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Keppel A. C. Creswell

# Archæological researches at the Citadel of Cairo [avec 30 planches].

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# ARCHÆOLOGICAL RESEARCHES

# AT THE CITADEL OF CAIRO

BY

K. A. C. CRESWELL

ATTACHÉ ÉTRANGER À L'INSTITUT FRANÇAIS DU CAIRE.

## PREFACE AND DEDICATION.

An extensive memoir on the Citadel of Cairo, by the distinguished Arabic scholar M. Paul Casanova, of the Collège de France, having already appeared [1], I feel that an explanation is due for the appearance of this additional memoir on the same subject. M. Casanova, when he undertook his task nearly thirty years ago, relied on the collaboration of Max Herz, the late architect to the *Comité de Conservation*, for the architectural studies which were to accompany his work. M. Casanova's memoir is based on an exhaustive study of the Arabic texts, supplemented by personal knowledge of the topography of the enclosure, and his labour gained for him the honour of the Prix Saintour which was awarded him by the *Académie des Inscriptions et Belles-Lettres* in 1897. The memoir contains several references [2] to the studies of M. Herz which were to form a supplement to it. Not only were these studies never published, it is probable that they were never even commenced, since the archives of the *Comité* do not contain a single plan, photograph or drawing [3] of the Citadel, which has apparently remained a *terra incognita* to the staff. Thanks to the sympathetic interest and assistance of the Military Authorities I have been given every facility to explore the Citadel. The results of my researches are here presented in the hope that they may partly fill the gap

[1] *M. M. A. F. C.*, tome VI, fasc. 4 and 5.

[2] *Loc. cit.*, p. 542, n. 1 («Voir les études architecturales de M. Herz à la fin de ce mémoire»), pp. 580, n. 4, 584, 663, 726, 731 and 741.

[3] Except one small sketch of the masonry next the Muqaṭṭam Gate.



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left by Herz — I say "partly" because my researches have been mainly confined to the northern enclosure — and I feel that I cannot do better than dedicate them to the distinguished Arabic scholar whose previous study has made my archæological supplement possible.

## HISTORICAL INTRODUCTION.

Egypt had lost all her possessions in Palestine by 1153 and aṣ-Ṣâliḥ Ṭelâyeʿ had failed to form a coalition against the Crusaders, with the object of regaining territory. The Khalif Fâïz had died in July 1160 at the age of eleven, and aṣ-Ṣâliḥ Telâye"s choice of al-ʿÂḍid (1160-1171), a boy of nine, led to intrigues ending in the murder of the Wazîr. His son, who apparently became Wazîr in his place, was murdered by Shâwar, the Arab governor of Upper Egypt, in 1163, and the latter in turn was driven out by Ḍirghâm. Shâwar therefore fled to Nûr ad-Dîn to seek his assistance, promising him one third of the revenue of Egypt if he were re-instated [1].

Before Nûr ad-Dîn could make up his mind, Amaury, the new King of Jerusalem, having failed to receive the usual tribute [2] from Ḍirghâm, invaded the country, but withdrew after having got as far as Bilbeis. Ḍirghâm, hearing of Shâwar's intrigues, now sought an alliance with his recent adversary, and Nûr ad-Dîn, seeing the danger, decided to strike at once. Before Amaury could be won over by Ḍirghâm, Shâwar was on the march for Egypt (April 1164), with a force of Turkomans under Shîrikûh [3] and the latter's nephew Ṣalâḥ ad-Dîn, the famous Saladin of Crusading history. A victory at Bilbeis

[1] Lane-Poole, *Saladin*, p. 81, and his *History of Egypt*, pp. 175-176. The Khalif appears to have been a passive witness, in fact Behâ ad-Dîn speaking of these events says : «It was the custom, when anyone successfully raised the standard of revolt against a vizier, to submit to the victor, and establish him with full authority in the office for which he fought. Indeed, the whole power of the government lay in the vizier's army, and the vizier had the title of Sultan. They (the Khalifs) took care not to look into matters too closely, and had followed this policy from the first establishment of their dominion.» See his *Saladin*, translated in the *Palestine Pilgrims' Text Society*, vol. XIII, p. 47.

[2] It would appear that the later Fâṭimides had hitherto escaped invasion by a prudent application of subsidies or a fixed annual tribute, the *annuam tributi pensionem*, of William of Tyre (XIX, 5). See Lane-Poole, *Saladin*, p. 79.

[3] For this spelling, see Casanova, in the *M. I. F. A. O.*, tome IV, p. xi.

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was followed by the capture of Fusṭâṭ, and Ḍirghâm, deserted, first by the people and then by the Khalif and the Army, was assassinated as Shâwar was entering by the Bâb al-Qanṭara.

The latter, restored once more to power, repudiated his promises and refused to pay an indemnity. Shîrikûh therefore sent Saladin to occupy Bilbeis and the Eastern Provinces, while Shâwar, appealed to Amaury, who came and besieged Saladin at Bilbeis for three months. Events had happened in Syria which rendered urgent the return of both Amaury and Shîrikûh; an armistice was therefore arranged (October 1164) and Shîrikûh withdrew with his army. But just as the expedition of Cyrus and the Retreat of the Ten Thousand had shown the Greeks the weakness of the Persian Empire at that time, so had this expedition revealed the wealth and the weakness of Egypt. The cautious Nûr ad-Dîn was won over; the orthodox Khalif, eager to see his rival deposed, had readily granted his blessing and Shîrikûh started for Egypt on 12th Rabîʿ I, 562 (6th January 1167), with 2000 picked horsemen. Making a great detour he reached the Nile at Aṭfîḥ, 40 miles south of Cairo, and crossed to the west bank without being molested, but scarcely had he done so when Amaury, who had hurried from Palestine, arrived on the east bank. The two armies then followed the opposite banks to Cairo, Amaury pitching his camp at Fusṭâṭ whilst Shîrikûh occupied Gîza [1].

Amaury now sought a treaty, ratified by the Fâṭimide Khalif in person, and it was proposed that 200,000 gold pieces should be paid to Amaury forthwith and 200,000 when the enemy had been driven out of the country. This being agreed to, Amaury suddenly crossed the Nile, and Shîrikûh, taken by surprise, marched south, pursued by Amaury, who came up with him 10 miles south of Minya, where a pitched battle took place on April 18th, 1167. Shîrikûh was victorious by a narrow margin, and not feeling strong enough to march on Cairo, went north by a desert route [2], and entered Alexandria without opposition.

[1] Lane-Poole, *Life of Saladin*, pp. 81-85, and his *History of Egypt*, pp. 177-179.

[2] He probably marched via the Fayyûm to the Wâdy Naṭrûn, skirting Gîza on the way, and from the Wâdy Naṭrûn to Alexandria, a route still much used by the Arabs of the Western Desert. This route, which passes through a gravelly and not a sandy region, would be sufficiently green in April to provide grazing.



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Saladin was left there as Governor and Shîrikûh started once more for Upper Egypt. The Crusaders and the Egyptians invested Alexandria and Saladin was hard pressed, but the return of Shîrikûh so raised the courage of the besieged and depressed that of the besiegers, that a treaty was signed under which Shîrikûh and Amaury both agreed to leave Egypt. The latter however left a garrison in Cairo and Fusṭâṭ.

Amaury, urged on by his advisers, once more invaded the country in November 1168, and signalled his arrival by massacring the whole population of Bilbeis. Shâwar now took desperate measures; Fusṭâṭ, although densely populated, was by his orders set on fire, lest it should again give shelter to the invaders, and the whole population deserted it *en masse*. « It was », says Maqrîzî, « an impetuous flood; it seemed as though men were leaving their graves for the Judgment; fathers did not concern themselves with their children, brothers did not trouble about each other. The hire of a mount from Miṣr to Cairo rose to 20 dinars. A pack animal was let for 30 dinars. Then Shâwar sent to Miṣr 20,000 barrels of naphtha and 10,000 torches. The whole was scattered about the town and the flames and the smoke of the burning rose to heaven. It was a frightful spectacle. The fire continued amongst the houses of Miṣr during 54 complete days, as well as the pillage organized by the slaves, men from the fleet, and others.....

« From this moment Miṣr and Fusṭâṭ became the ruin known to-day as the Mounds of Miṣr (*Kimân Miṣr*) [1]. »

On the 17th December 1168 Nûr ad-Dîn, this time at the urgent request of the Fâṭimide Khalif, sent a third expedition of 8000 men to Egypt, and effected a junction with the Egyptian army on the 8th January, after evading the forces sent by the Franks to intercept it. Amaury then returned to Palestine, but Shâwar took no steps to perform his engagements to his deliverers, on the contrary he actually made plans to arrest Shîrikûh at a friendly banquet. He was therefore seized by Saladin, who almost immediately afterwards received orders from the Khalif to send him his head. Al-ʿÂḍid then appointed Shîrikûh as Wazîr in his place 17 Rabîʿ II, 564 (18th January

[1] Maqrîzî, *Khiṭaṭ*, I, pp. 338-339 (Casanova's transl., III, pp. 286-287), and Bahgat and Gabriel, *Fouilles d'al Foustat*, pp. 13-14.

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1169), but the latter, dying two months later, was succeeded by his nephew Saladin, on 22nd Gumâdâ II, 564 (23rd March 1169)[1].

It was two years later that he commenced the first of his military works. Ibn Abi Ṭay says : « In this year [566 = 1170/1] the Sultan, that is to say Ṣalâḥ ad-Dîn, commenced the reconstruction of the Wall of Cairo, because the greater part of it had been destroyed, and it had become an open road stopping neither entries nor departures ». The reconstruction in question must refer to the East Wall of Cairo between the Darb al-Maḥrûq and the Bâb al-Wazîr. This work formed part of a scheme which was dropped later for a much more ambitious one[2].

Saladin was not to remain a Wazîr for long. In a very short time the whole country was completely under his control, and the authority of the Khalif was almost negligible. This being so, Nûr ad-Dîn wrote to Saladin ordering him to cease to recite the Friday prayer in the name of the Fâṭimide Khalif and to substitute that of al-Mustaḍy, the ʿAbbasid Khalif of Baghdâd. Saladin hesitated to do this. Fearing that Nûr ad-Dîn might one day attack him, he thought that his position would be stronger, if he could pose before the Egyptians as the Wazîr of the Fâṭimide Khalif, than it would be if he were governing the country in the name of the ʿAbbâsids. However, Nûr ad-Dîn insisted and Saladin, being merely his Lieutenant, foresaw that he might have to give way, but still hesitated. At this moment a stranger from Moṣûl called al-Amîr al-ʿÂlim, « the learned Amîr », appeared and, seeing that everybody feared to substitute the name of al-Mustaḍy said : « I will be the first to do so », and on the first Friday in Muḥarram 567 (10th September 1171) he mounted the pulpit and prayed for the ʿAbbasid Khalif, without encountering any opposition[3]. The following Friday (17th September 1171) Saladin ordered the preachers of Fusṭâṭ and Cairo to cease delivering the *khuṭba* in the name of al-ʿÂḍid and to recite it in the name of al-Mustaḍy. Al-ʿÂḍid, however, had died on the 13th.

[1] Behâ ad-Dîn, *Saladin*, loc. cit., pp. 54-55; Lane-Poole, *Saladin*, pp. 95-97, and his *History*, pp. 185-186.

[2] See Casanova, *Citadelle*, loc. cit., pp. 535-538; and my *Brief Chronology of the Muḥammadan Monuments of Egypt*, *B.I.F.A.O.*, XVI, pp. 54 ff.

[3] Ibn el-Athîr, in the *Historiens orientaux des Croisades*, I, p. 578 ff., quoted by Casanova, *Les derniers Fatimides*, *M.M.A.F.C.*, VI, pp. 415-416. Also as-Suyûṭî, Jarrett's transl., pp. 470-471.

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Behâ ad-Dîn, whose account appears more reliable, does not mention the story about the stranger from Mosûl, and says that Saladin himself gave the order in the first place, and that it was shortly before the death of al-ʿÂḍid, which both agree took place 10th Muḥarram 567 (13th September 1171) [1].

On the death of the Khalif, Saladin took possession of the vast Fâṭimide *qaṣr,* and no less than 18,000 persons were turned out, of whom the only males were those of the Khalif's family consisting of 252 persons. The two sexes were isolated so that the race might become extinct. Maqrîzî says that they were distributed as follows [2]:

| | |
|---|---|
| In the house of al-Muẓaffar | 31 |
| — Iwân of the Eastern Palace | 55 |
| — Western Palace | 166 |
| | 252 |

Of all the vast treasures that he found in the Palaces, Saladin kept nothing for himself; some he presented to his suzerain Nûr ad-Dîn, some he gave to his Emîrs; the great library of 120,000 volumes was handed over to his Chancellor, the Qâḍy al-Fâḍil. He himself continued to live in the Dâr al-Wazirât [3].

In the following year (568-1172/3) Saladin led an expedition to Kerak and Shaubak. He besieged both places and engaged in many skirmishes with the Crusaders, but returned to Egypt without having gained any advantage [4]. In his absence the partisans of the Fâṭimides, apparently led by the Arab poet ʿOmâra, had seized the opportunity to hatch a great conspiracy. They had even chosen a Khalif and a Wazîr and appear to have been in league with the Crusaders and Sinân, the Grand Master of the Assassins, but the conspiracy was discovered in time and failed [5].

[1] See his *Saladin,* loc. cit., pp. 61-62. Ibn al-Athîr died in 1210 and Behâ ad-Dîn joined Saladin as his Secretary in 1188. It is therefore difficult to decide whose authority has greater weight.

[2] Casanova, *Les derniers Fatimides,* loc. cit., pp. 435, 437 and 444.

[3] Lane-Poole, *op. cit.,* p. 193.

[4] Behâ ad-Dîn, *Saladin,* loc. cit., pp. 62-63.

[5] Casanova, *op. cit.,* pp. 422-423.

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Nûr ad-Dîn died 11th Shauwâl 569 (15th May 1174)[1] and, in Ramaḍân of the following year (March-April 1175), Saladin received from Baghdâd a diploma of investiture for Egypt and Syria[2]. The summer of the same year witnessed another attempt to re-instate the Fâṭimides, led by Kanz ad-Dawla, formerly a general in their service. He established himself at Aswân, collected an army of negroes and marched on Qûṣ. Saladin sent his brother al-Malik al-ʿÂdil against him and the revolt was crushed with much bloodshed, 7th Ṣafar 570 (7th September 1174)[3].

The death of Nûr ad-Dîn had left Saladin with only three possible rivals outside Egypt — (1) Nûr ad-Dîn's son, a mere child, in Syria, (2) Nûr ad-Dîn's nephew, Seyf ad-Dîn, Prince of Moṣûl, and (3) the Seljûq Sultan of Rûm, or Asia Minor. Having suppressed the revolt of Kanz aḍ-Dawla, Saladin decided to deal with his first possible rival, and therefore left for Syria, arriving at Damascus 30 Rabîʿ II, 570 (27th November 1174)[4]. We need not enter into the details of this campaign, except to say that a brilliant victory at the Horns of Ḥamâ[5] left him with no Moslem rival between the Euphrates and the Nile, and that he arrived back in Egypt 16 Rabîʿ I, 572 (22nd September 1176) after an absence of two years.

