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AYYŪBID ARCHITECTURE

by

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ABSTRACT

At the zenith of its power Ayyūbid rule stretched from the Tunisian border in the west, the Yemen in the south and al-Jazira north and eastwards, but only three areas out of this large territorial expanse have received any serious architectural study that has been published; these are Cairo, Damascus and, to a lesser extent, Aleppo. The buildings of Ḥamā, Ḥarrān, Homs and Moṣūl are cursorily described and other Ayyūbid structures apart from these have had little or no attention. Throughout there is a marked scarcity of drawings, plans and photographs. Under these circumstances only a detailed review with the most tentative of interpretations is possible.

The period opened in 1171 with the overthrow of the Fātimid regime in Egypt by Ṣalāḥ al-Dīn and the shift in political power was given visual expression in stylistic changes in the architectural field. Whereas the Fātimids adapted several North African architectural features, the Ayyūbid rulers looked eastwards for their inspiration. Although their rule lasted under a century, many new structural ideas apparent in regions under Ayyūbid control were continued, developed and elaborated under the following Mamlūk Sultanate.

The subject is divided under the accepted three headings of military, religious and secular constructions. The military section includes city walls, citadels and also caravansarāʾī, because of the parallel defence features. The madrasa and māristān are grouped with the masjid and mausoleum forms as religious architecture because of their inter-relationship and structural similarity. The third and last category, secular buildings, includes private houses and public baths.

HISTORICAL BACKGROUND TO THE STUDY

By the middle of the 11th century the Fātimid regime in Cairo had lost control of North Africa to the Zirīds, and also the regions of Syria and Hijaz. And yet a few years previously it had seemed as if the ruling house was in sight of achieving its objective: the victory of the Ismā'īlī cause over orthodox Sunnī Islam. During 1057-9 the Fātimid Caliph's name had been proclaimed in Mosul and then in Baghdad itself.¹ But this success had been short lived.

Egypt was torn by internal troubles. During the mid 11th century famine and Nile floods disrupted the economic and social life of the region, causing large numbers of the population to migrate north and east into Syria. Further disturbances were generated by the open faction between the three main ethnic groups making up the Fātimid armed forces, the Sudanese infantry, the Berbers and the Turkish cavalry.²

The appointment of Badr al-Jamālī, the then governor of Acre (Akkā) to assume administrative control in 1073 staved off the final collapse of the Fātimid power for another century, mainly through his re-organisation of the military and the civil administrations. But any success in implementing these programmes depended on the discontinuation of the traditional raison d'être of the Fātimid house, world domination in the Islamic context and, with this, any thought of further territorial expansion.³

1. H.A.R.Gibb. "The Caliphate and the Arab States". History of the Crusades. vol.1 p.92
2. M.Canard "Fātimids" NEI. p.858
3. H.A.R.Gibb. op.cit. p.95

By 1078 Damascus was surrendered to the Saljūqs, and only defensive bridgeheads were maintained in Palestine to protect Egypt and also the southern Syrian ports in order to prevent access to the Red Sea with its valuable transit trade.

But the capture of Ascalon in 1153 by the Franks signalled the beginning of major Crusader attacks, militarily and politically, against Egypt culminating in the siege of Cairo in 1168.

In the same year Shīrkūh and Ṣalāh al-Dīn (Saladin) were sent to Egypt, Ṣalāh al-Dīn being formally invested as wazīr the following year on the death of his uncle. Two years later, on the order of Nūr al-Dīn, allegiance to the Abbāsīd Caliph was publicly given and so Fātimīd rule officially came to an end.

Ṣalāh al-Dīn's immediate problems were echoes of the recent past; an uprising of the Sudanese section of the Fātimīd army and Frankish attacks on Damietta, Gaza with their capture of Ailah. The question of possible future conflict with Nūr al-Dīn was forestalled by his death in 1174. At this point Syria was thrown into complete turmoil as the various factions struggled for power, and during the years 1179-85 Ṣalāh al-Dīn followed a policy of diplomacy together with military action until he gradually gained control over northern and southern Syria and Azerbaijan, while his nephew carried Ayyūbīd authority into North Africa.

Originally the family had had its roots in Dabil in Armenia, but through serving the Saljūq house had gradually moved into northern and central Syria, where various members of the house held governorships. Without question the family owed much to the Saljūq house both through direct patronage in the early years and then indirectly by continuing and developing the Saljūq military traditions and religious policy.¹

The Ayyūbid regime brought into the mixed alien army the Saljūq iqṭā'^c or fief system, more feudal in character than the former Fāṭimid method but less qualified than those of the Syrian and eastern provinces.²

In the religious sphere the madrasa structure and all that it entailed, as first introduced by the Saljūqs, was adopted by the Zangids in northern Syria and carried south into Egypt by Ṣalāḥ al-Dīn. However, the broad policy concerning financial and commercial matters, and the bureaucratic organisation in the early years of Ayyūbid rule, followed Fāṭimid lines.

Already by the time of Ṣalāḥ al-Dīn's death, Egypt was again figuring as a major political power and the Ayyūbid house had won much prestige and influence. Under his banner, it has been said, all of western Asia was united;³ although this could be considered too enthusiastic a statement, through the rule of Ṣalāḥ al-Dīn and his family, Egypt became the base of Muslim strength both politically and commercially in the east Mediterranean area during this period.

1. "Nur al-Din and Saladin are inconceivable without Tughrul Beg and Nizam al-Mulk". C.Cahen "The Turkish Invasion: The Selchukids" History of the Crusades. vol.1 p.176
2. "... a limited and revocable assignment of revenue, carrying no manorial jurisdiction, or even administrative function". B.Lewis "Egypt & Syria" Cambridge History of Islam. vol.1 p.206
3. H.A.R.Gibb. "The Rise of Saladin" History of the Crusades. vol.1 p.587

The death of Ṣalāḥ al-Dīn in 1193 and the consequent family squabbling brought about widespread disorganisation until al-^c Ādil appointed himself Sultan in 1200. Not only did he have to consolidate his authority over the divided factions within the Ayyūbid territories but also he had to deal with the growing threat of the Khwārazm Shāh with his forces pushed westwards by the Mongols; this was only to be stemmed temporarily by his defeat near Erzinjan in 1230. Time was running out for the Ayyūbid house; with the death of al-Malik al-Kāmil in 1238, a long period of decline was set into motion. Although the name of Ayyūb continued to be used, real power in Egypt from 1249 lay in the hands of the Mamlūks. The Ayyūbid house in the northern territories kept their control for a little longer but under continual pressure from the Mongol forces;¹ the Hamā branch lasting until 1342.²

1. C.Cahen "Ayyūbids" NEI p.799-804

2. C.E.Bosworth "The Islamic Dynasties" Islamic Surveys No.5 p.62

SECTION 1 : MILITARY ARCHITECTURE

A. FORTIFICATIONS

The provision for and the maintenance of strong defence fortifications and secure strongholds were naturally of the first importance during the years of Ayyūbid rule. Such structures were erected throughout their territory but only the city walls and the citadel of Cairo have received detailed and thorough examination which has been fully published.¹ Some information is available on the Harrān,² Jerusalem,³ Damascus,⁴ and Aleppo⁵ citadels but the relative scantiness of the material available precludes the formation of a composite image, let alone any direct and full comparison with the Cairo construction.

The Ayyūbid system of fortification building presented no radical upheaval in architectural planning, but rather a continuous development from earlier defence structures combined with the lessons taught by experience. The existing complex was generally enlarged in areas to take full advantage of the physical terrain - at Cairo and the Qal'at Jindi, rock; Shaizar, a ridge; Aleppo and Homs, a tell; the Baalbek and Bōsra strongholds built upon ancient ruins. The Damascus citadel was the only exception, having no natural protection; in this case the walls were extended down to the river's edge which then gave a moat-like protection.⁶ Accordingly, the former defences were not

1. K.A.C.Creswell "Archaeological Researches at the Citadel of Cairo" BIFAO vol.23
K.A.C.Creswell Muslim Architecture of Egypt. vol.2
2. S.Lloyd & W.Brice "Harran" AS vol.1
D.Storm Rice "Studies in Medieval Harran,1" AS vol.2
3. C.N.Johns "Excavations at the citadel, Jerusalem" QDAP vol.5
"The Citadel, Jerusalem" QDAP vol.14
4. J.Cathcart King "Defences of the citadel of Damascus" Archaeologia vol.94
N.Elisséeff "Dimashk" NEI
J.Sauvaget "La citadelle de Damas" Syria vol.11
5. J.Sauvaget "Inventaire des monuments musulmans de la ville d'Alep" REI vol.5
6. Plate 1. J.Cathcart King op.cit.p.59

demolished but built around, forming an integral part of the new construction works continuously undertaken by the Ayyūbid rulers.

Although a west wall inscription of the Cairo structure indicates that some work was commenced before 1171 under Ṣalāḥ al-Dīn's command, the main Ayyūbid rebuilding began in 1176 and was to continue for some 45 years after his death.¹ The square or rectangular towers of Badr al-Jamālī in the existing Cairo defences gave way to semi-circular structures, said to avoid thereby the blind angles in line of fire found in the former shape.² Creswell concluded from his examination of the entire complex that the curtain wall with half-round towers stretching from the Muqāṭṭam tower in the east to the south-east and north dated from Ṣalāḥ al-Dīn's time, as did the two postern gates, the inner Bāb al-Qarafa and Mudarraḡ gate with its curtain walls.³ The finest example of work carried out during his rule is considered to be the east wall including the two towers at Darb al-Mahrūq and Burj al-Zafar with their two storeys with the internal cruciform plan.⁴

The Fāṭimid practice of incorporating columns horizontally end-on into the fabric along the base of the wall, these lacing courses serving as an additional strengthening factor against sapping, was continued in Cairo and also in Syria: for example at Bōsra, Damascus and Aleppo.⁵ It is also found as far afield as the Kızıl Kule or Red Tower of Alanya (in Anatolia), constructed probably in the early 13th century, and also

1. Plate 2.
K.A.C.Creswell MAE vol.2 pp.34-5 and 59
2. *ibid* vol.1 p.206
3. K.A.C.Creswell "Archaeological Researches at the citadel of Cairo"
BIFAO p.156
4. K.A.C.Creswell MAE vol.2 p.41-59
5. *ibid* vol.1 pp.210 and 183

in the semi-circular towers of the Amida curtain wall.¹ Although the earliest recorded use dates from the time of Ibn Tūlūn, late 9th century at ^CAkkā, with a surviving example in Mahdiyya harbour early 10th century, it is felt that this sudden resurgence in lacing courses for military purposes was a direct consequence of Crusader utilization.² It is interesting to note that the name of the Alanya tower architect, al-Halābī, suggests a north Syrian origin,³ and that the three Jamālī towers in Cairo, the Bāb al-Nasr, al-Fuṭūh and al-Zuwayla constructed between 1087 and 1092 with this strengthening element, were the works of three Urfan Christians.⁴

The characteristics of Salāḥ al-Dīn's early building were the use of smooth masonry of small sizes compared with the larger stone blocks favoured by the Fātimids, and the internal employment of flat roofing slabs over a continuous corbelling and narrow heads.⁵ By comparing the later fortifications and defence systems of the citadels of Damascus, Bōsra and Mount Tabor with those at Cairo, a general dating has been approximated for the later square or rectangular structures of rusticated masonry, incorporating semi-conical hoods for arrow-slit guards and pointed barrel vaults on the interior, replacing the earlier flat roofing.⁶ These developments were executed either during the rule of al-Malik al-^CAdil, or of his son al-Malik al-Kāmil.

1. S.Lloyd & D.Storm Rice Alanya (^CAlā[→]iywa) p.12-15
M.van Berchem & J.Strzygowski Amida plate xix (2)
2. K.A.C.Creswell op.cit. vol.1 p.210
3. S.Lloyd & D.Storm Rice op.cit. p.15
4. K.A.C.Creswell op.cit. vol.1 p.163
5. K.A.C.Creswell "Archaeological Researches at the citadel of Cairo"
BIFAO p.115-118
6. ibid p.118
see also C.N.Johns "Medieval ^CAjlūn" QDAP.vol.1 p.28-9

The 13th century citadels of Syria were dominated by powerfully proportioned towers contributing additional defence and providing living accommodation for troops. A network of covered stairs or subterranean passages linked the wall galleries with the magazines in the interior. Strength was the key-word. To compensate for the weakness of open areas, walls were constructed extra thick ¹ - the curtain wall of the south face of the Damascus citadel being over 16 feet (some 4.5 m.) dense.²

Compared with Ḥamā, Homs and Aleppo, the citadel at Damascus has been considered better preserved. The wall has some 13 towers, four of which protect the basically rectangular plan.³ The surviving remains of Ayyūbid construction are the gates, Sharqi and al-Ṣaghīr 1207, Tūmā dated 1227, the Bāb al-Faraj 1239, and lastly that of al-Salām 1243. The citadel itself, completely restored during the period 1207-17,⁴ illustrates all the fortification elements of this period - the well-placed and numerous arrow-slits, the loop arcades along the curtain walls, the double parapets for mangonel equipment, machicolation and the use of bent entrances.⁵ These are the defences to be found in the other Ayyūbid constructions in varying degrees according to the

1. J.Sourdel-Thomine "Burdj" NEI p.1316

2. J.Cathcart King op.cit. p.64

3. At Homs only sections of the walls survive, at Ḥamā only the hill area while in Aleppo the great mosque and entrance to the citadel are still standing.

J.Sauvaget "La citadelle de Damas" Syria vol.11 p.60 & 64

4. N.Elisseeff op.cit. p.284

5. J.Cathcart King op.cit. p.61 & 74

J.Sauvaget sees a striking resemblance to the Aleppan citadel, pointing out the similarity of the Damascus Bāb al-Hadid with the citadel entrance in Aleppo and other more decorative comparisons. He concludes that technicians from this North Syrian city actively participated in the Damascus construction. (op.cit. p.222)

strategic importance of the structure, for instance at Baalbek¹ and Bōsra.² The probable Ayyūbid restrengthening of the enclosing wall of the Jerusalem citadel demonstrates again the system of loop arcades running throughout the tower parapets and curtains.³

The only apparent exception to this line of strongly defended fortresses throughout Syria and Egypt seems to be the Harrān citadel - a surprising occurrence, bearing in mind the part the city played during Ṣalāḥ al-Dīn's campaigns in the north.⁴ The major gate named Aleppo in the city wall, with a dating inscription of 1192, is "... a decorative affair, with no provision for defence, and indeed the whole of the walls as they survive today, with a thickness of hardly more than three metres, can have afforded little military protection."⁵ The irregular shaped Qal'at with its strange 11-sided towers also lacks any major defence elements and its main entrance appears by comparison very unprotected, only having flanking arrow-slits.⁶

According to Briggs "There is no doubt that he [Ṣalāḥ al-Dīn] owed something to his knowledge of fortification to the Norman castles that had by this time sprang up all over Palestine"⁷ and that the greater emphasis on stone was a direct borrowing of Crusader "stereotomy", together with the use of Frankish prisoners of war.⁸ While these statements contain some measure of truth, for instance concerning the construction of the

1. J.Sourdcl-Thomine "Ba'labakk" NEI p.971
2. A.Abel "La citadelle eyyubite de Bosra Eski Cham" AAS vol.6 p.103-8
3. C.N.Johns "The citadel, Jerusalem" QDAP vol.14 p.171
4. Also there is Ibn Shaddad's report that al Malik al-Ādil rebuilt the citadel. D.Storm Rice op.cit. p.37 & 45
5. S.Lloyd & W.Brice op.cit. p.78
6. ibid p.101
7. M.S.Briggs Muhammedan Architecture in Egypt & Palestine p.78
8. ibid p.81

citadel and palace of Sultan Ṣalīḥ on the Island of Rawda, on which captives were employed,¹ Briggs' comment implies incorrectly that there had been little architectural development in the military field through the Islamic world before the introduction of visible concrete examples of Western fortification methods on to Muslim soil.

Deschamps holds that the machicolis, for example, incorporated into the fabric of the Sahyun stronghold near Antioch was "une invention des Francs"² and Enlart suggests that the Crusaders had been responsible for its introduction into the East.³ But numerous pre-Islamic examples of machicolation have been listed by Creswell, dating mainly from the 6th century, including Kfillusin 492 or 522, Rifada 516 and Dar Qītā 551 where it had a definite defence function. Admittedly many early examples and the 8th century Umayyad models, found in the Qasr al-Hayr al-Gharbi and its sister palace al-Sharqī, have been considered as little more than latrines. The system then appeared to fall into disuse until its reintroduction within the Palmyra defences of 1132/3.⁴ From that time its strategic importance was clearly recognised. Machicolis of varying sophistication were built into the fabric of citadels,⁵ walls, gates and even caravansarā⁶ throughout the 12th and 13th centuries. They were set over the three gateways of the Cairo citadel dated to Ṣalāḥ al-Dīn's reign and the gate Burj al-Zafar⁷ and formed an integral part

1. K.A.C.Creswell MAE vol.2 p.134
2. Deschamps "Le chateau de Saône dans la principauté d'Antioche" GBA p.360 6 m per 4 quoted by Creswell.
3. C.Enlart Manuel d'archéologie française 2nd edition vol.2 p.528-9
4. K.A.C.Creswell op.cit.vol.2 p.61
K.A.C.Creswell "Archaeological Researches at the Citadel of Cairo" BIFAO vol.23 p.159-166
5. Plate 3
6. See below under "Caravansarā"⁷
7. K.A.C.Creswell MAE vol.2 p.61. Elsewhere, in the BIFAO article he states that no defence machicolations, only latrines, were to be found in Saladin's Cairo (p.164)

of the military constructions ordered by al-^CAdil in Damascus, Bōsra and Cairo. In the Kızıl Kule of Alanya, machicolations were built on three levels in varying positions to obtain maximum coverage,¹ while slot machicolations protected the gates of the Cilician forts of Yilan and Tumlu.²

A similar history concerns the use of the bent entrance. A Byzantine connection has been suggested but this has been rejected by Creswell, who states that there was no such structure in the North Africa of Justinian nor at Rome and Constantinople - the earliest dated appearance on Byzantine territory being in the inner citadel of Ancyra, 859.³ Golvin details two Byzantine examples, the Qaşr Balazma and Ain Tunja in North Africa, and four Roman sites in South Tunisia, but no attempt at dating is made.⁴ It seems from Tolstov's field work in the Amu Darya region that this defence feature could well have Central Asian origins. Reporting the excavations of the late Hellenistic fortifications of Janbas-Qal^Ca constructed from the end of the 1st millenium B.C., it is stated "The system of the defense of the gate was extremely interesting. The gate formed a large rectangular projection in the wall (20 by 50 meters); inside of this was a narrow passage which made two turns at a right angle. Embrasures inside this passage opened to all sides, enabling the defenders to shoot from every direction at any enemy who might break through the gate."⁵ This finding was no isolated incident; a single-angled turn was discovered at the entrance of another fort,

1. S.Lloyd & D.Storm Rice op.cit. p.12
2. G.R.Youngs "Three Cilician Castles" AS vol.15 p.133
3. K.A.C.Creswell "Bāb" NEI p.831
4. L.Golvin "Note sur les entrées en avant corps et en chicane dans l'architecture musulmane de l'Afrique du Nord" AIED vol.16 p.237-9
S.Toy dates the Byzantine fortresses after the mid-6th Belisarius conquest of North Africa. A History of Fortification 3000BC - 1700 AD p.57-61
5. H.Field & E.Prostov "Excavations at Khwarazm 1937-9" AI vol.6 p.160

Aiyaz-Qal^oa, and the authors add further that all fortifications of this period excavated had intricate gate structures.¹ Elsewhere it has been suggested that there may be a Mesopotamian influence from the 3rd millennium Tello palace and the neo-Babylonian temple of Kish.² Other examples of the device include the middle gate of the walls of the Sixth City of Troy and the c.1500 BC Tirigus main entrance,³ and the basic ground-plans of three Urartian fortresses in the Van region indicate a very simple model.⁴

The earliest recorded Islamic example⁵ is described by al-Khatib and relates to the Baghdad of al-Mansūr in the second half of the 8th century.⁶ It seems possible that other contemporary Islamic examples may have survived, but published information is vague, and few detailed, clear and comprehensive plans of fortifications have been published with adequate textual description. Definitely the system, with a slight variation, was interwoven into the various palace complexes at the Qal^oa of Banū Hammād, founded 1007 in North Africa. The ground-plans of the three palaces of al-Bahr, al-Salam and al-Manar illustrate a straight entrance protected by a projecting portal leading into a long narrow hall running parallel with the facade, the exit from which is through a side or off-centre doorway, so direct access is prevented into the palace interiors.⁷ A precise dating for these structures has not been given but it is reasonable to suppose that these buildings were

1. *ibid* fig.8 and p.160

2. L.Golvin Recherches Archæologiques à la Qal^oa des Banū Hammād p.103

3. S.Toy A History of Fortifications 3000 BC - 1700 AD p.10-12

4. The forts Arapzengi (Körzüt) Kale, Kefirkalesi and Bağin (Palin) have been given an approximate date of the 8th century BC.

C.A.Burney "Urartian fortresses and towns in the Van region" AS vol.7 fig.6 p.47; fig.13 p.51; fig.15 p.52

5. Results of recent excavation work at Siraf suggest the existence of a bent entrance before a structure on a pre-Islamic level; this area will be fully examined in the next season. Personal communication Dr.D.Whitehouse 21st July 1971.

6. K.A.C.Creswell *op.cit.*p.831

7. L.Golvin *op.cit.*pp.60-83 and 101.

erected during the apogee of the city from 1018-1060. A similar arrangement has been found in Ashir and the Almoravid fortress of Tasghimut in the High Atlas and it has been stated that the remains of the Mahdiyya entrance (circa 914) suggest this plan.¹ The straight-through doorway of the early 10th century Ajdabiya palace in Libya was altered to this at some stage.²

But the question remains unanswered from where the idea arose in 11th century North Africa, of including such an arrangement in the structure.³ Golvin implies a Fātimid parentage: "... une diffusion de ce thème sans doute né en Ifriqiya et colporté au Maghrib Central par les Ḥanhāja, alliés des Fatimides."⁴ But as far as can be judged, the Bāb al-Naṣr, Bāb al-Futūh and Bāb al-Zuwayla were straight-through portals and although Creswell details one poor example in the Fātimid Cairo complex, the bent entrance proper appeared frequently as a defence element only in Ayyūbid Egypt and Syria⁵ - in Cairo itself at the three northern enclosure gates, and the Bab al-Jadid after 1176,⁶ in the Sinai fortress of Jindi,⁷ and also at Bōṣra⁸ and Damascus.⁹ Three of the postern gates of the Sahyun fortress constructed early 12th century are bent.¹⁰ At Jerusalem the bent entrance with two turns is dated by an inscription 1310/1,¹¹ but the most complicated example is the

1. L.Golvin "Note sur les entrées en avant-corps et en chicane dans l'architecture musulmane de l'Afrique du Nord" AIEO vol.16 p.223-227
2. A.H.Abdussaid "Early Islamic monuments at Ajdabiyah" Libya Antiqua vol.1 p.117-8
3. H.Terrasse traces the Maghribi and Tunisian use to 12th century Spanish influence and in turn a borrowing from Byzantine military defence systems. "Ḥiṣn" NEI p.500
4. L.Golvin op.cit.p.227
5. European examples of this device includes 12th c.Chateau de Dornach, de Gisors. S.Toy op.cit.p.70-72
6. K.A.C.Creswell op.cit.p.832
7. J.Barthoux "Description d'une forteresse de Saladin découverte au Sinai" Syria vol.3 p.48
K.A.C.Creswell op.cit p.832 where he dates the structure circa 1182.
8. A.Abel op.cit.p.131
9. J.Cathcart King op.cit.p.76
10. S.Toy op.cit.p.94-6
11. C.N.Johns op.cit.p.174

Malik al-Zahir's gate in Aleppo constructed about 1214 which contains five right-angled turns.¹

It appears from the diagram of Kızıl Kule and the citadel's main gate that this device was also employed there.² Another two northern contemporary instances have been noted - the frontier castles of Gökvelioğlu and Yılan which are said to date from the Armenian occupation of Cilicia (1080 - 1375)³. Whether these structures were the works of Christian architects is still to be answered. Certainly this defence measure was no Muslim monopoly, as is shown by the castles of Atlīt and Tartūs⁴ and the famous Crac des Chevaliers (Hisn al-Akrād) with its main gate and two postern gates protected in this way, built probably in the late 12th - 13th centuries.⁵

Another improvement over previous systems was the general refinement in the placing and angling of the arrow-slits. It has been noted above that the Cairo defences constructed at the time of Ṣalāḥ al-Dīn employed semi-circular towers which gave a wider range of vision. Apart from this, in the enclosure itself several slits were situated facing inwards into the area to allow further retaliation should the attacking party gain entrance.⁶ In some parts of the Damascus complex the positioning of loops was dictated by the structure. The identical placing of slits at the ends of the tower interior vaulting on the

1. K.A.C.Creswell op.cit. p.832
2. S.Lloyd & D.Storm Rice op.cit. fig.2 & 15
3. G.R.Youngs "Three Cilician Castles" AS vol.15 p.113, 133
4. C.N.Johns "Excavations at Pilgrims' Castle Atlīt" QDAP.vol.3 p.159 & note 1
5. S.Toy op.cit. p.99
6. K.A.C.Creswell MAE vol.2 p.12

three storeys resulted in a restricted field of vision and therefore of fire. On the other hand, point-blank range was provided by the arrow-slits at ground level running along the fighting gallery all around the curtain wall. Although this has been thought to be a late 13th century improvement, Sauvaget has proved that the dating inscription referred only to repairs undertaken to the wall fabric at that time.¹

Compared with those of Badr al-Jamālī dating, these Ayyūbid slits continued to floor level allowing a better line of fire and usually were wider splayed with semi-cone heads, the best examples being in the Burj al-Matar along to the Burj al-Mulābat in Cairo. This type is also found in the Damascus citadel and the ruined Mount Tabor stronghold, erected in 1211 but destroyed shortly after.² But the method of roofing the apertures by flat lintels as used in the early Ayyūbid work at Bōsra³ and at Jerusalem⁴ was also employed in the Cairo structure. As with machicolis, this defence element appeared in the contemporary caravansarā'ī buildings as can be seen below, but no detail is available concerning the depth and method of hooding of the slits. As far as can be deduced, it became general practice to provide slits in the interior of the khān portal or in the facade to protect the entrance.

The traditional method of linking levels and sections by open staircases had obvious disadvantages, but this was the system followed in

1. J.Cathcart King op.cit. p.62-65
2. K.A.C.Creswell "Archaeological Researches at the citadel of Cairo" BIFAO p.109
3. A.Abel op.cit. plate VI no.1: plate VIII no.1.
4. C.N.Johns "The citadel, Jerusalem" QDAP vol.14 p.171

Fātimid and early Ayyūbid construction south and west of the Burj al-Zafar in Cairo, echoing the open steps to the 5th century Constantinople ramparts and the 6th century fortifications of Rusafa and Diyarbakr. However, in the Bāb al-Wazīr and Darb al-Mahrūq, staircases were incorporated within the fabric to link the various storeys. A similar system appeared in the 10th century Antioch defences, a city which had been under Muslim administration from the mid-7th century until 968.¹ The advantages of this device were fully recognised - as noted above, most of the later Ayyūbid additions to existing strongholds provided for internal galleries either within or under the walls of the building, work sometimes being carried to extremes in the more than adequate protection the device gave. Once more the idea was adopted to a lesser extent in the khān structures of Syria, whereby the stairs leading to the entrance "tower" were fully enclosed.

