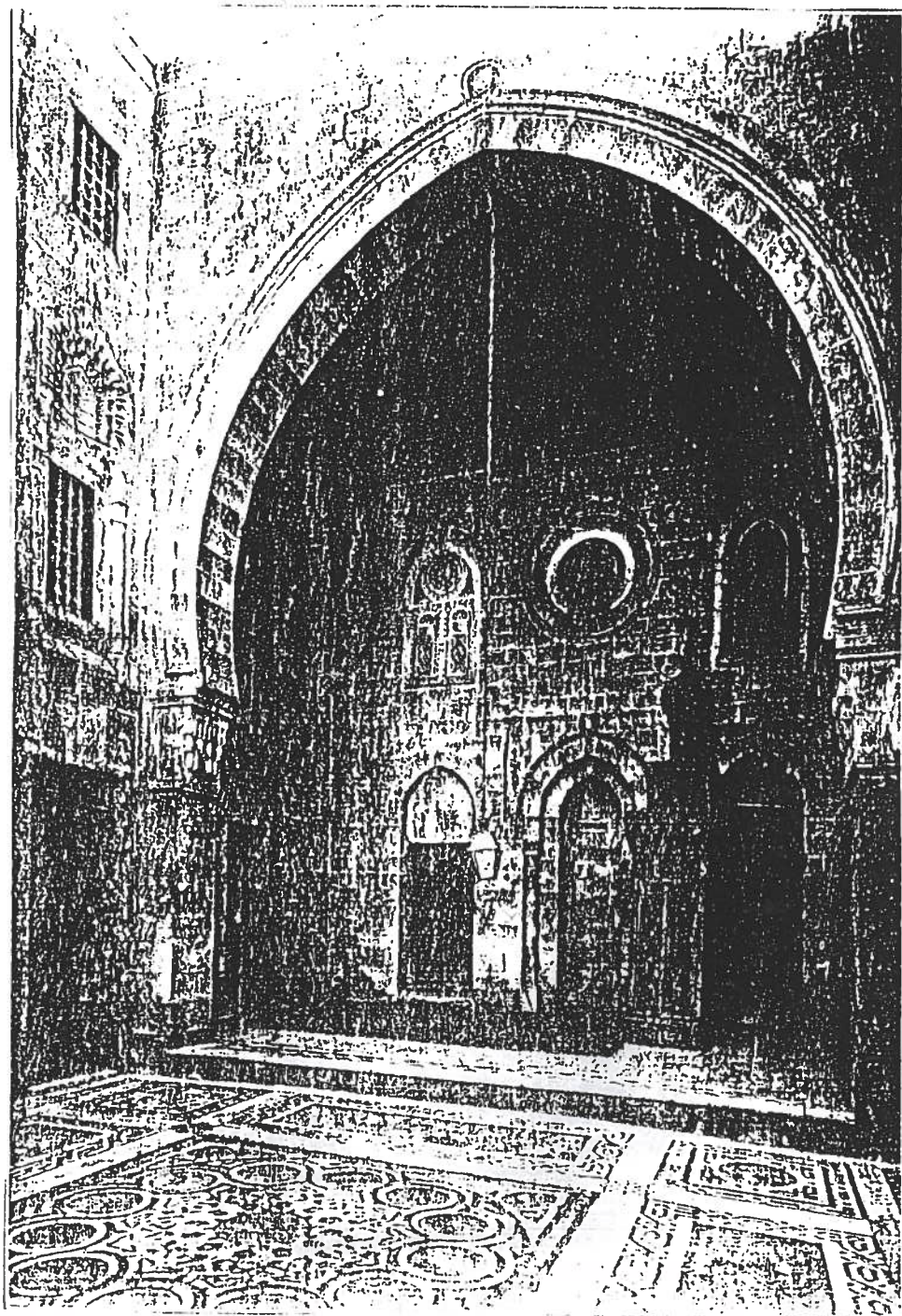


Plate 19-7 (Comité, 1919)