Another revolt, this time at Qeft, is said by Maqrîzî[6] to have taken place in this year. It was led by a pseudo-Dâwûd, son of al-ʿÂḍid, and was suppressed by al-Malik al-ʿÂdil Abû Bakr, the brother of Saladin. There is no doubt that these revolts were the cause which decided Saladin to construct a citadel as a place of refuge should a Fâṭimide rising ever assume really serious proportions. In seeking this solution he was no doubt guided by what he had found to be the custom in Syria, where every town of importance was

[1] Behâ ad-Dîn, p. 65.

[2] Abû Shâma, II, p. 250, quoted by Casanova, *op. cit.*, p. 428.

[3] Behâ ad-Dîn, pp. 65-66, and Casanova, *op. cit.*, pp. 420 and 430-433.

[4] Behâ ad-Dîn, p. 69.

[5] *Ibid.*, pp. 73-74. Lane-Poole (*History of Egypt*, p. 200 n.) remarks that Saladin's independent sovereignty dates from this victory, for it was only after this success that he issued coins in his own name. He had first placed the name of the Fâṭimide Khalif on his coins, then that of Nûr ad-Dîn, but never his own. When he occupied Damascus, he placed the name of Nûr ad-Dîn's son aṣ-Ṣâliḥ together with his own, on the coins which he struck there. After his victory at the Horns of Ḥamâ he for the first time struck coins in his own name.

[6] *Khiṭaṭ*, I, p. 233, quoted by Casanova, *op. cit.*, pp. 421 and 433.

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defended not only by a wall but by a citadel also, which might even serve as a place of refuge against the population of the town itself, in case of a rising. In this connection Lane-Poole remarks : « It has been supposed that Saladin designed the Citadel of Cairo to protect himself against a possible insurrection of the partisans of the late dynasty. A sufficient explanation, however, is found in his early associations : every Syrian city had its citadel or fortress, and experience had shown many a time that the town might be taken whilst the citadel remained impregnable, a refuge for the people and a means of recuperation. Therefore Cairo must have a citadel too. It might soon be needed as a tower of defence against his liege-lord Nur-ed-din himself. Saladin had propitiated the King of Syria with presents from the treasures of the Fatimid palace; prayers were offered for him as sovereign lord every Friday in the mosques, above all in the great mosque of el-Hakim, which now supplanted the Azhar as the chief mosque of the city; and his name appeared on the coins struck by Saladin at Cairo. But in spite of this nominal subjection and the absence of all symbols of personal sovereignty, Saladin was virtually his own master; and supported as he was by a strong army commanded by his brothers and nephews, he was in fact King of Egypt. Nur-ed-din was well aware of this, but his difficulties with the Franks, with the Seljuk Sultan of Rum, and with various contentious rulers in Mesopotamia, left him no leisure to clip the wings of his vassal in Egypt. He could not even count upon Saladin's coöperation in the Holy War; for, whether rightly or wrongly it is difficult to decide, Saladin was convinced that if once his suzerain had the chance of seizing his person, there would be an end of his power; and nothing could induce him to venture within Nur-ed-din's reach [1]. »

The suggestion that Saladin's fear of Nûr ad-Dîn played any part in the matter is untenable as there is nothing to show that Saladin had any intention of constructing a Citadel until two years after Nûr ad-Dîn's death. On the other hand, although citadels were the rule in Syria, it is scarcely likely that Saladin would have followed such an expensive fashion, had he not already experienced three risings and felt that others were to be feared. He therefore naturally adopted the remedy with which his journeys in Syria had made him familiar [2].

[1] *Saladin*, pp. 119-120. — [2] See also Maqrîzî's account, *infra*, p. 117.

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He decided on the construction of a Citadel, immediately after his return to Cairo. Maqrîzî says : « Saladin entered Cairo 16 Rabîʿ I, 572 (22nd September 1176)..... and he gave orders for the construction of an enclosure to surround Cairo, Miṣr [i. e. Fusṭâṭ] and the Citadel. He entrusted the supervision of it to the Emîr Qarâqûsh, who commenced the Citadel, the enclosing wall and the ditch which surrounds it [1]. »

## THE SITE.

Seen casually from Cairo, the Muqaṭṭam seems to rise abruptly in a line of cliff dominating the valley of the Nile, but actually the demarcation is not so absolute, and in reality there are several outcrops of rock, well in advance of this cliff. These outcrops vary in size, the smallest being that which appears alongside the intake tower of Ibn Ṭûlûn's aqueduct at Basâtîn. In contrast to this we have the Raṣad, or high ground to the south of Qaṣr ash-Shamʿ, the Heights of Saint George of Napoleon's map. This ground, which on the west side ends in a cliff dominating Dair at-Tîn and the railway to Ḥelwân, slopes away so gradually to the general level of the plain [2], the strata having been slightly tilted, that it is scarcely noticeable from the east. A second outcrop of importance forms Qalʿat al-Kabsh, the site chosen by Ibn Ṭûlûn for his mosque and the new quarter of al-Qaṭâ'iʿ which he founded. What appears to be a third great outcrop is that which Saladin chose as the site of his Citadel. It is not really an outcrop, however, but a spur which has been separated from the main mass by Saladin, who purposely quarried stone

[1] *Khiṭaṭ*, II, p. 233, l. 32; transl. by VAN BERCHEM, *Notes d'archéologie arabe*, in the *Journal asiatique*, 8e série, t. XVII, p. 447, n. 1.

[2] Maqrîzî, speaking of the Raṣad, says : « This place is a height which dominates Râshida to the east and Birkat al-Ḥabash to the south, but, seen from the east, it is a plain, and one goes thither from the Qarâfa without ascending..... This height was formerly called al-Gorf; afterwards they named it the Observatory (*Raṣad*) since al-Afḍal, son of Badr al-Gamâly, established there a sphere to observe the stars. » *Khiṭaṭ*, I, p. 125, Bouriant's transl., *M. M. A. F. C.*, tome XVII, p. 363; and VAN BERCHEM, *Une mosquée du temps des Fatimites*, *M. I. É.*, II, p. 612. The name *Raṣad* is no longer in use. This high ground was probably the site of the Roman fortress which preceded Qaṣr ash-Shamʿ. See A. J. BUTLER, *Ancient Coptic Churches*, I, pp. 172-175, his *Arab Conquest of Egypt*, pp. 244-245, and his *Babylon of Egypt*, pp. 7-8; also GUEST, *The Foundation of Fustat and the Khittahs of that town*, in the *J. R. A. S.*, 1907, pp. 61-62.



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here; these quarries being still in use at the present day, it follows that the rock face has been steadily receding. This artificially detached spur is higher than the two great outcrops mentioned, but it does not underlie the whole of the area now occupied by the Citadel, the southern end of the latter being built on made ground. The objections raised by various authors, Maillet for example [1], that the site was badly chosen, since it is dominated by the Muqaṭṭam, had no validity in Saladin's time, as no missile-throwing weapon of those days had sufficient power to throw a projectile into the Citadel from the cliffs behind it.

This site was not entirely bare; it had been chosen by Ḥâlîm ibn Harthmat, who was Governor of Egypt from 194-195 (810-811), for a pavilion called the Qubbat al-Hawâ, in which ʿÎsâ ibn Manṣûr, a later Governor, died in 233 (847/8). When the Ṭûlûnide Dynasty fell, the Qubbat al-Hawâ was deliberately destroyed [2], and later on, its site was converted into a cemetery where a number of mosques arose. Before the Citadel was built there appear to have been the following, commencing at the north end : (1) mosque of Saʿd ad-Dawla, (2) mosque of Muʿizz ad-Dawla, (3) mosque of ʿAddat ad-Dawla, (4) mosque of ʿAbd al-Jabbâr, (5) mosque of Amîn al-Mulk, (6) tomb of Lâûn, (7) mosque of the Qâḍy Annabîh, and (8) tomb of Walakshî [3].

[1] He says : « La situation du Château n'est rien moins qu'avantageuse. En effet il est tellement commandé par la montagne, dont le sommet le domine, que de là on pourroit facilement y jeter des pierres avec la fronde, & incommoder considérablement la garnison » (*Description de l'Égypte*, p. 190).

The point where the Muqaṭṭam approaches closest to the Citadel is at the top of the ramp opposite the south-eastern angle tower (this ramp may be seen on Plate I, to left). The distance here is about 350 metres. Now although the catapults of the Greeks and Romans, which, according to Ammianus Marcellinus (Book XXIII, cap. IV), were provided with a sling at the end of their arm, could throw stones from 4 to 500 yards, it is most improbable that any of the mediæval type could do so. In the first place there is no evidence to show that they were ever provided with a sling at the end of the arm, which, according to the experiments of Sir Ralph Payne-Gallwey, adds a third to the range, and secondly because it would appear that the art of making a really efficient and durable skein of sinew had already been lost. It would appear from Payne-Gallwey's researches and practical experiments that 300 yards was about the maximum range in the Middle Ages. See his *Projectile-Throwing Engines of the Ancients*, Parts I and II.

[2] Maqrîzî, *Khiṭaṭ*, II, p. 202; translated by Casanova, *Citadelle*, loc. cit., pp. 555-556; *Khiṭaṭ*, II, p. 201, translated in de Sacy's *Abd-Allatif*, p. 209, and by Casanova, *loc. cit.*, p. 567; Lane-Poole, *Story of Cairo*, p. 65, and his *History*, p. 31.

[3] Casanova, *Citadelle*, pp. 557-559.

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## DESCRIPTION AND ANALYSIS OF THE ENCLOSURE.

General arrangement of the enclosure. — Casanova has well said [1] that what strikes one first of all in the plan of the Citadel is that it is divided into two enclosures, absolutely distinct. The northern, which forms an irregular rectangle measuring about 560 metres from east to west and 317 metres from north to south, is joined to the other by a neck 150 metres across, the division consisting of a very thick wall terminating at either end in towers of enormous diameter. In the centre of this wall is a gateway, called the Bâb al-Qulla [2], defended by two polygonal towers (Fig. 1). To the south of this dividing line is a vast irregular enclosure, which, even to the most unpractised eye, is obviously of many periods. It is slightly smaller than the former, its extreme measurements being about 510 metres from north to south, and 270 metres from east to west. Unlike the northern enclosure, which is strengthened by many towers, both square and semi-circular, the southern consists almost entirely of curtain walls of irregular outline, almost unbroken by towers. Maqrîzî, who noticed this anomaly, expresses himself thus : « This is the configuration of the Citadel : it is built on an isolated elevation, surrounded by stone walls with towers and salients, which end at the Qaṣr al-Ablaq (Striped Palace) [3]; after that it is linked to the palaces of the Sultans by an arrangement unusual in the towers of citadels » [4].

Casanova makes the following comment : « Ainsi cette disposition anormale s'explique parfaitement par la comparaison des différents textes. Il y a une

[1] *Citadelle*, loc. cit., p. 573 ff.

[2] Now known as the Inner Gate.

[3] For the Qaṣr al-Ablaq, or Striped Palace, see Maqrîzî, *Khiṭaṭ*, II, pp. 209-210; Qalqashandy, Wüstenfeld's transl., pp. 86 and 88; Ibn Iyâs, *Târîkh Maṣr*, I, p. 159; Maillet, *Description de l'Égypte*, p. 193; Pococke, *Description of the East*, I, p. 33; Niebuhr, *Voyage en Arabie* (éd. 1877), I, p. 194; the *Description de l'Égypte, État moderne*, XVIII, 2e partie, pp. 351-352; Wilkinson, *Topography of Thebes*, p. 306; Rhoné, *L'Égypte* (2e éd.), p. 75-77; Casanova, *Citadelle*, pp. 635-641, and Margoliouth, *Cairo, Jerusalem and Damascus*, pp. 54-55. It was built in Sha'bân 713 (November-December 1313), and, according to the remains of it shown on Napoleon's map (see my Fig. 11), must have occupied the southern half of the present military prison, and part of the carriage drive which serves as an approach to the mosque of Muḥammad 'Aly.

[4] *Khiṭaṭ*, II, p. 204, l. 33; quoted by Casanova, *op. cit.*, p. 576.



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citadelle, d'une part, et, d'autre part, des palais, toute une petite ville royale (un Versailles, ou un Potsdam) élevée à l'abri de la forteresse. L'anomalie disparaît, si l'on rétablit le plan primitif[1]. »

THE NORTHERN ENCLOSURE, GENERAL DESCRIPTION. — At the present day, to visit the Citadel, one ascends from the Meydân in front of the Bâb al-ʿAzab by a somewhat steep road which divides at the Bâb al-Hattaba; the left branch descends to the Northern Cemetery (« Tombs of the Khalifs », so-called), the right curves round and passes under the north-western corner of the northern enclosure, where there is a semi-circular tower (A) and a length of curtain wall resting on a low cliff of rock (Fig. 1, and Plates XXI-XXII). This road, which was made by Muḥammad ʿAly, on an artificial ramp, passes under the Bâb al-Gedîd, a great gateway with guard-rooms attached (Plate XXIV, A), also due to him, and rising steadily, passes through a second archway (Bâb al-Wusṭâny) into the southern enclosure, in front of the mosques of an-Nâṣir Muḥammad, 718 (1318), and Muḥammad ʿAly. On our left is the Bâb Qulla already referred to, which is the present entrance to the northern enclosure, or Citadel proper. This gateway is set in the centre of a straight wall of great thickness, the ends of which are marked by two great round towers (B and C); that to the left is 21 metres in diameter but only of moderate height, the other is 24 metres in diameter and about 25 metres high, measured outside the enclosure. To continue our examination of the northern enclosure, we must now make a detour, pass between the two great mosques already mentioned, turn to the left in front of Muḥammad ʿAly's Hall of Justice, turn to the left again, pass a tower of moderate size which covers the famous Well, and then, inclining to the right, leave by a gateway called the Bâb al-Gebel (Plates III and IV A). A splendid and imposing line of fortifications (Plates II, III and VIII) now appears on our left, running nearly due east towards the Muqaṭṭam, and another line (D) on our right runs away from the gate in a southerly direction, and therefore at right angles to the first. It is, however, of an entirely different type and possesses three towers only. Both these façades spring from the great round tower (C), which marks the south end of the line

[1] *Citadelle*, p. 577.