1. K.A.C.Creswell PAE vol.2 p.59-60

B. CARAVANSARA I^{->-'}

It appears that caravansarā^{>ī} in Egypt and North Africa dating from this period have not come under any published study, if in fact any survive. But this does not apply to the region of Syria. The Syrian khān of the 12th and 13th century had fundamentally a small square shape² or sometimes a rectangular plan.³ Around the open central courtyard ran a continuous vaulted liwān or gallery broken by the single entrance. Usually the gallery was also interrupted by chambers flanking the gateway, one of which functioned as a mosque in several examples. The ground plan of al-Qtaifī, constructed in the second half of the 12th century, shows a long narrow room each side of the portal, whereas the Khān Tumān (late 12th century) probably had two smaller chambers, again seen in the caravansarā^{>ī} al-^cAṭnā built circa 1234. A second variation but still reflecting the basic shape is illustrated by the plan of the early 13th century khān at Qārā, of al-^cArūs and of al-Qusair dated around 1135; the vaulted liwān is broken here by the placing of a separate liwān opening onto the central area opposite the entrance.⁴

Although the Syrian model fulfilled the same functions as its Persian and Anatolian counterparts in providing shelter for travellers, both merchant and pilgrim, their animals and their property, it is apparent from this description that there was a definite difference in

1. Plate 4
2. approximately 40 metres square, such as the Khāns Qārā, al-Qusair and al-^cAṭnā.
3. as found in the caravansarā^{>ī} al-Qtaifī measuring 58m x 35m., al-^cArūs 41m x 47m., and the small Khān al-Tumān approximately 35m x 25m.
4. J.Sauvaget "Caravanserails syriens du moyen-âge" AI.vol.6 p.48-55

architectural planning. The Saljūqid khāns examined by Siroux are admittedly square in plan built round a central court, but he details only two structures which had continuous līwāns, the caravansarā^ī of ^cAbbassi of Safavid construction near Imam Hachem, and Darwazeh-Gatch thought to date from Sāsānian times. He concludes that the medieval Iranian model was identifiable by the arrangement of separate rectangular rooms facing directly on to the central area (covered or uncovered depending on the prevailing climatic conditions of the region); for instance, the 10th century Ribāt Karīm where specific areas were designated for human or animal habitation.¹ But other scholars see the basic characteristics of the early and medieval Persian khān as bearing great resemblance to the simple cruciform four-līwān madrasa ground-plan.²

The normal Anatolian khān also employed the central court, usually enclosed with separate rooms opening on to it and including a backward projecting līwān opposite the entrance,³ as can be seen on the plan of the khān within the Alanya complex, where the back portion was the animal stabling or storage area.⁴ This distinct separation between animal and human quarters was a feature in the Alara Khān in the nearby Sarapsa region; the continuous līwān on the three sides of the basic rectangular structure was used for stables and the parallel row of chambers opening on to an open narrow area formed the living areas

1. M.Siroux "Caravanserais d'Iran et petites constructions routières" MIFAO p.35-99
2. A.Godard "Khorasan" Āthār-é Īrān vol.4 p.76
Dr.M.Kiani The Iranian caravanserais during the Safavid period
unpublished PhD thesis University of London 1970 p.48
3. K.Erdmann "Bericht über den Stand der Arbeiten über des Anatolische Karavansaray des 13 Jahrhunderts" Atti 2 Congresso Arte Turca p.75
4. S.Lloyd & D.Storm Rice "Alanya (^cAlā^īyya) p.30

for the travellers.¹ The caravansarā²ī of Mama Hatun in Tercan, constructed in the first half of the 13th century with its irregular square shape and plan of three liwāns, two longitudinal and one opposite the entrance is considered unique by Ünal.²

As far as can be determined from the one brief published report of a Mesopotamian example, it too differed from the Syrian type. From the square ground-plan of the Atshan caravansarā³ī near Ukhaïdir, probably dating from the 9th century, it appears that a series of separate chambers were built around an open area but not all with direct access to it. The projecting gateway was protected by double towers giving the khān a fortress-like appearance.³

In both the Iranian and Anatolian types, it is clear that specific areas were allocated for man and beast. This appears not to be the case in the Syrian models examined of this period.⁴ Siroux has suggested that the simpler Syrian structure with its comparatively spartan facilities reflected the differing regional requirements. The relatively short distances from town to town to be covered compared to those in Iran and Anatolia, and the less numerically strong convoys meant that correspondingly less emphasis was placed on the provision of comfort, and indeed size.⁵

1. *ibid* p.46
2. R.H.Ünal Les monuments Islamiques anciens de la ville d'Erzerum et de sa region. p.152
3. G.L.Bell Palace and Mosque at Ukhaïdir p.41-3
4. At a later date with the building of large complicated khān structures, animals were kept separately. G.Scanlon mentions in passing that in Mamlūk Cairo wakālas to provide lodging for travellers were set up near the city gates, outside which their pack animals were stabled. "Housing & Sanitation" Islamic City p.184
5. The journey from Aleppo to Damascus taking only 10 days. M.Siroux *op.cit.*p.46

On the other hand the Syrian architects seemed to pay greater attention to defence. In the surviving Iranian khāns of this period it appears that only towers and occasionally a high portal entrance were deemed necessary for maintaining security.¹ But all the Syrian buildings examined by Sauvaget incorporated a defended entrance higher than the enclosing walls, themselves strengthened by corner and intermediary towers, for instance the Khān al-^cArūs erected by Ṣalāḥ al-Dīn in 1181/2,² and al-^cAṭnā circa 1234.³ Stairs to the portal towers were incorporated into the fabric to give added protection, a system employed frequently in later Ayyūbid fortifications. It is possible that the steps in the al-Qusair Khān were protected in this manner, as clearly were those of the Khāns al-^cArūs and Qārā.⁴

Often arrow-slits and simple machicolis were added as further defence in the square entrance towers. At Khān al-Tumān, the earlier building discovered by Creswell and probably dating from the end of the 12th century, two more sophisticated types were set into the north and west facades;⁵ probably the extremely simple ones found at al-Qṭaifī were latrines only, judging from their position.⁶

All these structures, with the exception of the Khāns al-Qṭaifī and

1. "... a special design [was] evolved, since the usual defence arrangements of moat, barbican and machicolation would have been prohibitively expensive in such quantity." Dr.M.Kiani op.cit.p.48
2. J.Sauvaget op.cit.p.51
3. ibid p.54-5
4. ibid figs. 3, 4 and 6 facing p.52
5. K.A.C.Creswell "Two Khans at Khan Tuman" Syria vol.4 p.138
6. J.Sauvaget op.cit.p.49

al-Tumān were constructed of stone of two sizes, the larger being employed for arches and corner angles. At the Khān al-Tumān large masonry blocks were used throughout,¹ while the ashlar facade and use of assorted stone sizes at al-Qtaifī led Sauvaget to comment "...particularité que je n'ai relevée dans aucun autre monument syrien".²

1. *ibid* p.52
K.A.C.Creswell *op.cit.*p.137
2. J.Sauvaget *op.cit.*p.49

SECTION 2 : RELIGIOUS ARCHITECTURE

A. MASJID

The Fātimid period is said to have seen the appearance for the first time in Egypt of the tri-axial mosque entrance with a dome in front of the mihrab, preceded by a transept running directly from the central courtyard to the sanctuary. Cupolas covered the back two corners of the sanctuary area, as for instance in the mosques al-Azhar constructed during 970-2 and al-Hākim 1002-3, while at the front angles of the facade two square-based minarets stood as salients, flanking the projecting monumental portal.¹ It is generally agreed that these main architectural details were concrete expressions of existing forms in Ifriqiyya, the first base of Fātimid power.² In northern Syria and spreading into the Azerbaijan region, Damascus was the source of inspiration for mosque building in the second half of the 12th century. The Ulu Jāmi^cs of Mardin, Mayāfāriqīn and Van with the Masjid Jāmi^cs of Diyarbakir and Aleppo, and also the Harrān Jāmi^c al-Firdaws followed the basic outline of the Umayyad mosque of Damascus, where the dome dictated the width of the aisles running parallel with the qibla wall.³

1. K.A.C.Creswell MAE vol.1 p.37-62 : 65-104
G.Marçais "Fātimid Art" NEI p.863
In the light of recent excavation finds by Dr.D.Whitehouse and A.Hutt in Ajdabiya, Libya, these generalisations concerning Fātimid mosques can be regarded as suspect. (Personal communication from A.Hutt on 7 July 1971)
This arrangement of portal and minarets is also found in Saljūq Anatolia.
2. G.Marçais op.cit.p.863
K.A.C.Creswell op.cit.p.290
O.Grabar's review of "Muslim Architecture of Egypt" AQ.vol.4 p.424
3. E.Herzfeld "Damascus: Studies in architecture" AI vol.13-14 part 4 p.118-135 in which he gives other examples of small separate mosques in Damascus.
G.Fehérvári "Harrān" NEI p.229-230

Although few examples of 12-13th century individual mosque structure survived, it cannot be said that the masjid as a separate monument ceased to exist.¹ Those extant are mainly combined in madrassa/māristān complexes and with this incorporation, individual features which had come to the fore during the Fātimid period tended to be submerged and eventually dropped in a move towards simplification, and later towards a symmetry for the entire unit. The rear corner domes were "never seen again in Egypt"² and the concept of the minaret reverted to its more traditional function rather than developing a more decorative role; no longer were two placed at the facade corners.³ Generally both in Egypt and Syria a three-arched facade spanned the southern side of the courtyard, the central arch being built taller and wider for visual balance. However, in some buildings the three bays had approximately identical width.⁴

Concerning the roofing of this side, Herzfeld has attempted to isolate two groups corresponding to the two regional areas of Syria; the Makām Ibrahim al-Asfal in the Aleppan citadel⁵ was an example of the northern regional style "... vis., dome on pendentives between two barrel vaults, is normal over rectangular rooms during the Ayyūbid period in Aleppo and North Syria."⁶ Other mosques said to follow this system were

1. Ibn Shaddad stated that in a 1233 visit he found 660 mosques and 93 madrasas in Damascus. M.H.M. Ahmad "Some notes on Arabic Historiography during the Zangid and Ayyūbid periods" Historians of the Middle East p.80 note 2.
2. K.A.C. Creswell op.cit. p.289
3. ibid p.289
4. For example:
Madrassa Khan al-Tūtūn Aleppo: K.A.C. Creswell "Origin of the cruciform plan in Cairene madrasa" BIFAO fig.1
al Zāhiriya Aleppo: Plate 5 and J. Sauvaget "Inventaire des monuments Musūlmans de la ville d'Alep" REI fig.6 no.26
Jāmi^c and Madrasa Firdaws Aleppo: Plate 9 and J. Sauvaget op.cit. fig.4 no.31
Mashhad Husayn J. Sauvaget op.cit. fig.4 no.20
5. E. Herzfeld op.cit. vol.10 part 2 p.49 fig.66
6. ibid p.49

Jāmi^o al-Shaikh Ma^crūf within the Aleppan Madrasa Shādbakhtīya complex dated 1193,¹ the Madrasa Sharafīya mosque constructed in the mid-13th century,² the Madrasa Sultānīya finished 1223/4³ all in Aleppo, and the Maḳam Nabī Allāh Yūsha built about 1207 in Ma^carrat al-Nu^cmān.⁴ He continues to elaborate that, although less defined, cross-vaults and flat roofing were preferred in the southern region's architecture.⁵

With both these assumptions, Sauvaget definitely disagrees. He denies that a dome covering with two vaults was general in Ayyūbid Aleppo, listing the only examples known to him as the mausoleum Umm al-Afdal^c Alī, the Kāmiliya (13th century) and the Khānaqāh Farāfrā 1237 as his diagram of the Khānaqāh clearly shows.⁶ Contrasting with Herzfeld, his plans of the Shādbakhtīya and Sharafīya madrasas indicate flat gabled roofing from the dome base, as was employed at the Madrasa Sahibiya, and he concludes that "... partout ailleurs, là où nous connaissons le dispositif ancien, c'est un toit à deux pentes ... qui apparaît, par une imitation consciente de la mosquée des Omayyades".⁷ Cross vaulting is found in the Madrasa^c Adiliya,⁸ a structure strongly Aleppan in flavour and is shown on his plan of Madrasa Mukaddimiya Aleppo 1168, the second oldest madrasa in Syria.⁹ On the other hand, Lauffray's illustration

1. K.A.C.Creswell Muslim Architecture of Egypt vol.2 p.111 fig.57
2. *ibid* vol.2 p.118 fig.65
K.A.C.Creswell "Origins of the Cruciform plan in Cairene Madrasa" BIFAO vol.21 p.6 & 15-16
3. K.A.C.Creswell MAE vol.2 p.115 fig.62
J.Lauffray "Une Madrasa Ayyoubide de la Syrie du nord" AAS vol.3 p.53 plate 3A
4. E.Herzfeld *op.cit.* part 3 p.9 and fig.6 p.7
5. *ibid* part 2 vol.9-10 p.49
6. Plate 6
J.Sauvaget "Notes sur quelques monuments musulmans de Syrie" Syria vol.24 part 1 p.225
J.Sauvaget "Inventaire des Monuments Musulmans de la ville d'Alep" REI vol.5 fig.7 no.32
7. *ibid* fig.5 no.21 : fig.7 no.33
8. Plate 7
9. J.Sauvaget "Notes sur quelques monuments musulmans de Syrie" Syria vol.24 p.223
J.Sauvaget "Inventaire des Monuments Musulmans de la ville d'Alep" REI vol.5 fig.3 no.18

of the cross-section of the mosque within the Sultānīya complex shows definitely a dome supported on pendentives between barrel vaultings.¹

Although it is tempting to assume regional differences, it must be remembered that until a fully comprehensive and systematic survey of medieval religious structures has been undertaken, no definite categories can or should be drawn up. This point is emphasised by the existence of buildings whose sanctuary liwān roof systems fall into neither of the above classifications - the Madrasas Zāhiriya and al-Firdaws erected 1217² and 1235 respectively, in Aleppo,³ and the Mashhad Husayn end 12th beginning 13th century;⁴ these three have three domes covering the entire gibla liwān; Sauvaget also adds the structures Shaikh Muhassin and Jāwuliya⁵ to which the Damascus Mosque of the Ruknīya complex can be included.⁶

Decorative aspects, such as arch forms and dome ornamentation will be discussed below, but this seems to be the place to deal with one of the more striking decorative features found in the religious structures of this time, but unfortunately insufficiently published - the marble mihrābs.

The earliest known example is considered to be in the Aleppan madrasa Khān al-Tūtūn 1168/9, although it has been noted that Maqrīzī recorded a Fatimid mihrāb with a marble lining.⁷ There were some six other

1. Plate 8
2. Plates 5 & 9
K.A.C.Creswell op.cit. vol.2 p.113 dates Madrasa al-Zāhiriya Aleppo as 1219/20
3. J.Sauvaget op.cit. fig.6 no.26, 81 & 84
K.A.C.Creswell op.cit.vol.2 p.114 fig.60: facing p.116 fig.64
K.A.C.Creswell "Origin of the Cruciform plan in Cairene madrasa" BIFAO p.16 fig.6
4. J.Sauvaget op.cit.fig.4 no.20
5. J.Sauvaget "Notes sur quelques monuments musulmans de Syrie" Syria vol.24 part 1 p.225
6. Plate 10
7. K.A.C.Creswell MAE vol.2 p.102 note 3

examples, three of which are still standing in Aleppo. The finest in Creswell's opinion was in the Madrasa Shādbakhtīya,¹ followed chronologically by those constructed in the Madrasas al-Zāhirīya, al-Sultānīya, within the Jāmi^c and madrasa complex al-Firdaws and the Khānaqā.² Another Aleppan mihrāb is detailed by Herzfeld, that of the Mashhad Husain 1200³ and also Sauvaget very briefly refers to two, at the Jawziya Hanbali madrasa and the Karkīsiyā Zangid mausoleum, but it is not clear from the text if these are marble-lined, or only framed with a marble geometrical design.⁴

In fact the only two examples adequately described and also photographed are firstly the Sultānīya niche in light and dark ochre with red and green⁵ and the mihrāb in white, dark green and purple marble in the mid-13th century Mausoleum Ṣāliḥ Najm al-Dīn Ayyūb in Cairo. This, discounting the Fātimid example mentioned above, is the earliest known Egyptian specimen. Traces of a marble lining have been seen in the main mihrāb niche of the Mashhad Sayyida Ruqayya.⁶

As far as any generalisation is possible, particularly when only a few of these mihrābs have been described and reproduced in any publication, the mihrāb was in the shape of a deep semi-circular niche flanked either side by a slender column. This recess was decorated with

1. Plate 11
K.A.C.Creswell op.cit. vol.1 p.249 note 4
2. *ibid* vol.2 p.103
3. E.Herzfeld op.cit. vol.10 part 2 p.58-9
4. J.Sauvaget op.cit.p.222
5. J.Lauffray "Une Madrasa Ayyoubide de la Syrie du nord" AAS p.61-2
plate 5 & 9
6. K.A.C.Creswell op.cit.vol.1 p.249

vertical slabs of marble in various colours emphasising play of light and shade, stretching the whole length of the semi-cylindrical body. The niche head was corbelled with polychrome marble, the shape of the front arch being pointed. These coloured blocks forming the semi-dome led outwards into a geometrical strapwork design which framed the arch in a rectangular or square shape,¹ similar strapwork as found on portal frames of the period in Northern Syria and Anatolia.²

It is clear that this fashion, whether used for mihrābs or portals had northern Syrian origin. "... the spread to other regions of a very specific North Syrian marble marquetry with entrelacs... [can be explained by the following:] owing to the pressure of the Mongol armies, the stonemasons left their workshops in Aleppo to take up residence in Seljuq Konya and Mamlūk Cairo".³

As such, it is apparent that although found in Cairo, this type of mihrāb enjoyed greater popularity in the region of Syria, just as the stucco mihrāb is found more frequently in Egypt. Only three Syrian stucco examples have been traced, in Nablus in the Jāmi^c al-Khadrā and two in the mid-14th century Zāwiya al-Saḥibīya.⁴

The Fatimid triple mihrābs side-by-side still found favour in Egypt in

1. Plate 12
D.Hill & O.Grabar Islamic Architecture & its decoration Fig.517 (Zawiya al-Zāhiriya)
E.Herzfeld "Mshattā, Hīra und Bādiya" Jahrbuch der Preussischen Kunstsammlungen vol.42 p.141 (Madrasa Sultāniya)
J.Lauffray op.cit. plate 5 & 9A (Madrasa Sultāniya)
K.A.C.Creswell MAE vol.2 p.102 (Mausoleum Najm al-Dīn)
2. See below.
3. R.Ettinghausen "Interaction and Integration in Islamic Art" Unity and variety in Muslim civilisation p.111
4. K.A.C.Creswell op.cit.vol.2 p.103

the Ayyūbid period. There are two in the immediate time limit, situated in the mausoleum Imām al-Shāfi^ī 1211 and within the madrasa complex of Ṣalihīya 1242.¹

One other interesting mihṛāb is to be found in the Jāmi^ī Nūrī in the main niche. Below an undated inscription underneath the capitals, there is a decorative frieze formed of animal figures with an arabesque scroll.² This with another fragment of "... un decor floral entremêlé de figures humaines" placed in the Mausoleum Abū al-Fidā^ī is considered to be Ayyūbid from the Palace of Hamā.³

1. K.A.C.Creswell "Origins of the cruciform plan in Cairene madrasa" BIFAO p.40 and note 2
2. E.Herzfeld "Damascus: Studies in architecture" AI vol.10 part 2 p.45
3. J.Sauvaget op.cit.p.229 and fig.3 on p.230

B. MAUSOLEUMS

As has been seen above, the masjid was absorbed into the complex of the madrasa and māristān and, along with this, it was common to combine a mausoleum from an early date.¹ The sudden popularity of the commemorative structures as separate buildings during the Fātimid years has still not been fully explained. It has been pointed out that there appears to have been no parallel surge of building in North Africa, so an Ifriqiyyan influence cannot be claimed.² It is very probable that the first Sunnī examples were erected as a direct consequence of Shi'ite building at places with special religious associations³ but this does not answer for the growth of Sunnī popularity. There has been a tentative suggestion that this spate of mashhad construction, which was to be continued and further elaborated under the Ayyūbids and Mamlūks, was linked to the increasing importance and growing influence of the bourgeoisie under the commercially orientated policies of these regimes.

The traditional form remained unaltered - a square surmounted by a dome - believed by some to be a legacy from pre-Islamic tomb architecture, but interpreted by Grabar as a true Islamic form with its connotations of veneration and respect.⁵ Instead of the early Fātimid open-sided tomb, Ayyūbid design favoured a solid building with one entrance opposite the

1. The various Arabic terms for mausoleums such as "qubba", "turba" and "zāwiya" have not yet been satisfactorily defined. For the position of the latest research, the reader is directed to O.Grabar "Earliest Islamic Commemorative Structures" AQ. vol.6. In this section, the term "qubba" is used with no specific meaning, only as an alternative term for mausoleum and tomb chamber.
2. O.Grabar's review of "Muslim Architecture of Egypt" AQ.vol.4 p.425
3. O.Grabar "Earliest Islamic Commemorative Structures" AQ vol.6 p.39
4. O.Grabar "Illustrated Manuscript of the 13th century: Bourgeoisie and the Arts" Islamic City p.217
5. O.Grabar "Earliest Islamic Commemorative Structures" AQ vol.6 p.44

mihṛāb wall,¹ as found in later Fatimid structures.² The mausoleum of the ^cAbbāsīd Khalifas constructed before 1242 in Cairo has this plan "the usual type"³, a square base with three free-standing walls and dome, as had the qubbas of Sitt al-Shaḥm al-Suḡhrā⁷ built 1173, of al-Najmīya circa 1179⁴ both in Damascus, as well as the 1172 mausoleum of Zayn al-Dīn described as the first example "... of a type peculiar to Dimashk".⁵

This comment undoubtedly is a reference to Herzfeld's definition of the form of the qubba dome chamber as found in the two regions of Syria, north and south. In the Aleppan region, he concludes, it was generally as over a prayer hall with "... a smooth cupola with or without small windows at the springing line, over pyramidal pendentives. This type ... is of western origin ... The Damascus type is ... a square room with flat, arched recesses in the four walls; four niches, semi-circular in plan, over the corners, corresponding flat niches with a pair of small windows over the normal axes, together forming an octagonal zone of transition; above it, a drum of sixteen smaller niches, equal in size, alternately open with a little window or closed, segment-shaped, and decorated with a conch, the former over the axes, the latter over the corners of the octagon; at last the dome, smooth or with sixteen ribs over this sixteen-sided figure."⁶

1. K.A.C.Creswell Muslim Architecture of Egypt vol.1 p.289-290
2. K.A.C.Creswell implies that the earlier "canopy" tomb gave way completely to the later solid architectural form. However, Grabar commenting on the early to mid-12th century Mausoleum of Muhammad al-Hasawālī, states that "... the main curiosity of this mausoleum is that it seems to have reverted to earlier patterns by being open on three sides". ("Earliest Islamic Commemorative Structures" AQ vol.6 p.37
3. K.A.C.Creswell op.cit.vol.2 p.88
4. E.Herzfeld "Damascus: Studies in Architecture" AI.part 3 vol.11-12 p.42-44
5. N.Elisseeff "Dimashk" NEI p.284
But at the same time it appears that some mausoleums were erected with open sides. K.Wultzinger & C.Watzinger Damaskus, die Islamische Stadt plate 7c.
6. E.Herzfeld op.cit.part 3 p.65-66

This method of transforming the square form into a dome support by creating two zones of transition is also mentioned by Sauvaget and Ecochard as being peculiar to the city of Damascus and its surrounds, in structures built before the second half of the 13th century, giving as examples the mausoleums of Farrūkh Shāh and Bahrām Shāh 1183, the tomb chambers within the Madrasa Jaharkasīya, constructed between 1211 and 1237, and in the Marīdāniya complex of the same period.¹ But it would be incorrect to suppose that this use of two zones was unique to central Syria; Godard notes several examples of Saljūqid Iranian masjid-i jāmi² in such areas as Isfahān, Qazwīn, Gulpāygān, Ardīstān, Zawāra and Burujird.²

But again the problem of insufficient published information arises.³ Simply, this theory of two distinct Syrian types cannot be proved or disproved satisfactorily, as there appears to be no adequate detail available on the Aleppan mausoleum structures of this period allowing any comparison. Clearly Herzfeld has some doubts on regional application of these categories as he admits there were at least two exceptions both in Damascus, the tombs al-Mukaddimīya and Alā al-Dīn 1173 employing an octagonal drum.⁴ The Qubba al-Takritīya also has only one zone of transition.⁵

1. M.Ecochard & J.Sauvaget Les monuments Ayyoubides de Damas p.27-50 p.119-129
2. A.Godard "Les Coupoles" Āthār-e Irān vol.4 p.273-4
3. for instance J.Sauvaget lists the 1224 Mausoleum al-Darwīshīya as unusual with an interesting construction, but gives no further details or references. (J.Sauvaget "Inventaire des monuments Musulmans de la ville d'Alep" REI vol.5 p.81)
4. E.Herzfeld op.cit.p.66
These two zones of transition were also employed in hammām architecture, but there the use of 8 and 16-sided zones are said to indicate a corresponding earlier date. (see below Hammāms)
5. E.Herzfeld op.cit.part 3 p.61
K.Wultzinger & C.Watzinger op.cit.p.120-3 Ref. D.N Vd

Apart from this, there were definitely two other methods of covering the qubba form in Syria. The mausoleum of Miqtal built in Damascus 1224 had a vaulted roof¹ as did the tomb chamber in the Madrasa Sha'mīya al-Husāmīya 1185-6 outside the city.² From the presence of two lateral semi-domes, it has been deduced that a conical roof covered the qubba of Safwat al-Mulk 1110/1, "le dernier vestige conservé d'une fondation des princes seljoukides de Damas":³ a system not seen elsewhere except over the entrance chamber of the Māristān Nūr al-Dīn erected some 50 years later. This method has been compared to that used in the Dār al-Khalīfa at Sāmarrā⁴ and this so-called "fir cone" vault⁵ is found in early 13th century structures in the Mesopotamian region, for instance the mausoleums of Sitt Zubaida⁶ and of Shaikh Umar Suhrawdī⁷ in Baghdad. It has been suggested that this architectural form passed from this region into Southern Iran and then was employed by the Saljūqs, whose work in turn influenced Ayyūbid architects.⁸

The zone or zones of transition were generally constructed of brick, as was the actual dome, another Mesopotamian and eastern tradition.⁹ The use of stone for the drum and dome was very rare; only at Baalbek¹⁰ and Ma'arrat al Nu'mān¹¹ did ashlar blocks form the dome. Examples of stone drums are more numerous towards the end of the Ayyūbid period, but are

1. M.Ecochard & J.Sauvaget op.cit.p.116
2. E.Herzfeld op.cit.Part 3 p.41
3. M.Ecochard & J.Sauvaget op.cit.p.9
4. *ibid* p.10-12
5. E.Herzfeld op.cit.vol.9 part 1 p.26
6. *ibid* part 1 vol.9 p.25-6
A.Godard "Les Domes Alveoles" Āthār-é Īrān vol.4 p.359
7. A.Godard op.cit.p.359
E.Herzfeld op.cit.vol.9 part 1 p.26
8. E.Herzfeld op.cit.vol.9 part 2 p.27-29
9. M.Ecochard & J.Sauvaget op.cit.p.12 & 23
10. E.Herzfeld op.cit.part 3 p.46 & 66
11. K.A.C.Creswell "Origin of the Cruciform plan in Cairene madrasa" BIFAO vol.21 p.12

still considered exceptional in Damascus and its immediate surrounds, for instance the mausoleums of Saif al-Dīn al-Kaimara, and at Ṣalḥīya. There appears to be only one example of a wooden dome, that surmounting the tomb structure of Imām al-Shāfi^cī built 1211 in Cairo where the thick walls, some 5 metres, could have surely borne the weight of a stone dome.²

The drums were visible on the exterior,³ and frequently covered by a fluted cupola as at the mausoleum of Ṣalāḥ al-Dīn, and Rukn al-Dīn 1224,⁴ and mirrored in early 13th century tomb sconces.⁵ This melon shape had been favoured in Fāṭimid Cairo and before then, in the Aswan and Upper Egypt regions,⁶ probably an influence of North African architecture.⁷

It seems possible that the dome exteriors were decorated. One such example, considered to be authentic, is the mausoleum dome of the partly ruined Madrasa ^cIzzīya in Damascus, dated by a lintel inscription to 1224. The outside cupola surface resting on a sixteen-sided drum is painted with large stylised flower or lotus bud motifs in vermilion on a white ground.⁸

Of the actual construction of the walls of the tomb chamber, stone was generally used either up to the arch extrados or the drum, two sizes

1. M.Ecochard & J.Sauvaget op.cit.p.89-90
2. K.A.C.Creswell Muslim Architecture of Egypt vol.2 p.65
3. Plate 13
4. Plate 10
5. M.Ecochard & J.Sauvaget op.cit.p.46-57
M.Elisséeff op.cit.p.284
6. K.A.C.Creswell op.cit.vol.1 p.289
7. ibid p.90
8. Plate 14
M.Ecochard & J.Sauvaget op.cit.p.70-73
Other decorative forms, such as blind niches with shell flutings, arches etc., will be discussed below.

of stone blocks indicating a 12th century structure.¹ Brick also sometimes formed the arches themselves. This pattern of construction materials was followed in the madrasa and māristān complexes.²

1. M.Ecochard & J.Sauvaget op.cit.p.117
2. K.A.C.Creswell op.cit.p.66-67
M.Ecochard & J.Sauvaget op.cit.pp.4, 23, 67, 82 and 131.