Marble paving in Mamluk Cairo
Plates
Catalog # 20
Madrasa of Jawhar al-Lala



Plate 20-1

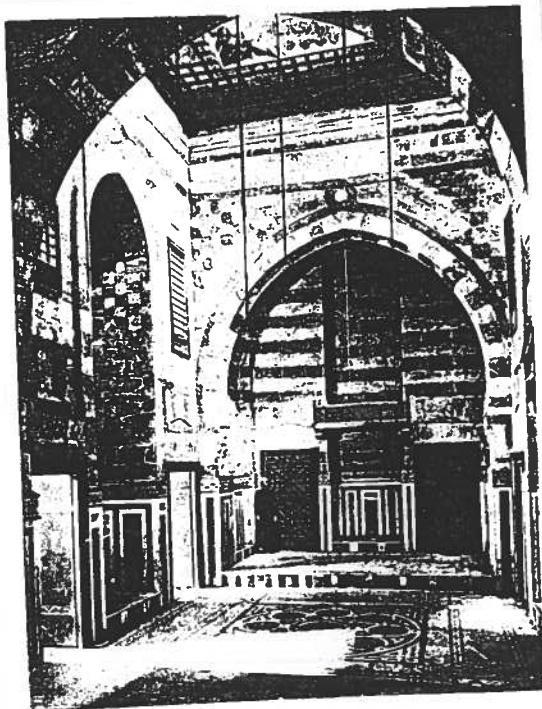


Plate 20-2

Marble paving in Mamluk Cairo
Plates
Catalog # 21
Complex of al-Ashraf Barsbay



Plate 21-1

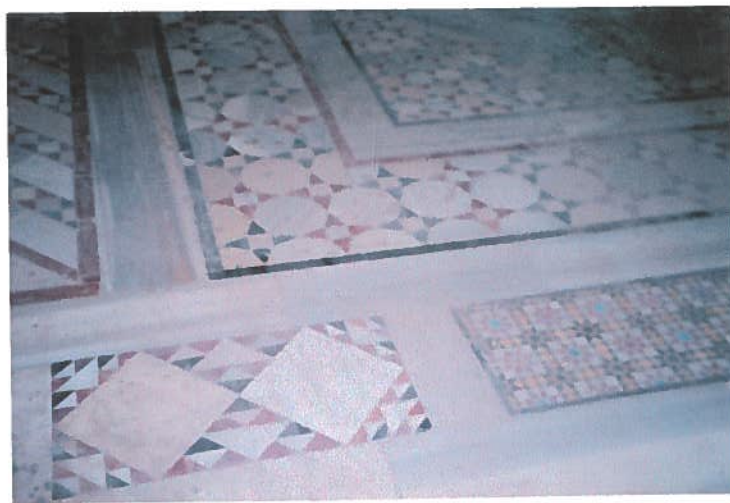


Plate 21-2

Marble paving in Mamluk Cairo
Plates



Plate 21-3



Plate 21-4

Marble paving in Mamluk Cairo
Plates



Plate 21-5



Plate 21-6

Marble paving in Mamluk Cairo
Plates



Plate 21-7



Plate 21-8

Marble paving in Mamluk Cairo
Plates



Plate 21-9

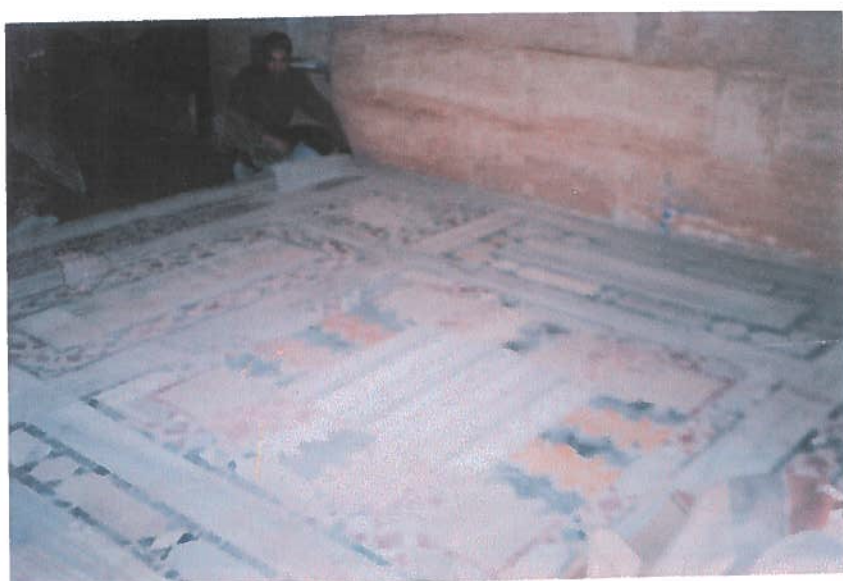


Plate 21-10

Marble paving in Mamluk Cairo
Plates



Plate 21-11



Plate 21-12

Marble paving in Mamluk Cairo
Plates



Plate 21-13



Plate 21-14

Marble paving in Mamluk Cairo
Plates



Plate 21-15



Plate 21-16

Marble paving in Mamluk Cairo
Plates



Plate 21-17



Plate 21-18

Marble paving in Mamluk Cairo
Plates

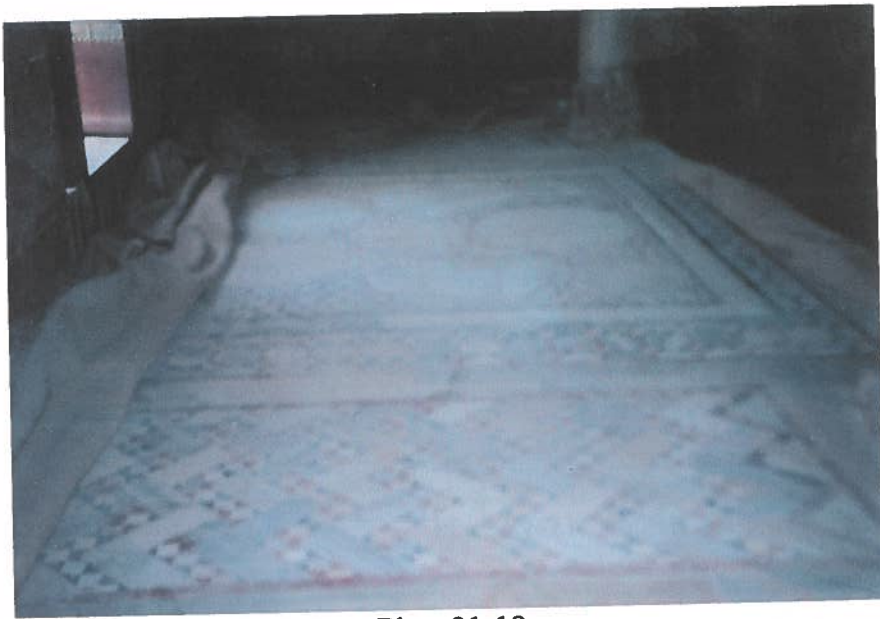


Plate 21-19



Plate 21-20

**Marble paving in Mamluk Cairo
Plates**



Plate 21-21



Plate 21-22



Plate 21-23