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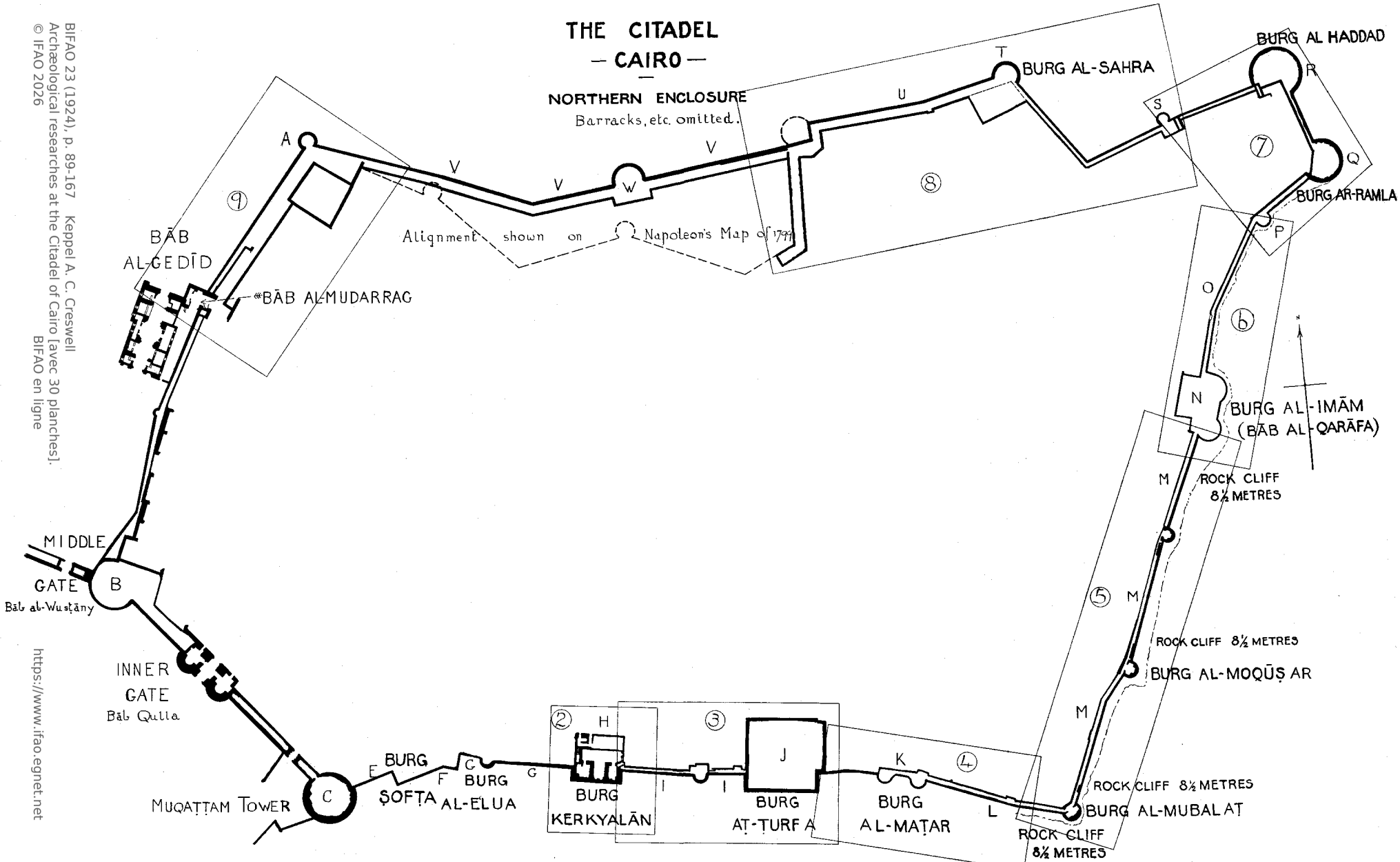


Fig. 1. — The Citadel : Northern enclosure; key plan (traced from Army plan).

of division between the two enclosures; it is the former façade which must now occupy our attention.

It commences with a piece of curtain wall (E) 16 m. 50 in length, of smooth masonry with very narrow headers; then comes a curious salient of rusticated masonry (F), of which the blocks are much longer although the courses are almost the same in height. A length of smooth masonry (G) follows, similar to the first, and broken near its west end by a small half-round tower (Plate IV, A). This curtain wall, which has been reinforced with a very thick glacis, ends in a great tower (H) 20 metres square, of rusticated masonry like that already mentioned. A length (51 metres) of smooth curtain wall (I), broken by a small half-round tower (Plate VI, B), brings us to another square tower (J) of immense size (30 metres across the front), built of rusticated masonry like the other. Although merely one tower in a great enclosure, it is nevertheless larger than the great keep of Norwich Castle, which measures 96 feet by 93, and is 70 feet in height (29.25 × 28.33 × 21.33 m.)[1]. This should enable English readers to realize the vast scale of the fortress we are studying. Separated from this great tower by 25 metres of smooth curtain wall are two half-round towers (K) placed close together (Plate VII), after which 59 metres of smooth curtain wall (L) brings us to the south-east angle tower (Plate VIII).

One point must be emphasized here; all the half-round towers are of the same masonry as the curtain wall which is smooth, with very narrow headers. Hitherto, towers and curtain walls have risen from the ground level, but about 50 metres before reaching the corner, a new feature of great importance appears, a vertical cliff of rock about 8 to 9 metres high, which continues round the corner, and runs along the greater part of the east side, at first close to the curtain wall, but later at some 7 or 8 metres from it (see Plates I, VIII and IX, B). The corner we have now come to is nearer to the Muqaṭṭam than any other point in the Citadel, the distance being about 350 metres.

On turning this corner, a strip of curtain wall (M), about 170 metres in length, nearly straight, and broken by two half-round towers (N), brings us to two very salient half-round towers, of much greater size than those we have

[1] See E. A. Browne, *Norman Architecture*, p. 68.

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already met with, and, curiously enough, of rusticated masonry (Plate X). These, unlike the two coupled towers in the façade facing south, have scarcely any recess between them. Another strip of smooth curtain wall (O) 66 metres in length brings us to a half-round tower (P) of normal size, after which another length of 22 metres ends in a great tower (Q), nearly circular, of rusticated masonry, which dominates the valley between the Citadel and the Muqaṭṭam. On turning the corner we observe another (R) similar to it, but of even greater diameter (22 metres). These two towers are 22 metres apart (Plates XI-XII).

The enclosure then doubles back on itself, and a length of 76 metres of smooth curtain wall, broken by one half-round tower (S), brings us to a re-entrant angle, from which another strip 45 metres in length, and running north, ends in a half round angle tower (T), in size slightly larger than the many half-round ones we have already passed (Plates XVI and XVIII). Its masonry appears to be composed of re-employed material, as some blocks are rusticated and others are not. A nearly straight curtain wall (U) of similarly mixed blocks, ends abruptly after 83 metres, and a new wall (V) set back 7 metres, starts, and runs for 120 metres (Plates XIX and XX). At this point there is a great half-round tower (W), after which the wall changes its direction and continues for 95 metres more, ending in the north-western angle tower, which we passed before entering Muḥammad ʿAly's great vaulted gateway (Plate XXI).

Northern enclosure, detailed description. — Let us now return to the Bâb al-Gebel and make a detailed study of the enclosure, tower by tower. The so-called «Muqaṭṭam Tower» of modern plans (Plates III-IV) is both in masonry and construction completely unlike anything else in this enclosure. Its masonry externally is smooth and good, but it is differentiated from that of the curtain walls and half-round towers by the absence of the narrow headers which distinguish the latter, and it has scarcely weathered at all, in complete contrast to the other, which has suffered so much, especially near the ground, that it is difficult to find a strip in fair condition [1]. Internally, the

[1] The bad condition of the surface of the masonry was noticeable over 200 years ago and struck Maillet, who says : «En effet quoique les pierres, dont ses murs sont bâtis, soient d'une

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masonry is small and rough and the vaults are of brick, a material used nowhere else in the whole enclosure. Structurally, it consists of a central domed chamber, comparatively small, as the walls are of immense thickness, suggesting that this tower was designed to withstand artillery. The staircase to the summit runs up on the left side of the entrance in the thickness of the wall, in a manner recalling that of one of the towers in Yedi Kuli Kapu (the Castle of the Seven Towers) at Constantinople. There is no opening, nor signs of any opening, connecting it with the internal gallery, which we shall see runs through the curtain wall to the east of it. Its lower half is slightly battered, but its upper part rises vertically and is capped by a boldly projecting cornice. The division between the battered and vertical faces is marked by a bold torus moulding.

Burg Ṣofṭa and Burg al-E'lua. — The Burg Kerkyalân [1] is separated from the Muqaṭṭam tower by just over 90 metres. The curtain wall between them is strengthened by two towers, the Burg Ṣofṭa, which projects 6 metres as a distorted rectangle 25 metres wide and about 15 metres high, and the Burg al-E'lua, a half-round tower of apparently normal type (Plate IV, A). There is evidently a gallery in the curtain wall, as the arrow-slits served by it are visible, and there must be casemates, or at least a gallery round the tower, for the same reason, but I have been quite unable to find a way in. The Burg Ṣofṭa, however, which I conclude, on the analogy of the other square towers, must once have projected internally for about 19 metres (width 26 metres, less external salience, 6 metres = 19 metres) no longer does so. The position of the barrack rooms shows that the upper storey of this tower, if it ever did have a great internal salience, has been cut away [2] — perhaps because it was ruined. Its sides are slightly battered, and I have already remarked that its

qualité excellente, l'air humide & salin de la nuit joint aux ardeurs excessives du Soleil pendant le jour les a tellement calcinées, qu'à voir cette forteresse, on diroit qu'il y a deux ou trois mille ans qu'elle subsiste» (*Description de l'Égypte*, p. 190).

[1] I have adopted the names found on Napoleon's map, although they appear to be unknown to-day. I propose to revive them by this means.

[2] The barrack rooms, seen peeping over the ramparts in Plate IV B, are of two storeys, the lower one being hidden. The inner ground level, however, is well above the row of arrow-slits referred to, so it is possible that the tower runs back beneath the barracks at the arrow-slit level, assuming, of course, that it was once square.

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masonry, unlike that of the other towers, is rusticated. The Burg al-E'lua is separated from it by 8 m. 68 of curtain wall, and beyond it is another strip 32 m. 47 in length, which has been strengthened by a very thick glacis (see Plate III). There is a similar glacis on the east side of the southern enclosure [1], which, however, did not exist in Napoleon's day [2]. I therefore attribute both to Muḥammad 'Aly. This tower, and these two lengths of curtain wall, have also defied my attempts to find a way in, although they are provided with arrow-slits. We have now reached the Burg Kerkyalân.

Burg Kerkyalân. — This great tower is 20 m. 60 high on its outer face, and almost exactly 20 metres square. Like the Burg Ṣofṭa it is built of large rusticated blocks, and its faces slope back about 0 m. 75. In plan (Fig. 2), it consists of a large cruciform chamber (A), the four arms of which are roofed with pointed tunnel-vaults of cut stone, 4 m. 55 in height, intersecting in the centre (Plate V, A). The two outer corners are occupied by rectangular cross vaulted rooms (B and C) giving a flanking fire. The western has four embrasures as shown, the eastern two only, but an arrow-slit, visible on the exterior, shows that one giving a flanking fire has been walled up on the inside and plastered over. In all, there must originally have been nine on the exterior. All these arrow-slits are alike, a splayed recess, covered by a well-cut tapering vault, resembling half a cone laid on its side. The northern arm of the cross has been cut off by a partition wall as shown, and access to it is obtained from the back of the tower by a door (D), which is now reached by a corridor at the side of a block of barracks. This door also serves the staircase leading to the top of the tower. On entering and turning to the left one reaches the northern arm of the cross by a passage (E) roofed with flat stone slabs resting on a continuous corbel course. The walls and vaults are in a bad state, the floor level has risen through the accumulation of earth and débris, and one has to stoop to enter the second passage (F), the function of which is not clear. It serves a small square room (G) giving access in its turn to a vaulted passage (H), the southern wall of which has given way. It would appear that the narrow room (I) next to it, roofed with flat stone slabs, was

[1] Casanova, *Citadelle*, Pl. XV. — [2] See the *Description de l'Égypte, état moderne;* Atlas, Pl. 68.

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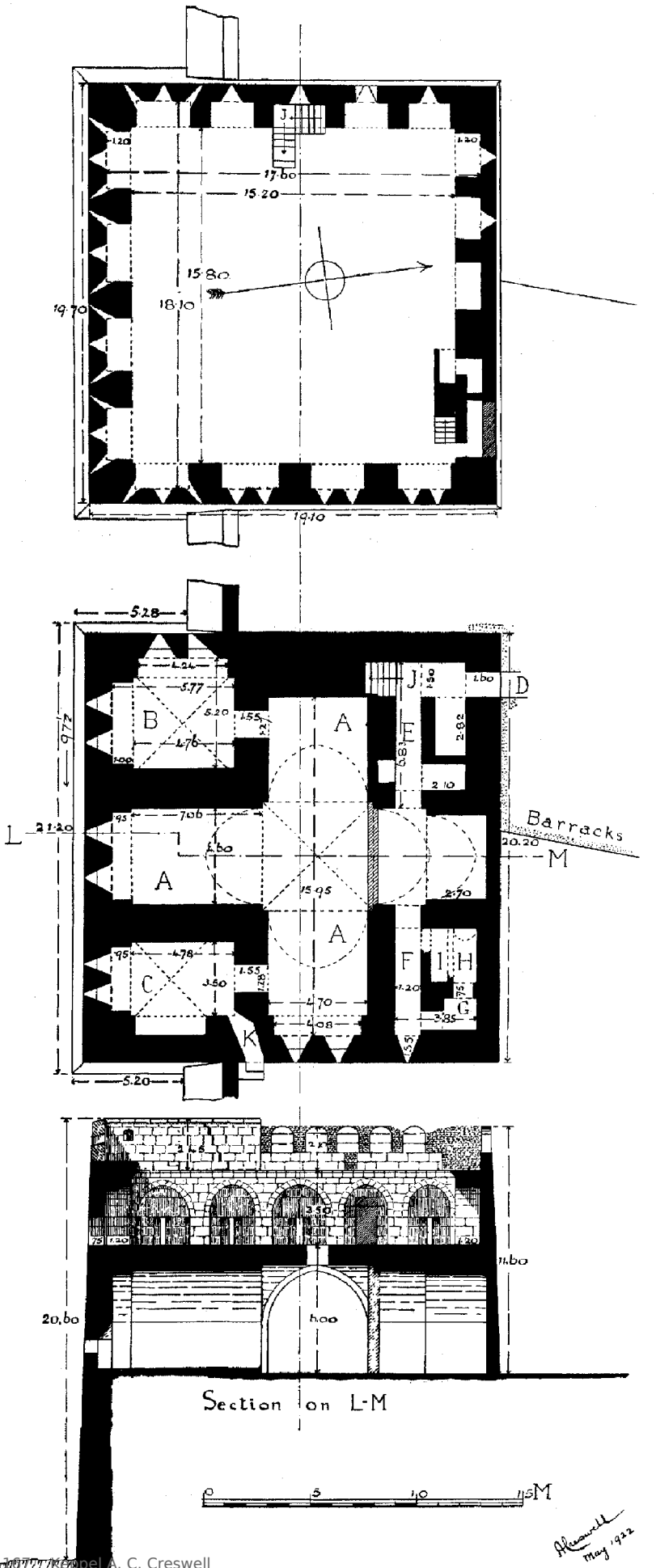


Fig. 9. — Burg Kerkyalân.

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originally entirely closed up. This corner is in a dangerous state. I conclude that these little chambers, as well as those in the corresponding corner, were merely made to lighten the structure.

If we ascend the staircase (J) to the roof, we find ourselves in a rectangular enclosure measuring 15 m. 20 × 15 m. 80, open to the sky, and surrounded by a series of shallow vaulted recesses, 1 m. 20 deep, with joggled voussoirs, supporting the banquette which served the crenellations (Plate V, B). These recesses are all provided with one, two or three arrow-slits. In the latter case, two of the arrow-slits are placed at the corners in the curious and unusual manner shown, an arrangement which I have only once seen elsewhere, — in a tower at Ṣaffûrieh [1], near Nazareth (Plate VI, A). It will be observed, from the position of these arrow-slits, that this tower was designed to be held even against a hostile force which had penetrated into the enclosure itself.