C. MADRASA/MĀRISTĀN

The history of the madrasa/māristān structure is well known. Under Maḥmūd of Ghaznī the first four madrāsas were built in Nishapur in the early 11th century. For half a century no others were constructed until the potentiality of such establishments against the Shī'ī propaganda machinery was realised by the Saljūqid wazīr Nizām al-Mulk. During his years of power many schools were founded, first in Nishapur again and then throughout the western part of the Saljūq Empire, in Baghdad, Basra, Isfahān, Balkh, Herat and Moṣūl. The idea spread rapidly in the areas of Northern Syria and Mesopotamia; the first one in Damascus was founded sometime after 1103, and in Aleppo in 1123.¹ And Nūr al-Dīn ordered building in Urfa, Moṣūl, Raqqa, Manbij, Aleppo, Hamā, Homs, Damascus and Baalbek. The establishment of a madrasa within a city did not necessarily always meet with the approval of the local inhabitants; a previous attempt to erect one in Aleppo in the year 1120/1 had failed because of open public hostility.² Further west, two madrāsas in Egypt were recorded as having been founded to house the Shāfi'ī rite in Alexandria, first by the Fāṭimid wazīr Ridwan in 1138³ and then in 1151/2 by the Fāṭimid Caliph Zāfir.⁴

The introduction and the form of the early madrasa/māristān structure into Egypt has been the subject of much debate. Until Creswell's study⁵ it was generally assumed that a cruciform arrangement of four

1. By 1233 Damascus alone had 93 madrāsas. M.H.M.Ahmad "Some Notes on Arabic Historiography during the Zengid and Ayyūbid periods" Historians of the Middle East. p.80 note 2.
2. K.A.C.Creswell "Origin of the cruciform plan in Cairene madrasa" BIFAO vol.21 p.2-3
M.Van Berchem CIA Egypt vol.1 part 1 p.260-9
3. L.Hautecoeur & G.Wiet Les Mosquées du Caire p.102-3
4. M.Van Berchem op.cit. p.263 note 2.
K.A.C.Creswell op.cit.p.1 note 1. Both scholars describe the Zāfir establishment as "an isolated incident"
5. K.A.C.Creswell op.cit.p.1-54

līwāns around a central courtyard was the typical plan throughout Ayyūbid Syria and Egypt. Van Berchem defined the usual Cairo madrasa as "... celle-ci offre un plan uniforme: une cour centrale et carrée, flanquée de quatre salles ou līwāns, formant les branches d'une croix. Cette figure est inscrite dans un carré dont les angles sont occupés par les dépendances: salles de cour, bibliothèques, logements pour les professeurs, les étudiants et le personnel de service ... Celles [early examples in Syria] que j'ai pu visiter présentent un plan analogue à celui des madrasahs cairotes; d'autres ont perdu toute trace de leur aménagement primitif".¹ But Van Berchem admits that frequently only two rites were housed within one structure in the Saljūqid Empire, northern Syria and Egypt.² He continues to trace a Syrian origin for the cruciform ground-plan, an idea already implied by Lane Poole³ and then taken up by Herz Pasha⁴ and Marçais.⁵ Briggs follows Herz Pasha in choosing as the best example the mosque of Sultan Hassan in Cairo;⁶ Van Berchem described the structure as "... le seule preuve tangible du rapport étroit qui lie la quadruple madrasah au plan carré"⁷ as to him there are no surviving Syrian examples. To Herzfeld, the "perfect type of the 'cruciform plan'" is the Māristān Nūrī in Damascus founded in 1154.⁸ Creswell refutes the seeming assumption of a uniform plan and that the Damascus structure is indeed cruciform. He is certain that this plan had only a limited life and popularity, being "... practically unknown outside

1. M.Van Berchem op.cit.p.265-6
2. ibid p.265
3. Lane Poole Art of Saracens in Egypt p.53
4. Herz Pasha Catalogue sommaire des monuments exposes dans le musee nationale de l'art arabe. p.37 quoted by K.A.C.Creswell op.cit.p.4-5
5. G.Marçais Manuel d'art musulman vol.1 p.109 quoted by K.A.C.Creswell op.cit.p.5
6. M.S.Briggs "Architecture of Saladin and the influence of the Crusades" BM vol.38 p.12
7. M.Van Berchem op.cit.p.269
8. E.Herzfeld "Damascus: Studies in Architecture" AI vol.9 part 1 p.5

Egypt",¹ as he can only trace two examples in Syria, both of a later period - the Madrasa Malik al-Zāhir Bibars constructed in 1277 in Damascus and the 1327/8/9 Madrasa Tankiz in Jerusalem, the former built some 16 years after the first cruciform example in Cairo, the Madrasa Zāhiriya 1262. However, this Cairo madrasa did not house all four rites; the first known cruciform plan for the four rites in Egypt is found in the Madrasa al-Nasiriya, 1295.²

From Creswell's examination of the historical sources for the cities of Aleppo, Damascus, Jerusalem and for Egypt, it is clear that frequently a structure was erected for only one rite and sometimes two; in Damascus for instance, out of the eighty madrasas detailed, only six were established for two rites.³ Those madrasas catering for the four rites were usually of a 2-liwān plan (the Madrasa al-Salāhiya circa 1242), although, apart from the few cruciform examples, admitted by Creswell, there is one known example of a 6-liwān madrasa constructed, but outside Syria and Egypt, the Mustansiriya of Baghdad built in 1232.⁴

As explained above, the madrasa/māristān complex brought together into one structure religious and social edifices. Briggs' statement that Salāh-al-Dīn introduced two new buildings, the māristān and the madrasa,⁵ implies the development of a new architectural form alongside that of

1. K.A.C.Creswell op.cit.p.43

2. *ibid* p.43, 49-50

L.Hautecoeur & G.Wiet op.cit.p.257

3. K.A.C.Creswell op.cit.p.24-36

4. *ibid* p.35

5. M.S.Briggs Muhammedan architecture in Egypt & Palestine p.78

the madrasa, but the basic plan of both structures was one and the same. The only difference was that the living quarters or cells in the madrasa functioned in the māristān as hospital bed-space.¹ In both a masjid area and a small mausoleum chamber were included, but it seems that the provision and arrangement of lavatories, so distinct a feature in early 12th century Syrian religious buildings, were not considered important.²

In Syria the problem of space and of conformity within long-established urban limits was solved in a different manner than in Egypt. Herzfeld remarks on the generally small and irregular-shaped Syrian buildings, especially those with a religious function, constructed during the 12th and 13th centuries; to him, these monuments suggest a deliberate adjustment to fit between existing architectural fabric,³ which in turn indicates to Grabar the growing influence of the mercantile and bourgeoisie classes on urban development.⁴ In Egypt and particularly in Cairo during this period the answer to these problems lay in the alignment of the exterior facade of the structure with the existing street line, the interior being set askew to obtain the correct orientation towards Mecca; the Aqmar mosque constructed in 1125 in Cairo is taken to be the first example of this solution.⁵ There is no definite evidence of any such extreme arrangement of exterior and interior of an Islamic religious building outside Egypt, although Creswell's description of the mausoleum Sultan Ṣālih Najm al-Dīn constructed 1249-50

1. E.Herzfeld op.cit.vol.10 part 2 p.13
2. "Wherever one sees them, one recognises them ... as works of the period of Nur al-Din ..." e.g. Māristān Nūrī in Damascus, the Nūr al-Dīn mosque at Hamā and the Mashhad al-Muhassim in Aleppo. *ibid.* vol.9 part 1 p.5
3. *ibid.* vol.11-12 part 3 p.37
4. O.Grabar "Illustrated Manuscript of the 13th century: Bourgeoisie and the Arts" Islamic City p.217
5. C.Kessler "Mecca orientated architecture and urban growth of Cairo" Atti del 3^o Congresso di studi Arabi e Islamici 1966 p.425
K.A.C.Creswell Muslim Architecture of Egypt vol.1 p.241, fig.141 on p.242.

includes the words "... an extreme example of this practice so common in Cairo but unknown, or almost unknown, outside Egypt."¹

The Syrian madrasa and māristān of the period generally had a basically rectangular plan against the square form of the Egyptian structure, with usually only one large liwān, the rest of the area not taken by the masjid being rows of cells.² The Cairo examples did not incorporate a masjid except for the Madrasa Mansūrīya 1285 and the nearby Barqūq,³ but instead used the liwān in the qibla direction for prayers, whereas in the Syrian madrasa/māristān "... le mihrab est habituellement placé, non pas sous l'iwan, mais bien dans une salle de prière qui se développe comme il est logique - sur la face Sud de la cour".⁴

Another regional difference has been seen in the general omission of a minaret in the Syrian complexes, contrasted with the Cairo examples;⁵ Creswell lists only four in Syria in this period, the minarets of the Great Mosques of Ma^carrat al-Nu^cmān 1179, of Damascus constructed during 1174 to 1184 (the northern one), of the citadel in Aleppo 1213/14 and finally of the Aleppan Masjid Jāmi^c al-Dabbagha al-Atīqa erected circa 1200 (the minarets of the Madrasa Sultānīya and the Jāmi^c with Madrasa Firdaws probably being later additions.⁶ These were all of the

1. *ibid* vol.2 p.102. No further details or references are given. C.Enlart Les Monuments des Croises dans le royaume de Jerusalem vol.2 p.313 fig.434; from the ground plan of the small chapel of Saida al-Rih at Anifi (Nafin) near Tripoli, the main nave was obviously slanted in a slightly different direction from that of the entrance. Plate 10: the Rukhīya complex ground plan indicates a slanted entrance chamber as does the mausoleum Khadīja Khātūn in Damascus. E.Herzfeld *op.cit.* part 3 fig.109
2. Plates 15 and 7
3. K.A.C.Creswell "Origin of the cruciform plan in Cairene madrasa" BIFAO vol.21 p.24 & 40
4. M.Ecochard & J.Sauvaget Les Monuments Ayyoubides de Damas p.52 where examples from Damascus, Aleppo, Ma^carrat al-Nu^cmān and Ḥoṣrā are given: the madrasa al-Ṣāhibīya in Damascus is the exception as the prayer area resembles a liwān. (note on p.54)
5. K.A.C.Creswell *op.cit.* p.40
6. *ibid* p.40
J.Sauvaget "Inventaire des monuments Musulmans de la ville d'Alep" REI vol.5 p.82

traditional square base form as were those of Raqqa and Harrān in northern Mesopotamia. Two octagonal examples are given, both within this period, that of Balis 1210/1 and Salkhad constructed some twenty years after.¹

As it is clear from Creswell's inspection of early madrasa/māristān structure that it had a simple form of one or two liwāns, whether in Aleppo, Ma^carrat al-Nu^cmān, Damascus, Boṣrā or Urfa,² the origin of the cruciform ground-plan does not really enter into this subject, except inasmuch as the argument relates to other contemporary architecture in Ayyūbid territory. It seems very probable that the cruciform plan, when used, was of Iranian origin; Creswell's rejection of Godard's Rayy and Khargird 4-liwān ground-plans as typical prototypes is merely based on the original function of these buildings, that is whether they were constructed as madrasa or firstly as a masjid or house,³ but as Grabar points out "... there is nothing to deny that [they] ... were on a cruciform plan".⁴

1. K.A.C.Creswell Early Muslim Architecture vol.2 p.493
2. K.A.C.Creswell "Origin of the cruciform plan in Cairene madrasa" BIFAO vol.21 p.8-24
K.A.C.Creswell MAE vol.2 p.107-8
Great Mosque at Urfa 1113/4 ... 1 liwān
Madrasa Abu Mansur Kumushtakin, Boṣrā 1136 ... 2 liwāns
Dār al-Hadīth Nūr al-Dīn, Damascus c.1154-74 ... 1 liwān
Madrasa Khān al-Tūtūn, Aleppo 1168-9 ... ? 2 liwāns
Madrasa Nūr al-Dīn, Damascus 1172 ... 1 liwān
Madrasa al-Ma^crūf (Shadbakhtīya) Aleppo 1193 ... 1 liwān
Madrasa Shāfi^cī, Ma^carrat al-Nu^cmān 1199 ... 1 liwān
Madrasa al-Zāhiriya, Aleppo 1219-20 ... 1 liwān
Madrasa al-Ādilīya, Damascus finished 1223 ... ? 2 liwāns
Madrasa al-Sultāniya, Aleppo 1223/4 - 31/2 ... ? 2 liwāns
Jāmi^c and Madrasa Firdaws, Aleppo 1236 ... 2 liwāns
Madrasa al-Sharafiya, Aleppo c.1250 ... 1 liwān
Madrasa al-Kāmilīya, Aleppo before 1300 ... ? 2 liwāns
3. K.A.C.Creswell op.cit vol.2 p.132-3
A.Godard "L'origine de la Madrasa" AI.vol.15-16 p.1-9
A.Godard "Khorasan" Āthar-e Irān vol.4 p.70-6
4. O.Grabar's review of "Muslim Architecture of Egypt" by K.A.C.Creswell AO.vol.4 p.426-7

Creswell, Herzfeld, Godard, Lauffray and Grabar agree only on one point - the influence of private house architecture¹ on the form of the madrasa and māristān. Godard sees a definite link between the average house ground-plan "De même que la mosquée arabe, hypostyle, semble bien être le résultat de l'adaptation de la maison arabe aux besoins de l'Islām, la maison à quatre īwāns du Khorāsān semble donc bien se trouver à l'origine du plan à quatre īwāns de la madrasa, puis, par l'intermédiaire de la madrasa, du caravansérail et de la mosquée."² Herzfeld also opts for a strong Iranian influence from domestic architecture - an influence which moved west through Baghdad into Syria where space and costs limited the design, resulting in smaller līwāns being constructed and only the number four being incorporated when necessary.³ On the other hand, Lauffray suggests that the structures were "... peut être dérivées ... des maisons byzantines de la région", claiming that recent excavations north of Jabal Sam'an confirmed this theory.⁴ To Creswell, the origin of the early madrasa is to be found in the 12th century domestic architecture of Cairo, the qa^ca consisting of a reception hall with two līwāns on opposite sides of a covered square court. For further proof, he lists many examples from the sources, of private houses during the 12th, 13th and 14th centuries being turned into madrasas with no structural alterations.⁵ But, as Ecochard and Sauvaget state, referring to the Madrasa ^cAdrāwīya in Damascus, founded probably in 1184/5 from perhaps

1. Details of domestic architecture will be given below.

2. A.Godard "Khorasan" Āthār-é Irān vol.4 p.76

3. E.Herzfeld op.cit.vol.11-12 part 3 p.37

4. J.Lauffray "Une madrasa Ayyoubide de la Syrie du nord"AAS vol.3 p.65 note 1.

5. K.A.C.Creswell op.cit.vol.2 p.129

K.A.C.Creswell "Origin of the cruciform plan in Cairene madrasa"
BIFAO vol.21 p.45-9

a private habitation "... d'autre part, notre ignorance des types d'habitation au temps des Ayyoubides est telle qu'il serait vain d'attendre des ruines une confirmation de cette hypothèse".¹ And it is apparent that the earliest examples of one and two-liwān madrasa/māristān structures appeared in Syria before Egypt. Godard indirectly points to another possible connection with the eastern part of the Empire by stating that during this period the single or double liwān mosque was still being erected in Khurasan.²

As stated above, the open central courtyard³ led on the south side into the masjid area with its facade generally divided into three bays with a wooden or stone and wood lintel inserted at the springing level, whereas in Iraq this would have been formed of brick.⁴ The only apparent exception is found at the Madrasa ^CĀdilīya in Damascus, begun under Nūr al-Dīn but finally completed in 1223, where the masjid was entered through a five-arched facade.⁵ The introduction of the three axial entrance into Egyptian buildings of the late Fātimid period is seen as a direct offshoot of the Syrian practice.⁶ There were also incidences of a portico again with three arches leading to the masjid triple-bayed facade, as seen in the Aleppan Madrasa al-Zāhiriya.⁷

The other faces of the courtyard were occupied by the cells, either used

1. M.Ecochard & J.Sauvaget op.cit.p.63
2. A.Godard op.cit.p.144-5
3. The 1224 Madrasa Rukniya in Damascus was exceptional with its covered court. E.Herzfeld op.cit.vol.11-12 part 3. p.22
4. M.Ecochard & J.Sauvaget op.cit.p.22-3, 21-2
5. Plate 7. K.A.C.Creswell op.cit.p.6, 12
6. K.A.C.Creswell Muslim Architecture of Egypt vol.1 p.290
7. Plate 5.

for teaching or hospital treatment and either on one or two levels, the two storeys appearing to have been the general rule in Baghdad and Iranian structures. Probably the Madrasa al-^CĀdilīya, Damascus, constructed between the second half of the 12th and the early 13th centuries, included cells on two levels as did the Aleppan Madrasas Kāmiliya, Zāhiriya 1222/3 and Sultāniya, and the Nūriya al-Kubrā' in Damascus.¹

But for all these similarities, a regular geometrical, symmetrical plan found in the buildings Firdaws 1235 in Aleppo, the Sālihiya, the 1245 Sāhibiya and Kaimariya was only visible in the structures of the late Ayyūbid period.² "The aesthetic principles that dominate the Iranian model never influence the Syrian architects, whose aim was solid masonry, good proportions instead of decoration, an equilibrium of functional parts, carefully weighed, emphasizing the important, subordinating the accessory, with enough contrast not to become monotonous, but no strict symmetry, simple, double or [sic] quadruple. Simple symmetry appears only at the period of decline, when the attempt must be made to surpass the older and better works and when one yields to ostentation".³ For this reason, Herzfeld cannot agree with Sauvaget's reconstruction of the Dār al-Ḥadīth al-Nūriya in Damascus as a strictly symmetrical unit with three identical liwāns and courtyard facades.⁴

1. *ibid* p.12-15
M.Ecochard & J.Sauvaget *op.cit.*p.81 note 172
E.Herzfeld *op.cit.*vol.9 part 1 p.46-9
J.Sauvaget "Notes sur quelques monuments musulmans de Syrie" Syria
adds that the correct transliteration is Kubrā, not Kubrā'. vol.24
part 1 p.215
J.Lauffray "Une madrasa Ayyoubide de la Syrie du nord" AAS vol.3 p.56-7
2. Plate 9. E.Herzfeld *op.cit.*vol.9 part 1 p.53
3. *ibid* vol.11-12 part 3 p.37
4. Plate 16. E.Herzfeld *op.cit.*vol.9 part 1 p.51 fig.39
M.Ecochard & J.Sauvaget *op.cit.*p.16 fig.7

As with the mausoleum and masjid construction, the madrassa/māristān buildings were erected of stone and brick. Generally, according to Ecochard and Sauvaget, brick was used for arch, drum and dome construction; this material for arches, and other relatively light weight fabric during the 12th century is interpreted by them as showing strong links with Iraqi building methods.¹ But as noted above, there were examples of solid stone being employed in quantity, for instance the walls throughout the Madrasa Zāhirīya in Aleppo, completed in 1223, and the stone dome of the Shāfi^Cī madrasa at Ma^Carrat al-Nu^Cmān.² Stone arches are clearly visible at the Madrasas Firdaws and Sharāfiya in Aleppo.³ At Aleppo the Zāhirīya was constructed of large stone blocks contrary to the 12th century practice of using comparatively smaller size blocks, generally of two sizes.⁴ Ashlar and also bevelled (as distinct from rusticated) dressed stone was used as can be seen in the Madrasa ^CAdilīya⁵ in Damascus and the early 1150 Qaṣṭal al-Shu^Caibīya in Aleppo, built by the Jerusalem architect Sa^Cīd al-Mukaddasī.⁶

From the information available, small ashlar blocks formed the vaulted līwāns and the cross vaulting. As can be seen from the ground-plans of the Ayyūbid madrassas, even in the later symmetrical structures, there was no one specific use of either cross or barrel vaulting. As with arch forms and other more decorative elements,⁷ a variety of forms was found side by side in the same unit; referring to the Māristān al-Kaimariya

1. *ibid* p.22-3
2. J.Lauffray *op.cit.*plate 26
K.A.C.Creswell *op.cit.*p.12
3. K.A.C.Creswell *op.cit.*plate 6 and 7
4. M.Ecochard & J.Sauvaget *op.cit.*p.117, 23
5. *ibid* plate 17
6. E.Herzfeld *op.cit.*vol.10 part 2 p.30-32
7. see below.

mid-13th century Herzfeld states "At the same time it shares with the Madrasa al-Ṣāhibīya the strict symmetry of the plan ... the avoidance of domes, the exclusive use of barrel, cloister, and cross vaults, apparently a fashion of that late period".¹ There appear to be several examples of an unusual flattened vault found in some Aleppan buildings, the Zāhirīya,² Kāmiliya³ and the Māristān Nūrī in Damascus⁴ but details are lacking so no comparison between the vaults of these three structures is possible. According to Ecochard and Sauvaget, there was one characteristic of the Ayyūbid liwān throughout, that "... l'arc de tête de la voûte ne repose sur des pilastres en saillie sur la paroi".⁵

As with the vaults, so a variety of domes and drums with their supports was employed. It appears from the published evidence available that Herzfeld's statement that the later period was perhaps characterised by the "avoidance of domes" (see above) is incorrect; the 1235 Jāmi⁶ and Madrasa al-Firdaws in Aleppo is perhaps an extreme but still valid example with a total of 11 domes.⁶ From the discussion in the preceding two sub-sections of the dome forms found in the mosques and mausoleums of the period, it is clear that both fluted and smooth cupolas and a variety of polygonal zones of transition were constructed sometimes within one complex; an example of this occurring is seen in the Jāmi⁶ Nūrī in Hamā with a foundation inscription of 1163 where one

1. E.Herzfeld op.cit.vol.11-12 part 3 p.30
2. K.A.C.Creswell op.cit.plate 4
3. J.Sauvaget op.cit.p.82
4. E.Herzfeld op.cit.vol.9 part 1 p.7
5. M.Ecochard & J.Sauvaget op.cit.note 106 p.54
6. Plate 9

dome rests on an octagon formed from four squinches, and the second dome with 24 flutes is supported by a 12-sided drum on pendentives.¹ Apart from the other zones of transition of 8 and then 16 sides, another method was used in the Madrasa Zāhirīya, Aleppo, the 1136 Madrasa Mabrak at Bosrā, and the Madrasa ʿĀdilīya in Damascus, that of stone lintels set across the corners in oversailing courses.² But there is a fundamental difficulty in identifying the systems used in particular structures, resulting from Creswell's inaccurate use of the terms "pendentive" and "squinch";³ this together with the probable but incalculable reliance of one scholar on another's basic assumptions and conclusions in some form, is further aggravated by the lack of photographs, illustrations and diagrams without full textual descriptions of the roofing system in Ayyūbid madrasa structures.

According to Pauty and Golvin, the squinch form was preferred to the pendentive in Fātimid Egypt and Syria, to be reversed in the Ayyūbid period;⁴ "Subissant l'influence turque, ils abandonneront par la suite la 'trompe musulmane' et emploieront presque exclusivement le 'pendentif musulman' pour adopter ensuite le pendentif byzantin qui résolvait le problème beaucoup plus simplement".⁵ As stated above, Herzfeld is of the opinion that pendentives (between two barrel vaults) was the usual system employed in Ayyūbid Aleppo and northern Syria; however, in categorising the two kinds of mugarnas,⁶ the 'Irani' or squinch form and

1. E.Herzfeld op.cit.vol.10 part 2 p.41-2
2. K.A.C.Creswell MAE vol.1 p.252 and note 11.
3. ibid p.248 and plate 113A. He refers to the pendentives in the Mashhad of Sayyida Ruqayya 1133, but the illustration indicates the use of squinches or squinch arches below the zone of transition.
4. L.Golvin Essai sur l'architecture religieuse musulmane p.136-7
E.Pauty "Contribution à l'étude des stalactites" BIFAO vol.29 p.131
5. ibid p.141
6. This subject will be discussed below.

the 'Mediterranean' or pendentive type,¹ he concludes that there is no distinct regional use of one or the other² and supposedly, taking this as valid comment, if there was strict demarcation of drum transition methods, it would logically be echoed in this more decorative form.

1. Plate 17
2. E.Herzfeld op.cit.vol.9 part 1 p.11-40

SECTION 3 : SECULAR ARCHITECTURE

A. PRIVATE HOUSES

There is very limited information available concerning domestic architecture in Egypt and Syria during Fāṭimid and Ayyūbid times; for Egypt, once again one is forced to rely for the greater part on the findings and conclusions of Professor Creswell,¹ with recent reports about Fustāt excavations.² Regarding Syrian architecture of this kind, the information is even less.