Marble paving in Mamluk Cairo
Plates



Plate 21-24



Plate 21-25

Marble paving in Mamluk Cairo
Plates



Plate 21-26



Plate 21-27

Marble paving in Mamluk Cairo
Plates



Plate 21-28



Plate 21-29

**Marble paving in Mamluk Cairo
Plates**



Plate 21-30



Plate 21-31



Plate 21-32

Marble paving in Mamluk Cairo
Plates
Catalog # 22
Madrasa of Jawhar al-Qanquba'i



Plate 22-1



Plate 22-2

Marble paving in Mamluk Cairo Plates



Plate 22-3

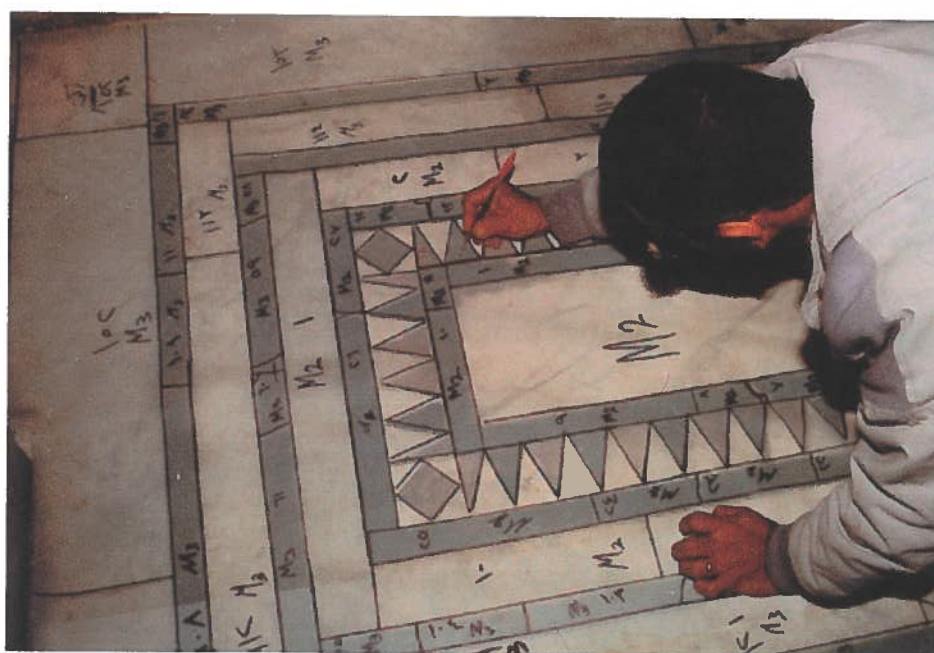


Plate 22-4

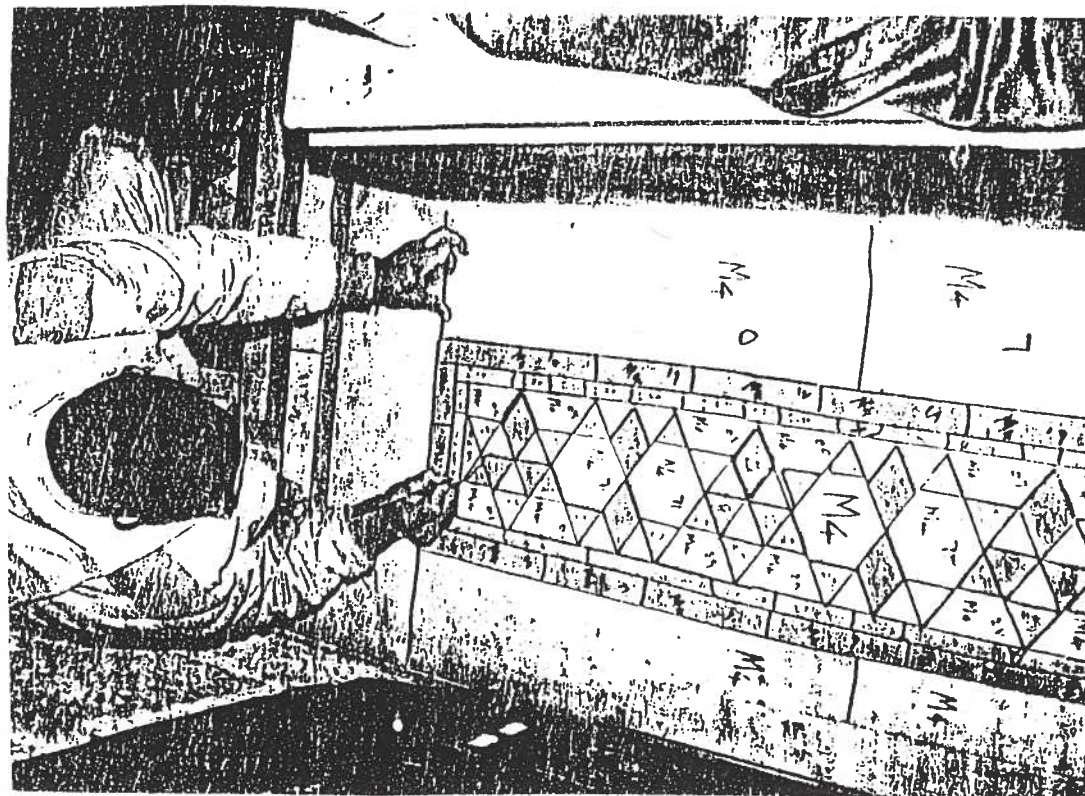


Plate 22-5

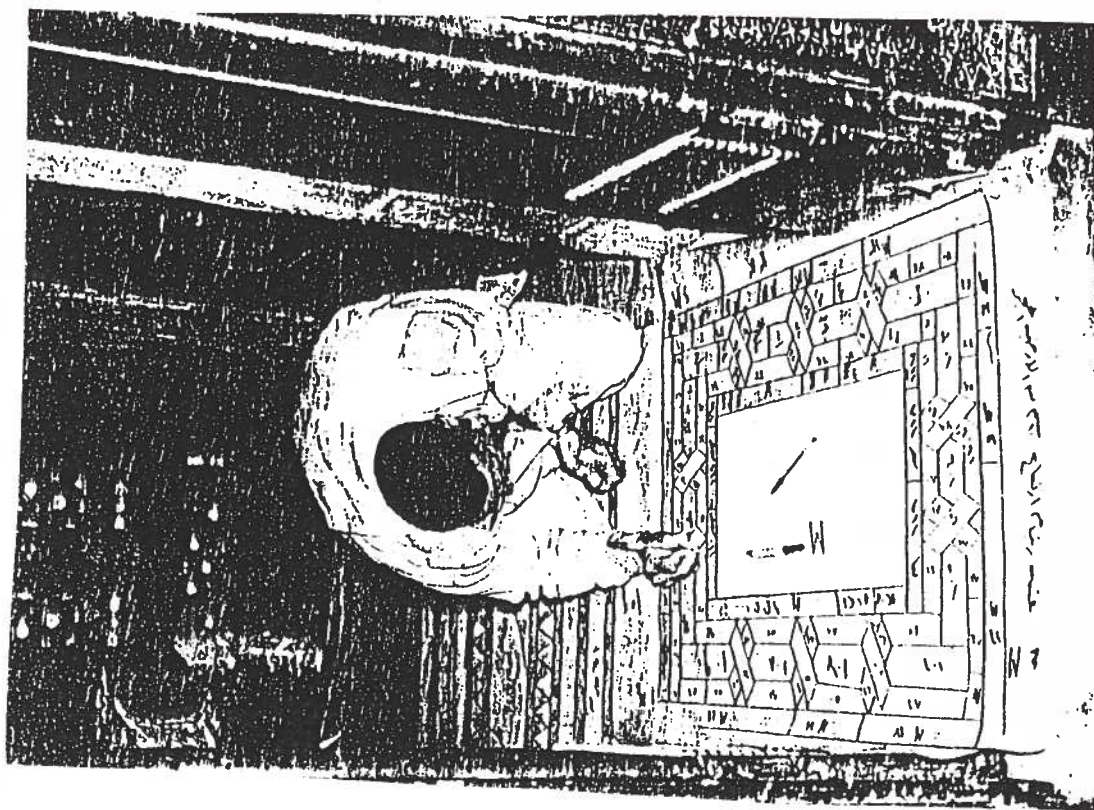


Plate 22-6

Marble paving in Mamluk Cairo
Plates
Catalog # 23
Madrasa of Taghribirdi



Plate 23-1



Plate 23-2

Marble paving in Mamluk Cairo
Plates



Plate 23-3



Plate 23-4



Plate 23-5

Marble paving in Mamluk Cairo
Plates



Plate 23-6



Plate 23-7

Marble paving in Mamluk Cairo
Plates
Catalog # 24
Mosque of Zayn al-Din Yahya



Plate 24-1



Plate 24-2

Marble paving in Mamluk Cairo
Plates
Catalog # 25
Mosque of Timraz al-Ahmadi (Bahlul)