A staircase in the north-east corner leads to the banquette, and, on ascending to it, it is interesting to observe that the original crenellations have been almost completely preserved on the inner side (Plate V B, to right). That part which makes an exterior salient has been re-topped for musketry (Plate V B, to left), but the loop-holes are of very bad design, being too cramped and having very little command. On the exterior, the remains of the brackets of a mâchicoulis may be seen on the salient part of each flank, and faint traces of three more on the outer face. From their level, it is clear that they must have been operated from the banquette.

In this tower, besides the entrance at the back, which, until the partition wall was built across the northern arm of the cross, gave access to the whole interior, there is another small door in the east side, through which the interior is reached by a narrow passage (K) roofed by flat stone slabs on a continuous corbel course. The reason for the position of this small door is to give access to the tower from the rampart walk which, however, was only about half a metre above the interior ground level. One would expect to pass out by a similar door on the opposite side, but the masonry of the interior at the corresponding point appears to be solid [2].

[1] For this tower, see Conder and Kitchener, *Survey of Western Palestine*, I, pp. 335-338.

[2] I say «appears to be» as it is covered with whitewash and a little plaster, but it rings solid when struck with a hammer. I have not ventured to remove the plaster.



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Burg aṭ-Ṭurfa. — A strip of curtain wall 50 metres in length[1], and strengthened by a small half-round tower (Plate VI, B) brings us to the mighty Burg aṭ-Ṭurfa (Fig. 3), which is almost exactly 30 metres square[2], slightly battered and built of rusticated blocks like the Burg Kerkyalân. This tower, which serves to-day as an ammunition store, consists internally of two self-contained parts without any connecting doorway. The outer and smaller is composed of four great vaulted casemates (A, B, C and D) averaging 7 m. × 4 m. 50, strung, so to speak, on a passage which runs through the tower from one side to the other, and which must have been a continuation of the rampart walk. No two chambers are quite alike, however. The outer wall is so thick that the arrow-slits are set in semi-circular recesses to give adequate freedom of movement. Each arrow-slit is covered by a tapering vault like half a cone laid on its side. In this respect they resemble those of Burg Kerkyalân. Peculiar, and, one would imagine, useless arrow-slits are arranged, as shown, in the two outer corners, also an arrow-slit in each flank, making eight in all.

The rear part of this tower is arranged differently, its salient feature being a mutilated cruciform central chamber (E)[3], the arms of which taper towards each side. Another unusual feature is the number of doors, of which three (F, G and H) are in use and two more (I and J) may be recognized. Two of those in use are at opposite ends of the great cruciform chamber, which at present is divided into two parts by a whitewashed brick partition wall (K). A tunnel-vaulted room (L), 5 m. 13 × 3 m. 30, opens out of the east arm, and a curious complicated passage leads from the latter into a small irregular shaped room (M), partly cross-vaulted and partly tunnel-vaulted. On planning the results of exploration made from within, a blank area (O) is left near the

[1] It will be seen that the western portion of this curtain wall is strengthened by a glacis. Some of its original crenellations remain, but an opening has been cut in each, splayed for musketry, and the spaces between them filled up. The parapet of the eastern part has been re-built, probably by Muḥammad 'Aly.

[2] It is however a slightly distorted rectangle, as may be seen in Figure 3. I found, by taking a diagonal measurement on top, that none of its angles were true right angles.

[3] It will be noticed in the plan, that what would have been the southern arm of the cross is filled up with a wall of brick (Q). Contrary to what might be expected, the back wall of the second casemate is apparently of solid stone. The brickwork, therefore, instead of being a partition wall, must be merely the filling up of a recess which, incidentally, is not quite on the same axis as the casemate.

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latter in the south-west corner, and an examination of the outer wall reveals much re-making, as shown. There must have been a staircase to the top, there is no room for it elsewhere, and I feel convinced that it exists in a ruined state at this point, that the entrance to it was in the remade portion of the wall (I), and that it has merely been filled up with rubbish from above. The overhanging corner (P) in the passage is due, I believe, to the underside of this staircase.

The summit of the tower has been entirely cleared, and it merely presents a flat expanse of gravel, with a modern parapet, varying from 1 metre to 1 m. 35 in thickness, but once, no doubt, it was arranged to provide two tiers of fire, like the top of Burg Kerkyalân.

One more feature of this tower must be noticed : it projects 6 m. 80 on its west side and 7 m. 65 on the opposite side, that is to say, the curtain wall is set back 0 m. 85.

The curtain wall continues to the east of this tower for 25 metres, at first in a style similar to that previously studied (Fig. 4), but the last 10 metres has been re-faced from the ground, and, judging from the curious pilaster, is almost certainly due to Muḥammad ʿAly. Seen from the interior (Plate VII B, to right), it presents a loop-holed wall of masonry (A), with remains of the original banquette (B) still rising some 40 or 50 cm. above the ground. The banquette and the parapet together measure 2 m. 80 in thickness. We now reach Burg al-Maṭar (Plate VII).

Burg al-Maṭar. — This is the name, given on Napoleon's map, to a pair of half-round towers, 15 metres high, placed close together, but without intercommunication. They are similar in size and construction, and each consists of a cruciform cross-vaulted chamber, with an arrow-slit facing outwards, and two others giving a flanking fire (Fig. 4). The interior of the western tower shows no signs of ever having communicated with the banquette which runs westward from it, as the masonry of the recess on the right at A runs round without any break, and all the courses are continuous. Nor can a passage have led out of it on the left, the direct line of such a passage being occupied by a staircase, now blocked about half-way up, which led to the roof. This staircase completely destroys the possibility of there having been an exit on this side.



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The other tower is an integral part of the curtain wall to the east of it, with which it is in communication as shown, but although the gallery continues 1 m. 65 to the west, that is merely in order to reach the door (B) into the open. The wall at the end of this passage appears to be solid original work, as the courses continue all round at the same level, showing that the end piece is not a later walling up. There must be a lower chamber in each of these towers, as blocked-up arrow-slits are visible on the exterior about 6 metres above the outer ground level, but I have failed to find a way into them. Between the towers is a piece of solid wall (C), 5 m. 30 in length and 2 metres in thickness. It must be later work, as it is of different masonry [1], and completely breaks bond with that on either side of it (Plate VII, A and B); in fact the line of junction has opened perceptibly. I am unable to explain what has happened; every thing, however, indicates that we have here the remains of a gateway, notwithstanding the silence of the texts.

Burg al-Maṭar to Burg al-Mubalaṭ. — We now come to the beginning of a completely preserved piece of curtain wall which runs continuously for over 650 metres, with the exception of two breaks, one of which only dates from a few years back. This curtain wall is roughly 2 m. 80 in thickness, and inside it is a gallery, 85-93 cm. in width and averaging 2 m. 25 in height. I first entered this gallery in 1918 through a window (D) like an arrow-slit, of which one side had been broken away. The floor of the gallery was covered by a layer of rubbish about three quarters of a metre deep, but at a point about 45 metres to the east of Burg Maṭar, the rubbish increased to such an extent that it was only possible to crawl. I proceeded far enough to get my head into the third discharging chamber (G) and hold up a candle, but it was quickly extinguished by a flight of bats which came streaming out.

In June 1922 I approached Lt.-Col. Stokes, Director of Works, who showed the greatest interest in my proposed researches and gave permission for the clearing away of rubbish from galleries and towers, provided that he was kept informed of what was being done, and that no charges fell on Army funds. As a result of this sympathetic attitude, and the liberality of the *Comité* in

[1] The courses average 39 cm. in height, and the blocks have a drafted edge surrounding a flat but rougher centre, a «faux bossage» in fact.

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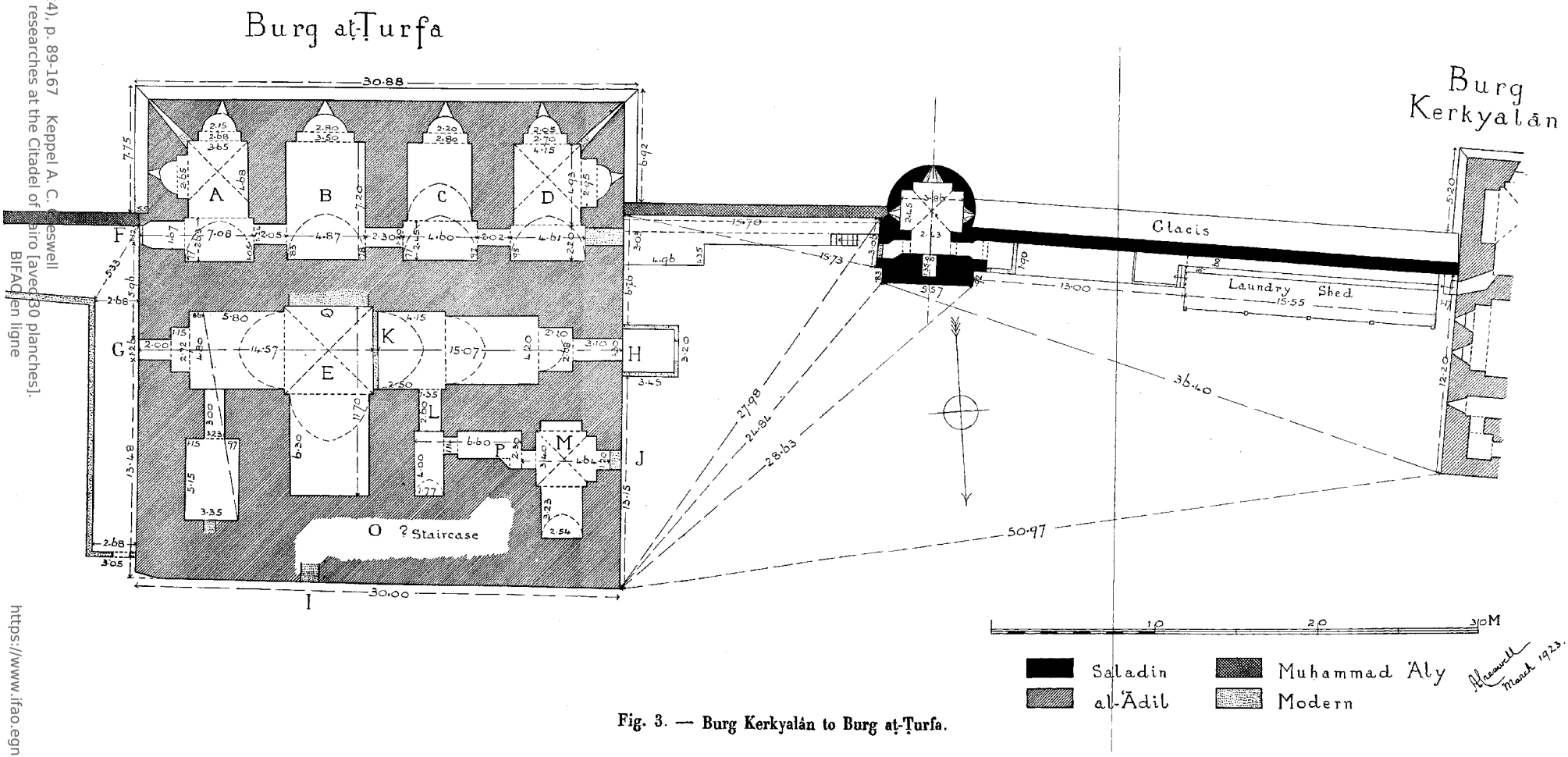


**Fig. 3. — Burg Kerkyalán to Burg aṭ-Ṭurfa.**

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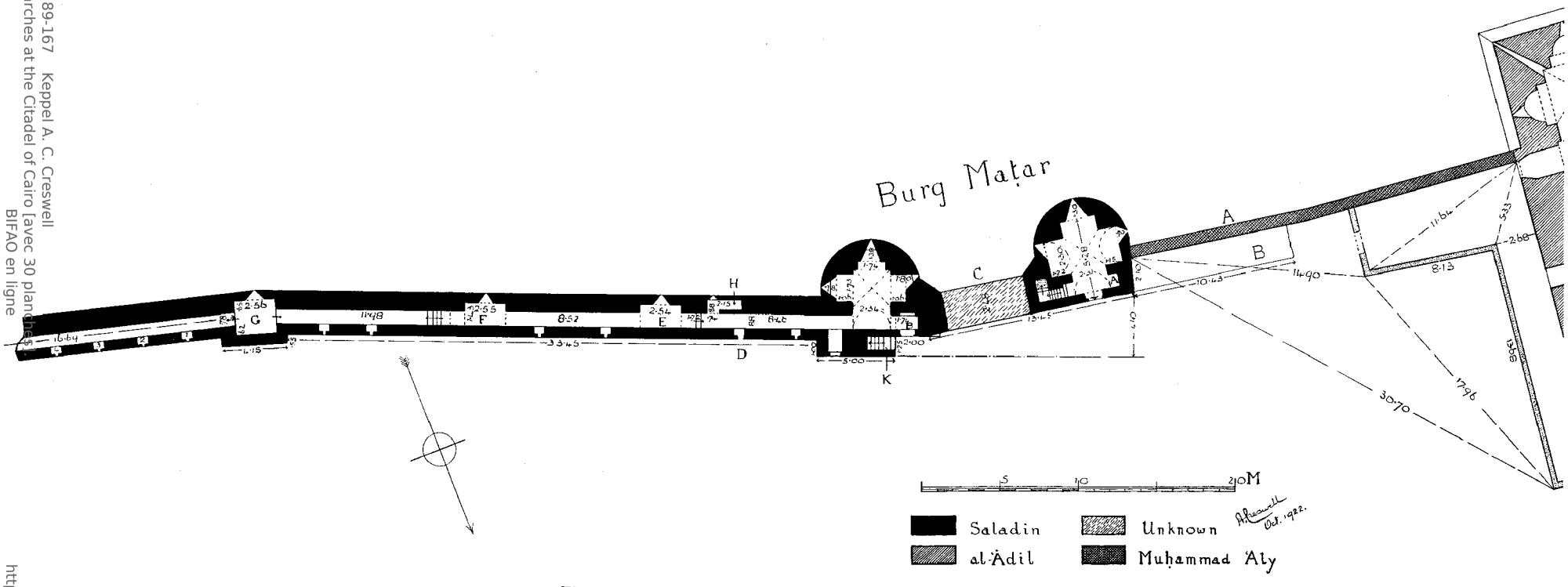


**Fig. 4. — The Citadel : Burg Maṭar, etc.**

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making the necessary grant, the whole length of gallery between Burg Maṭar and Burg al-Mubalaṭ was cleared, and I was able to make the attached plan (Fig. 4).