As mentioned above, Creswell is of the opinion that the early madrasa/māristān structure closely resembled the qā'a of the Fāṭimid period; a reception hall with two liwāns on opposite sides of a square area, which was covered by a skylight,³ for instance the Qā'a al-Dardir. This building he describes as proving that "... the type of house known from the excavations of Fustāt had given place to an entirely different one by the 12th century".⁴ The earlier examples had had apparently flat roofs instead of the brick semi-domes supported by straight-sided triangular pendentives found in this edifice dated by Creswell to the first half of the 12th century.⁵ Also, from the excavations carried out by Ali Bahjat, he concludes that the 11th century houses of Fustāt were usually single and infrequently two-storeyed buildings arranged around a rectangular court. On one side

1. K.A.C.Creswell MAE vol.1
2. G.Scanlon JARCE vol.4 on.
3. K.A.C.Creswell op.cit.p.289-290
4. ibid p.263
5. ibid p.261-3

a triple arched portico leading into a deep room with smaller rooms flanking, on the others a room lending a certain symmetry to the whole unit. This description approximates that stated earlier by Hauteceur and Wiet "Une portique à trois baies s'éleve sur une des faces d'une cour; dans la baie centrale se trouve la salle principale, flanquée de deux pièces plus petites sans communication avec elle; sur les trois autres faces de la cour sont ménagées des niches de profondeurs variables, allant de la capacité d'une salle assez vaste à celle d'un léger enfoncement".¹ A marked feature was the planning of the entrance so that complete privacy was achieved.² Creswell feels this plan was derived from Iraq and probably brought into Egypt with the regime of Ibn Ṭūlūn; also an Iranian influence is observed.³

Evidence has come to light through recent work in Fustāṭ that the introduction of lime mortar in the time of Ibn Ṭūlūn resulted in multi-storey building. "Heights of five and six storeys became the norm until the city was destroyed or abandoned in 1168 ..."⁴ Before only one storey buildings were possible.⁵

As far as can be gathered the average Damascus house was based on the central courtyard, either rectangular or square in shape, and on to this "... s'ouvrent les portes des chambres, sur la face sud une large

1. Hauteceur & Wiet Les Mosquées du Caire p.109
2. "... housing was always oriented away from the streets, doors seldom faced one another ..." G.Scanlon "Housing & Sanitation" Islamic City p.182
3. K.A.C.Creswell op.cit.p.127-8
R.Ettinghausen "Interaction & Integration in Islamic Art" Unity and Variety in Muslim civilisation p.113
Early 13th Afghan house was "d'une construction à cour centrale et à quatre iwāns, avec quatre pièces d'habitation ou de service dans les angles". A.Godard "L'Origine de la madrasa" AI vol.15-16 p.5
4. G.Scanlon op.cit.p.187
5. *ibid* p.186

baie donne accès à une vaste pièce".¹ It seems that the houses were usually brick-built with a wooden frame of poplar; 11th century Damascus gave the appearance of being "batie en boue"². Concerning the private dwellings in the northern region reaching into Mesopotamia, only a brief general comment is made by Lloyd and Brice "The usual house consisted of a series of rooms grouped round a court or courts, themselves entered directly from the street, or through a vestibule".³

As stated above, Ecochard and Sauvaget note that little is known about this topic,⁴ a fact which is again borne out by Elisséeff's comment that the subject of domestic architecture has not been the object of any systematic study.⁵

1. N.Elisséeff "Damas à la lumière des theories de Jean Sauvaget" Islamic City p.174
2. J.Sauvaget "L'architecture musulmane en Syrie" RAA vol.8 p.29
3. S.Lloyd & W.Brice "Harran" AS p.86
4. M.Ecochard & J.Sauvaget MAD p.63
5. N.Elisséeff op.cit. p.174

B. HAMMAMS

Lastly in the category of domestic and public architecture, the baths; the form continued to be dictated by the basic need to retain heat and steam.¹ The deep foundations and walls were constructed of rubble masonry; vaults and domes of all rooms being built of brick with the exception of the hot room where stone formed the roofing.² Compared with the Umayyad examples,³ there had been a simplification at some point both in ground plan and in the heating system; in 12th century Damascus the hypocaust method was abandoned in favour of simpler underfloor piping. The typical ḥammām⁴ consisted of four rooms, the preparation room, then two intermediary chambers with the steam or hot room adjacent to the heating section "... the plan to which in particular the Damascus baths of the Ayyubid period conform".⁵ Sometimes it appears the accepted arrangement of cold - tepid - hot sections was rejected by omitting the cold room, but probably in these circumstances the preparation room acted as a substitute, as for instance in the Ḥammām Ammūni in Damascus.⁶

1. J.Sourdel-Thomine "Ḥammām" NEI p.141
2. M.Ecochard & C.LeCoeur Les Bains de Damas vol.1 p.35-36
3. "... il existe un grand trou dans nos connaissances entre le VIIe siècle ... et le XIIe". J.Sauvaget & M.Ecochard Les monuments Ayyoubides de Damas p.109
4. No adequate information appears to be available concerning other Syrian ḥammāms, nor those in Egypt and other Ayyūbid regions. J.Sauvaget comments in passing his regret that no reference was made to the Aleppan baths, which he feels contributed to the development of the north Syrian baths and influenced those of central Syria, but he gives no reference where details of these Aleppan examples can be found. J.Sauvaget - review of M.Ecochard and C.LeCoeur's "Les Bains de Damas" Journal Asiatique vol.234 p.332
"... non seulement nous ne connaissons aucun bain fatimide ou ayyoubide mais il n'est resté, au Caire, que le portail du bain de l'émir Bachtak (VIII/XIVe siècle) et une coupole ruinée de celui du sultan Malik Mouayyad Chaikh (IX/XVe siècle). L.Hautecoeur & G.Wiet Les Mosquées du Caire. p.107
5. J.Sourdel-Thomine op.cit.p.144
6. M.Ecochard & C.LeCoeur op.cit.vol.2 p.36

The two types of ground-plan visible in Umayyad structures, the square arrangement found at Qaṣr al-Ḥayr al-Gharbī for example, where the rooms were on the same axis around a central point, and the rectangular composition on two axes as in Qaṣayr ^cAmrā and Ḥammām al-Ṣarakh were both used in Ayyūbid Damascus.¹ Assuming this division of types to be valid,² it seems both arrangements had equal popularity; neither form appears to have predominated and often both types were constructed side by side.³ However, it should be remembered that no firm dating is possible for several Ayyūbid baths described by Ecochard and LeCoeur so the existence of a slight chronological difference of preference between the two types cannot be precluded. The two axes plan was later dropped in Mamlūk Damascus and the square arrangement was further developed.⁴

The basic rectangular form was followed in the baths of ^cUmari, Ṣafi and Sitti ^cAdhrā,⁵ dated to the end of the 12th or beginning of the 13th century.⁶ By contrast, the Ḥammāms Silisī, Jūsī, Qanātir⁷ and Bzūriya are examples of the square plan arranged around the central feature of the octagonal room.⁸

1. *ibid* vol.2 p.126-128
2. J.Sauvaget disagrees with these two categorisations particularly the central/square ground plan stating that "... l'obligation d'échelonner les trois salles de long du conduit de fumée qui doit contribuer à leur échauffement, obligation qui impose inéluctablement un plan axé. Les deux groupes distingués ici me paraissent être seulement deux variantes d'un seul et même type de plan : un plan axé dans lequel 'un élément' est parfois construit sur plan rayonnant". He concluded that the available space determined the choice of one rather than the other variation. J.Sauvaget *op.cit.*p.331
3. J.Sauvaget & M.Ecochard *op.cit.*p.109
4. M.Ecochard & C.LeCoeur *op.cit.*vol.2 p.128
5. Plate 18. This bath being originally a private hammām.J.Sauvaget *op.cit.*p.331
6. M.Ecochard & C.LeCoeur *op.cit.*vol.2 p.14.
J.Sauvaget & M.Ecochard *op.cit.*p.99
7. J.Sauvaget disagrees with Ecochard & LeCoeur's dating of Qanātir as he thinks the decorative motifs have a 14th century flavour, but he admits the possibility of a genuine 12th-13th century structure. J.Sauvaget *op.cit.*p.330
8. Plate 19.
M.Ecochard & C.LeCoeur *op.cit.*vol.2 p.14

But whether the ground-plans form two distinct types (and Ecochard and LeCoeur admit that a few medieval ḥammāms do not quite fall into either category, for instance the ḥammām Afīf) "... dans tous ces bains, les mêmes ouvriers ont travaillé avec les mêmes techniques et en employant les mêmes principes de décoration et de construction".¹

The inclination towards complete austerity, as found in the other Ayyūbid structures detailed above, is also found in these exteriors; the entrance was "... only rarely conceived as an architectural motif to embellish an important facade"² but there is some evidence to suppose that facade walls were polychromed.³ In the interiors, decorative relief was limited to the use of fluted domes, conches and pointed arched niches;⁴ doorways were arched, breaking away from the frequent use of lintels.⁵ Ecochard details five main methods of dome support, flat (encorbellement plat), pendentives, corner squinches, three niches composing a pendentive tier of 2 x 1 forming a dodecagonal drum, and lastly a sixteen-sided arising from an octagonal chamber⁶ - the last methods indicating an early date.⁷

Stalactites did occur in some of the structures but this has been seen as really a 14th century development.⁸ The appearance of the seven-rayed conch shell has also been taken as a dating factor, as "le signe d'une évolution dans le décor",⁹ from the five-segmented shell; this, it is

1. *ibid* p.14
2. J.Sourdel-Thomine *op.cit.*p.141
3. M.Ecochard & C.LeCoeur *op.cit.*vol.1 p.35
4. Plate 20
5. M.Ecochard & C.LeCoeur *op.cit.*p.35
6. J.Sauvaget & M.Ecochard *op.cit.*p.111
7. They "... sont d'un emploi courant à l'époque ayyoubide et disparaissent dans les premières années du XIII^e siècle". *ibid* p.105
8. M.Ecochard & C.LeCoeur *op.cit.*vol.2 p.46
9. *ibid* vol.2 p.43 note 1.

argued, was popular in Damascus only up to the end of the 12th century, after which the more elaborate shell form was used.¹

Because there is no direct evidence to prove the contrary, it could be assumed that there was no further decoration in the ḥammāms.² Fragments of ḥammām wall paintings dating from the Fātimid period have been found on a site south of Cairo.³ Admittedly nothing has been found in Ayyūbid structures, but a description by a 14th century doctor, Ibn ʿAbdullāh al-Bahāʾī al-Ghuzūlī quoting another author seems to point again in this direction; he wrote that the inventors of the bath "... recognised that a man loses some considerable part of his strength when he goes into a bath; ... so they decorated the bath with beautiful pictures in bright cheerful colours. These they divided into three kinds, since they knew that there are three vital principles in the body - the animal, the spiritual, and the natural ... for the animal power, they painted pictures of fighting and war and galloping horses and the snaring of wild beasts; for the spiritual power, pictures of love and of reflection on the lover and his beloved, and pictures of their mutual recriminations and reproaches, and of their embracing one another, etc; and for the natural power, gardens and beautiful trees and bright flowers".⁴ It is obvious that the interiors of the surviving Ayyūbid baths have since been frequently replastered, possibly concealing painted decoration.

1. *ibid* vol.2 p.40
2. This assumption has been made concerning the exteriors of Ayyūbid structures in general. J.Sauvaget & M.Ecochard *op.cit.*p.70 illustration p.68
3. R.Ettinghausen "Painting in the Fatimid period: a reconstruction" *AI* vol.9 p.121 and figs.23 & 24.
4. T.W.Arnold Painting in Islam p.88

ORNAMENTATION

The increasing use of stone throughout the Ayyūbid territories faced the architects with the problem of relieving the impression of massiveness and solidity that the stone architecture emitted. It has been stated quite correctly that "One of the most fundamental principles of the Islamic style ... is the dissolution of matter",¹ and so ornamentation of the stone itself with the additional materials of paint, plaster, wood and glass was used in the main structure to play a part in diminishing the heavy and austere appearance of stone blocks.

The complete fluidity of choice that has been noted in the dome construction and the varying methods of transition from a square to a circular form is echoed in the more decorative repertoire. But at all times in this period, the decoration remained subordinate and reticent placed only where necessary, either for emphasis or concealment of structural points.

A. ARCHES

Strictly speaking, the arch form should be defined as a structural feature, but as the more decorative forms of niches and mugarnas will be included below under this classification of "ornamentation", it is logical that the arch form should also be categorised under this heading.

The arch shapes of the Ayyūbid structures, whether true arches, niches or

1. E.J.Grube World of Islam p.11

mere frames, indicate no set accepted formulae chronologically, regionally or functionally; often in one structure, two or three true arch designs will be found side by side and often combined into one form.¹ Pointed, keel, horseshoe in a pointed form, cusped and flattened arches and horizontal stone lintels are found in structures in all parts of Ayyūbid territory² as far as information can be gathered from available material.

The ubiquitous two-centred pointed arch, which appeared in the Islamic context as early as Khirbat al-Mafjar in Syria, the Tār-i Khāna in Dāmghān³ continued to be used both in Syria and Egypt of the 12th and 13th centuries in military, religious and secular structures. According to one opinion, it was the most popular shape.⁴

A later development was the four-segmented keel or ogee-arch, which, according to Creswell, can be dated to the late Fātimid period.⁵ From the examples detailed in Ayyūbid structures, this form seems to have been more prevalent in Egypt, especially in the first half of the 13th century. In the more decorative form of niches, radiating flutes from a lower central boss, flanked by engaged colonettes was a common elaboration best seen in the Cairo Mausoleum Imām al-Shāfi'ī and the Mosque al-Sālih Talā'ī.⁶

1. For instance, in the mausoleum Sulṭān Sālih Najm al-Dīn 1249, the mausoleum Amīr Abū Mansūr Ismā'īl 1216, and the mausoleum Abbāsīd Khalīfas, and Imām al-Shāfi'ī 1211.
2. Also seen in the Madrasa Cifte Minareli at Erzerum built from about 1250.
3. L.Golvin Essai sur l'architecture religieuse musulmane p.88
4. Plate 5.
M.Ecochard & J.Sauvaget Les Monuments Ayyoubides de Damas p.5 note 3 state that all monuments described in the study had pointed arches except when specifically mentioned otherwise.
5. K.A.C.Creswell MAE vol.1 p.263. L.Golvin op.cit p.90 sees this arch shape as originally an Egyptian evolution but Hautecoeur and Wiet in Les Mosquées de Caire p.218 suggest a Persian or Indian origin. An example of an ogee form niche also tri-lobed has been noted in the Buddhist caves at Bamiyan, Central Asia. (G.Fehérvári in a personal communication 20 Sept.1971)
6. Plate 21. K.A.C.Creswell op.cit.vol.2 p.66

The 1173 Qubba Sitt al-Shām al-Ṣuḡhrā¹ in Damascus is the first Ayyūbid model traced in which a pointed horseshoe arch was incorporated but this was no isolated instance; Herzfeld comments that this form was "... more common in Damascus at that time than elsewhere".¹ The shape also appears alongside a pointed arch in the vestibule of the mid-13th century Cairo Mausoleum of Sulṭān Sāliḥ Najm al-Dīn² and in Harrān, the south-east gateway.³

A lobed form is found, varying from the simple (that is, tri-lobed) as in the Damascus citadel⁴ to the more complex (cusped) when used to decorate blind niches with or without the addition of flutes radiating from upper, central or lower bosses, considered by some to be an Iraqi importation.⁵ This more elaborate design was apparent in the early Safwat al-Mulk tomb in Damascus,⁶ and at the mosque of Ṣalāḥ al-Dīn in Mayāfāriqīn (Silvān) constructed in the second half of the 12th century.⁷ The Fāṭimid lobed form described as "recticurviligne" by Marçais,⁸ as seen at the Cairo Bāb al-Zuwayla 1092 and the mausoleum of Sitta Sayyida Ruqqayya, was copied in Syria and according to Golvin, marked an important stage in the 12-13th century development of the muqarnas "... cet arc ... devait jouer un rôle de premier plan dans les combinaisons complexes de niches, de consoles et de plans incurvés (muqarnas)..."⁹

1. Plate 10. E.Herzfeld "Damascus: studies in architecture" AI vol.11-12 part 3. p.43
J.Sauvaget in his critique of Herzfeld's study "Notes sur quelques monuments musulmane de Syrie" Syria vol.24 part 1 p.218 has no comment other than the example in the madrasa Nūrī al-Kubra is a later addition.
2. K.A.C.Creswell op.cit.vol.2 p.102
3. Plate 22. D.Storm Rice "Studies in Medieval Harran" 1.AS vol.2 p.49-51
4. J.Sauvaget "La citadelle de Damas" Syria vol.11 p.79 fig.15
5. M.Ecochard & J.Sauvaget op.cit.p.22-3
6. *ibid* p.6
7. G.L.Bell Palace & Mosque at Ukhaidir p.93
8. L.Golvin op.cit.p.98
9. *ibid* p.98-9

At the other extreme, the severe forms of the flattened rounded arch and also the monolithic lintel block¹ were popular in the Fātimid and Ayyūbid fortifications of Cairo and elsewhere in Egypt, Syria and also in Anatolia.² In the Madrasa Firdaws in Aleppo, both shapes can be seen forming one arch, a heavy flattened voussoir arch with a large stone block forming the lintel, also found in the western facade of the Madrasa and Mausoleum of Sultān Sāliḥ Najm al-Dīn in Cairo.³ Frequently a flat arch supported a monumental entrance as those of the Madrasas Nūrī, Sāhibā, ʿĀdilīya and Kilijīya show.⁴

B. STONE TECHNIQUES

Softening of this severe form of the lintel and heavy flattened arches was achieved by the ornamental jointing of the stone both for doors and windows, "joggled voussoirs" as Creswell describes these blocks.⁵ Admittedly this jointing technique was no new development in Ayyūbid times; early 12th century buildings in Syria, such as the Mausoleum Safwat al-Mulk and the Dār al-Ḥadīth al-Nūriyya⁶ have this feature. But these years of the late 12th to mid-13th century saw a more widespread use in all structures military, secular and religious, in Egypt as well as Syria extending into Anatolia, and with it, the use of different coloured stone blocks to lend greater emphasis.⁷

1. Creswell sees these forms as North Syrian Christian features MAE vol.1 p.211
2. for instance the Mausoleum Mama Hatun at Tercan constructed in the early 13th century. R.H.Ünal Les monuments Islamiques anciens de la ville d'Erzerum et de sa region figs.114 & 115
3. D.Hill & O.Grabar Islamic Architecture and its decoration fig.515 K.A.C.Creswell op.cit.vol.2 fig.45 facing p.96., plate 35
4. E.Herzfeld op.cit.part 1 fig.75. part 3 fig.11, 90 & 91.
5. Plate 23. Joggled voussoirs were used in the late 3rd century Porta Aurea and at Ravenna; they then appear in Diyarbakir on the Kharput gate 909/10 "probably the earliest example in Islam" K.A.C.Creswell "Archaeological Researches at the citadel of Cairo" BIFAO vol.23 p.166-7 MAE vol.1 p.170
6. E.Herzfeld op.cit.part 3 p.13
7. see below.

Concerning the more accepted form of carving, there are numerous examples of figural sculpture, which appears to have been a speciality of Northern Syria, diffused southwards into Egypt at an early date where it adopted a variation. The figures, usually animal forms, were carved in shallow reliefs generally placed either in the upper spandrels or at the springing level of an important arch or doorway. At Amida (Diyarbakir) two horses of late 11th century work are situated on the main wall, while a relief of a lion attacking a cow or gazelle decorates the Great Mosque portal, erected approximately a century later.¹

Two pairs of dogs on chains, not exactly identical, guard the citadel door of Harrān from their position on the wall piers, and fragments were found that suggest two basalt carvings of birds were placed in the spandrels.² Ornamenting the ^CAjlūn gateway in Syria³ a pair of fighting peacocks date from the same period. Further north some 70 miles from Moṣūl in Mesopotamia, a gateway shallow relief carving depicts two haloed, bearded figures spearing dragons, dated to the mid-13th century.⁴ Another example including a human form was the famous Talisman Gate of Baghdad erected in 1221 whose relief showed a central seated figure faced by two dragons.⁵ In Egypt these stone ornaments did not assume representational forms until the Mamlūk period: instead a more geometrical form of shallow carving was employed.⁶ Whether these reliefs were thought to have talismanic properties or in fact had

1. M. Van Berchem & J. Strzygowski Amida p.40 & 67
2. Plate 22. D. Storm Rice op.cit. vol.2 p.63-66
3. C.N. Johns "Medieval ^CAjlūn" QDAP vol.1 p.27-8
4. G. Reitlinger "Medieval Antiquities west of Mosul" Iraq vol.5 p.149-150
5. M. Van Berchem & J. Strzygowski op.cit. p.83
6. as the Fātimid Cairo gateway Bāb al Nasr 1087 shows. K.A.C. Creswell MAE vol.1 plate 50

any symbolic significance is still open to question and will remain so until Muslim iconography is extensively studied.

Fine denticulated border carvings provided a deceptive element concealing the rigid forms of the stone arches and added further interest with the resulting play of light and shade. In early structures bevelling helped to soften these massive arch forms, such as the Fātimid defence constructions and the Aleppan architecture of Nūr al-Dīn with some later examples, for instance the madrasa Shādbakhtīya 1193.¹ But the later mastery of techniques in the medium of stone is illustrated by the fine edging carvings of the Madrasa ʿĀdilīya and Māristān al-Atik in Damascus and Aleppo respectively and the citadel gate of Damascus.² A similar treatment of the medium is found decorating facade bays in the Dūnāysīr mosque near Mardin constructed in the early 13th century.³ The culmination of such a technique was the magnificent muqarnas portals of Ayyūbid buildings which clearly indicate the masterly achievement of the medieval architects in providing a sense of the incorporeal contrasting with the density of ashlar blocks. But such an important decorative feature must have a separate classification of its own.⁴

The monotony of sheer stone was further relieved by the introduction into the fabric of different coloured and textured stones both as architectural blocks and also as purely decorative additions. "La plus timide manifestation" of this "element proprement syrien"⁵ is the hesitant

1. K.A.C.Creswell "Archaeological Researches at the citadel of Cairo" BIFAO vol.23 p.152 note 1.
2. Plate 24.
Very similar to the Māristān al-Atik carvings are those of the Mayāfāriqīn mosque Salāh al-Dīn constructed in the second half of the 12th century. G.L.Bell Palace and Mosque at Ukhaidir plate 84.fig.3
3. A.Gabriel "Dūnāysīr" AI vol.4 p.11 figs.8, 9 and 12.
4. see below
5. M.Ecochard & J.Sauvaget op.cit.p.13

polychrome work of the Safwat al-Mulk tomb in Damascus.¹ From then the occurrence of such work became more frequent and increasingly confident, in Syria being usually of limestone and basalt;² the use of basalt traced to the Hamā and Homs schools³ or alternatively Hauran.⁴ Yet again this feature later influenced both Egyptian and Anatolian fashion.⁵

From this, polychrome work for the facades and ornamentally jointed voussoirs developed the re-use of marble as a contrasting medium as it offered a wider yet more subtle range of colours, with the added advantages of providing a differing textural quality and presumably easier working. Although employed in a decorative way in the Syrian palace of Khirbat al-Mafjar, marble working appears to have fallen into dis-use until this period when it re-emerged in a sophisticated form, already mentioned above in connection with the mihṛāb.

A distinctly north Syrian feature, once more this element of decoration was to be imitated further south in southern Syria and Egypt and north in Saljūq Anatolia.⁶ Briefly described as a polychrome marquetry of conservatively harmonious tonal shades of marble, interlaced in strict

1. Other early examples are given by M.Ecochard & J.Sauvaget *ibid* p.13 note 33
2. For instance the 13th century facade of the Madrasa al-Kilijīya N.Elisséeff "Dimashk" *NEI* p.284
3. J.Sauvaget "L'architecture musulmane en Syrie" *RAA* vol.8 p.28
4. N.Elisséeff "Damas à la lumière des theories de Jean Sauvaget" *Islamic City* p.174 M.Ecochard & J.Sauvaget *op.cit.*p.13
5. J.M.Rogers "Recent work on Seljuq Anatolia" *Kunst des Orients* vol.6 part 2 p.141.
6. Examples include: Mashhad al-Husayn, Aleppo 1200
Jāmi^c and Madrasa al-Firdaws, Aleppo 1235
Madrasa al-Sultāniya, Aleppo.
Ikhnakīya and Ṣuhaib Rūmī, Damascus.
Qubba al-Silsila & Tanjizīya, Jerusalem.
Alā al-Dīn Mosque, Konya
Madrasa Karatāi, Konya
Mausoleum Shafar al-Dīn, Cairo 1250

K.A.C.Creswell *MAE* vol.2 p.103

E.Herzfeld *op.cit.*vol.10 part 2 p.58

J.Sauvaget "Notes sur quelques monuments musulmans de Syrie" *Syria* vol.24 states that the correct transliteration of Ikhnakiya is Jakmakīya; he also questions where the Suhaib example is situated. p.222.

horizontal and vertical bands or in interconnecting semi-circular forms.¹ this decorative element has been thought by Herzfeld to have a symbolic significance; "the combination of these two Sasanian thoughts, the multi-lobate arch and the diadem archivolt, is the scheme of composition followed in the interlaced spandrel ornaments of Aleppo ... The flamboyant curves of the two specimens below, Firdaws - Aleppo 634, and Ikhnakiya - Damascus, clearly suggest a nimbus or crown. The two pairs of floating fillets are evolved and knotted together : there enters a third idea the magic knot, 'ukda ..."²

C. NICHES AND MUQARNAS

After careful consideration, these two decorative elements have been included under one heading. The reason for this decision stems from the confusion of terminology. Herzfeld, for example, observes a distinction between the small cell niches or 'alveoli', which usually decorated the zone of transition under the dome, and the muqarnas form, employing the Kāmūs definition of "scale-shaped".³ Contrasting to these terms, Sauvaget includes both these forms under the general heading of "alveoli".⁴ Also employing a general term, Rosintal on the other hand, used the word "stalactite".⁵ Clearly some distinction would be welcome but the difficulty with Herzfeld's two categorisations arises from arriving at a correct assessment of the two forms, and, if one sees a direct and progressive relationship between the two, of the

1. Plate 12.
2. E.Herzfeld op.cit.vol.10 part 2 p.62
3. He refuses to use the word "stalactite" to describe this architectural feature "... because suspended brackets do not appear before the definite decline of this earlier form in the Mameluke period".
E.Herzfeld op.cit.vol.9 part 1 p.11.
4. J.Sauvaget "Inventaire des monuments musulmans de la ville d'Alep"
REI vol.5
5. J.Rosintal L'Origine des Stalactites

exact point when an 'alveoli' is transformed into a muqarnas. For the purpose of this study, the term 'niche' will be used to describe a shallow or recessed blind-arch form of varying height either standing in isolation or with similar forms flanking laterally. The word muqarnas will be used to describe similar forms comparatively smaller in size, but only when such elements appear in a tiered form.

The niche form continued to play its traditional role in the Egypt and Syria of this period. Used to decorate wall faces both externally and internally, there are numerous examples ranging from the simple to the exceedingly complex in all three categories of Ayyūbid architecture. To a great extent the deep intricate designs so popular in Egypt¹ are by comparison less frequently found in Syria, but in both regions the niche form was employed to decorate both externally and internally the zones of transition underneath the dome structure.² There was no attempt by the architects of this period to conceal the different stages of transforming a cube into a hemisphere - more that they wished to draw attention to these points. The Madrasa ^QIzzīya outside Damascus is a good example; the first zone is emphasised on the exterior by a pointed niche in which two smaller pointed windows are situated, and the second zone is decorated between the windows by deep conch niche heads.³

But without any hesitation the most important development in the decorative field was the elaboration and extended use of the muqarnas:

1. Plate 21
2. Plate 20
3. Plate 14. M.Ecochard & J.Sauvaget op.cit.p.68 fig.39

"Basically it is a section of vault which, used in combination with other identical or related elements, creates a three-dimensional ornamental effect which can be scaled to any need, from vast niches ... or entrances ... to the smallest details of construction or decoration".¹ As to its function, it has been considered that the primary use was structural, and that the element only assumed a decorative role at the completion of its development.² However, Godard implies that he feels that the mugarnas was a purely decorative form from the beginning, employed to counteract the impression of solidity resulting from the use of stone and brick.³ It is clear that the shape has a direct relationship with the architectural squinch, but whether the mugarnas was a structural extension of the multiple squinch is open to doubt.⁴

Despite early examples of use in Iran and Northern Syria observed by other scholars,⁵ Creswell defines a separate and, according to him, distinct Egyptian development, giving as an example the simple mugarnas in the fabric of the Coptic Church Abū al-Sayfain built in the third-quarter of the 10th century.⁶ As Grabar points out there are numerous more sophisticated examples in Iran and Central Asia dating from this period, and he himself considers Creswell's Egyptian example falls into a category of crude imitation.⁷ Indeed it appears that the mugarnas in Egypt only developed from the beginning of the 12th century and with it a parallel movement in North Africa.⁸

1. D.Hill & O.Grabar Islamic Art & its decoration p.84
2. E.Pauty "Contribution à l'étude des stalactites" BIFAO vol.29 p.130
J.Rosintal op.cit.p.1-9
3. A.Godard "Les Coupoles" Āthār-é Īrān vol.4 p.272
4. J.Rosintal op.cit.p.9 Further study is necessary to ascertain whether in fact these early multiple squinches bear any stress as Rosintal assumes, or whether they have a pure ornamental function.
5. The first example of use is said to be in the Gunbad-i Qābūs at Gurgān dated beginning of 9th century. G.Fehérvári Development of the mihrāb down to the XIVth century. vol.2 p.285
6. K.A.C.Creswell MAE vol.1 p.253 and 231-2
7. O.Grabar's review of Creswell's "Muslim Architecture of Egypt" AO vol.4 p.423-4
8. L.Golvin op.cit.p.157

The first Egyptian example known to Creswell to extend the Fāṭimid use of two tiers formed of 3 and 1 cells is the Cairo Mausoleum of the Abbāsīd Khalīfas with two painted tiers of 3 and 3,¹ constructed in the mid-13th century, continuing the Fāṭimid practice of placing them almost exclusively in mausoleum structures.² There then appears to be a rapid development to more elaborate forms; the madrasa and tomb Ṣāliḥ Najm al-Dīn built some ten years after, has a three-tier system formed of 3 x 3 x 4,³ although Creswell states previously that the development of two tiers, formed of 3 x 3 came at the end of the 13th century.⁴

As the period continued, the use of this decorative element became more frequent and varied. Zones of transition, domes and semi-domes and monumental portals were decorated in this way, sometimes over the entire surface,⁵ the cells themselves further ornated with fluting or star-shaped incisions.⁶ Muqarnas were also used to decorate corniches, as found in the madrasa Mukaddamīya at Aleppo, along with the al-Dabbaja minaret, and ornamenting capitals as in the Madrasa Jawulīya and Maqām Asfal.⁷

The earliest monumental muqarnas portal in Egypt leads into the madrasa Baybars, constructed 1264, and many examples can be found of the 14th century.⁸ But compared with Syria, this was a late development.