Plate 25-1



Plate 25-2

Marble paving in Mamluk Cairo
Plates

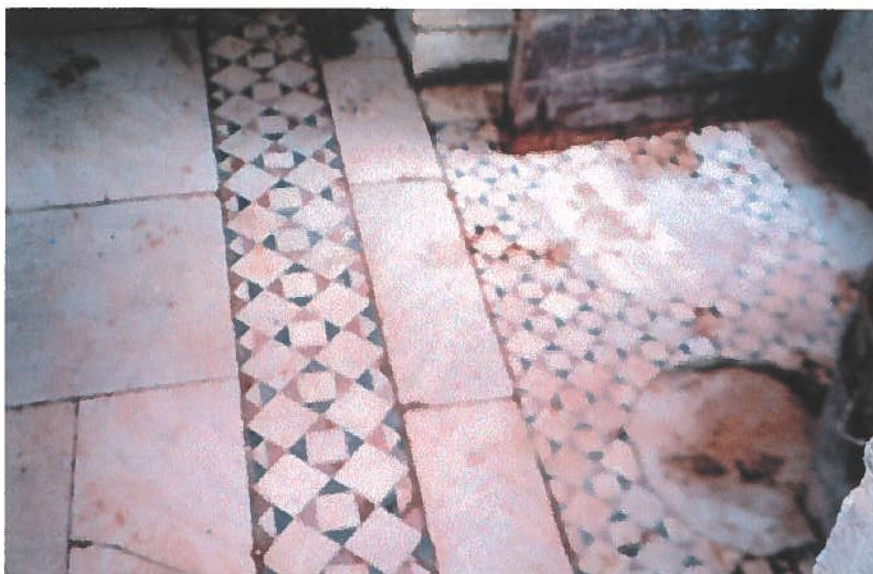


Plate 25-3

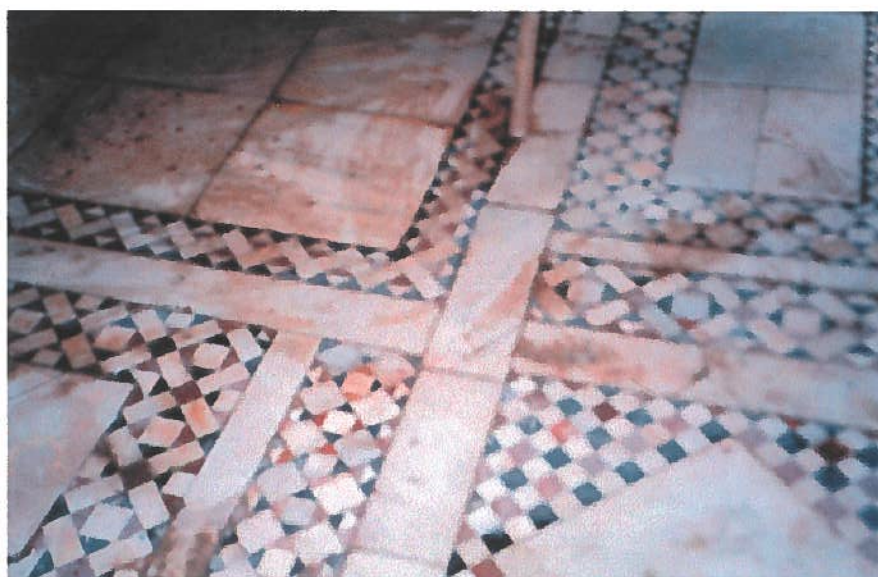


Plate 25-4

Marble paving in Mamluk Cairo
Plates



Plate 25-5



Plate 25-6

Marble paving in Mamluk Cairo
Plates
Catalog # 26
Complex of Qaytbay



Plate 26-1



Plate 26-2

Marble paving in Mamluk Cairo
Plates



Plate 26-3



Plate 26-4

Marble paving in Mamluk Cairo
Plates



Plate 26-5



Plate 26-6

Marble paving in Mamluk Cairo
Plates



Plate 26-7



Plate 26-8

Marble paving in Mamluk Cairo
Plates



Plate 26-9



Plate 26-10

Marble paving in Mamluk Cairo
Plates



Plate 26-11

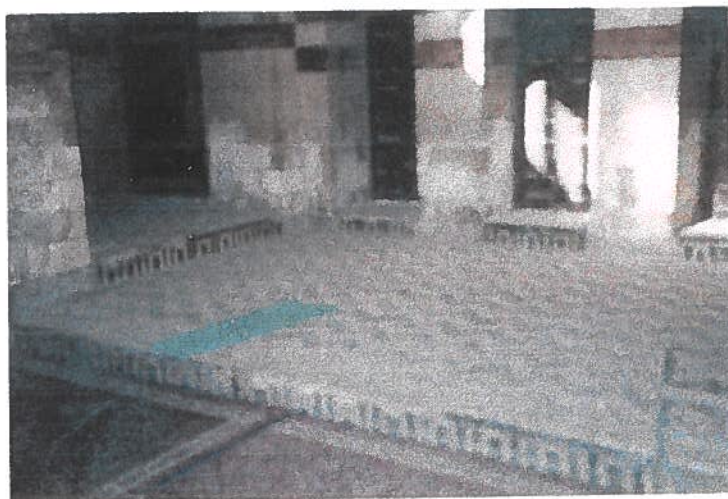


Plate 26-12



Plate 26-13

Marble paving in Mamluk Cairo
Plates



Plate 26-14



Plate 26-15



Plate 26-16

Marble paving in Mamluk Cairo
Plates



Plate 26-17



Plate 26-18

Marble paving in Mamluk Cairo
Plates



Plate 26-19



Plate 26-20

Marble paving in Mamluk Cairo
Plates



Plate 26-21

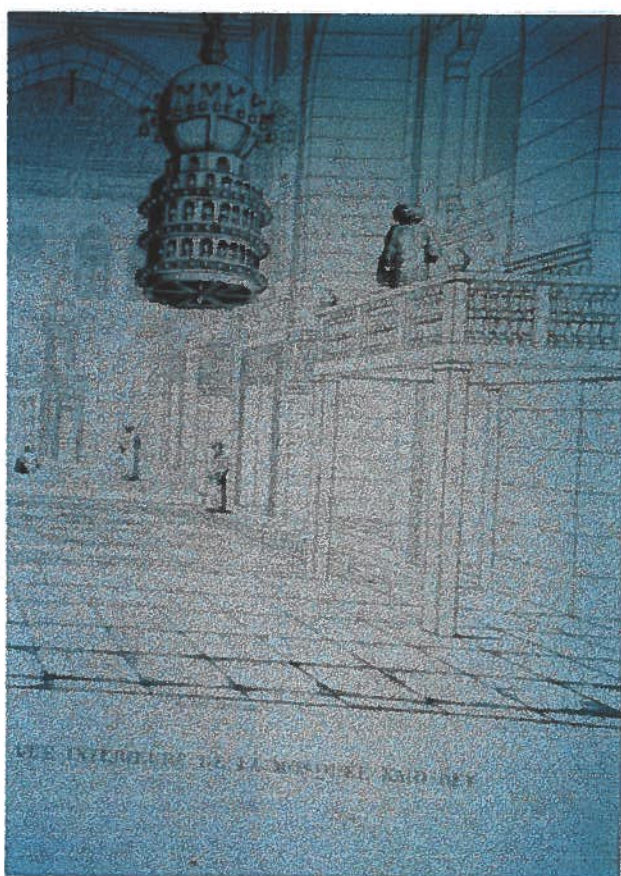


Plate 26-22

Marble paving in Mamluk Cairo
Plates
Catalog # 27
Mosque of Qaytbay



Plate 27-1



Plate 27-2

Marble paving in Mamluk Cairo
Plates



Plate 27-3



Plate 27-4



Plate 27-5

Marble paving in Mamluk Cairo
Plates

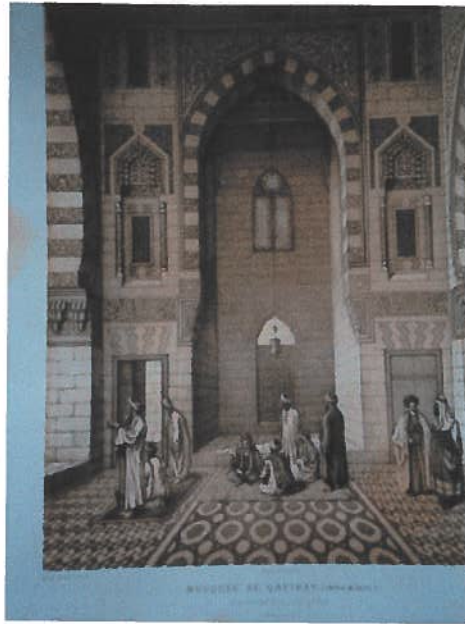


Plate 27-6 (D'Avennes)