It will be seen that the curtain wall is provided at distances varying from 8 m. 50 to 12 metres, with discharging chambers (E, F and G) sufficiently deep to enable a man to draw an arrow without obstructing the corridor [1]. The arrow-slits are widely splayed, and 1 m. 70 in height, which is much more than those of the Fâṭimide fortifications of Cairo [2]; moreover they open from the floor level, which would enable an archer to step right into them and get a deep plunging fire, an impossibility with the older type. They must therefore be considered as a marked improvement. Instead of being covered by a tapering vault, like half a cone laid on its side, they are spanned in every case by a great lintel, above which is a nearly flat arch arranged to relieve the

[1] The distance from the back of the corridor to the outer edge of the arrow-slits is about 2 m. 10. Some old arrows of Turkish type, preserved in the Cairo Museum, average 72 3/4-73 centimetres in length, which agrees with Pyne-Gallwey's figure for the Turkish war arrow of 28 1/2 inches (see his *Projectile-Throwing Engines of the Ancients*, p. 18). An archer would therefore require 0 m. 73, plus say 0 m. 45 the length of his fore-arm, or 118 cm. to draw a bow. This subtracted from 2 m. 10 gives 0 m. 92, which is just the width of the corridor!

[2] For the Fâṭimide fortifications of Cairo, see Maqrîzî, *Khiṭaṭ*, I, pp. 377, 379 and 380-382, and Casanova's transl., *M. I. F. A. O.*, IV, pp. 77-95; Qalqashandy, Wüstenfeld's transl., p. 70; Maillet, *Description de l'Égypte*, pp. 209-210; Pococke, *Description of the East*, I, p. 30 and plate XIII; Napoleon's *Description de l'Égypte*, état moderne, XVIII, 2e partie, pp. 300 and 523-528 and Planches, tome I, pl. 46-47; al-Gabarty (French transl., Bulâq), VI, p. 302, and VII, pp. 54-55; Hay, *Illustrations of Cairo*, plate XV and relative text; Roberts, *Egypt and Nubia*, vol. III, 3rd plate; Castellazzi, *Ricordi*, pl. 31; Rhoné, *L'Égypte* (2e éd.), pp. 354-361; Prisse d'Avennes, *L'Art arabe*, texte, pp. 75-79, 162-164 and figs. 6-10, and Atlas, plate III; Kay, *Al Kahirah and its Gates*, *J. R. A. S.*, 1882, pp. 235-244; Artin Pasha, *Bab Zoueyleh*, in the *Bull. de l'Inst. égyptien*, 1883, pp. 127-152; Kay, *Inscriptions at Cairo and the Burju-ẓ Ẓafar*, *J. R. A. S.*, 1886, pp. 82-84; van Berchem, *Notes d'archéologie arabe*, in the *Journal asiatique*, 8e série, tome XVII, pp. 443-478; his *Corpus inscriptionum arabicarum*, I, pp. 56-62 and 707-708, and plates XVII-XIX; Casanova, *Citadelle*, pp. 525-553; Talbot Kelly, *Egypt*, plate 13; Herz Bey, *C. R. du Comité de Conservation*, 1897, pp. x-xii; Worsfold, *Redemption of Egypt*, pp. 93-95; Franz Pasha, *Kairo*, pp. 19-21; Lane-Poole, *Story of Cairo*, pp. 150-154; and his *History* (2nd ed.), pp. 152-153; Margoliouth, *Cairo, Jerusalem and Damascus*, pp. 20-21; Saladin, *L'Architecture*, pp. 104-108 and figs. 60-62; van Berchem and Strzygowski, *Amida*, pp. 21-22, 307-308 and Abb. 257; Rivoira, *Moslem Architecture*, p. 178 and figs. 153-155; Mrs. Devonshire, *Rambles in Cairo*, pp. 20-24 and 67; and my *Brief Chronology*, *B. I. F. A. O.*, XVI, pp. 53-57.

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central part of the lintel. I must emphasize the fact that this description applies to all the arrow-slits in (*a*) the two half-round towers we have just examined, (*b*) the whole of the gallery, which, as I have said, runs for about 650 metres from this point, and (*c*) all the half-round towers through which it passes. The outer wall of the corridor averages 1 m. 15 in thickness, and the inner 0 m. 65 only. The latter is pierced with numerous windows, which, it will be observed, are placed so as to light the space between the discharging chambers, the latter being amply lit by the arrow-slits. The whole gallery is roofed by massive stone slabs resting on a continuous splay-face corbel course. At the discharging chambers, the increased width to be spanned is reduced by an extra corbel-course, and in the third as many as three are provided (Plate IX, A) on account of its exceptional width (2 m. 06). Near the entrance to this gallery, there is a small narrow room (H), which may have been a latrine. The floor level varies slightly, generally descending one step to each chamber, but after the second it rises four steps and continues at that level.

The floor of this gallery sounds hollow if stamped on, and from the exterior one can observe three arrow-slits at a lower level [1], which must belong to a lower gallery, but I have failed to find a way into it. I once thought that the little room might be the commencement of a staircase, and had the rubble floor removed to a depth of a foot. This was sufficient to show that the faced side walls did not continue downwards and that the rubble was therefore not a late filling up.

Burg al-Mubalaṭ. — The angle tower — Burg al-Mubalaṭ — is similar to the one next the entrance, except that it is set askew, in order to give a flanking fire to the south and east façades (Fig. 5) [2].

The ramparts were originally reached by a stone staircase at K (Fig. 4), but the entrance to it has been walled up, and one now ascends by a fixed wooden ladder on the other side of the slight salient. There are no crenellations to be seen, only a parapet with loop-holes for musketry, very cramped and badly

[1] See Plate VII A, — one can be faintly seen to the left of the water-pipe, and another (blocked up) in the east tower, which, I have already remarked, must have had a lower storey.

[2] Its axis, however, as may be seen on the plan (Fig. 5), does not exactly bisect the angle formed by the enclosure.

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designed like those at the top of the Burg Kerkyalân. The top of the parapet is 16 m. 80 above the cliff of rock, which itself is 10 metres in height. This parapet is, no doubt, due to Muḥammad ʿAly. All the half-round towers have likewise lost their crenellations and been re-topped with a parapet of similar masonry, but loop-holed for cannon.

It is possible to pass along and enter the upper storey of the angle tower; the interior on inspection turns out to be similar to the lower chamber (Fig. 5). On passing through we have on our left a staircase which runs up diagonally across the back of the tower to the summit, and on our right, just before emerging, is a walled-up doorway, which must have opened on the staircase to the lower gallery of the east façade. We shall see that intercommunication of this sort is provided at every tower. The walling-up has been done in good masonry, distinguishable from the rest by its dressing, which has been done with a toothed instrument, as is still the practice at the present day. The passage wall to the right having been repaired at the same time, the line of the doorway is only visible on the left side and at the top; on the other side the characteristic filling-in masonry merges with the new wall facing for several metres. A great deal of blocking up of doors, etc., has been done all over the Citadel in modern times in poor rubble masonry, but the above instance is quite a different matter. Many patches of sound work so dressed may be found in the galleries of the curtain walls, and in the towers. This dressing, so far as my experience goes, is only found in Cairo after the Turkish conquest, and it shows that the Citadel must have been thoroughly overhauled during the Turkish period, in spite of the apparent silence of the texts. The entrance to, and exit from, this tower are both spanned by a lintel with a relieving block hollowed on its under side.

We must now return to the lower chamber. On entering it again we observe that a similar passage leaves it on the opposite side; after a few metres this passage descends several steps, and a couple of metres farther on is (Fig. 5, at A) walled up. The reason for this is clear : the corbel course on the left side has perished and the heavy roofing slabs have sunk slightly. A thin wall of rubble has been built against the left side to support the sunken end of the ceiling slabs, but the passage has been blocked up with rubble as a precaution. But there is here a puzzling feature : this short length of passage is of nearly twice

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the normal height, and, at the back, i. e. the north end, it is in two storeys, the floor of the upper being formed by the sunken ceiling slabs of the passage which begins after the descent of several steps just mentioned. The upper level is reached by the remains of a flight of steps placed at the right side of the passage, which at this point has purposely been made of extra width. On climbing this damaged flight, we come to the commencement of an upper passage, a metre or so in length, ending abruptly in a piece of blank wall in good condition, which however is not original work, as it is distinguished by the Turkish dressing referred to above, and its courses do not quite correspond with those of the side walls. The level of this upper passage corresponds with that of the interior gallery of the next length of curtain wall, which is slightly higher than that of the length we have just examined. Above, on the rampart walk, the change in level is made in two places (1) by a flight of four steps at the entrance to the tower (B), and (2) by two more steps on emerging into the open on its north side (C). On planning the whole, the distance between the face of the filling-in wall and the end of the passage behind it appears to be just over 4 metres.

But where does the lower passage lead to? At first sight one is inclined to believe that it must lead to a lower gallery of the eastern curtain wall. However the arrow-slits of the upper gallery, which we shall presently enter, are less than 4 metres above the rock ledge, as may readily be observed from the next tower. Although this would just allow room for a lower gallery the arrow-slits would open almost at the rock level, so one is tempted to dismiss the idea.

Another alternative presents itself. Can the gallery double back underneath the gallery we have just passed through? We have seen that there is a lower gallery under at least the western half of it, and although there is no more depth for the first 20 metres from the eastern end than there is on the other side of the tower, the objection in connection with the lowness of the arrow-slits does not arise here, as there is no ledge of rock, the vertical face of the cliff being nearly flush with the curtain wall (Plate VIII). But we have been too precipitate. The same conditions obtain in the first length of the east enclosure, as it is only on approaching the first tower beyond the corner that a broad ledge of rock is left between the top of the cliff and the curtain wall (Plates IX A and X). It is therefore permissible to believe that the blocked up passage conti-

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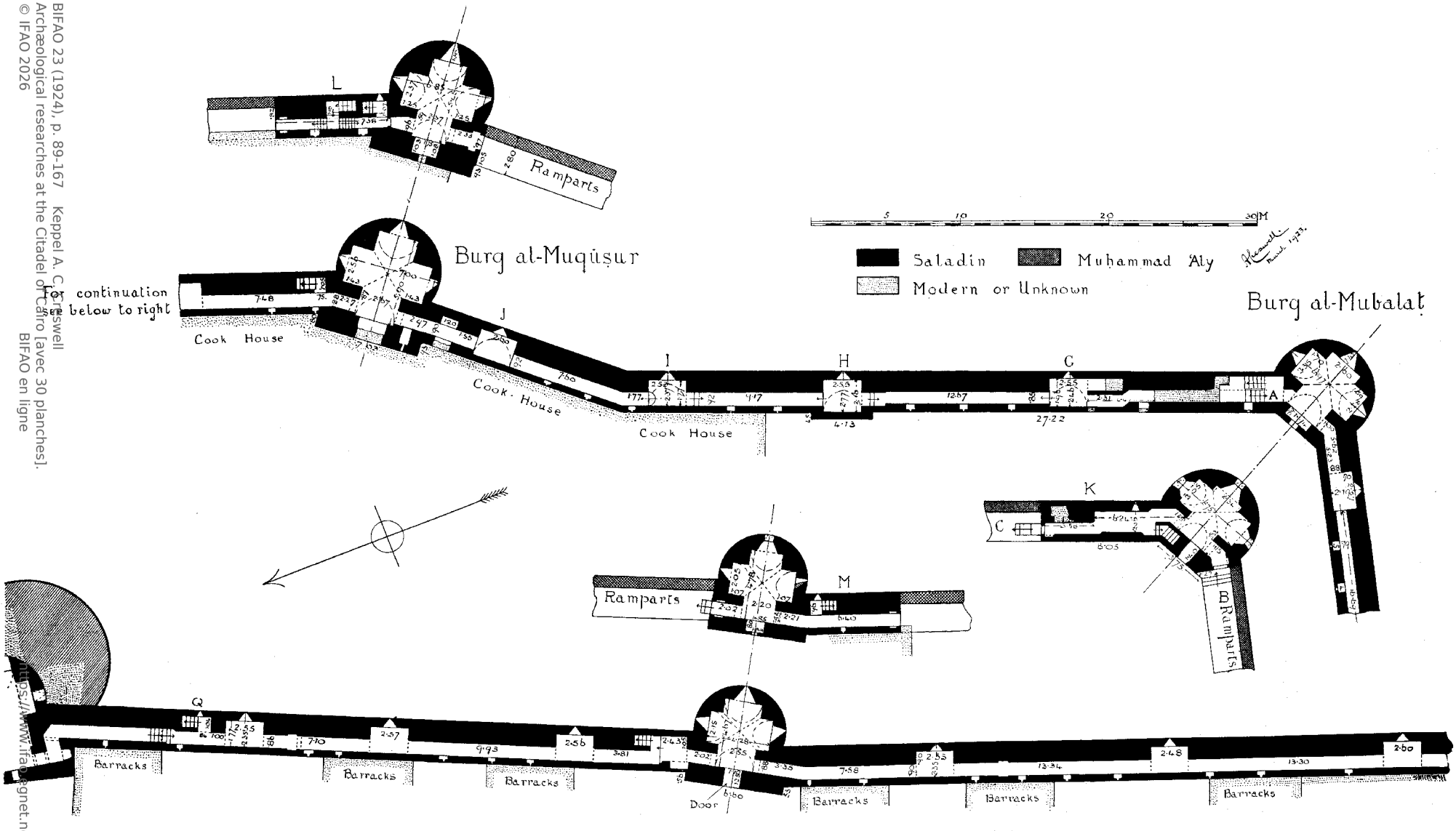


**Fig. 5. — Burg al-Mubalaṭ to Burg al-Imâm.**

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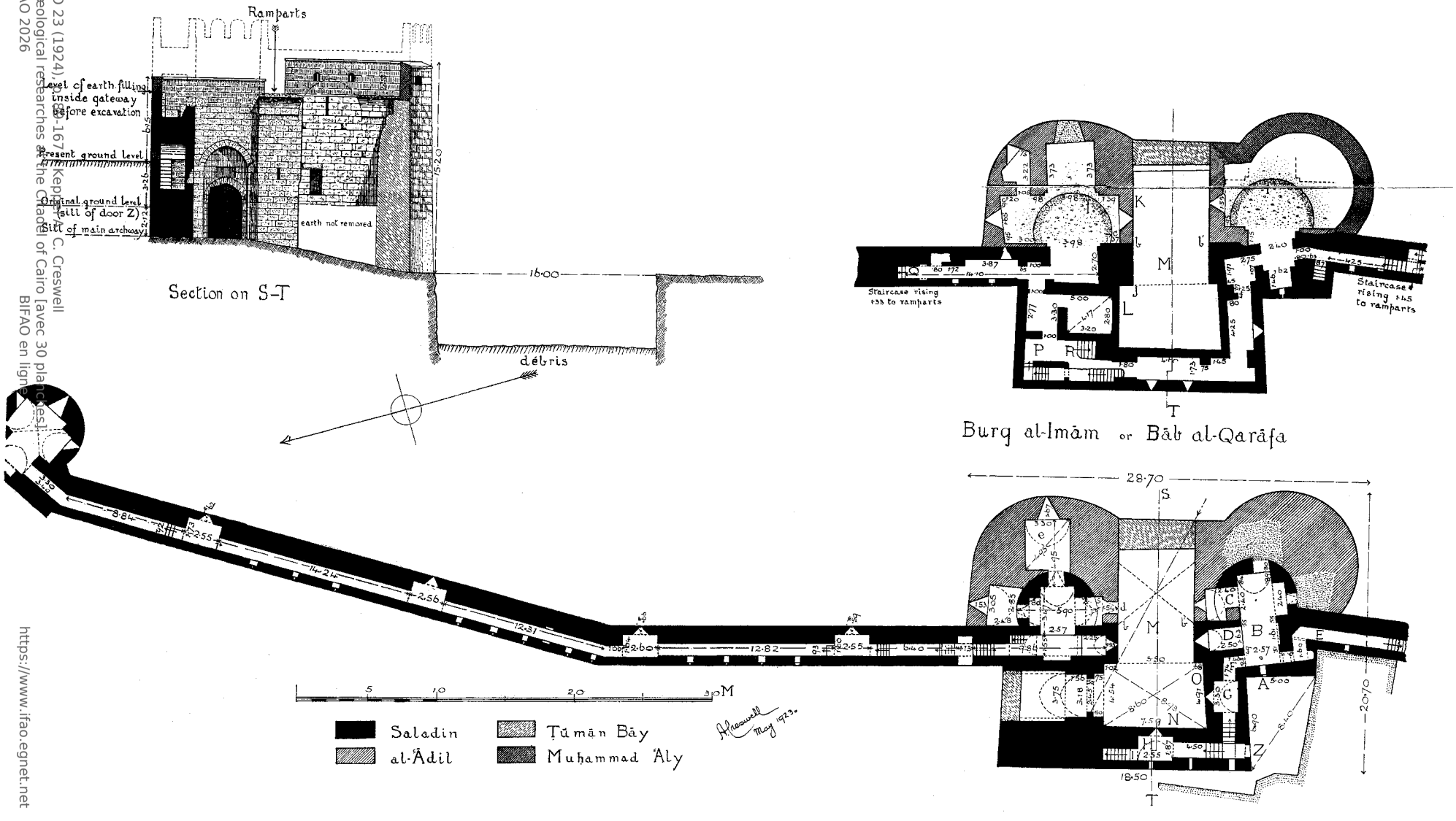


Fig. 6. — The Citadel : The Bâb al-Qarâfa.

nues as a lower gallery as far as the next tower. Unfortunately the outer wall surface and any arrow-slits there may have been in it cannot be examined, as it has been covered with a very thick coating of cement to a height of over 3 metres[1].