1. K.A.C.Creswell op.cit.vol.2 p.89
2. O.Grabar op.cit. p.424
3. K.A.C.Creswell op.cit.vol.2 p.103. Elsewhere he gives a proportion of 3 x 3 x 5 (p.134)
4. ibid vol.2 p.70
5. The earliest dated muqarnas dome is given as in the masjid of Sīn north of Isfahān 1134-5 constructed of brick and clay in 3 tiers on the arch ribbing. M.B.Smith "Early Iranian Islamic Architecture" AI vol.6 p.3-6
6. Plate 17. for instance, the portal of the Madrasa al-Ṣāḥibīya in Damascus. E.Herzfeld op.cit.vol.11 part 3 p.12
7. J.Sauvaget "La citadelle de Damas" Syria vol.11 p.223
8. K.A.C.Creswell op.cit.vol.2 Table on p.148

Such portals had been a popular feature in firstly the Aleppo region before spreading southwards to Damascus. The doorway of the madrasa Shādbakhtīya built in 1193 and that of the Mashhad Husayn appear to be the earliest models, followed by the Citadel gate in Damascus, and those of the madrasas Ādilīya, Atābakīya and Sāhibīya.¹

Two types of muqarnas semi-domes have been observed, one being 'Irani' formed from the horizontal by squinches as shown by the portal vaulting of the Mashhad Husayn, Zāhirīya, Sharīya and Firdaws; the other defined as 'Mediterranean' is supported by concentric hemispherical zones basically forming a pendentive shape, said to be seen in such structures as the Mashhad al-Muhassin, Husayn and the madrasa Shādbakhtīya. There appears to be no regional distinction; both types appear throughout Syria.² But this conclusion does imply that muqarnas had a structural role in these monuments, whereas in the early Madrasa Nūr al-Dīn domes, the cells were constructed of brick or plaster, that is added to the fabric after the dome support system. But then this does add further weight to the observation that in general there was no strict regional delimitation in the use of pendentives and squinches.

As to the origin, Herzfeld has traced this particular form to Mesopotamia and more specifically to the Imām Dūr,³ north of Sāmarrā constructed in the last decade of the 11th century.⁴ Sauvaget for his part, opts

1. J.Sauvaget op.cit.vol.11 p.222-3
2. Plate 17. Fig.11 is an example according to Herzfeld of an 'Irani' muqarnas vault; Fig.12 a 'Mediterranean' example. E.Herzfeld op.cit vol.11-12 part 3 p.12-15
3. E.Herzfeld op.cit.part 3 p.17
4. Herzfeld gives the date of the monument between 1089/90-4 (op.cit.vol.9 part 1 p.20) but M.B.Smith prefers a later dating of circa 1200 (M.B.Smith op.cit.vol.6 p.7 note 45).

for a more immediate North Syrian influence "... on ne saurait sans plus ample examen décider qu'elles ont passé de Baghdad à Damas directement, plutôt que par la voie de Mossoul":¹ and again "Une telle profusion de stalactites à Damas, dans les premières années du XIIIe siècle, n'est explicable ... que par l'influence de la Syrie du Nord".²

Definitely this feature first emerged in the region of Northern Syria like so many ornamental motifs, and then spread to the rest of the Ayyūbid areas.

To sum up, there is no better précis of the problems surrounding this decorative element, that is origin, function and development, than the following words:

"The muqarnas is an architectural and decorative element whose origins are as unclear as its ubiquity is certain ... At times a curious ambiguity remains as to whether certain combinations of forms were meant to be fully decorative or purely architectonic ... an ambiguity ... which seems to complicate even further any attempt at defining precisely the significance of decoration in Islamic art".³

D. PLASTER

In discussing the more decorative materials, the problem reoccurs of sparse material: the decorative schemes of various Ayyūbid structures have not come under detailed inspection but some generalisations are possible.

1. J.Sauvaget "Notes sur quelques monuments musulmans de Syrie" Syria vol.24 p.218
2. J.Sauvaget "La citadelle de Damas" Syria vol.11 p.224
3. D.Hill & O.Grabar op.cit.p.84

As to be expected the use of stucco in the Syrian territories of this period was comparatively rare contrasting to Egypt. Examples do exist of mihṛāb stucco forms,¹ but to find the intricate deeply cut plaster forms, one must look to the south, and also to the east, Iran. In Egypt the decorative motifs and general style continued the line laid down by the Fātimids, developing into extremely delicate work, perhaps too excessive in its fine lacy appearance.

In both Syria and Egypt the medium was used in conjunction with stone, to relieve the massive arch forms of the period, by forming narrow banding round the arch frame.² This is immediately reminiscent of stucco work at the Mosque of Ṣalāh al-Dīn at Mayāfāriqīn (Silvan) and to a lesser extent the mosque at Hasan Kaif, late 12th century.³ In all these examples, the bands consist of small square or arch compartments, approximately 11 cm. square, each incised with small geometrical or floral motifs. Observing this ornament in various Fātimid structures, Creswell has traced similar contemporary examples in Saljūq territory at Nakhchivān and Sē Gunbād, where geometric patterns are alternated with incised and relief motifs, of brick and stucco respectively or in stone.⁴ The use of stone instead of plaster for these small reliefs is also found in Cairo but it is clear that the treatment is more suited to the stucco medium.

Wider ornamental frames for dados, arches and vault joints were composed of inscription bands edged either with more calligraphic work on a

1. see above

2. Plate 23.

for instance the palace arches of the Damascus citadel (J.Sauvaget op.cit.vol.11 plate 36 nos.1 & 2) and the door frame of the Mausoleum Abū Mansūr 'Ismā'īl 1216 in Cairo (K.A.C.Creswell MAE vol.2 p.77)

3. G.L.Bell Palace & Mosque at Ukhaidir p.93 fig.2 plate 84 fig.1

4. K.A.C.Creswell op.cit.vol.1 p.126

smaller scale or with small arabesque or floral motifs.¹

Plaster was also used in another framing context, that of window grilles.

The first known example of the specialised floral arabesque pattern is said to be in the Madrasa Māridāniya of Damascus early 13th century² on which Sauvaget and Ecochard comment "Le composition et les détails, malgré le schématisation qu'imposait la technique employée, sont directement apparentés aux bois sculptés et aux peintures de l'époque ayyoubide, ainsi qu'aux beaux vitraux de la mosquée des Hanbalites, de l'hôpital de Nouîr al-Dîn, de la madr. Châmiya et de la mosquée du Repentir ..."³ The stucco work is some 4 to 5 cms. thick arranged in a symmetrical arabesque design springing from a vertical central point, in which red, blue, green and yellow glass is held. Other examples of similar grilles in Egypt have been detailed by Creswell reaching into the early years of the 14th century; two of which come into this period, those of the Mausoleum^c Abbāsid Khalifas where the glass is also painted, and the tomb of Sultan Sālih.⁴

Large scale stucco decorations are divided into two categories, small individual designs incorporated into an overall scheme as in plaster mugarnas, and secondly, large compositions of stucco work in the forms of medallions.

Plaster mugarnas fragments have been found said to date from the end of the 8th century in Nishapur and Raqqa.⁵ It appears that the mugarnas

1. K.Wultzinger & C.Watzinger Damaskus, die Islamische Stadt p.120-3 Plates 12c & d; 13a & b.
2. K.A.C.Creswell op.cit.vol.2 p.91.
3. M.Ecochard & J.Sauvaget Les monuments Ayyoubides de Damas p.125.
4. K.A.C.Creswell op.cit.vol.2 p.91
5. C.K.Wilkinson "The Museum's excavations at Nishapur" BMMA vol.33 p.9-12 fig.4-6
L.Golvin Essai sur l'architecture religieuse musulmane p.157

dome in the Māristān Nūr al-Dīn was the first Ayyūbid example of plaster muqarnas, being fixed onto a wooden framework,¹ although there are examples of the stone or brick muqarnas being covered with stucco. It is not possible to detail exactly whether most of the muqarnas vaults were basically formed from stucco work as the information is just not available.

Fortunately there is a little more data on the overall stucco decoration formed in large medallions, mainly found in the decorative schemes of the mausoleum structures in Syria and Egypt. Formed essentially of a foliated arabesque, the roundels in the Māristān al-Kaimari of Damascus consist of interlacing teardrop shapes whereas those decorating the walls of al-ʿIzzīya tomb have more of a rosette form - altogether a tighter, more centralised and compact design.² Painted circular forms using cobalt blue with a central vertical composition of foliated arabesques decorate the Farrukh Shah mausoleum in Damascus.³ Simple geometrical motifs were also incorporated into composition schemes but as with Fātimid stucco work the emphasis did lie in calligraphic and arabesque ornamentation. Throughout the stucco had a delicate touch, best illustrated in the scheme covering the surface of the Cairo Mausoleum ʿAbbāsīd Khalīfas with its 6-lobed medallions.⁴

It seems from chronological evidence that the flowing more simple arabesque stucco work was originally Syrian work, and as such bears

1. Plate 25. E.Herzfeld op.cit.vol.9 part 1 p.11.
2. Plate 26. ibid part 3. p.31 & fig.55: p.31 & fig.56
3. M.Ecochard & J.Sauvaget op.cit.p.31-4. figs.18 & 19.
4. K.A.C.Creswell op.cit.vol.2.fig.42.

considerable resemblance to wood carvings of this period of that region. On the other hand, the stucco execution on the exterior of the Mausoleum Imām al-Shāfi^ī and of the Minaret Sayyida al-Husayn in Cairo is said to have been influenced by Andalusian work.¹ Western Islamic motifs have also been observed in the banded decoration of the Qubba al-Takritīya in Damascus but it is considered as "an isolated, spontaneous transplantation".²

As with marble work, so this flowing form of stucco motifs was to form the basis on which the Mamlūk craftsmen were to formulate their style.³

E. PAINTING

Only the essential information is given in the various studies. It has been noted in regard to the Mausoleum ^CAbbāsīd Khalifas for instance that fine details were impossible to decipher because of the dirty condition of the painted plaster medallions. Whether there were tonal shading differences could not be ascertained at the time of inspection, but the colours, dark blue, red and yellow with outlining in white were observed.⁴ Elsewhere in Syria it seems that a cobalt blue and sometimes black usually provided the colour on medallion work, seen by Herzfeld as an Iraqi importation.⁵ The visual effect of high relief is definitely reminiscent of the deep-cut bevelled wood-carving of this period which elsewhere has been seen as a re-emergence of the Samarra bevelled stucco style.⁶

1. K.A.C.Creswell MAE vol.2 p.134
2. E.Herzfeld op.cit.vol.11-12 part 3 p.61. The mausoleum is also called "Tabutluk" by Wultzinger & Watzinger op.cit.p.120-3
3. K.A.C.Creswell op.cit.vol.2 p.90
4. Plate 27. K.A.C.Creswell op.cit.vol.2.p.90
5. E.Herzfeld op.cit.part 3 p.66
6. R.Ettinghausen "Turkish elements on silver objects of the Seljuq period of Iran" First International Congress of Turkish Art. p.128-133

Those wooden and plaster muqarnas cells studied were also painted with some added decorative motifs, based on a vertical and symmetrical arabesque design. The zone of transition decoration of the Mausoleum of ^CAbbāsīd Khalīfas is painted in gold, red, green and black, as is the dome, and the wooden structure of the Imām al-Shāfi^Cī is also coloured as well as carved.¹

Inscriptions were also frequently coloured either with black or in blue; in the now demolished Mausoleum Safwat al-Mulk both colours were used to decorate the geometrical intertwined plaited Kufic inscription.² On occasions marble incised inscriptions had black colour added for greater emphasis, for instance in the Jāmi^C Nūrī at Hamā, and the Damascus Māristān Nūr al-Dīn.³

The possibility of large-scale mural painting has already been mentioned above⁴ and historical evidence points to there being such examples in Fātimid Egypt.⁵ Although interiors and often exteriors of religious structures were plastered, it seems probable that such mural decoration did not exist in these buildings, except on dome exteriors. There are two examples in Syria, the painted decoration of which is considered to date from the Ayyūbid period;⁶ whether these are just isolated examples cannot be decided merely from this evidence. The possibility of large-scale mural paintings in secular structures however should be borne in mind, and not rejected out of hand.

1. Plate 27. K.A.C.Creswell op.cit.vol.2 p.89 & 68

2. M.Ecohard & J.Sauvaget op.cit.p.6-7

3. E.Herzfeld op.cit.part 2 p.43

4. see above "Hammāms"

5. R.Ettinghausen "Painting in the Fatimid period:a reconstruction" AI vol.9

6. Plate 14. the Madrasa al-ʿIzzīya outside Damascus.

The second example bears great similarity to the ʿIzzīya decoration; it has the same decorative motif, a two-pronged lotus bud/flower, but repeated less often. Structurally also there is a striking similarity. The name of the building is given by Herzfeld as the Madrasa Shibliya (op.cit.part 3 fig.76-77) but Sauvaget claims it is al-Badrīya ("Notes sur quelques monuments musulmans de Syrie" Syria vol.25 part 2 p.68 fig.39)

F. WOOD

The wood carving of the earlier period has been extensively studied¹ but that of the Ayyūbid period has received only passing interest. Again one suffers from the lack of information, textual and illustrative. From examples of wood-working surviving from this period, it could be deduced that Egypt and Southern Syria were the main areas but contemporary sources state that Aleppo was considered the main centre producing such famous works as the mihṛāb and minbar of Nūr al-Dīn² and the mihṛāb of the Halawīya Madrasa 1245. The Maqam Ibrahim in the city has highly complicated panels formed of an intricate geometrical design of 11, 12 and 10-pointed stars,³ whereas Fātimid examples are based on a simpler octagonal form.⁴

A definite introduction into Egypt was the coffered ceiling, the first example being in the Mausoleum Imām al-Shāfi^{cī}, in which the bay is covered with twenty octagonal forms, 5 x 4, the rims of which project downwards. This decoration was incorporated into the Madrasa Sāliḥ Najm al-Dīn, built some 30 years later, and was still being used until the early 15th century in the Madrasa Sultan Faraj.⁵

The only known example of wooden muqarnas in an Ayyūbid structure is those in the zone of transition of the Mausoleum Imām al-Shāfi^{cī}, Cairo. But there is some dispute as to whether these tiers are contemporary or a later mid-15th century addition.⁶ As the main reason for rejecting an early date is the existence of three levels, 5 x 7 x 3, which according to Creswell must mean a later date⁷ - an untenable theory - it does seem possible that these wooden muqarnas date from Ayyūbid times.

1. E.Pauty Les bois sculptés des églises coptes (époque fatimide) Cairo 1930

2. E.Herzfeld op.cit.part 2 p.58

3. ibid part 2 p.65

4. for example Mosque al-Sāliḥ Talā^{cī}. K.A.C.Creswell MAE vol.1 p.287

5. ibid vol.2 p.68. No mention is made of Syrian examples.

6. Plate 28. K.A.C.Creswell op.cit.vol.2 p.70

E.Pauty "Contribution à l'étude des stalactites" BIFAO vol.29 p.144 fig.5
Hautecoeur & Wiet Les Mosquées du Caire p.253

7. see above Ornament Section C: Niches and Muqarnas.

G. CALLIGRAPHY

Admittedly this section cannot be defined as a medium of decoration, but like the muqarnas, arch and niche forms, calligraphy played a significant part in the decoration of Ayyūbid structures. With the stucco work in arabesque or geometrical patterns, the decorative visual effect of the various scripts completed the surface ornamentation.

The three general forms of calligraphy found in Ayyūbid monuments, Kūfic with geometrical plaiting, seal or Char Ali, and Naskhī, were executed in stone, stucco or occasionally in marble, the letters being picked out in colour in the last two mediums. The earliest example more or less contemporary is found in rather a hesitant form painted in cobalt blue and black in the Mausoleum Safwat al-Mulk 1109,¹ to be elaborated under the Ayyūbids and to be continued in the time of Mamlūk rule. In this period the foliated Kūfic of the Fātimids was further developed into a more flowing fluid form;² the exceptionally stiff calligraphic inscription in stucco on the exterior parapet of the Imām al-Shāfi^cī tomb is considered to have a North African flavour resembling the script found at Qal^ca Ūdāya of Rabāt.³

Considerably rarer is the appearance of the second script, found only in one madrasa as far as is known, the Ruknīya in Damascus, built in the second quarter of the 13th century.⁴ As far as can be seen the dating of the plaque has not been questioned.⁵

1. M.Ecochard & J.Sauvaget op.cit.p.6-7 plate IV-VII
2. "La dernière inscription fatimite du Caire, datée de 555, est en pur coufique; le premier texte en caractère arrondi est celui de Saladin à la citadelle du Caire, daté de 579." M.Van Berchem Inscriptions Arabes de Syrie. p.35
3. K.A.C.Creswell op.cit.vol.2 p.75
4. E.Herzfeld op.cit.part 3 p.24
5. The earliest example is said to be the tower of Mas^cūd III (1099/1114) S.Flury "Calligraphy" SPA vol.4 p.1748

The first known Syrian example of Naskhī decorates the Minaret of the Great Mosque of Aleppo, the construction of which was begun in 1089/90¹ after its first appearance on 10th century Samanid coins. In comparison the earliest Egyptian example is found in the Mausoleum Imām al-Shāfi^{cī}, dated 547/1178,² and then on the Bāb al-Mudarraǰ 579/1183. According to Van Berchem, Ayyūbid Naskhī was distinctly different from the script of the Saljūqs; the rounded regular form executed in bold large strokes is considered the hall-mark of Syrian and Egyptian Naskhī of the Ayyūbid period contrasted to the Saljūq model which had a more eastern flavour, said to be Armenian or Caucasian influence, a more irregular form closely grouped and sometimes intertwined, with long strokes and a horizontal emphasis.³

1. K.A.C.Creswell "Archaeological Researches at the citadel of Cairo" BIFAO vol.23 p.142-3
2. K.A.C.Creswell MAE vol.2 p.34-5
3. M.Van Berchem (S.Lloyd & D.Storm Rice Alanya (Alā'iyya) p.49: no reference is given).

CONCLUSION

It is to be regretted that the information both illustrative and descriptive is so sparse concerning Ayyūbid monuments, as this prevents drawing distinct comparisons between the architecture of one period and another, as well as between one individual building and any other similar structure. Clearly those monuments studied in the three centres, Cairo, Damascus and Aleppo, cannot be considered as typical until there is evidence of comparable forms in other regional areas also under Ayyūbid control at that time.

In each of the three categories, military, religious and secular architecture, questions remain unanswered.

The military activity of these years obviously had tremendous effect on the defensive building of this period, as can be seen best in the Cairo fortifications where the lessons of experience are shown in concrete terms. But until information is available on earlier 9th/10th century fortifications both in this region and in the eastern part of the Islamic world, the true significance of Ayyūbid military architectural features cannot be estimated. It is unclear whether the regime was responsible for the re-introduction of such features as the bent entrance, machicolation, covered stairways - all known in the past but apparently re-appearing only during this period. Only the investigation of earlier fortifications can give the answers, together with the study of the development of military equipment of this period. The reason for such

extremely protected enclosed linking passages in these Ayyūbid structures cannot be explained for instance, but perhaps an answer is to be found in siege tactics and arms. The change from square or rectangular towers to semi-circular shapes has been interpreted in terms of field of vision, but if this is correct, why were angled towers prevalent in the later Ayyūbid period. But it can be assumed that these years marked a high point in military architecture and, as history testifies, this period was marked with long sieges on both sides illustrating the strength and efficiency of the defence features.

The accent on defence is striking in Syrian caravansarā'ī. In all the structures inspected, various of the military architectural features were incorporated into the fabric. But whether the basic rectangular or square form with its spare facilities of the Syrian khān was echoed in the Egyptian territories cannot be ascertained as there appears to be no contemporary example extant. Definitely the Mamlūk period heralded the introduction of the monumental structure so common in the more northern and eastern regions, Anatolia and Iran, into Syria and Egypt.

In terms of religious architecture the most important achievement was the incorporation of the madrasa/māristān into the society of the urban community. With it, the accepted Fātimid features of architectural design disappeared as did the concept of massive independent masjid structures. But not so the mausoleum building; the popularity of erecting such edifices which had arisen during the years of Fātimid rule continued

during the 13th century well into the Mamlūk period, a popularity still unexplained. The Mamlūk double mausoleum chamber seems to have had its origins in the combined tomb chambers found occasionally in Syria, as of Farrūkh and Bahrām Shāh late 12th century and the early 13th century Madrasa Jahārkasīya, all in Damascus. The great funerary mosque of the later period is seen to have developed from the ground plan of the Madrasa ʿIzzīya with a dominant mausoleum area and small mosque adjoining.¹

Regarding the typical ground-plan of the Ayyūbid madrassa/māristān in the early period, only tentative generalisations are possible. Within a short period both the masjid and mausoleum areas were combined into the structure. Occasionally built on two levels, the area had usually square or rectangular plan with, in Syria, the masjid on the southern side entered through a triple-bay facade, and an adjoining square tomb chamber. Built in this period for one and sometimes two rites, the structure had a definite one or two-liwān pattern, only to be enlarged into a distinct cruciform shape in the late 13th century. With the later Ayyūbid period, a regular symmetrical ground plan evolved which is said to mark the beginning of the decline in architectural standards.

The roofing systems and dome support methods show a considerable variety both in Egyptian and Syrian structures. But the lack of precise details has resulted in confusion; therefore no distinct regional or chronological differences should be attempted without further thorough investigation of structures already studied and those surviving outside the three important centres.

1. M.Ecochard & J.Sauvaget Les monuments Ayyoubides de Damas p.72

Similarly although some attempt has been made to distinguish two models of bath ground-plan, the square format and the rectangular arrangement of the three essential rooms, it is to be remembered that only the hammāms of Damascus have come under such examination; information of other Syrian and Egyptian examples being unavailable for the purposes of this study. When such data has been gathered it could well show differing regional types as well as proving the conclusions of Ecochard and LeCoeur incorrect.

Domestic architecture of these regions has not been extensively studied. Excavation evidence has clearly shown that in Fustāt buildings of 5 or 6 storeys were erected until the last half of the 12th century. In Syria it appears that basically the house was arranged around a central courtyard with the rooms organised in the traditional bayt form, maintaining strict privacy. Obviously before one can accept unequivocally Creswell's assertion of an immediate connection between the madrasa/māristān form and the Egyptian two-liwān qa'a, more information must be obtained on private structures of the regions under consideration.

Throughout Ayyūbid architecture, the increasing use of stone can be seen compared with Fātimid examples. All the scholars whose published work has been studied for this dissertation, have commented on "... the perfect mastery over stone".¹ In military structures it appears that the work of Salāh al-Dīn was typified by the use of small smooth ashlar blocks, rusticated stones being a feature of later Ayyūbid construction. In all other buildings, except domestic, stone was employed at least up to the

1. E.Herzfeld "Damascus: studies in architecture" AI. vol.11-12 part 3 p.11

arch extrados, generally in two sizes of stone blocks with the larger being confined to the first three or four courses and to arch voussoirs. Brick was almost exclusively used for dome constructions and frequently for the building of the zone of transition.

Indeed to Lauffray the purity of style with the visual austerity of the stone work typifies Ayyūbid architecture.¹ Decorative features, although varied both in medium as well as motif, were subordinate to the sheer form of the stone structure, with the possible exception of some stucco work found in Ayyūbid Cairo. The Syrian structures of the period show masterly handling of stone, marble and wood carving. The introduction of marble and stone polychrome techniques was to be further developed by the Mamlūk and Anatolian architects; but the discreet work of the Ayyūbid period was to be overplayed as the two-coloured arches of the Mamlūk structures illustrate. The mugarnas form was continued and elaborated by the later architects, but it could be argued that it never again attained such an equilibrium between the massive undecorated surface and the complex play of cell and bracket.