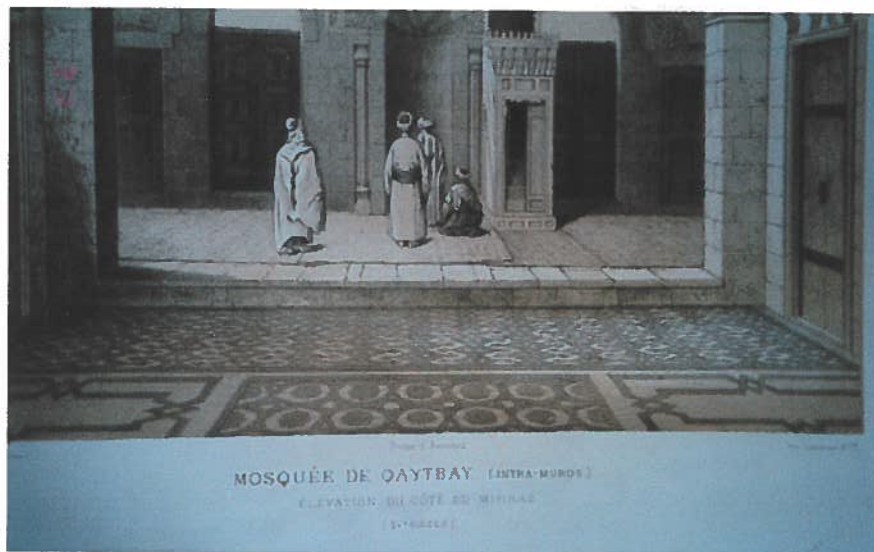


Plate 27-7 (D'Avennes)