There is yet another possibility. Just north of this corner is a curious solid half-round tower, built on the ground level and only rising just above the top of the cliff (Pate IX, A). From its masonry, etc., it appears to belong to the late Turkish period. Can it be that the passage which is puzzling us leads down to a secret exit, now blocked up by this solid tower?

Burg al-Mubalaṭ to Burg al-Imâm. — This length, which measures about 175 metres, is similar to that which we have just studied. It is strengthened by two intermediate towers (one called the Burg al-Muqûṣar), which divide it into three lengths measuring 55, 53 and 43 metres respectively. In June 1922, I first penetrated into the north end of the gallery which runs through it, by squeezing through a window like an arrow-slit, at the back of Burg al-Imâm (at A, Fig. 6). As on a previous occasion, I was able to do so, because one side of this opening had been broken away. I found myself in a vaulted chamber, which we shall discuss later (see p. 150); it is enough for the present to say that opening out of this chamber on the right side was the interior gallery of the curtain wall. It was much fuller of rubbish than the other length, and I was only able to penetrate 6 or 7 metres, but I could see a considerable distance just under the ceiling slabs and observe light entering in one or two places.

A certain sum of money having been left over after clearing the other length, the *Comité* agreed to spend it here, and in a few weeks this length was cleared also. It turned out to be identical in style to the other — the thickness of the wall, the width of the gallery, the construction of the arrow-slits, the windows on the inner side, the ceiling of flat stone slabs resting on a continuous splay-face corbel course, all are identical in both lengths. The only

[1] Herewith the explanation of this feature : « En 1889, j'eus la stupéfaction de voir les Arabes tranquillement occupés à détacher d'énormes blocs pour les débiter en menus cailloux, et élever à quelques pas de là de misérables cahutes. Depuis, on a empêché ces singuliers abus ; les parties délabrées ont été recouvertes d'un solide ciment qui enlève un peu du pittoresque, mais conserve ces débris de la vieille forteresse de Ṣalâḥ ad-Dîn. » Casanova, *Citadelle*, p. 514.



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departure from type is to be found in the first four discharging chambers from the south end (G, H, I and J), in which the ceiling, instead of being flat, consists of a tunnel vault with its axis at right angles to the wall (Fig. 5). The towers, too, are similar, each consisting of two stories of cruciform chambers, with three arrow slits, one giving an outward, the other two a flanking fire. Attached to each, on the level of the ramparts, is a short length of passage (K, L and M) which, so to speak, makes the curtain wall of two stories for some 7 metres or so (Plates IX B and X). The staircase to the top of the tower is arranged in these pieces. In the corner tower the staircase which puts the gallery in communication with the ramparts, has all been filled up with rubble, but it is intact in the second tower. It is broken away in the third, and its upper end has been walled up. A fourth staircase (Q), quite intact, was cleared out. It comes up through the floor of the rampart a few metres to the south of Burg al-Imâm. There is a shallow recess on either side of these upper passages at both ends (Fig. 5), into which the double doors, which shut off the towers from the rampart, folded back, and above on each side is a square hole for the beam in which the door spindles were set. In the gallery below are similar recesses, showing that it must have been possible to cut it up into independent sections.

The rock-cut cliff, which is practically flush with the walls at the corner, retreats after the first tower, leaving a ledge averaging 10 metres in width until quite close to the Burg al-Imâm, where it ends abruptly, its edge turning inwards and disappearing under a slope of débris (Plates X and XXVI A)[1].

Burg al-Imâm to Burg ar-Ramla. — I first entered this length of gallery from the interior of the Burg ar-Ramla, which faces ʿAbbâsîya. To reach this tower I passed across the top of Burg al-Imâm which, before the excavations carried out under my direction, presented an even expanse of gravel and continued along the ramparts for about 70 metres, until I came to the next half-round tower, which is 12 metres high and similar in construction to those already examined (Fig. 7, A). The interior of this tower, upper floor, is reached after pas-

[1] Some of this débris is due to rubbish thrown out through the arrow-slit alongside, when the gallery and towers were cleared, but some was already there, and is, no doubt, due to builders rubbish, dumped over the parapet from time to time.

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sing from the ramparts into a passage, on the right side of which is a staircase (B) leading to the top. This passage leads into a cruciform chamber (A) of the usual type, on the opposite side of which is another passage (C) which should take us into the open again. However, it is blocked up at a distance of 3 m. 90 metres from the tower chamber. On ascending to the top of this tower, we find that, like its fellows, it has been given a new parapet with embrasures for cannon. On the far side however may still be seen the remains of the original crenellations. A wooden ladder placed at this spot takes us to the top of the married quarters of the Army of Occupation, a great block of barracks which occupies this end of the Citadel [1]. The upper storey of these barracks is level with the ramparts, which now form part of its floor, and the parapet has been continued upwards to form the outer wall. This, of course, is the reason why the short passage beyond the tower chamber, which must once have opened on a further length of ramparts, has been blocked up. Walking over the flat roof of the barracks we come to Burg ar-Ramla, which rises well above them (Plate XI).

Burg ar-Ramla is a great tower, almost circular, with a diameter of over 17 metres, built of rusticated masonry similar to that of the two great square towers on the south façade. It is 20 m. 80 in height, measured from the rock at its base to the top of its parapet.

We have so far observed two types of masonry in that part of the enclosure which we have examined in detail : (*a*) smooth masonry the courses averaging 43,5 cm. in height, with stretchers about 80 cm. in length and very narrow headers, few being more than 19 cm., and (*b*) rusticated masonry of large blocks, the stretchers being about a metre and a half in length, and the headers 33 cm., although the courses only average 43,5 cm. in height. The curtain wall and all the half-round towers are of the former type, the two great square towers and the Burg Ṣofṭa of the latter. We have moreover seen that in all their details of construction the curtain walls and half-round towers are a uniform piece of work — all the arrow-slits are constructed in

[1] See Plate XI, where two windows of this block are just visible between the small and large tower in the centre of the plate.



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the same way, all the openings are spanned by lintels and flat relieving arches, and all the towers are similar in size and plan, — cruciform and cross-vaulted. Which type of work is the earliest and therefore the work of Saladin, and who is responsible for the other? The tower to which we have just come will provide the answer to the first part of the problem. Let us therefore descend by the staircase (D) which runs down inside its rear face, and examine the interior.

On descending we find ourselves in a passage of a type to which we have now become accustomed, in width about 0 m. 90, roofed by stone slabs on a continuous splay-face corbel course. As the staircase has descended obliquely we must double back to enter the central chamber E, which, in spite of the great external diameter, it is surprising to find is no larger than those we have already seen. Moreover, although the masonry is covered with a thick coating of plaster, it is easy to see that it is of the same plan — cruciform and cross-vaulted — with an arrow-slit pointing outwards and one to right and left giving a flanking fire. But these arrow-slits have been seriously tampered with; they have in fact been so cut away that it is possible to walk through them. On doing so we find that each leads into a room, about 4 m. 10 × 2 m. 75, roofed with a pointed tunnel-vault. On the far side of each is an arrow-slit, but, most important of all, on turning round to leave each room we observe that the side by which we entered is curved in plan, it is in fact the outer face of a tower which we are looking at, a tower of the same size and type as the other half-round towers, now merely serving as a core round which has been built a mighty one 17 metres in diameter. Its arrow-slits, now mutilated, have been cut away at the sides to serve as doors to the casemates F, F, F of the latter. All now becomes clear : the small half-round tower of smooth masonry, together with its curtain wall, existed before the mighty tower of rusticated masonry which now enfolds it. To Saladin, therefore, must be ascribed the thread of curtain wall set with half-round towers, which is intact for over 650 metres, but to whom must we ascribe the later type of work?

The inscription over the Bâb al-Mudarrag[1] ascribes the Citadel to Saladin,

[1] See Mehren, *Câhirah og Kerâfat,* I, pp. 18-19; van Berchem, *C. I. A.,* I, pp. 80-86; and Casanova, *Citadelle,* loc. cit., pp. 569-571.

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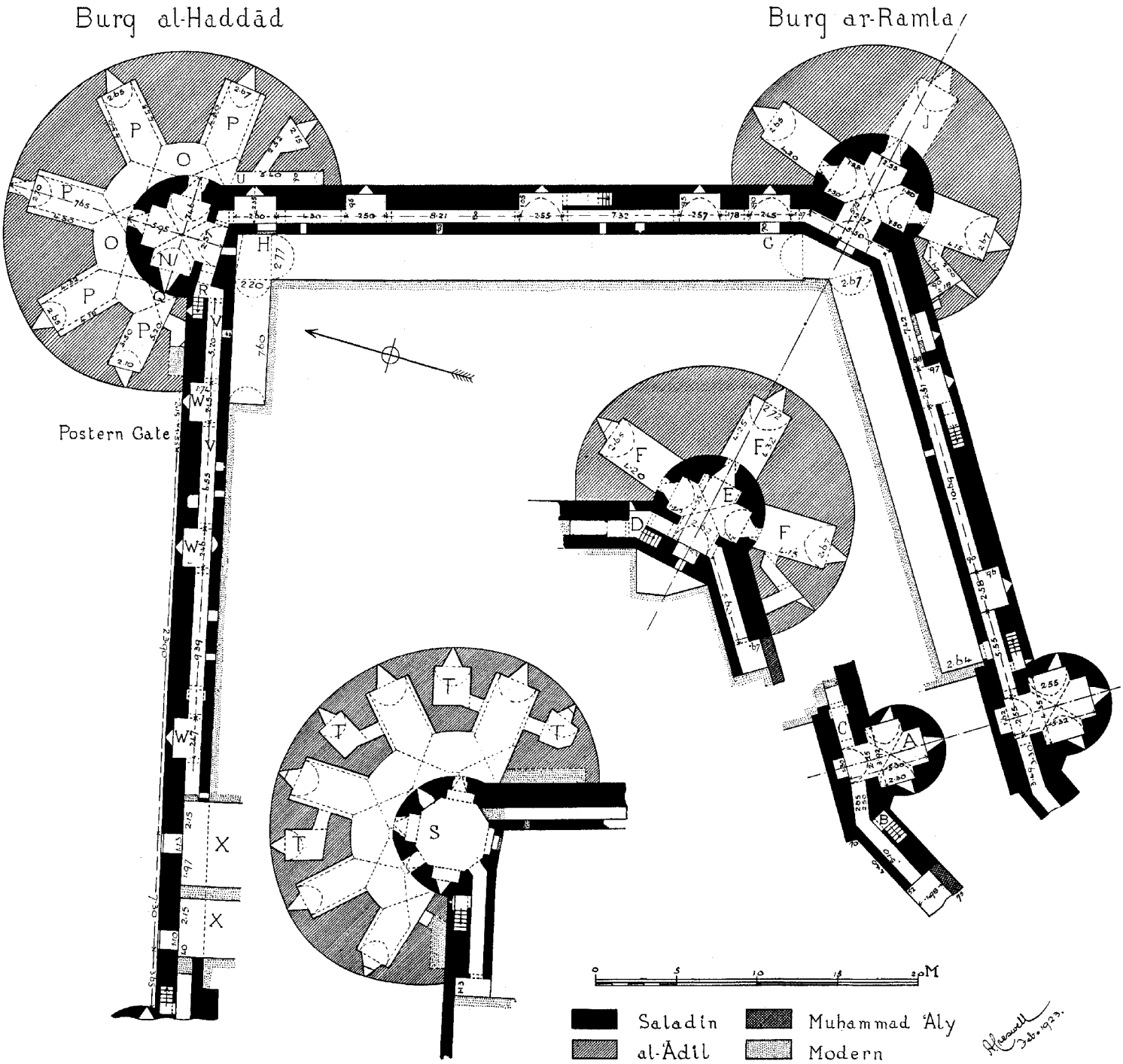


**Fig. 7. — The Citadel : Burg ar-Ramla and Burg al-Haddâd.**

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and, as it is dated 579 (1183/4), one would be led to believe that this date, as is usual, refers to the completion of the work. Nevertheless Maqrîzî, in an important passage, renders this conclusion impossible. He says : « This is how the construction of the Citadel came about. The Sultan Ṣalâḥ ad-Dîn, having put an end to the power of the Fâṭimides, and having rendered himself sole master of Egypt, did not on that account quit the Grand Palace of the Wazîr, which he had up till then occupied in Cairo. However, he was not free from anxiety, both in respect of the partisans which the Fâṭimides still had in Egypt, and of al-Malik al-ʿÂdil Nûr ad-Dîn Maḥmûd ibn Zengi, Sultan of Syria. He took precautions, first of all against the attacks of Nûr ad-Dîn, by sending his brother al-Malik al-Muʿaẓẓam Shams ad-Daula Tûrân Shâh in the year 569 (1173/4) to Yemen, in order to conquer a new kingdom, which would offer him an asylum in case of an attack on the part of Nûr ad-Dîn. Shams ad-Dawla effectively conquered all Yemen, and on the other hand God delivered Ṣalâḥ ad-Dîn from anxiety in respect of Nûr ad-Dîn, who died this very year. Free from all fear in that direction, Ṣalâḥ ad-Dîn wished to secure for himself a strong place where he could establish his residence; because he had divided between his Emîrs the two palaces which the Fâṭimides occupied, and had established them there..... The intention of the Sultan was that the Wall should surround Cairo and Fusṭâṭ in one enclosure, but he died before the Wall and the Citadel were finished. These works were neglected until the reign of al-Malik al-ʿÂdil, who established his son al-Malik al-Kâmil in the Citadel, appointed him as his Viceroy in Egypt, and nominated him as his successor. The latter finished the Citadel, and built the Palace of the Sultan in the interior in 604 [1207/8]. He made it his regular residence until his death, and, after him, it has always been the residence of the sovereigns until this day [1]. »

This is confirmed by al-Bakri aṣ-Ṣiddîq, who says : « Under his reign [al-Malik al-ʿÂdil] the Sultanate was transferred from the Palace of the Wazîrat at Darb al-Aṣfar, to the Citadel in the year 604, and the first who lived in it was al-Kâmil as *naib* [viceroy] of his father » [2].