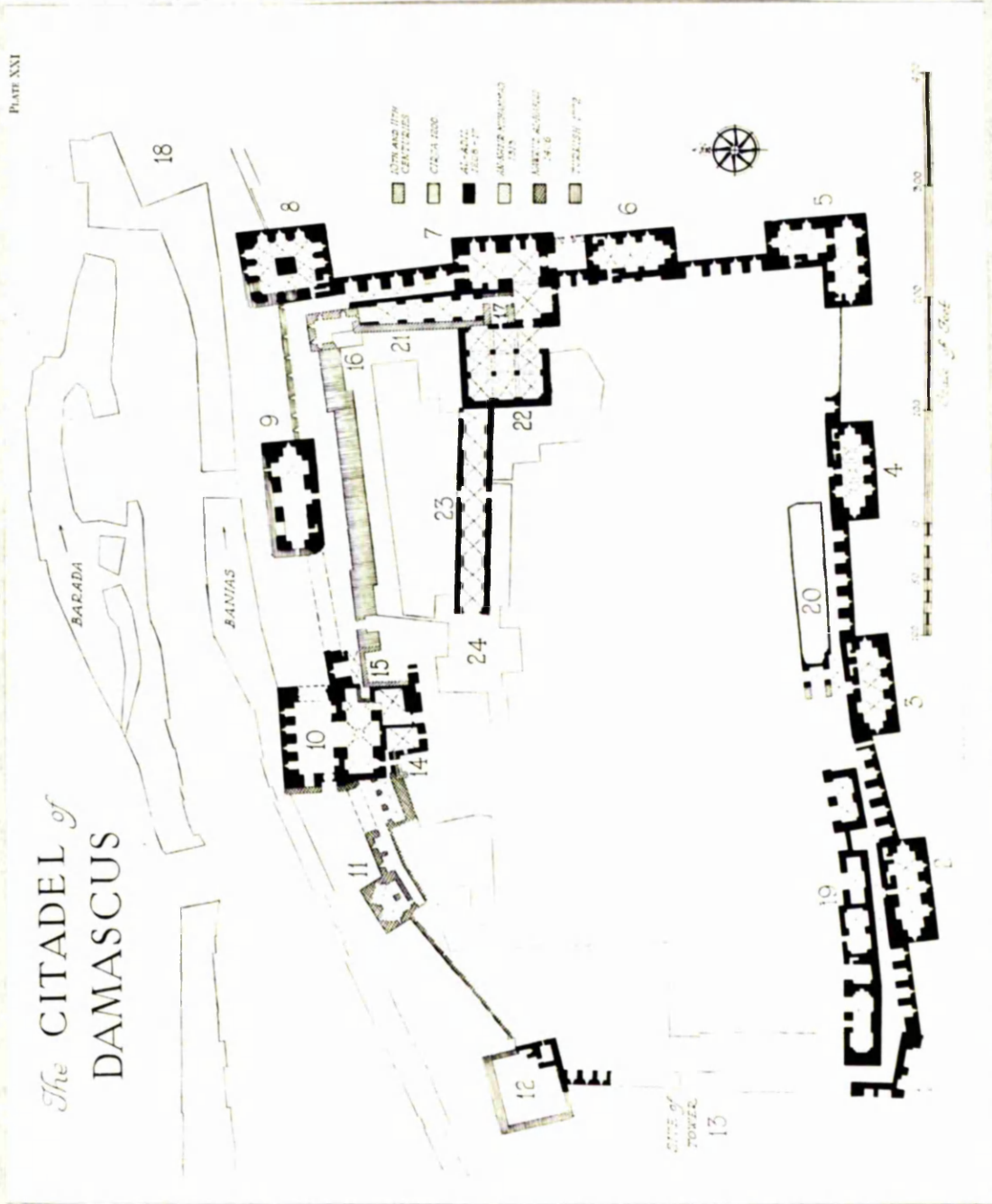
The Fātimid emphasis on calligraphy and arabesque forms was continued by the Ayyūbids, geometrical designs playing a minor role but employed particularly in wood carving. With the introduction on a large scale of the Naskhī script, Kūfic was to be confined generally from this time to Qur'ānic inscription bands while the fluid well-proportioned forms of the foliated arabesque was to become "... one of the main characteristics of the floral decorative patterns met with later in the Mamlūk period".²

1. J.Lauffray "Une Madrasa Ayyoubide de la Syrie du Nord" AAS.vol.3 p.66
2. Dr.Fārid Shāfi'ī in K.A.C.Creswell MAE vol.2 p.90

The zenith of Ayyūbid architecture has been seen by Herzfeld in the Damascus of al-Malik al-ʿĀdil (1196-1218) and the Aleppo of al-Malik al-Zāhir al-Ghāzī (1186-1216). He considers that the last thirty years of Ayyūbid rule already showed a decline, in that the early simplicity and purity of style was lost in attempts to better the early architectural forms - a style to be later completely submerged under Mamlūk architectural experiments.¹ This is perhaps a little too harsh a judgement on Mamlūk architecture, particularly of the early period. The example of the Madrasa and Mausoleum of Sultan Qalāʾūn in Cairo built 1284/5 immediately springs to mind.

With the Ayyūbid regime the focus for architectural inspiration was on Syria, particularly the northern region. Frequently architectural features appeared for the first time already in a sophisticated form in and on buildings in Aleppo, a city renowned for its marble, stone and wood working. Individual motifs have been traced back, showing links with the regions of Iran, Iraq and Azerbaijan but at the same time there are several examples of architectural and decorative elements appearing in Northern Syria before emerging in Anatolia. More information is required about the early and contemporary structures of these neighbouring regions before the true picture of the influences at work can be gauged.

1. E. Herzfeld op.cit. vol. 11 part 3 p. 32



Plan of the Damascus Citadel
No.10: North gate Bāb al-Hadid

(from J.Cathcart King "Defences of the citadel of Damascus" Archaeologia vol.94 plate 21)

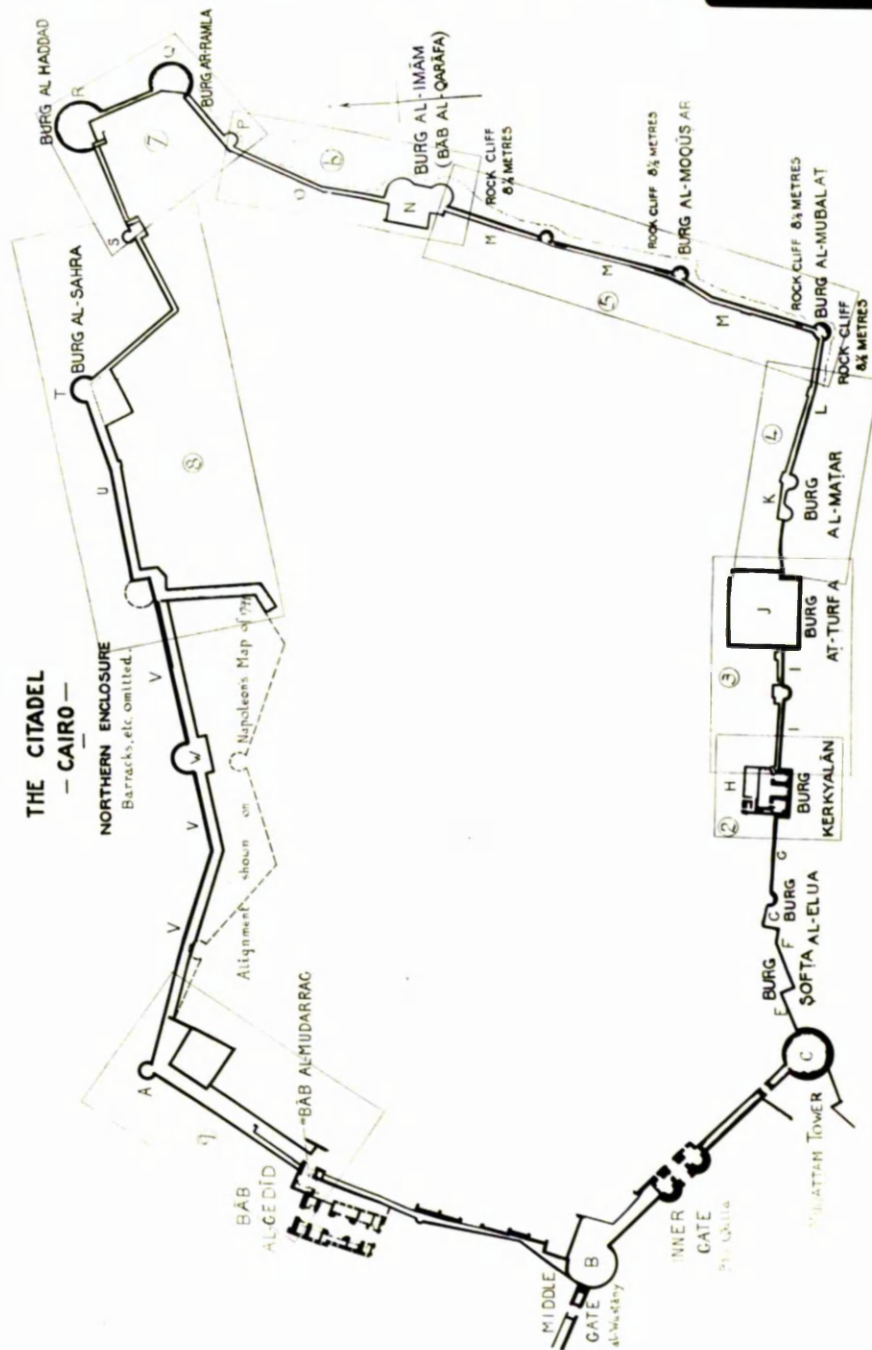


Fig. 1. The Citadel. North enclosure. See plan, second floor, page 100.

Cairo Citadel, north enclosure

(from K.A.C. Creswell "Archaeological Researches at the citadel of Cairo" BIFAO. vol.23. opposite p.100)



519. ALEPPO. Part of the citadel walls and entrance. Twelfth and thirteenth centuries (see pages 58, 76)



520. Frontal view to main entrance of the citadel (see page 76)

Citadel of Aleppo

(from D.Hill & O.Grabar Islamic Architecture & its decoration fig.519 & 520)

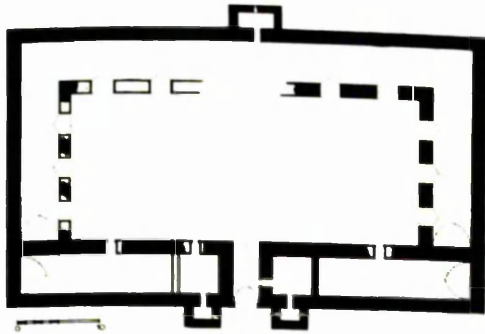


FIG. 2—EL-ḲATFĒ

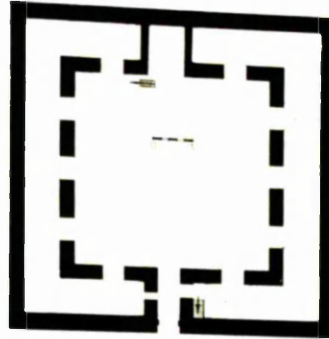


FIG. 3—EL-ḲOṢAIR

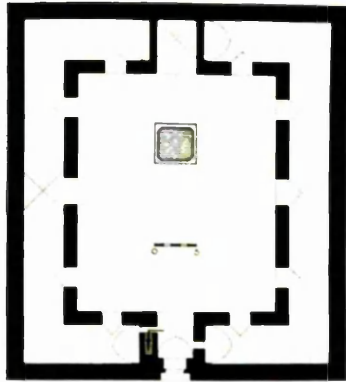


FIG. 4—KHĀN EL-'ARḲS

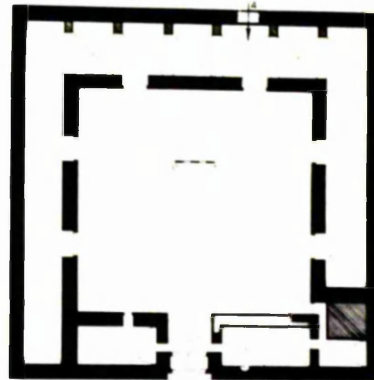


FIG. 5—KHĀN ṬMĀN

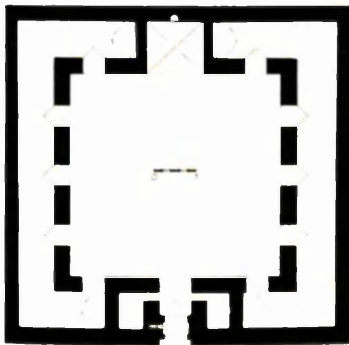


FIG. 6—ḲĀRIĀ

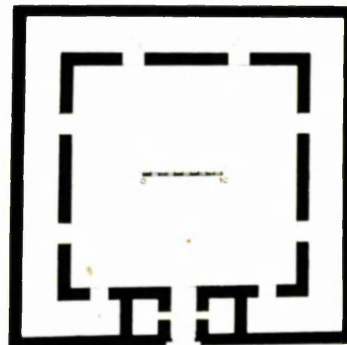
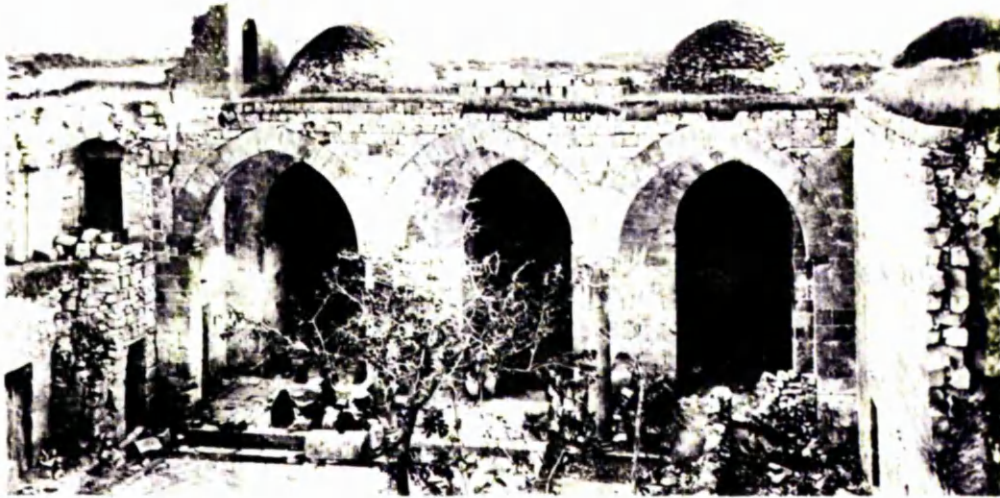


FIG. 7—EL-'EṢṢĒ

Ground plan of Syrian Ayyūbid Khāns

(from J.Sauvaget "Caravanserais syriens du moyen-âge" AI vol.6 opposite p.52)



A. — Aleppo (Firdaus) : Zāheriya Madrasa — façade of sanctuary.



B. — Aleppo (Firdaus) : Zāheriya Madrasa — sanctuary.

Sanctuary facade of Madrasa Zāhiriya, Aleppo

(from K.A.C.Creswell "Origin of the
cruciform plan in Cairene madrasa"
BIFAO vol.21 plate 3)

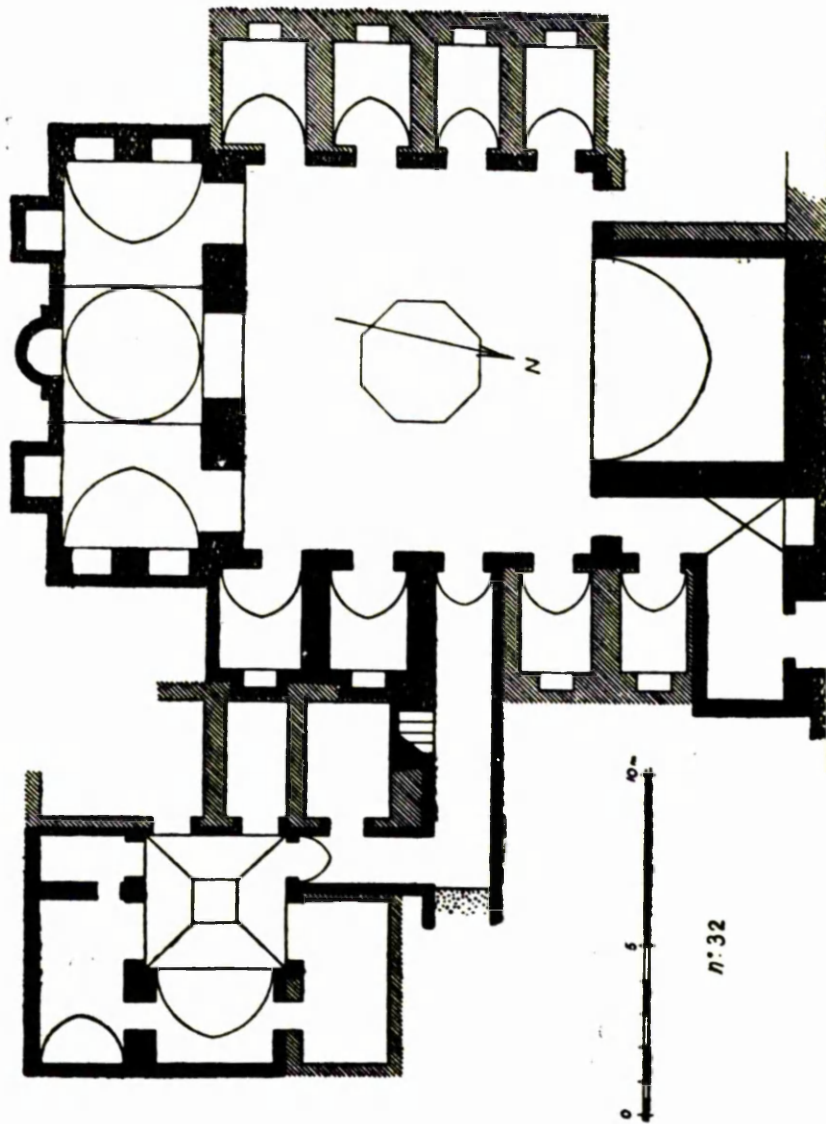


FIG. 7.

Ground plan of Khānaqā Farāfrā, Aleppo

(from J.Sauvaget "Inventaire des monuments Musulmans de la ville d'Alep"
REI vol.5 fig.7 no.32)

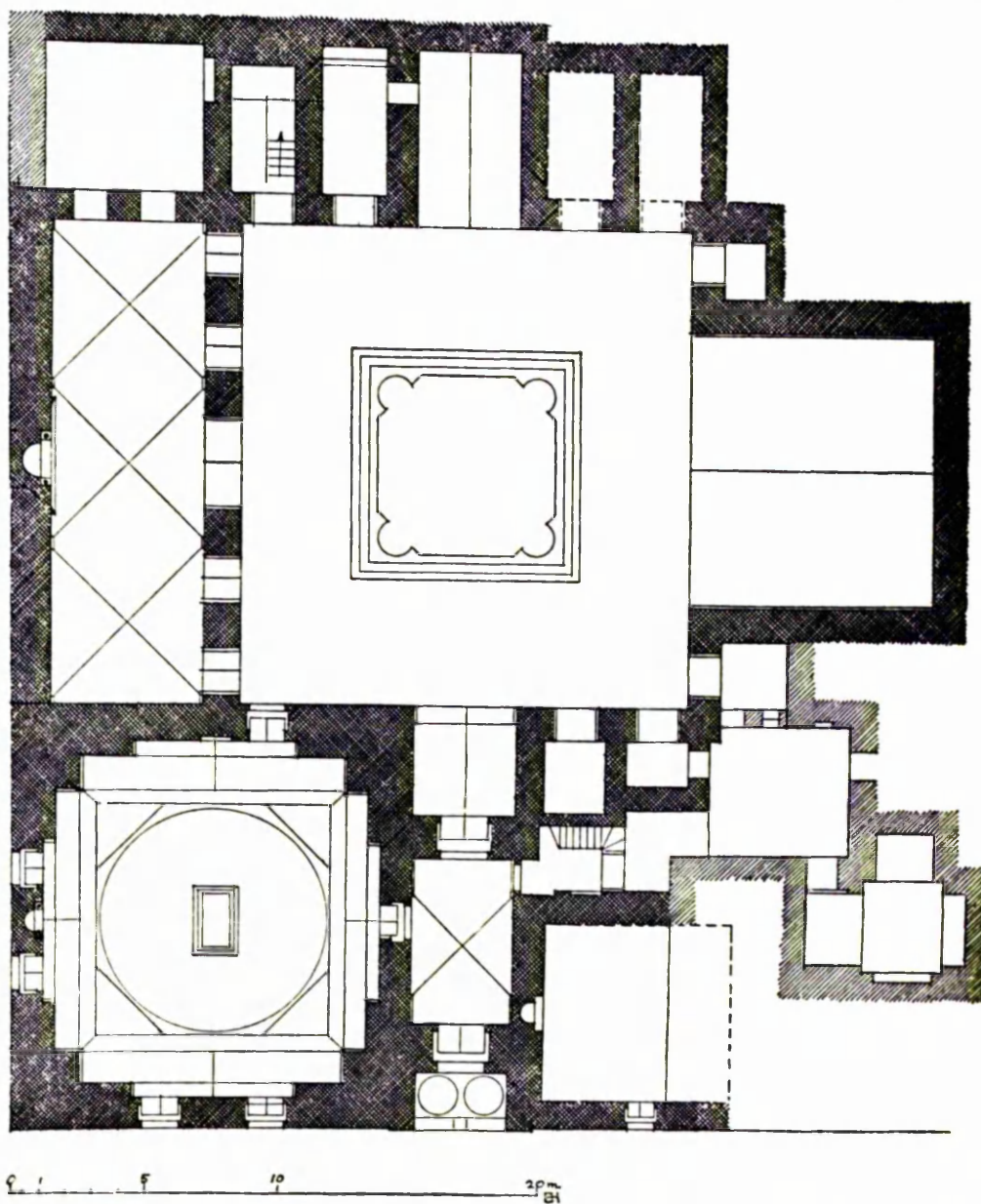


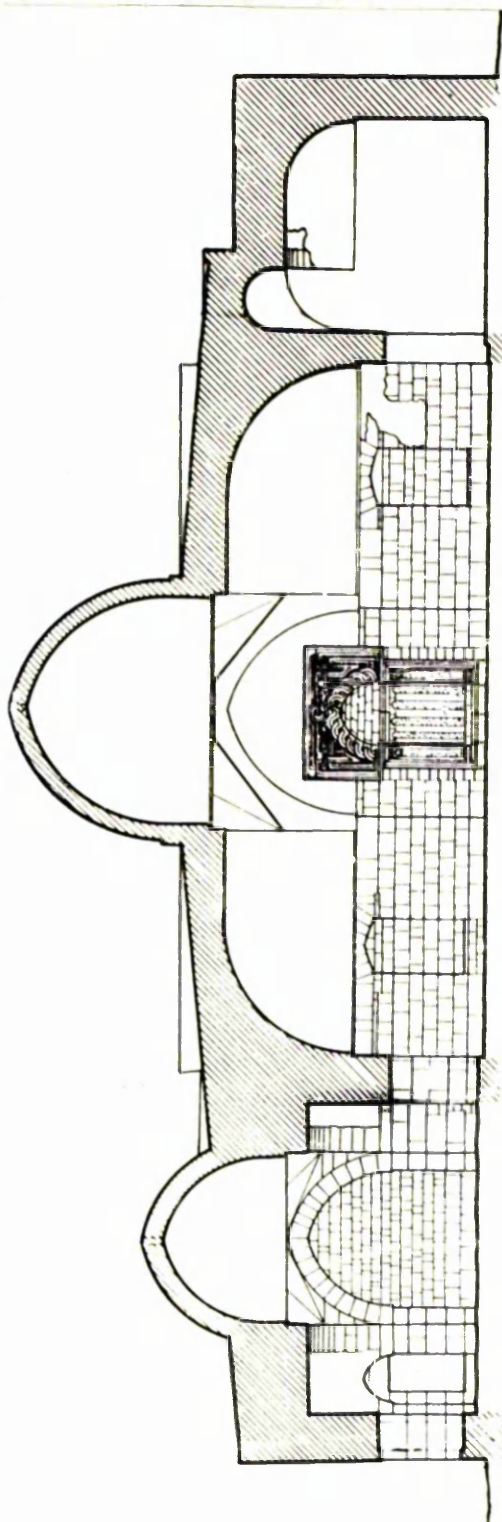
FIG. 59. DAMASCUS: 'ADILIYA MADRASA, plan. Scale 1 : 200. (From Herzfeld, *loc. cit.*)

Ground plan of Madrasa 'Adiliya, Damascus

(from K.A.C.Creswell MAE vol.2
p.113 fig.59)

Pl. III a

Une Madrasa Ayyoubide



Coupe U-V

Coupe Est-Ouest sur le masjid et le mausolee

Section plan east/west of the Madrasa Sultaniya, Aleppo 1223/4

(from J.Lauffray "Une Madrasa Ayyoubide de la Syrie du nord" AAS vol.3 plate 3)

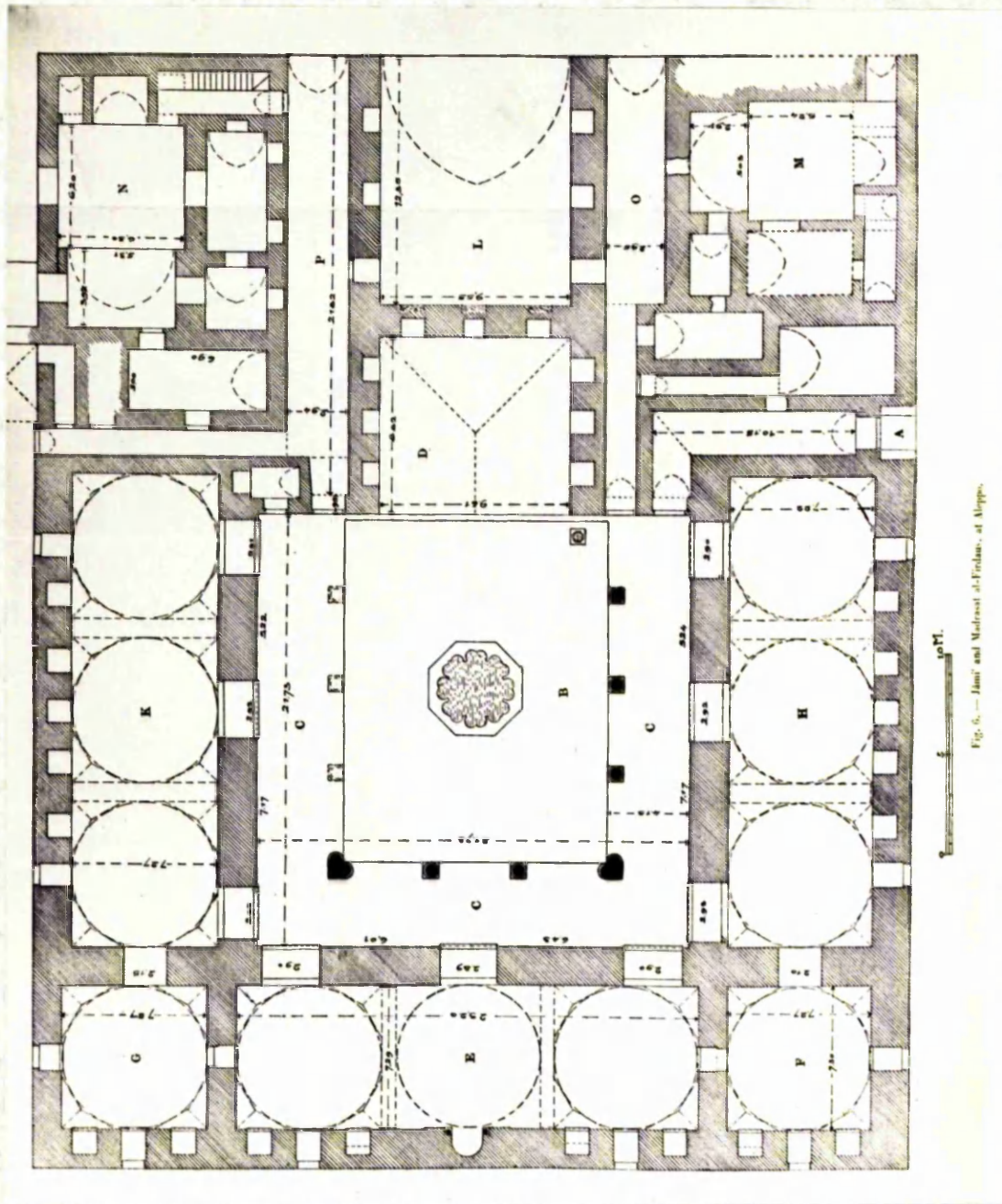


Fig. 6. — Jamii and Madrasat al-Firdaws, at Aleppo.

Ground plan of the Firdaws complex, Aleppo

(from K.A.C.Creswell "Origin of the
cruciform plan in Cairene madrasa"
BIFAO vol.21 fig.6)

Topographischer Katalog von Damaskus.

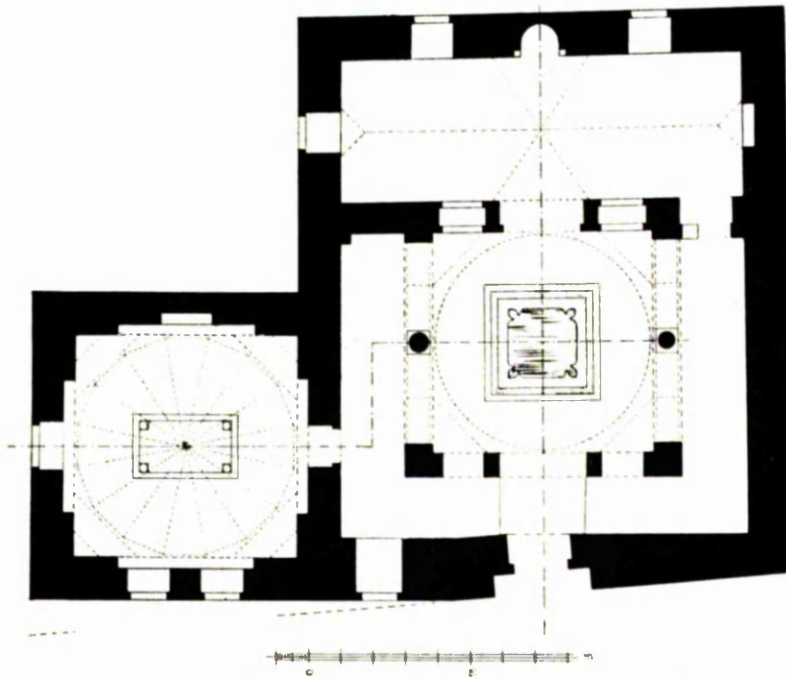


Abb. 42. Mos. u. Turbe Rukn ed-Din. DN IX d, 621 b, M. 1:200.