Marble paving in Mamluk Cairo
Plates
Catalog # 28
Qubbat al-Amir Yashbak



Plate 28-1



Plate 28-2

Marble paving in Mamluk Cairo
Plates



Plate 28-3



Plate 28-4

Marble paving in Mamluk Cairo
Plates
Catalog # 29
Madrasa of Abu Bakr Muzhir



Plate 29-1



Plate 29-2



Plate 29-3

Marble paving in Mamluk Cairo
Plates



Plate 29-4



Plate 29-5



Plate 29-6

Marble paving in Mamluk Cairo
Plates



Plate 29-7



Plate 29-8

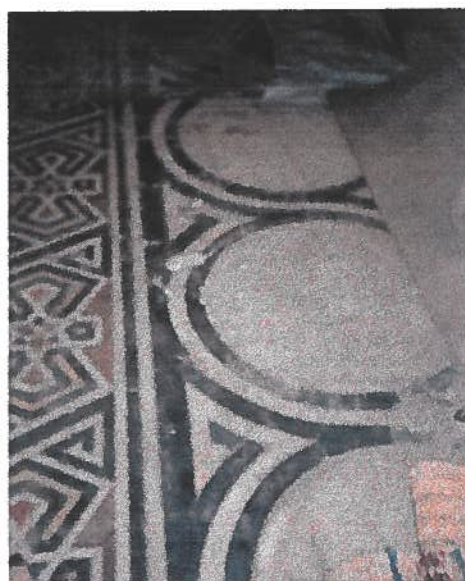


Plate 29-9

**Marble paving in Mamluk Cairo
Plates**



Plate 29-10



Plate 29-11



Plate 29-12

Marble paving in Mamluk Cairo
Plates



Plate 29-13

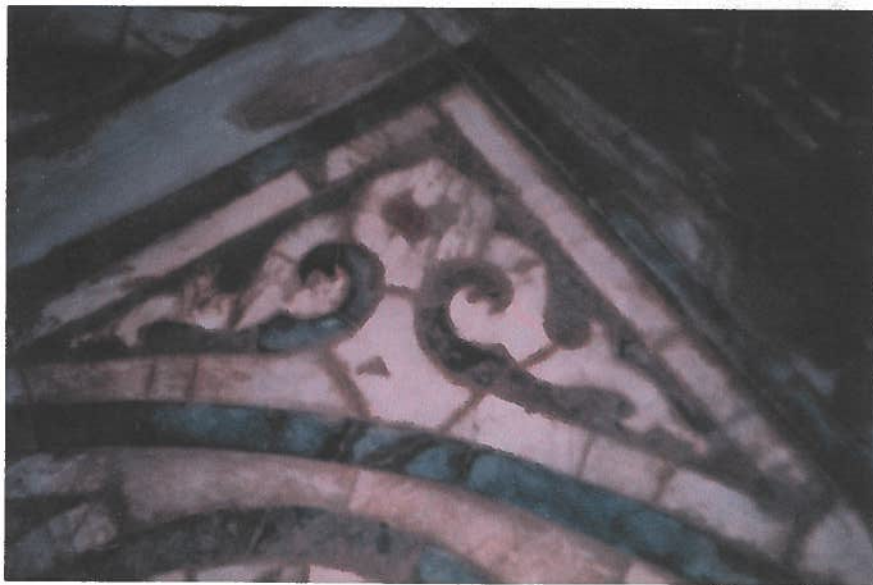


Plate 29-14

Marble paving in Mamluk Cairo
Plates



Plate 29-15



Plate 29-16

Marble paving in Mamluk Cairo
Plates



Plate 29-17



Plate 29-18

Marble paving in Mamluk Cairo
Plates



Plate 29-19



Plate 29-20

Marble paving in Mamluk Cairo
Plates



Plate 29-21



Plate 29-22

Marble paving in Mamluk Cairo
Plates
Catalog # 30
Madrasa of Qijmas al-Ishaqi



Plate 30-1



Plate 30-2



Plate 30-3

**Marble paving in Mamluk Cairo
Plates**



Plate 30-4



Plate 30-5

**Marble paving in Mamluk Cairo
Plates**



Plate 30-6



Plate 30-7

Marble paving in Mamluk Cairo
Plates



Plate 30-8



Plate 30-9



Plate 30-10