[1] *Khiṭaṭ*, II, p. 203; translated by Casanova, *Citadelle*, pp. 572-573.

[2] Quoted and translated by Casanova, *op. cit.*, p. 573. The work in question stops at the events of the year 1062 (1653) and the MS. used was copied in 1072 (1661/2).

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I therefore conclude that the towers built in rusticated masonry were raised by order of al-ʿÂdil, but it is advisable to seek architectural confirmation by comparing them with existing remains of al-ʿÂdil's military architecture elsewhere, viz. : the Citadel of Damascus, due in great part to him [1], the Citadel of Bosra (Plate XIII, B) built by him, according to its inscriptions, between 599 and 610 (1202-1213) [2], and the ruined fortifications on Mt. Tabor [3]. The following points of resemblance may be noted: (1) in every case rusticated masonry is employed, (2) in every case the towers are square or rectangular, and, finally, the construction of the arrow-slits which we have observed in the square towers is similar to those on Mt. Tabor (Plate XIII, A), i. e. a tapering vault like half a cone laid on its side, built of well cut stones.

In spite of these points of resemblance, it may still be asked: Is there any reason besides differences of style, for believing that the square towers on the south side are additions to the original work? Yes, because they break the more or less uniform spacing of the half-round towers. The latter are placed at distances varying from 40-55 metres apart, and a glance at the plan shows that the Burg Kerkyalân and Burg aṭ-Ṭurfa are placed between half-round towers, in such a manner that the curtain wall is broken into lengths of 25, 16, 32 and 32 m. 50 respectively. Therefore these square towers, considered from this point of view have all the appearance of being interpolations.

But why are they placed here? The answer is simple; because a cliff of

[1] Van Berchem, *Inscriptions arabes de Syrie*, in *M. I. É.*, III, pp. 465-469 and 514-515, and Sobernheim, *Die Inschriften der Zitadelle von Damascus*, in *Der Islam*, XII, pp. 1-28.

[2] Wetzstein, *Reisebericht über Hauran und die Trachonen*, p. 71. For descriptions, see Seetzen, *Reise durch Syrien*, I, pp. 68 and 72-73; Burckhardt, *Travels in Syria*, p. 233; Richter, *Wallfahrten im Morgenlande*, pp. 181-182; Buckingham, *Travels among the Arab Tribes*, pp. 202, 203 and 206; Berggren, *Reise*, II, p. 63; Laborde, *Voyage de la Syrie*, p. 63 and plates LVII-LVIII; Lord Lindsay, *Letters*, II, p. 272; Rey, *Voyage dans le Haouran*, p. 184; Monk, *The Golden Horn*, etc., II, p. 272; Porter, *Five years in Damascus*, II, pp. 145-147; de Vogüé, *Syrie Centrale*, p. 40; Merrill, *Palestine Exploration Fund, Quarterly Statement*, 1876, pp. 55-56; Schumacher, *Z. D. P. V.*, 1897, pp. 146-147, and Brünnow and Domaszewski, *Die Provincia Arabia*, III, pp. 44-46 and Fig. 927.

[3] Built by him and his son al-Malik al-Muʿaẓẓam between 607 and 612 (1211-1215/6), and destroyed a few years later for strategical reasons. See van Berchem, *Inscriptions arabes de Syrie*, in the *M. I. É.*, III, pp. 459-463 and 512-514, and sources cited, also Conder and Kitchener, *Survey of Western Palestine*, I, pp. 367-368 and 388-391, with plan.

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rock, averaging 8 m. 1/2 in height, already mentioned, commences at a point 45 metres west of the corner and runs practically the whole length of the east side [1]. Obviously, therefore, this part did not require re-inforcing, but the rest of the south façade, being built on flat ground did. Architecture, topography and the texts are therefore in complete agreement. As for the great round towers, Burg ar-Ramla and Burg al-Haddâd, these were built round the small original angle towers with the express object of dominating the pass between the Citadel and the Muqaṭṭam. At this time the Nile reached what is now Station Square, and the North Wall of Cairo, as extended by Saladin, rested on it in a great tower, called the tower of al-Maqs [2]. In the opposite direction the wall ran east to the Burg aẓ-Ẓafar, and then turned south to the Bâb al-Wazîr. It therefore follows that a body of men on the east bank of the Nile, if they did not wish to enter Cairo, could only march south by the narrow pass between the Citadel and the Muqaṭṭam [3], a pass which at that time was much narrower at its northern end than it is now. Hence the importance of these two towers and the reason for their re-inforcement by al-ʿÂdil.

Let us now make a further examination of this tower. To get to the lower storey I had to obtain a ladder and descend the well which has been formed between the barracks and the rear face of this tower. On descending we observe that the barracks are not in contact with the curtain walls at the ground level. On the contrary they are separated from them by a great tunnel vaulted gallery, which runs round two sides of this salient; the space behind the two great angle-towers has, however, been left open to the sky [4].

We can pass along this tunnel-vault and enter the curtain wall between the

[1] This, at the present day, is not quite clear near the north end owing to the débris which has accumulated there.

[2] This tower stood near the site of the present Mosque of Walâd Inân on the west side of Sharîʿ Nubar Pasha, shortly before it enters Station Square (Meydân Bâb al-Ḥadîd). See Casanova, *Citadelle*, p. 539.

[3] Unless, of course, they are prepared to make a detour of a dozen miles or so without water, going up to the top of the Muqaṭṭam by the wady behind ʿAbbâsîya and coming down by the wady behind Ṭura.

[4] The barracks have rooms on the ground level facing inwards, as rooms facing outwards could not be lit, but the upper floor which extends right across this tunnel-vault on to what was formerly the ramparts, has two sets of rooms opening off a long central corridor, one set facing inwards, the other resting on the tunnel-vault and facing outwards. The floor of these rooms is on a level with the original ramparts and their outer wall is merely the parapet continued upwards.

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Burg ar-Ramla and the Burg al-Haddâd by the windows with which its rear face is provided. There are two doors, G and H, and opposite ends of this length; G was partly walled up when first I saw it, and H was not only walled-up, but covered with débris also. This has since been cleared away. The lower storey of Burg ar-Ramla is a replica of the upper, and the arrow-slits of the inner tower have been cut away like those above, but it is not possible to pass into chamber J on account of the height of the dust and rubbish, and to enter the other chambers I had to crawl on my stomach. As above, there is a small supplementary chamber (I), probably a latrine, to the right, and one can see and recognize the masonry of Saladin's work, whose curtain wall forms one side of the chamber, as shown [1]. We can pass westwards along the gallery in the curtain wall, through three discharging chambers, until we come to the lower storey of the half-round tower, which is similar to the upper one, and thence, with difficulty, to within a few metres of the two coupled half-round towers, after which the passage, which is without light and infested with bats, is completely blocked [2]. The whole of this gallery is exactly similar in every respect to the two lengths we have already examined (Fig. 7). If we pass out of the lower storey of Burg ar-Ramla on the north side, we find ourselves in a fourth length of gallery, identical in type, which brings us into the lower storey of Burg al-Haddâd.

Burg al-Haddâd. — Like its fellow Burg ar-Ramla, this mighty tower is composite. It consists of a small half-round tower of the size and type with which we are now familiar, enfolded in an immense addition 22 metres in diameter and 21 m. 70 high. The gallery leads us, of course, into the cruciform interior (N) of the original tower from which we pass into the newer part, through mutilated arrow-slits as before. The 15 metres extra diameter of the addition has

[1] In this tower, and in Burg al-Haddâd the masonry of the lower storey, unlike the upper, has not been disfigured by a coating of plaster. Saladin's masonry is remarkable for the narrowness of its headers.

[2] I walked down this passage bent nearly double, holding an acetylene candle in one hand, and my note-book in front of my face with the other. Bats came streaming by and every few seconds I heard a grunt from the man behind me, as one of them hit him in the face. This passage is now completely clear, and adequately lit since the filling-in has been removed from the arrow-slits. This filling-in was frequently of rubble, but in many cases in this length, of good masonry.

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provided room for five large outer chambers or casemates (P) opening from a vaulted ambulatory (O) which separates them from the core of Saladin. The vault of this ambulatory is penetrated by the pointed tunnel-vaults of the casemates, and, on walking round it, one can recognize the smooth masonry of the central core, of which one arrow-slit (Q) has remained unmutilated. The arrow-slits of the casemates are spanned by tapering vaults of well-cut stone, like those of the great square towers of the south façade, and of al-ʿÂdil's reinforcement of Burg ar-Ramla, but only one is open at present and that has been mutilated. The inner tower has been set at the corner of the salient as shown in a different way from the other, which is placed nearly symmetrically like the Burg al-Muballaṭ. It will be seen from the plan that communication between the gallery and the ramparts is provided at much closer intervals in the south and east sides of this salient, than elsewhere. A staircase (R) in the west side of the inner tower of Burg al-Haddâd ascends to the upper floor[1], in what may be called the staircase-annexe of the tower, exactly as arranged elsewhere, with the exception of the inner tower of Burg ar-Ramla. In the same annexe, at a higher level, is a second staircase which once led to the top of the inner tower, now part of the larger area which forms the top of this great composite tower[2].

Of all the half-round towers in the enclosure this is the only one which shows any variation from type. Although the lower chamber is cruciform and normal in every respect, the upper one (S) is an octagon, the eight sides of which are occupied by one window (at the back), two entrances (one blocked up), three arrow-slits in recesses, quite normal in type, and two narrow arrow-slits, not in recesses. The enveloping tower, at this level, is similar in plan to the lower storey, except that four small additional discharging chambers (T), each provided with an arrow-slit, have been added as shown.

One small point must be noted, the narrow passage (U), which opens from the right end of the ambulatory, is roofed by a tunnel-vault. This predilection for a tunnel-vault, even in narrow passages, which Saladin's architects always covered by flat slabs on a continuous corbel course, is a peculiarity which we shall find again in work which I attribute to al-ʿÂdil.

[1] When I first explored this tower, the upper exit of this staircase was walled-up.

[2] The upper exit of this staircase also was blocked up until recently.



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The top of this tower is provided with seven tunnel-vaulted recesses carrying a banquette. Four of these recesses served arrow-slits, now converted, with one exception, into embrasures for cannon (Plate XV). The remaining three are arranged as mâchicoulis (Plate XIV), but cannon embrasures have been cut in the outer wall of these also. I cannot distinguish traces of mâchicoulis at the summit of Burg ar-Ramla.

Postern Gate. — In the curtain wall, on the west side of Burg al-Haddâd and at a distance of 2 m. 15 from it, is a postern gate (Plate XIV, B) now walled-up. It is quite small, being only 1 m. 55 wide and 2 metres in height. This gate, which does not appear to have been mentioned by any author, no doubt served for the exit of troops sallying out against a hostile force attempting to pass between the Citadel and the Muqaṭṭam.

Opening out of the west side of the lower tower chamber is a continuation of the curtain wall gallery (V), which passes immediately over the top of this postern gate, and continues for just over 30 metres. This length is provided with three discharging chambers (W) with embrasures. A few years ago it was possible to continue onwards to the Burg aṣ-Ṣaḥrâ, but this, unfortunately, is no longer possible, as the inner side of the gallery has been cut away for a length of some 11 metres, and the outer side pierced with two windows, giving light to a couple of barrack-rooms X, a most unfortunate piece of vandalism [1]. To enter the next length of gallery one must go to the Burg aṣ-Ṣaḥrâ.

The Burg aṣ-Ṣaḥrâ, which can be distinguished by the great iron water tower, painted red, which surmounts it, is, as we can see at first glance, composite. Externally it appears to consist of a half-round tower, placed at a corner

[1] The east and south sides of this salient are separated from the barracks, at the ground level, by a great tunnel-vault, as we have already seen. On the north side however there is no such tunnel-vault, its place being taken by unlit and unused barrack-rooms, that is to say, the lower floor of the barracks on this side is arranged like the upper floor, and consists of a row of rooms on either side of a central corridor, instead of on the inner side only. The two windows mentioned above were cut c. 1920, to render two of the unlit rooms habitable. In the summer of this year (1923), I learnt that a scheme had been sanctioned to pierce five or six more windows in this curtain wall, to render the rest of the unlit rooms habitable. I immediately went to see Col. Wilson, Chief Engineer in Egypt, and put my point of view before him, and I am glad to say that he decided that Saladin's work should not be mutilated.

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of the enclosure (Plate XVI, B and XVIII), but, seen from within, the first feature that presents itself is a great rectangle of rusticated masonry, 12 m. 70 × 21 m. 30, which occupies the re-entrant angle (Plate XVII, A). The masonry, which has evidently been re-made or re-touched in the upper part, is, in its lower courses, like that of the great square and the two great round towers. A door, obviously re-made, in the centre of the south side, gives access to the curious interior. On entering we observe a long tunnel-vaulted passage (Fig. 8, A), 2 m. 22 in width, running to a pointed-arched doorway (B), — a second postern gate in fact, — which has been solidly walled-up (Plate XVII, B). At a distance of 2 m. 60 from this doorway is a complete vertical break (C) in the masonry on either side and in the vault above, confirmatory evidence that the rectangle is a later addition. On the left of the tunnel-vaulted passage is a broad staircase (D) leading to the platform, now occupied by a great circular iron tank, holding 97,000 gallons, at the side of which is the great iron tripod. A second arch on the left side of the passage opens into a narrower passage (E) leading to a large tunnel-vaulted room (F) 8 m. 85 in length. In its south-western corner are the peculiar passages (G) shown on the plan; their function appears to be to economise masonry under the staircase. On the right of the main passage is a second tunnel-vaulted chamber (H) 5 m. 72 in length, and on its far side is a staircase which leads into the internal gallery (I) of the curtain wall as shown.

The opening (J) by which we pass into the latter deserves attention; it has clearly been cut afterwards, as the sides of it, which are not faced, permit one to see the rubble filling which occupies the space between the facing blocks. The opening (K) next to it has the same peculiarity. The staircase, in spite of its narrowness, is roofed by a pointed tunnel-vault, instead of a flat ceiling on a continuous corbel course. I believe this great re-inforcing rectangle to be another piece of al-ʿÂdil's work.