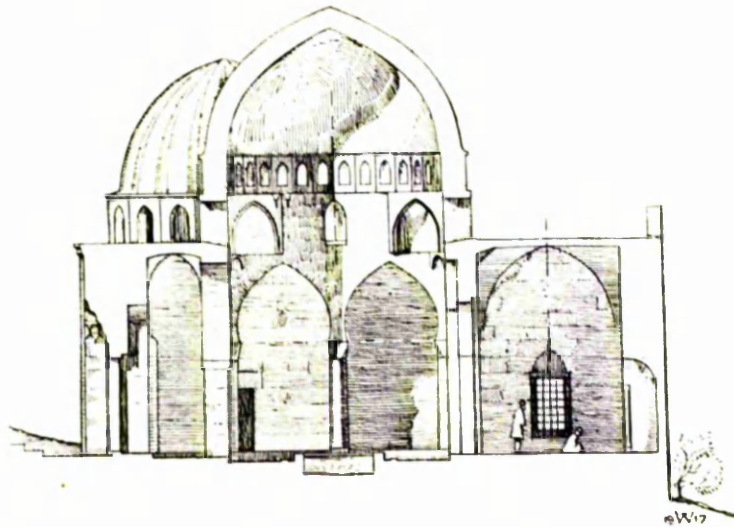


Abb. 43. Schnitt durch die Moschee des Rukn ed-Din, DN XI d, M. 1:200.

Ground plan and section drawing of the Rukniya complex, Damascus.

(from K.Wultzinger & C.Watzinger
Damaskus, die Islamische Stadt p.136
fig.42 & 43)

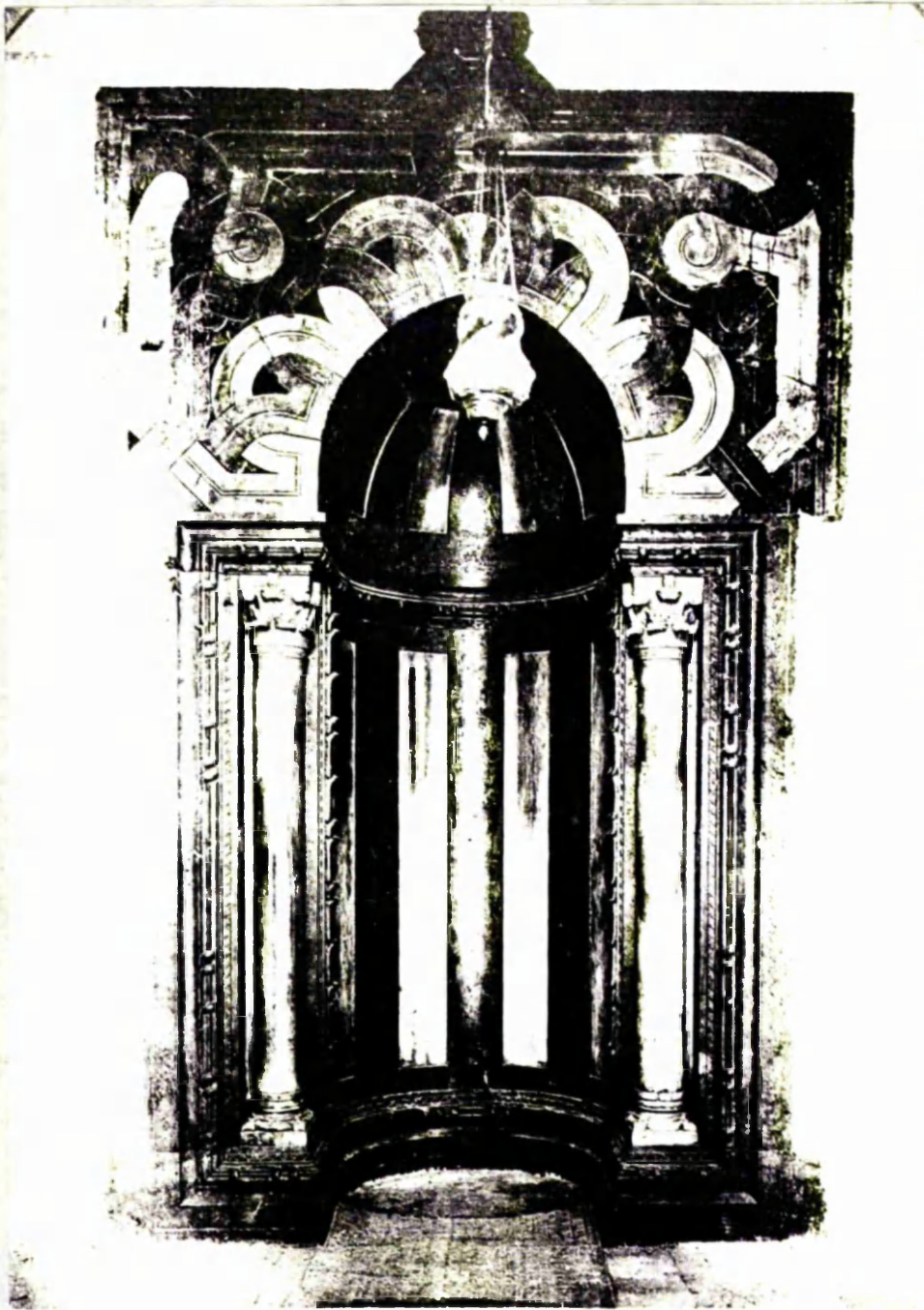
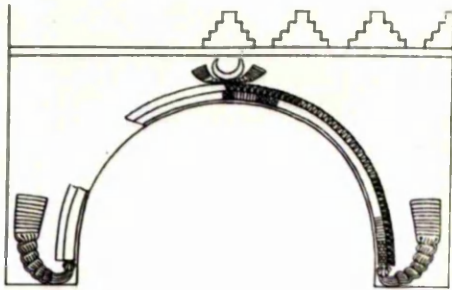


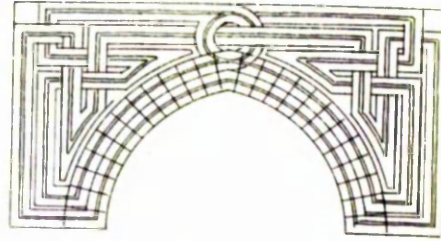
FIG. 72—ALEPPO, SHADBAKHTIYA, MIHRAB

Marble mihrāb of Madrasa Shādbakhtīya, Aleppo

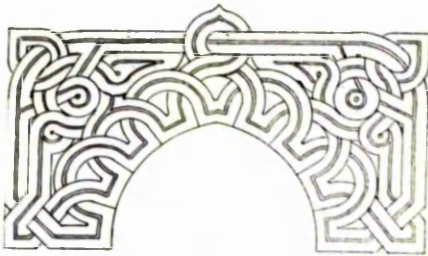
(from E. Herzfeld "Damascus: studies
in architecture" AI vol. 10 part 2
fig. 72)



Tāk-i-Bustān



Aleppo, Mashhad al-Husain



Aleppo, Shādhbakhtiya



Aleppo, Sultāniya



Aleppo, Firdaws



Damascus, Djakmaqiya

FIG. 83—SPANDRELS WITH MARBLE MOSAIC

Interlaced marble frames

(from E. Herzfeld "Damascus: studies in architecture" AI vol.10 part 2 fig.83)

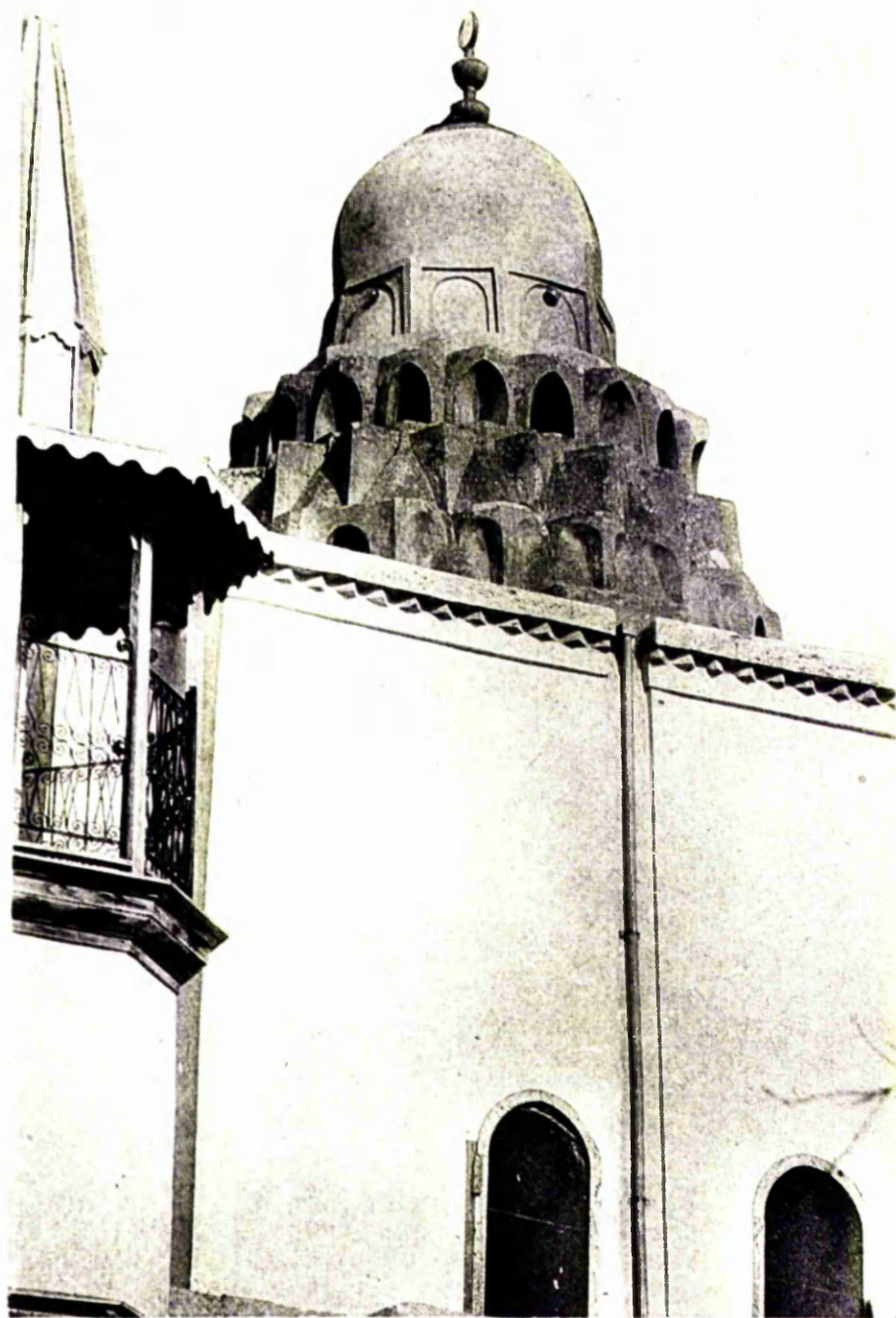


FIG. 60—DAMASCUS, MAUSOLEUM OF NŪR AL-DĪN

Exterior of Mausoleum Nūr al-Dīn, Damascus

(from E. Herzfeld "Damascus: studies
in architecture" AI.vol.9 part 1
fig.60)

LA MADRASA 'IZZIYA HORS-LES-MURS

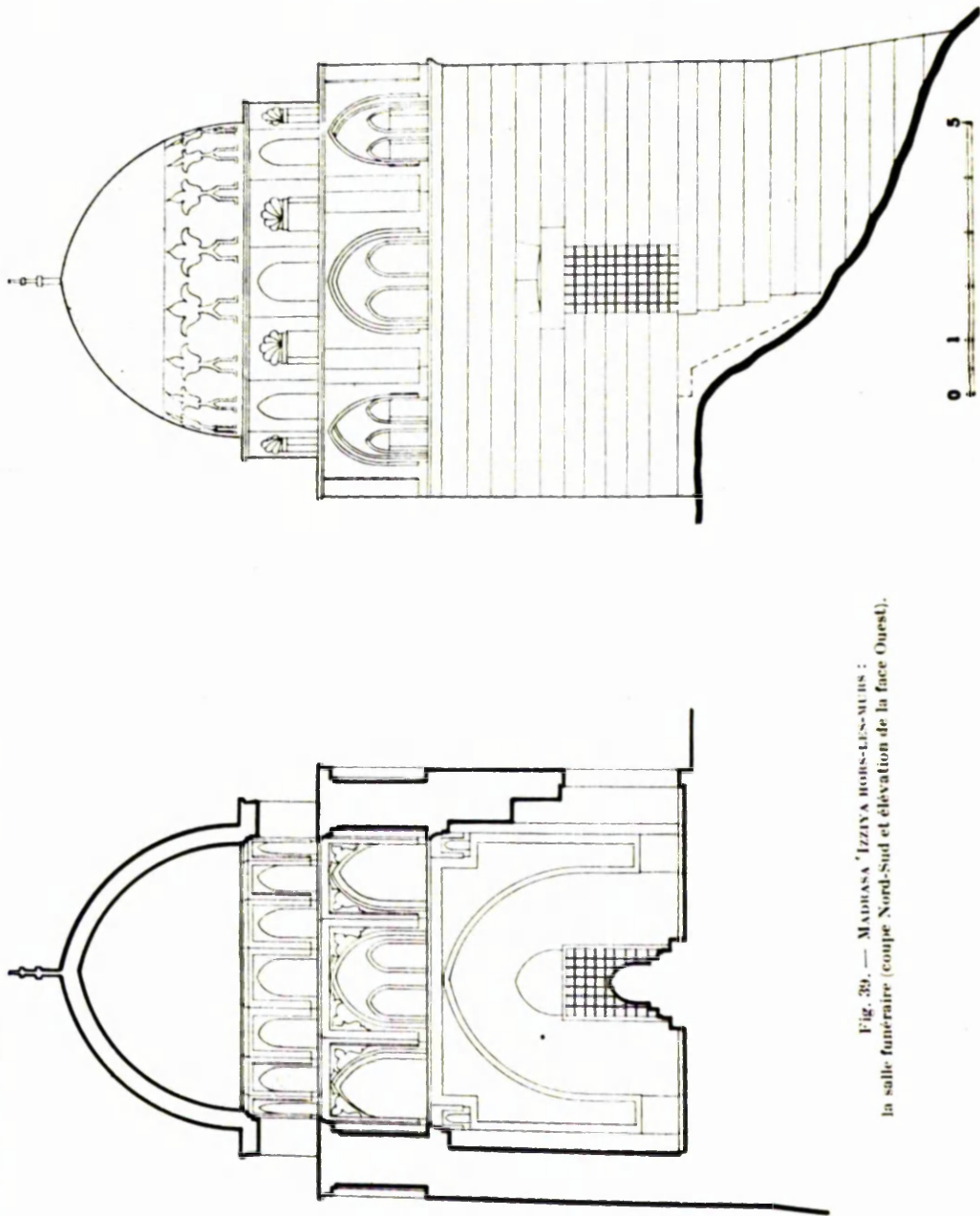
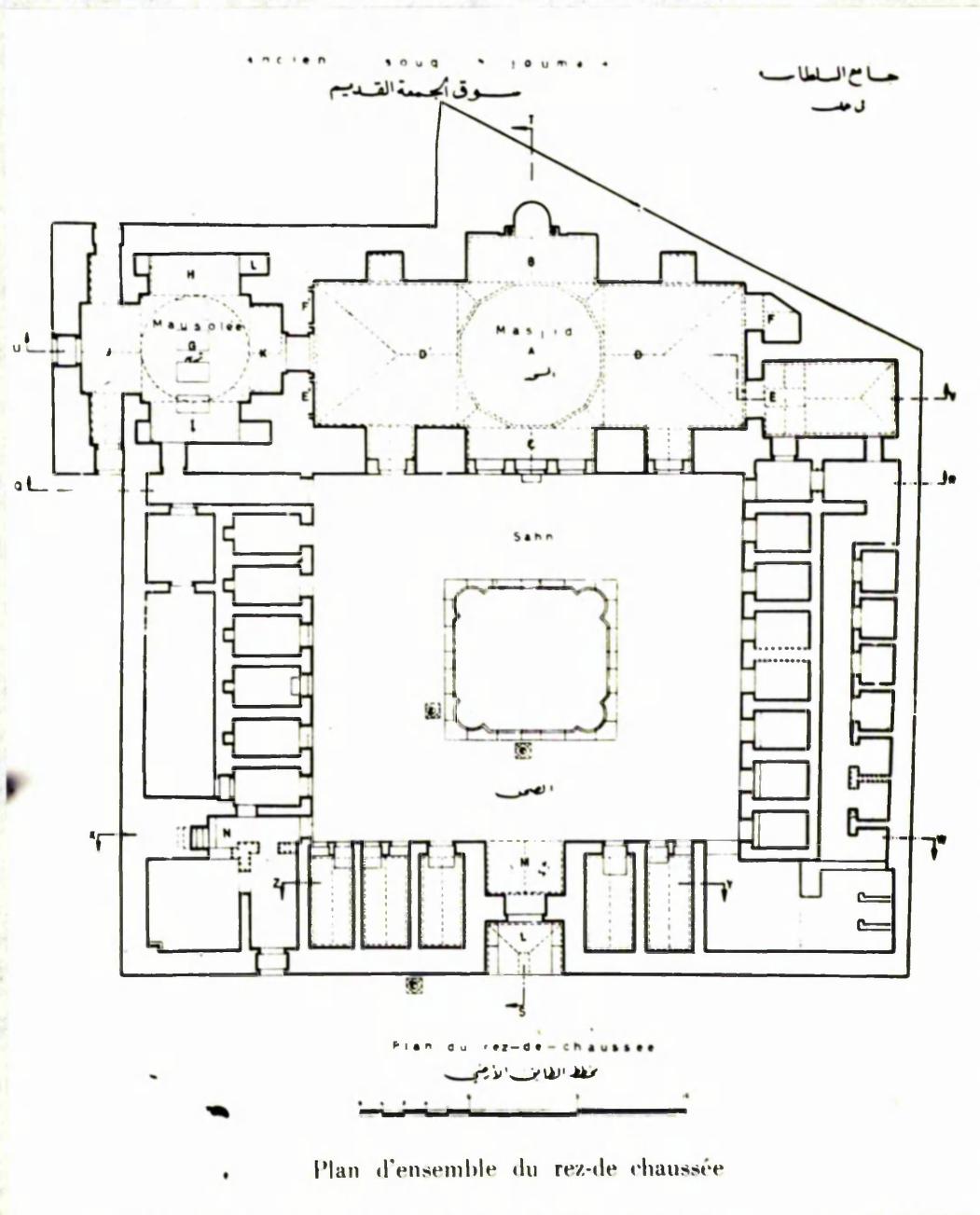


Fig. 39. — MADRASA 'IZZIYA HORS-LES-MURS :
la salle funéraire (coupe Nord-Sud et élévation de la face Ouest).

Section and elevation of Madrasa 'Izziya, Damascus

(from M.Ecochard & J.Sauvaget
Les monuments ayyoubides de Damas
p.68 fig.39)



Ground plan of Madrasa Sultaniya

(from J.Lauffray "Une Madrasa Ayyoubide de la Syrie du nord" AAS vol.3 plate 1)

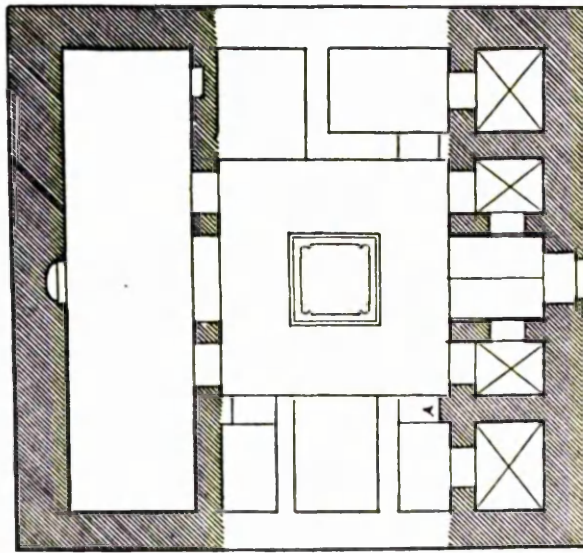


FIG. 53. DAMASCUS: DĀR AL-ḤADĪTH OF NŪR AD-DĪN, plan of Herzfeld.

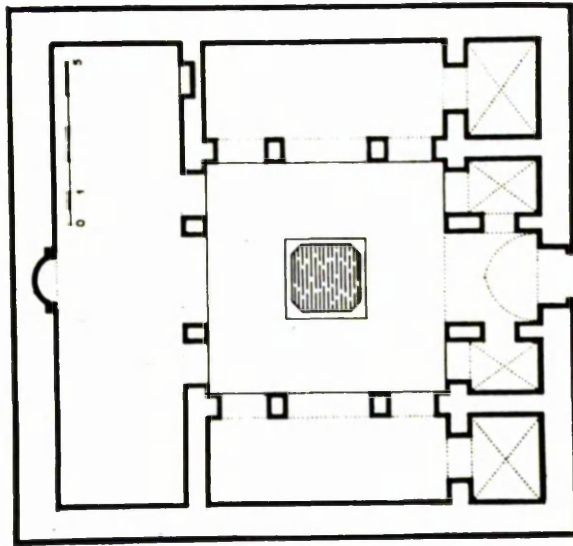


FIG. 52. DAMASCUS: DĀR AL-ḤADĪTH OF NŪR AD-DĪN, plan of Sauvaget. (From Sauvaget, *op. cit.*)

Two reconstructions of the Dār al-Ḥadīth Nūr al-Dīn (Nūrīya) ground plan.

(from K.A.C.Creswell MAE vol.2 p.108 fig.52 & 53)

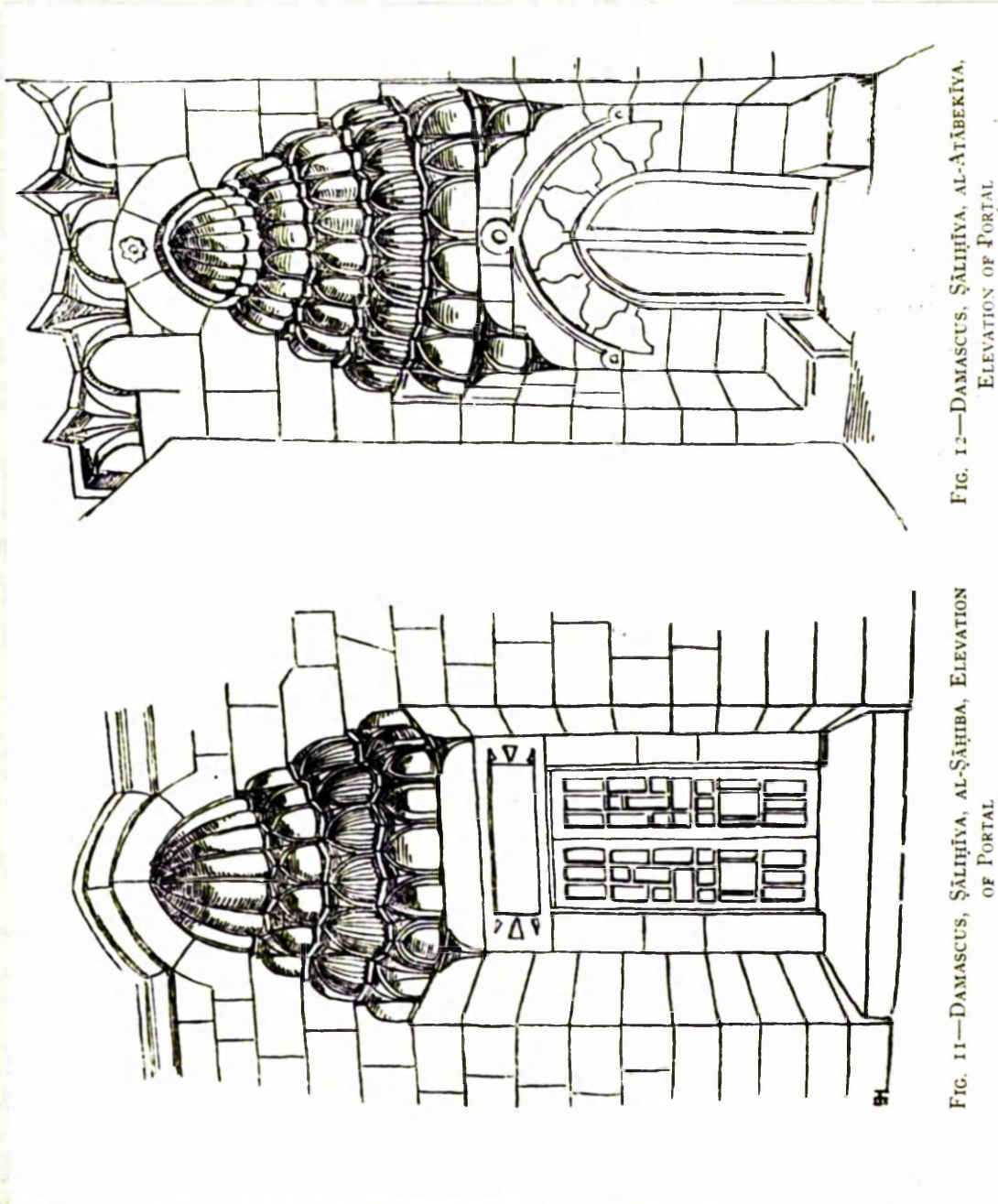


FIG. 12—DAMASCUS, ŞĀĪĪYA, AL-ATĀBEKIYA,
ELEVATION OF PORTAL

FIG. 11—DAMASCUS, ŞĀĪĪYA, AL-ŞĀĪIBA, ELEVATION
OF PORTAL

Muqarnas portals of the Madrasas al-Şāhibā
and al-Atabakiya, Damascus.