Marble paving in Mamluk Cairo
Plates
Catalog # 32
Madrasa of Azbak al-Yusifi



Plate 32-1



Plate 32-2



Plate 32-3

Marble paving in Mamluk Cairo
Plates



Plate 32-4



Plate 32-5

Marble paving in Mamluk Cairo
Plates



Plate 32-6



Plate 32-7

Marble paving in Mamluk Cairo
Plates
Catalog # 34
Complex of al-Ghuri



Plate 34-1

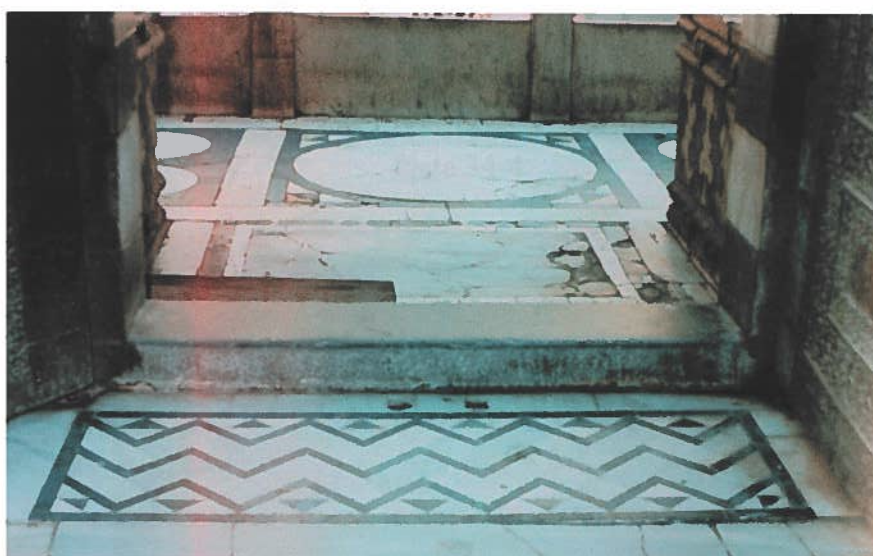


Plate 34-2

Marble paving in Mamluk Cairo
Plates



Plate 34-3



Plate 34-4



Plate 34-5

Marble paving in Mamluk Cairo
Plates

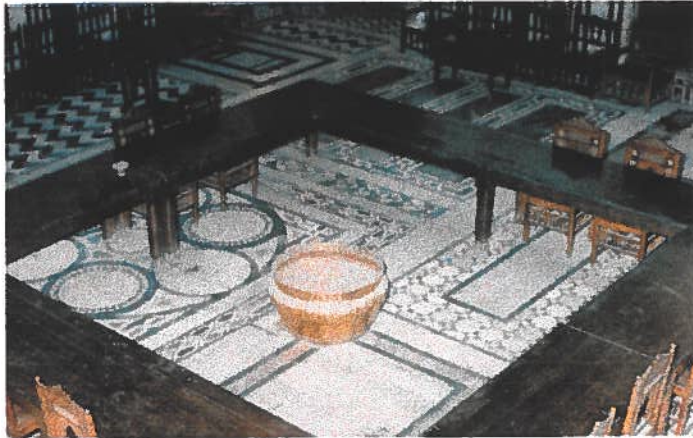


Plate 34-6

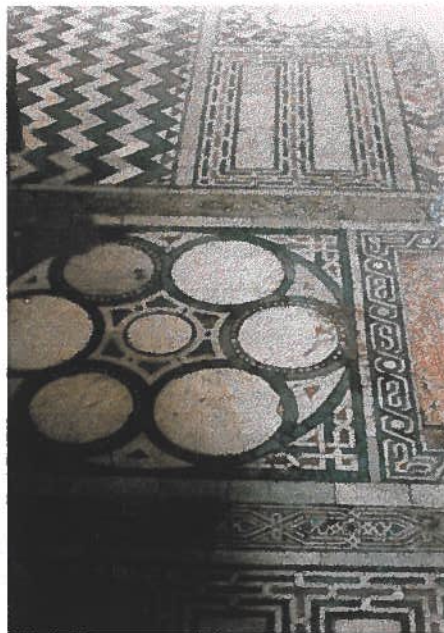


Plate 34-7



Plate 34-8

Marble paving in Mamluk Cairo
Plates



Plate 34-9



Plate 34-10



Plate 34-11

Marble paving in Mamluk Cairo
Plates



Plate 34-12

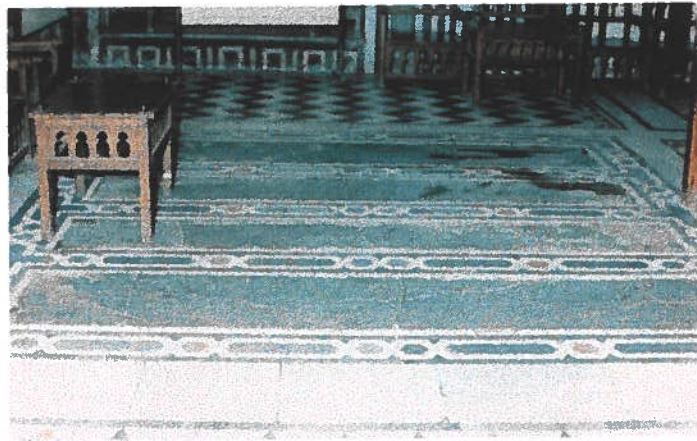


Plate 34-13



Plate 34-14

Marble paving in Mamluk Cairo
Plates



Plate 34-15



Plate 34-16



Plate 34-17

Marble paving in Mamluk Cairo
Plates

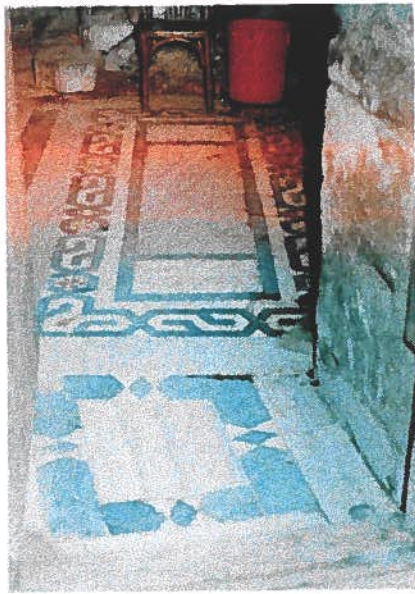


Plate 34-18



Plate 34-19



Plate 34-20

Marble paving in Mamluk Cairo
Plates



Plate 34-21



Plate 34-22



Plate 34-23

Marble Paving in Mamluk Cairo
Plates

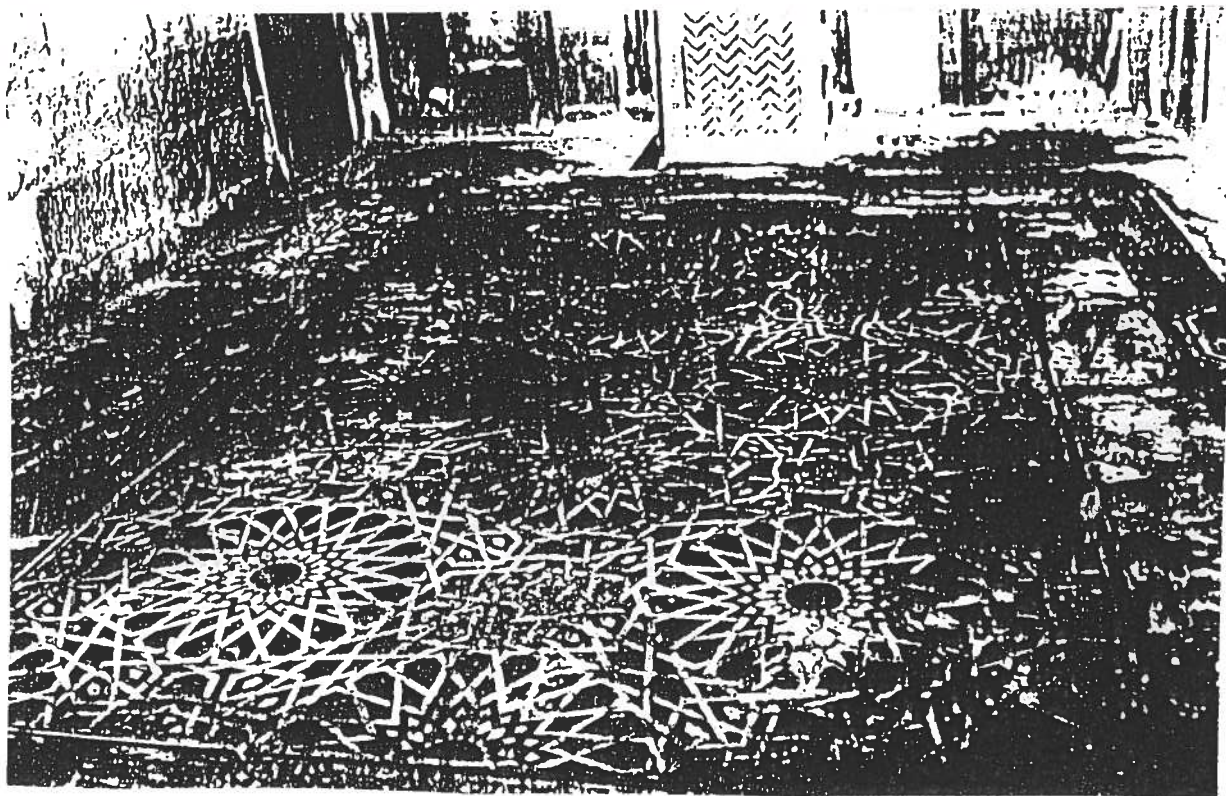


Plate 34-24 (Ebeid, 1976)

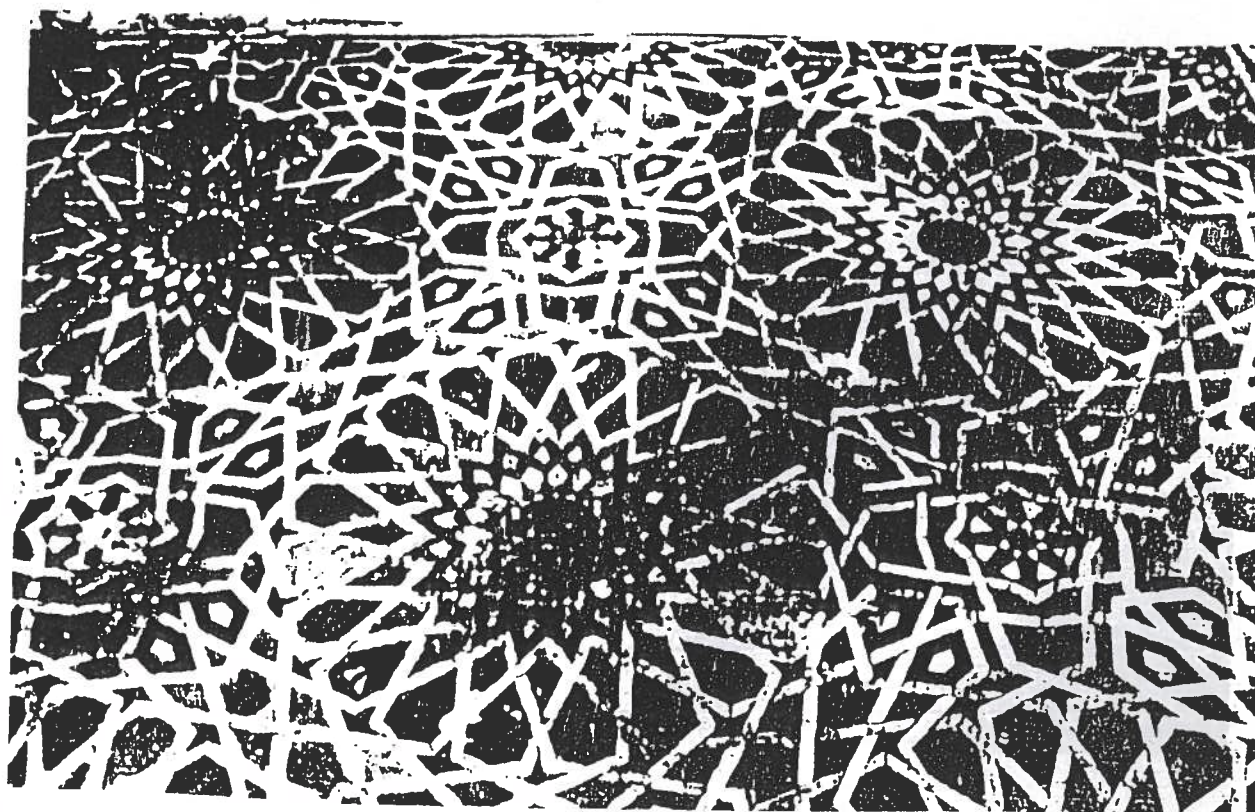


Plate 34-25 (Ebeid, 1976)

Marble Paving in Mamluk Cairo
Plates

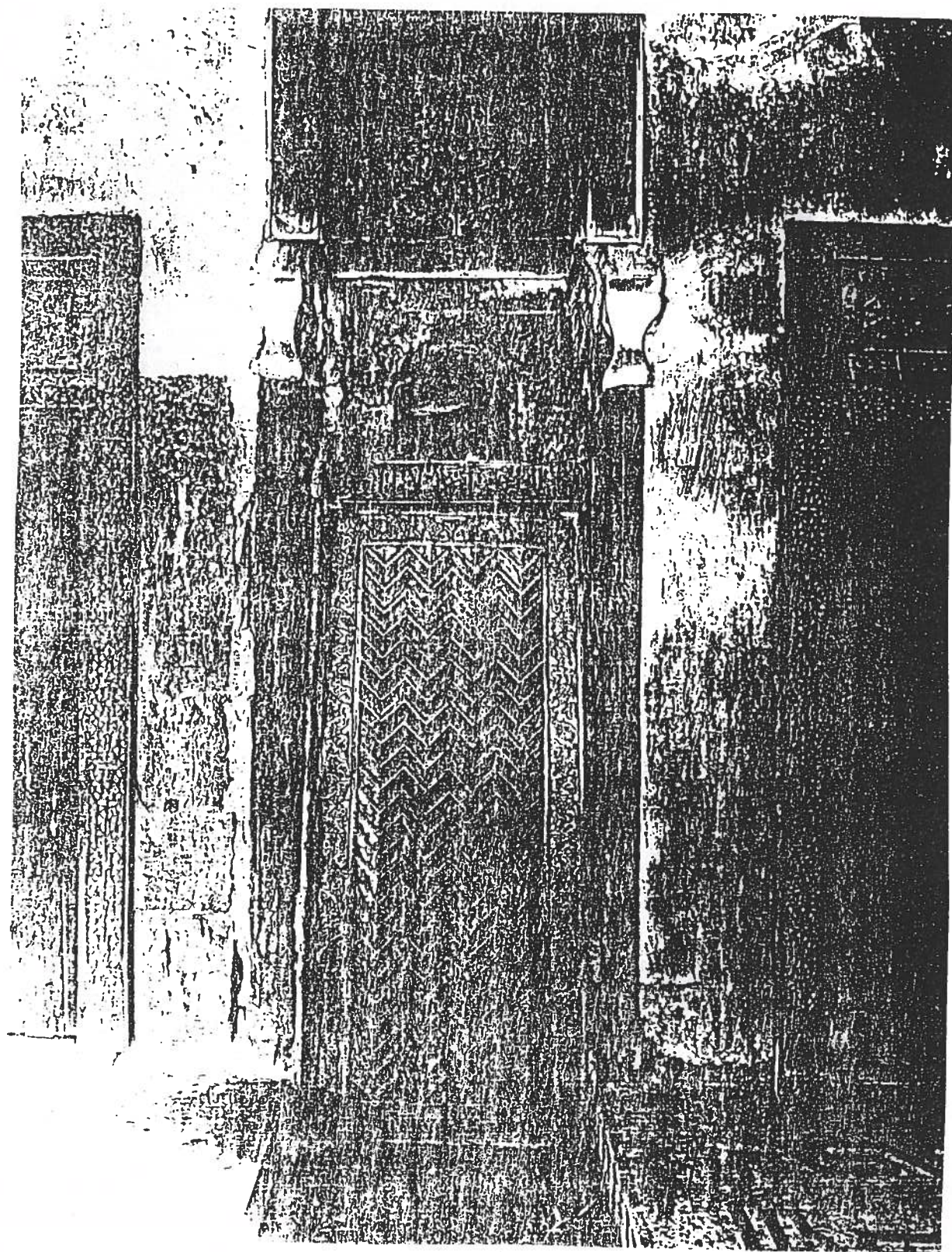


Plate 34-26 (Ebeid, 1976)

Marble paving in Mamluk Cairo
Plates
Catalog # 35
Madrasa of al-Ghuri



Plate 35-1

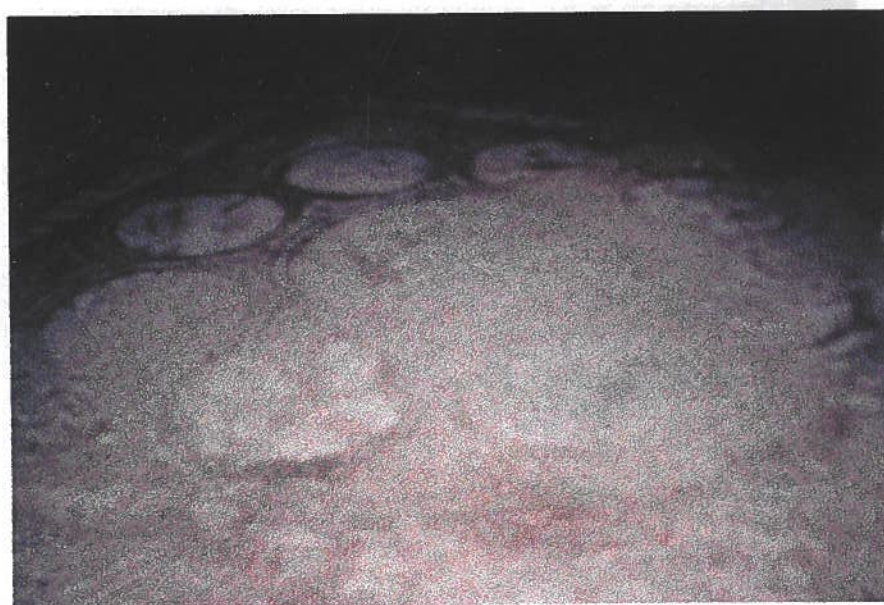


Plate 35-2

Marble paving in Mamluk Cairo
Plates



Plate 35-3



Plate 35-4

Marble paving in Mamluk Cairo
Plates



Plate 35-5



Plate 35-6

Marble paving in Mamluk Cairo
Plates



Plate 35-7

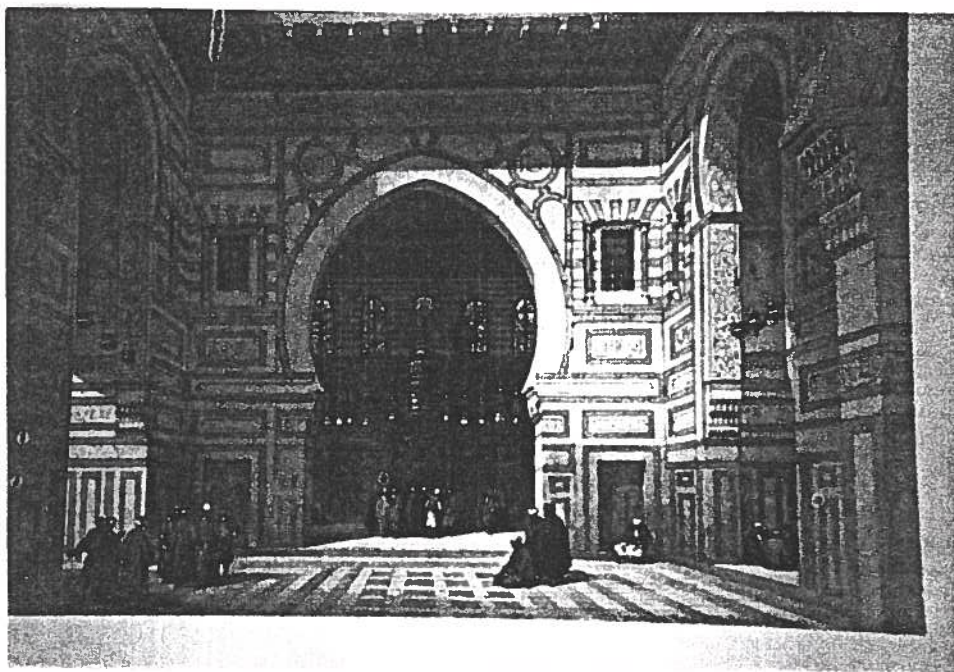


Plate 35-8 (Roberts)







Adf 30-3-2015