(from E. Herzfeld "Damascus: studies in
architecture" AI vol. 11-12 part 3
p. 12 fig. 11-12)

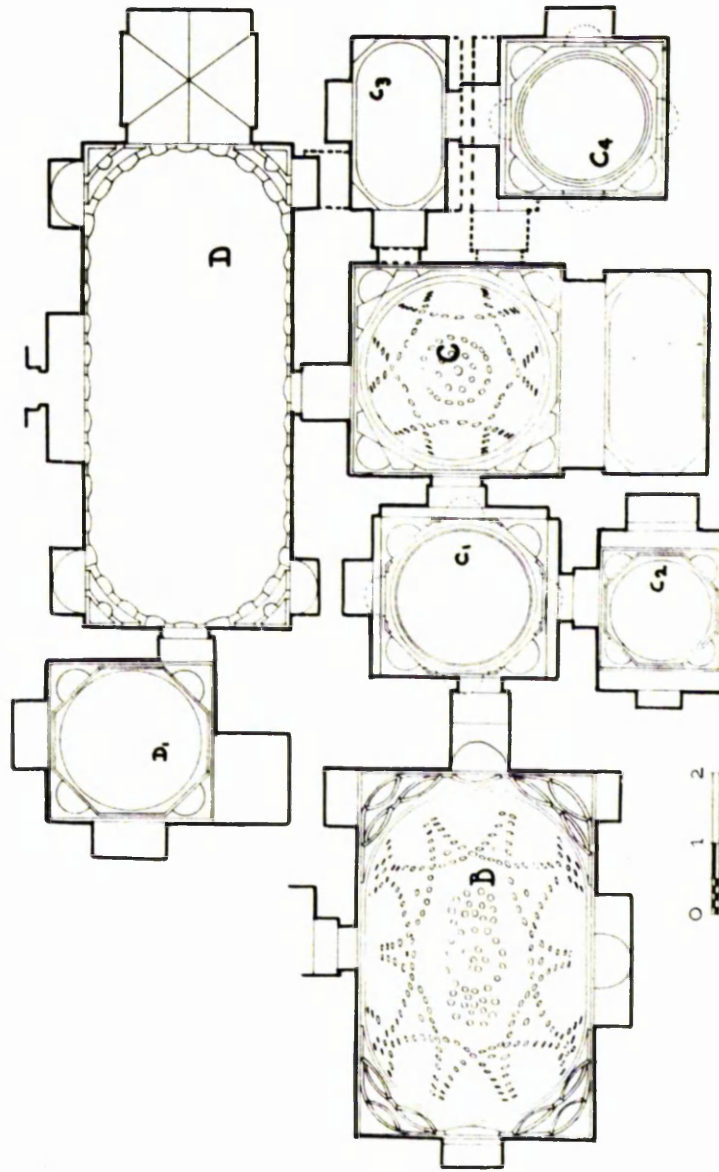


Fig. xv. — Bain de Sitti Adhra.

Hammām Sitti^c Adhrā, Damascus

(from M.Ecochard & C.LeCoeur
Les Bains de Damas. p.24 fig.25)

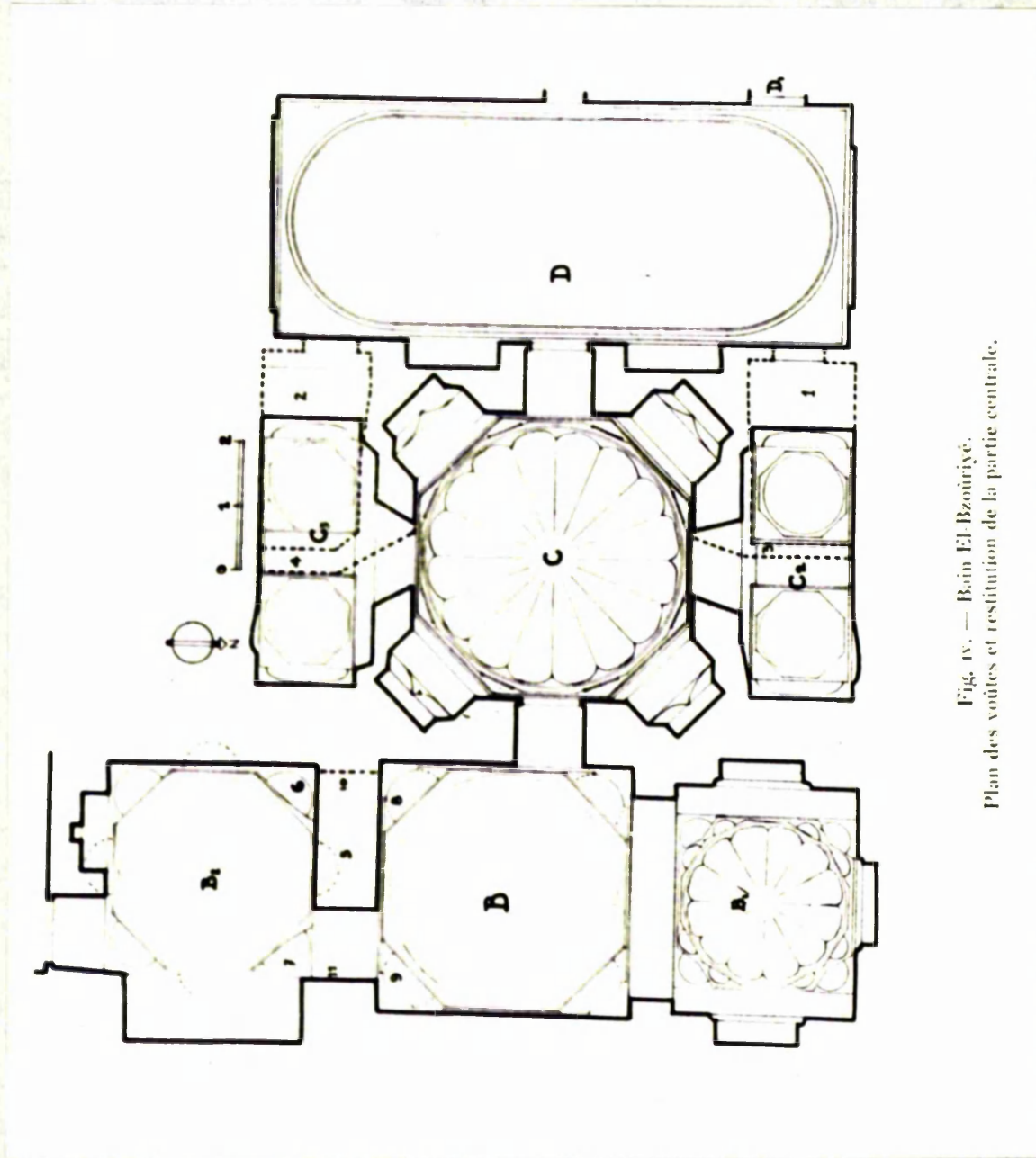


Fig. IV. — Bain El-Bzūriyye.
Plan des voûtes et restitution de la partie centrale.

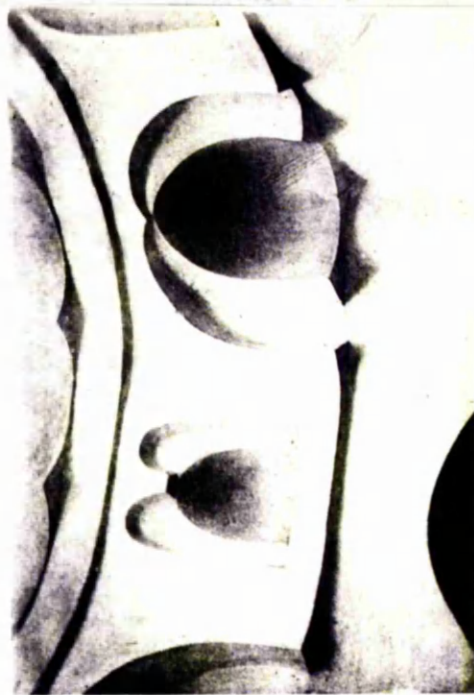
Hammām al-Bzūriyya, Damascus.

(from M.Ecochard & C.LeCoeur
Les Bains de Damas. p.17 fig.4)



Cliche J. Sauvaget

2. - BAIN DE SITTI 'ADRA. - Coupole de la Salle D.



Cliche J. Sauvaget

4. - BAIN D'OSAMA. - Coupole de la Salle 6.



Cliche J. Sauvaget

1. - BAIN DE SITTI 'ADRA. - Coupole de la Salle D.

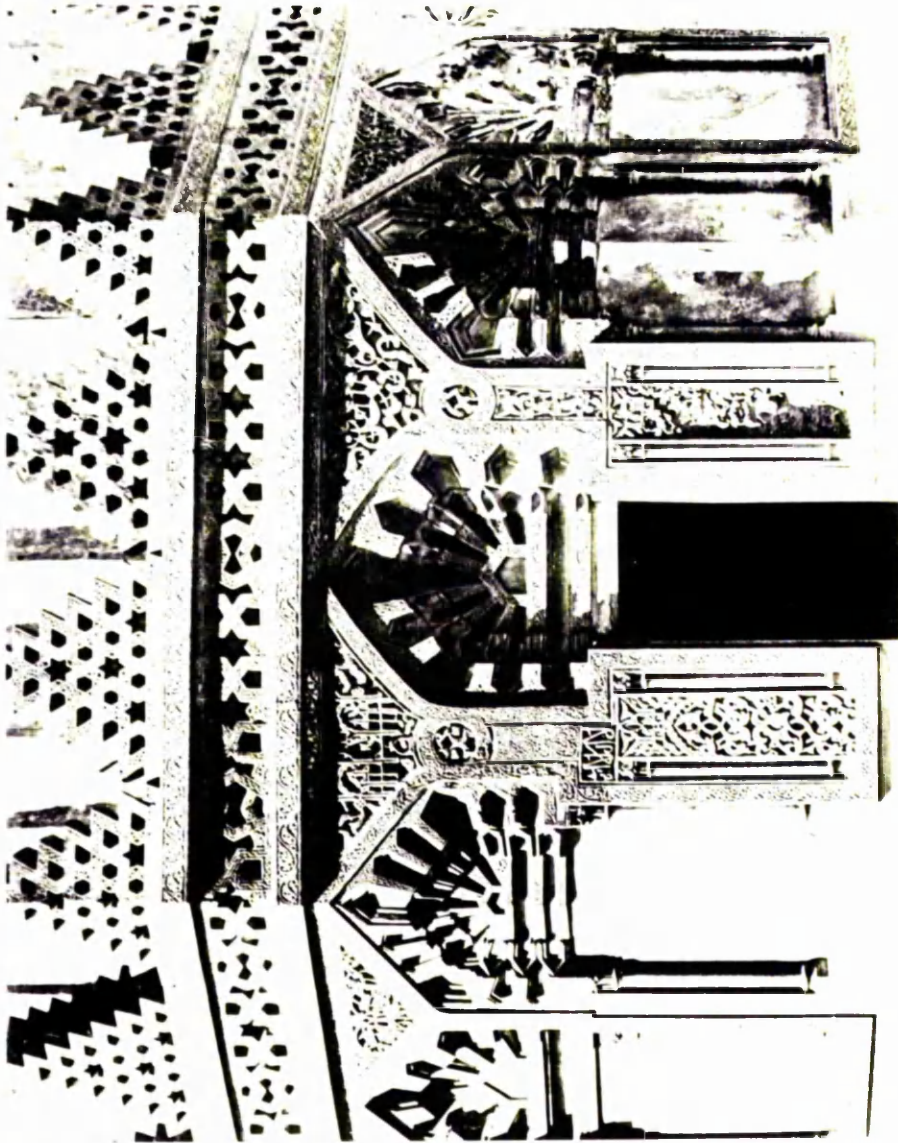


Cliche J. Sauvaget

3. - BAIN D'OSAMA. - Coupole de la Salle 1.

Decorated zones of transition: Upper left and right Hammam Sitti Adhra; lower left and right Hammam Usama.

(from M.Ecochard & J.Sauvaget Les Monuments Ayyoubides de Damas plate 20



Decoration of north corner of top storey

Exterior parapet of Mausoleum Imām al-Shāfi'ī

(from K.A.C.Creswell MAE vol.2 plate 23)

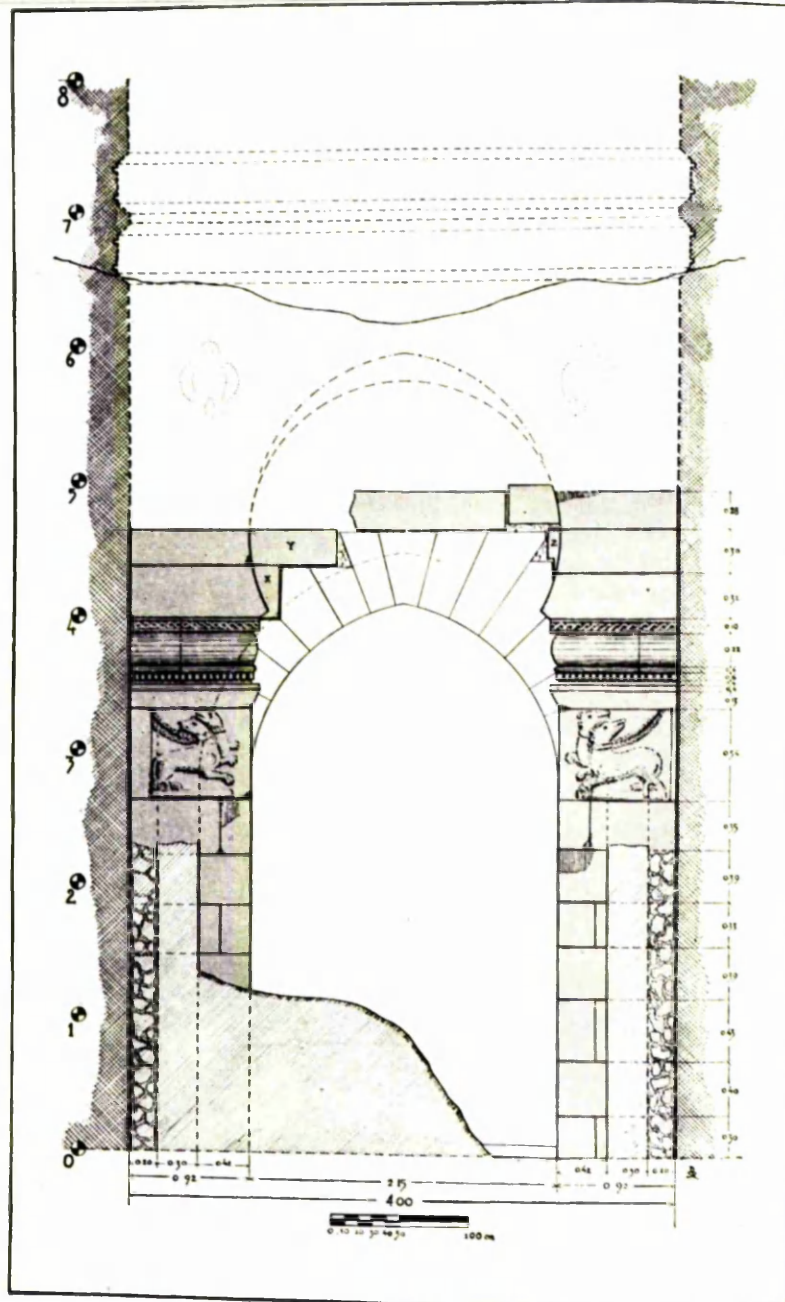
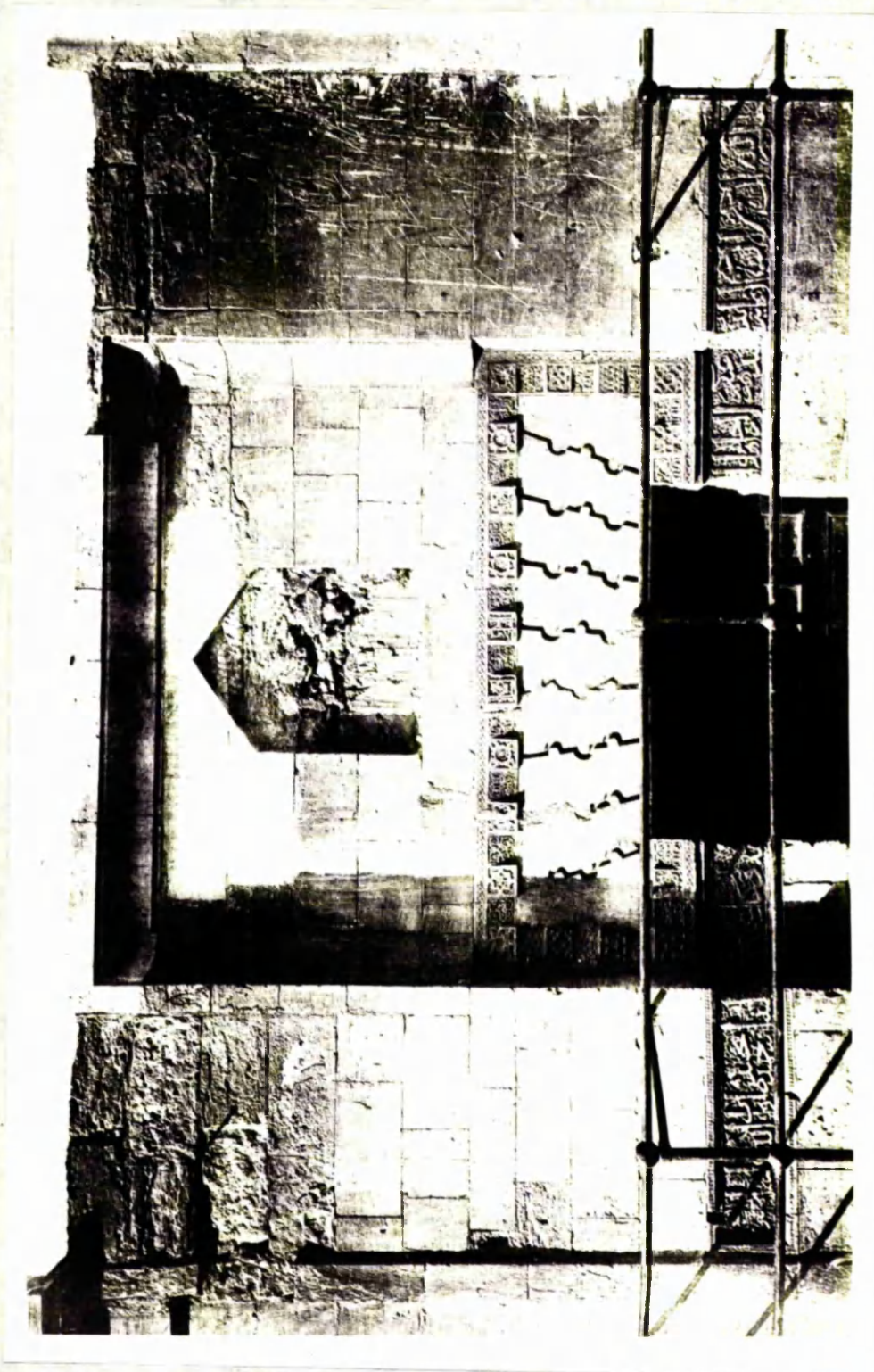


FIG. 3. Elevation of Southeast gateway.

South-east gateway - a reconstruction
Harrān

(from D.Storm Rice "Studies in
Medieval Harran,1" AS.vol.2 opp.p.51
fig.3)



Joggled voussoirs forming a flat lintel
Mausoleum Abu Mansur Isma'il 1216 Cairo.

(from K.A.C.Creswell MAE vol.2 plate 27)

DAMASCUS: STUDIES IN ARCHITECTURE

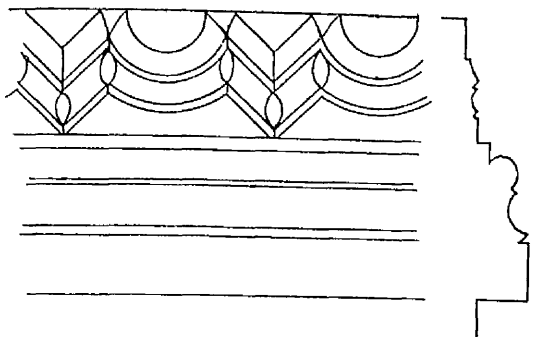


FIG. 32—ALEPPO, MURISTÂN AL-ÂTIK, DOOR OF NÛR AL-DÛN

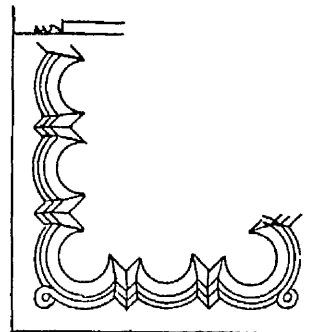


FIG. 34—DAMASCUS, CITADEL, BETWEEN SOUTHEAST TOWER AND SOUTH ENTRANCE TOWER

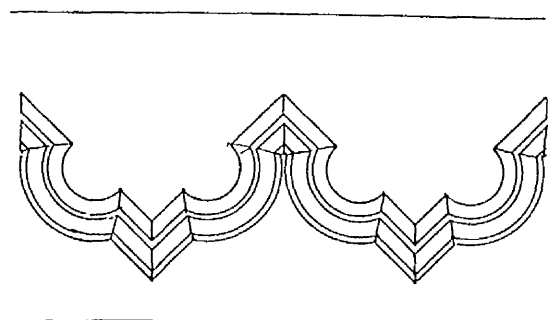


FIG. 31—DAMASCUS, BÂB AL-KHANDAĖ

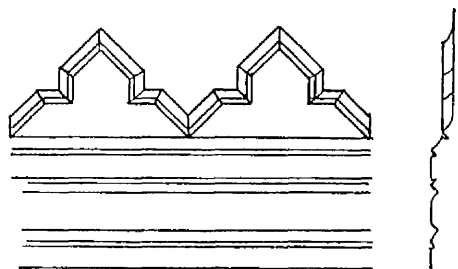


FIG. 30—DAMASCUS, MADRASA AL-ÂDLIYA

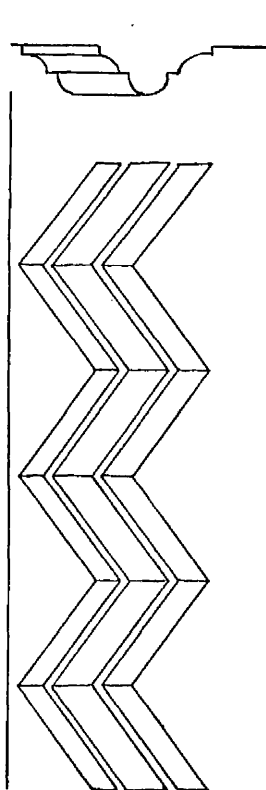


FIG. 33—DAMASCUS, CITADEL, MAIN GATE, LINTEL

FIGS. 30-34—MOLDINGS

Stone carved moulding in Damascus and Aleppo

(from E.Herzfeld "Damascus: studies in architecture" AI vol.9 part 1 p.47 fig.30-4)

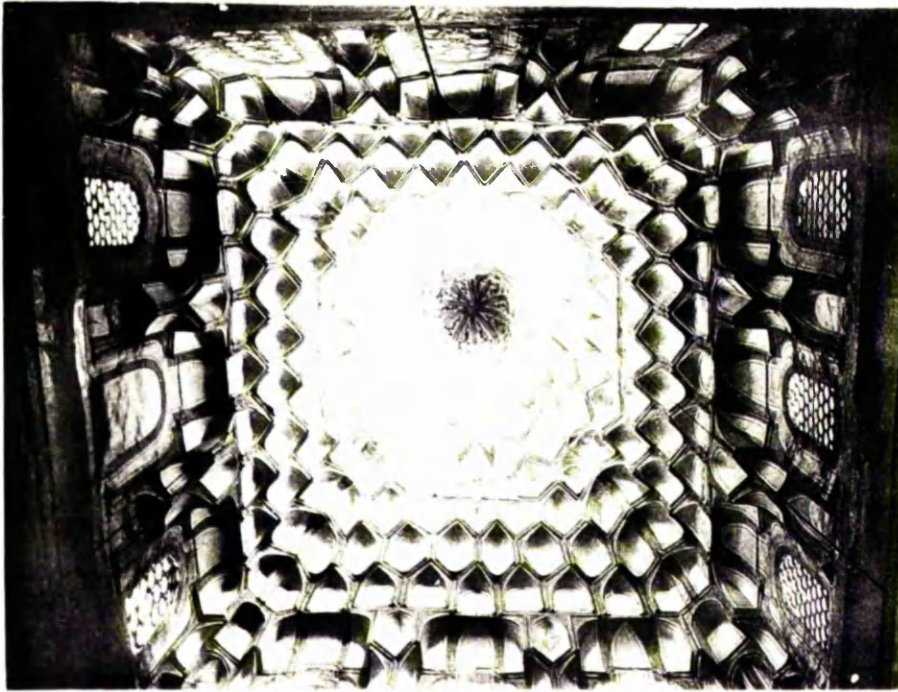


Fig. 45—DAMASCUS, MAUSOLEUM OF NUR AL-DIN. DOME

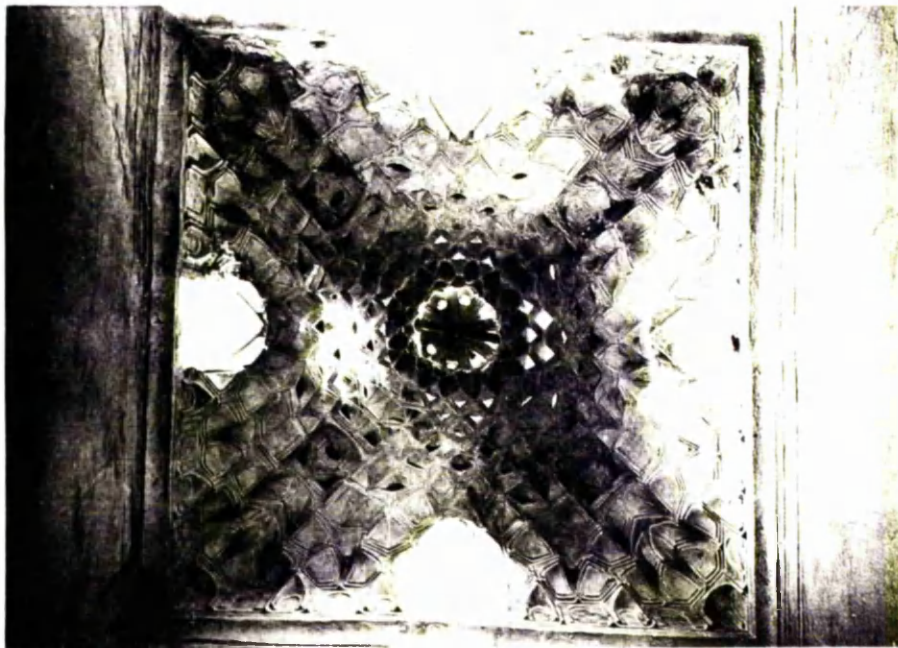


Fig. 44—DAMASCUS, MĀRISTĀN NŪRĪ. DOME

fig.44 Māristān Nūrī dome, Damascus

fig.45 Mausoleum Nur al-Din dome, Damascus

(from E.Herzfeld "Damascus: studies in architecture" AI vol.9 part 1 fig.44 and 45)



Clairé M. Ecochard

MADRASA 'IZZIYA HORS-LES-MURS. - Salle funéraire : décor de stuc du mur Sud.

Stucco medallion in Madrasa ^cIzziya, Damascus

(from M.Ecochard & J.Sauvaget Les monuments Ayyoubides de Damas plate 15)



Painted decoration and embossed and gilt medallions of zone of transition

Painted muqarnas and dome of Mausoleum ^cAbbāsīd Khalīfas

(from K.A.C.Creswell MAE vol.2
plate 30)



Interior of Mausoleum Imām al-Shāfiʿī

(from K.A.C.Creswell MAE vol.2
plate 25)

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^CAbbāsīd Khalifas
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AAS	Les Annales Archéologiques de Syrie
AI	Ars Islamica
AIEO	Annales de l'Institut d'Études orientales
AO	.....	Ars Orientalis
AS	.....	Anatolian Studies
BIFAO	.....	Bulletin de l'Institut française d'archéologie orientale
BM	.....	Bulletin of the Metropolitan Museum of Arts
EI	.....	Encyclopaedia of Islam
EMA	.....	Early Muslim Architecture
JA	.....	Journal Asiatique
KO	.....	Kunst des Orients
MAE	.....	Muslim Architecture of Egypt
MIFAO	.....	Memoires de l'Institut français d'archéologie orientale
NEI	.....	Encyclopaedia of Islam - new edition
QDAP	.....	Quarterly of the Department of Antiquities in Palestine
RAA	Revue des Arts Asiatiques
REI	Revue des Études Islamiques
SPA	Survey of Persian Art

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