A turn in the gallery leads into a half-round tower (L), but its continuation on the opposite side has been blocked up. However, the continuous splay-faced corbel course, which we have observed for over 650 metres, is still visible here. There is an ascent of two steps before the obstruction, evidently for the purpose of passing over the arch of the postern gate below. This tower-chamber, unlike its fellows, is very dark, and the reason is obvious. The



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recess on the left (west) side has been walled-up, so that the arrow-slit which it served is no longer visible, and the other two arrow-slits open into crevices in a mass of masonry nearly 2 metres thick. This is clearly a later addition, as the smooth finished face of the original work can be felt, to right and left, by putting one's fingers through the arrow-slits. If we return to the gallery by which we have entered, we find that the same fate has happened to the arrow-slit (M) of the recess next the tower, but the obstruction having been partly broken away at this point, we can just see the outer face of the enfolding work curving away. On descending to the tunnel-vaulted entrance passage and ascending to the top of the tower, we find that the width of the half-round salient at the corner is over 10 metres instead of being about 6 m. 50. In addition to this, the ramparts to the west are noticeably broader than those we have seen hitherto. They measure 3 m. 95, and the parapet, being a metre thick, gives the astonishing measurement of 4 m. 95 as the thickness of the curtain wall against the 2 m. 75 to 2 m. 85 we have found elsewhere. A little further we notice a strip of stone like a curbstone, but flush with the surface, running along with its outer edge at a distance of 2 m. 85 from the inner face of the curtain wall. There are many crevices on the side of this curbstone which is next the parapet, and in places it is even possible to insert a walking stick for its whole length, and feel a smooth masonry face all the way down. In other words the whole of this curtain wall has been re-inforced with an additional wall, 4 m. 95–2 m. 85 = 2 m. 10 in thickness! Moreover this facing has been carried round the half-round tower and just overlaps the first arrow-slit in the curtain wall to the south of it.

This facing, seen from the exterior, is composed of blocks, some rusticated and some smooth, re-used material I conclude. The rusticated stretchers are much shorter than those of the rusticated masonry we have met with hitherto. The postern gate of course is not to be seen, being covered by this casing. Now the great rectangle, as the plan shows, has clearly been designed to preserve access to this postern, which must consequently have been in use at that time. The casing wall, since it blocks up this postern, must therefore be of later date. The rectangle I have attributed to al-ʿÂdil, to whom must we attribute the casing? Evidently to a man afraid of artillery. Who else would add a solid wall 2 m. 10 thick to one already measuring 2 m. 85 and standing

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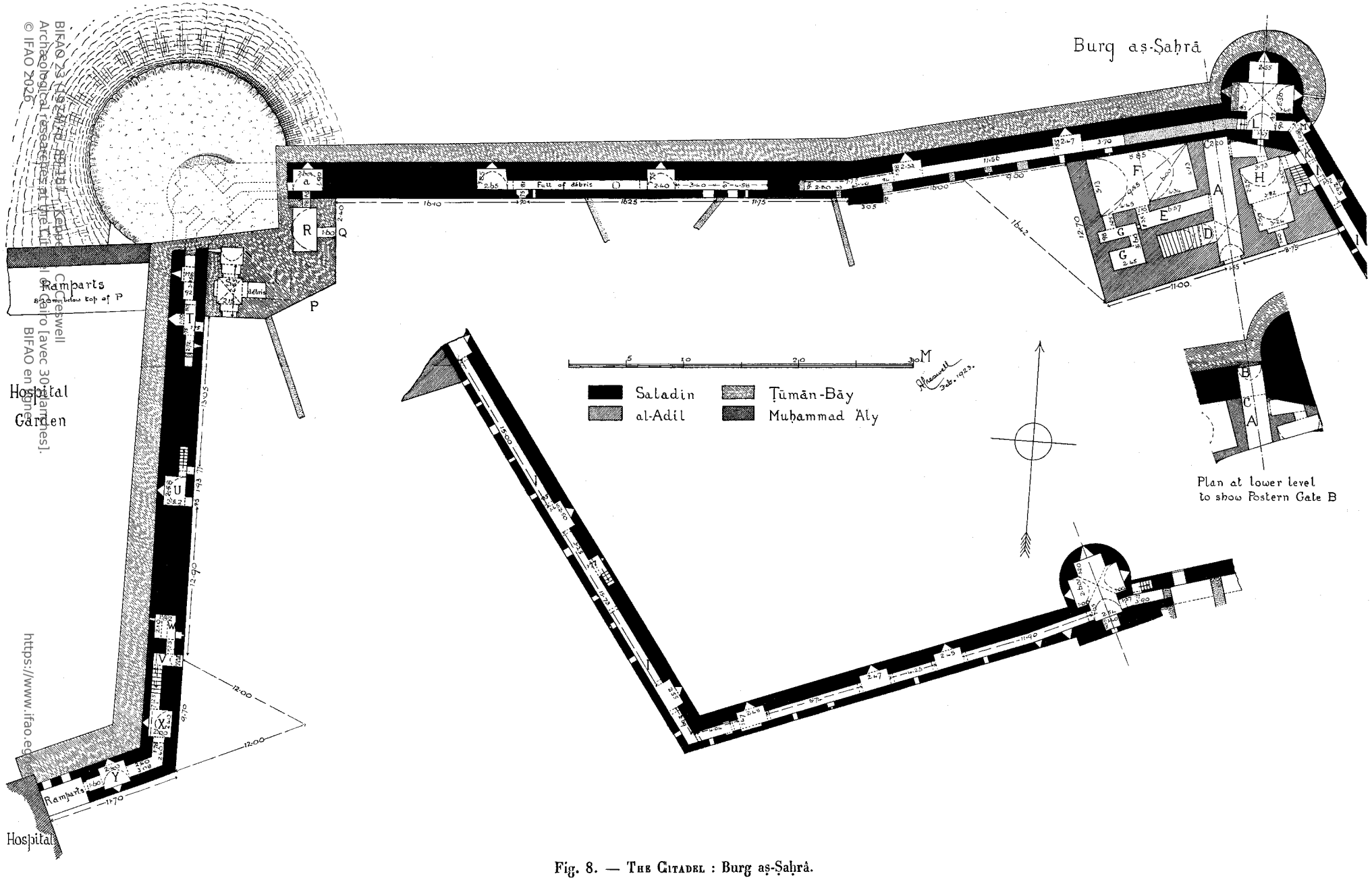


Fig. 8. — The Citadel : Burg aṣ-Ṣaḥrâ.

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at the top of a slope, which would render the use of battering rams almost impossible? Now the first Sultans who had to fear artillery were Qâyt-Bây, Jânbalâṭ and Ṭûmân Bây I, whose reigns witnessed the growth of the Turkish menace, caused by the victories of Sultan Bayezid.

Qâyt-Bây, however, appears to have confined himself to strengthening the fortresses of the northern frontier of the Mamlûk Empire — Aleppo, Birejik, Rûm Qal'â, 'Aintâb, etc.[1], — and although an inscription alongside the Bâb al-Mudarrag[2] records repairs by him, it is probable that they did not amount to much as no historian mentions them[3].

On the other hand, Ibn Iyâs under the date Gumâdâ I, 906 (November-December, 1500) says :« Then the Sultan busied himself with fortifying the Citadel with missile-throwing weapons, the transportation thither of cannon, and the stocking of it with the necessary provisions, such as biscuit, grain, butter, flour, wood, forage, filling the cisterns with water brought by camels, accumulating substantial reserves of cattle, great and small, and all kinds of provisions. Afterwards he built a tower of cut stone opposite the Bâb al-Mudarrag. He fortified the towers of the enclosure of the Citadel. Finally he descended into the Rumeyla, consulted the architects of the towers and decided to destroy the Madrasa of Sultan Ḥasan, dome and minarets. But they could not carry out the demolition. The Emîr Tagrîbardy the Ostadar [Major-Domo] advised the Sultan to abandon this project, and the Sultan gave up

[1] In 882 (1477/8) he made a tour of inspection to the frontier fortresses, which he ordered to be strengthened and put in order, and inscriptions on the Citadel and walls of Aleppo, the gates of Birejik and the Citadel of 'Aintâb testify to-day to his foresight and energy. This journey is only briefly mentioned by Ibn Iyâs (II, p. 175), but a full account of it was written by Abû l-Baqâ ibn Gi'ân, who accompanied him, the text of which has been edited by Lanzone (Turin, 1878), and translated into French by Mrs. Devonshire, *B. I. F. A. O.*, XX. For the inscriptions which record the works, apparently finished five years later, see Bischoff, *Tuḥaf al-anbâ' fi Ta'rîkh Ḥalab*, pp. 134-138; van Berchem and Fatio, *Voyage en Syrie*, I, pp. 207-216 (for Aleppo); van Berchem, *Inschriften aus Syrien*, in *Beiträge zur Assyriologie*, VII, 1, pp. 102-106 (for Birejik) and pp. 107-108 (for 'Aintâb). Qâyt-Bây was so pleased with his work that he gave himself a new title — *ṣâḥib al-qilâ' ar-rûmîyya*, Master of the Fortresses of Rûm, a title which first appears in the inscription of his Okâla at as-Surugîyya in Cairo, c. 885 H. See van Berchem, *C. I. A.*, I, pp. 501-504.

[2] The Bâb al-Mudarrag is the gateway, now no longer used, which put the Citadel in communication with the town. It is described below (p. 140 ff.).

[3] Casanova, *Citadelle*, pp. 702-703.

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the demolition, the news of which had deeply afflicted the people, because nothing so beautiful had been built since Islam [1]. »

It is true that no inscription of Jânbalâṭ exists confirming the above. However there is one alongside the Bâb al-Mudarrag, dated Ramaḍân 906 (March-April, 1501), which is four months later than the date recorded by Ibn Iyâs. It is in the name of Ṭûmân Bây I, who as Casanova points out, only reigned three months and thirteen days. He comes to the conclusion that the inscription records the works of Jânbalâṭ and that Ṭûmân Bây has sought to take credit for them [2]. I therefore believe this casing to be part of the work which one or the other of these two Sultans carried out in 906 (1500/1).

Function of the second postern gate. — What was the purpose of the second postern gate? The explanation, I think, is to be found in the presence, at a distance of about 120 metres to the north, of a *sâqiya* tower 16 m. 50 high (Plate XVIII) serving a well 44 m. 50 in depth, measured from an opening at the base of the tower. This tower, which is of smooth well-dressed masonry, may belong to a considerably later period, but the rock-cut well may easily date from the construction of the Citadel. In any case it is difficult to find any other reason for this postern. It may be objected that the position of the well shows bad strategy, since it is outside the enclosure of the Citadel, but as it is possible that the east wall of Cairo, although only completed as far as the Bâb el-Wazîr [3], was intended to join on to this tower, the well would not have been unprotected under such a scheme.

We must now examine the passage leading southwards from this tower. It proves to be of absolutely the same type as those lengths which we have already examined, both in the style of its masonry, its arrow-slits and its roof. After passing four arrow-slits and a staircase to the ramparts, we turn sharply to the east at a point about 46 metres from the tower. On turning the corner, we observe a recess for the leaves of a door, by which this length could be cut off from the previous one, an arrangement which we have already met with

[1] Casanova, *ibid.*, p. 704, quoting the Paris MS., Bibl. Nat., 595 B., f° 76 v°.

[2] *Ibid.*, p. 704.

[3] Maqrîzî, *Khiṭaṭ*, I, p. 347, l. 34 (Casanova's transl., *loc. cit.*, III, p. 315); I, p. 380, l. 1 (transl., IV, p. 88), and Casanova, *Citadelle*, pp. 542-543. Also translated by van Berchem, *Notes*, loc. cit., pp. 473-474.

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on the east side of the enclosure. After passing three more arrow-slits we enter a half-round tower at a point about 37 metres from the bend. Like the passage, this tower is quite true to type as may be seen from the plan. Just beyond it is a staircase, now blocked-up, which led to the upper floor. When I entered this tower for the first time, there was a great cone of débris which had poured through a hole in the centre of the cross-vault, and I was able to crawl through into the upper chamber. Four metres beyond this tower the passage is walled-up, but until 1918 it led straight on to Burg al-Haddâd. The space between this point and the place where we were stopped when proceeding westwards from Burg al-Haddâd measures 11 metres, and is now occupied by two rooms of the married quarters.

From Burg aṣ-Ṣaḥrâ westwards. — Hitherto we have only examined the top of this section, and ascertained that it has been re-inforced by a wall about 2 metres thick. Let us descend and examine its interior, which can be entered at several points as shown (Fig. 8). In construction it appears to be identical with the many hundred metres of curtain wall we have already examined, but in arrangement it is somewhat different, in that the gallery inside it, instead of being continuous, is broken into short sections separated by solid lengths of wall. If we enter by the opening nearest Burg aṣ-Ṣaḥrâ, we can pass eastwards until we reach a point where it is blocked up; this point is about 9 1/2 metres from the steps in L (Fig. 8). This walling-up was most probably done by the Royal Engineers before placing the great water tank on top of this tower. To the west this length stops 3 m. 80 from our point of entry. If the two barracks rooms already referred to had not been cut through the gallery of the wall, it would be possible to go from this point to the Burg al-Imâm (Bâb al-Qarâfa).

After a little over 4 metres of solid wall a fresh length O, provided with two arrow-slits, runs for just over 25 metres. We now approach a curious tower P, which is without a name on Napoleon's map. We enter by Q and find ourselves in a vaulted chamber R with a rough opening on its north side. On passing through we find ourselves in what is clearly a discharging chamber *a* of Saladin's wall, with a blocked-up passage leading out of its west side. The line of division between the masonry of tower and wall is clearly visible

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on both sides of the opening by which we entered, as shown on plan, 78 cm. belonging to the tower and 65 cm. to the wall.

If we pass round to the south face of this tower, we can enter a square cross-vaulted room S, with a vaulted passage, full of débris, leading out on the east side, which is evidently a staircase to the top of the tower. It turns to the left at right angles and comes out above, but it is too choked up to be ascended. Its upper end, however, is visible from the top of the tower.

Running away nearly due south is a fresh length of curtain wall, which, on examination, proves to be of exactly the same type as the last length, there being no continuous gallery but merely short lengths, as before. The first length T has two arrow-slits and is blocked-up at each end as shown [1]. The second length U consists of a discharging chamber and a long staircase, of about 20 steps, which leads straight up to the ramparts without any turning. The third V runs right and left as shown. To the right it leads into a curious chamber W without any arrow-slit; it was evidently divided into two by a wall of which the upper part only remains; it is a wonder that it does not fall, as there is no lintel and the unsupported length is over 2 metres. To the south a staircase ascends 1 m. 65 to a discharging chamber X of the usual type, out of which leads a passage, which shortly after turns westwards and brings us to a second discharging chamber Y. A little farther on the upper part of the wall is cut away, but the lower part continues until, at a point 11 m. 70 from the corner, it ends against the side of what is now the Isolation Ward of the Military Hospital. The external casing, which starts at the Burg aṣ-Ṣaḥrâ, runs along the whole of this length and then stops likewise against the Hospital.

On ascending the staircase we can look down into the Hospital garden, which is bounded on the north side by a mighty curtain wall with one huge tower in the centre. What then means the arm we have just followed? A glance at Napoleon's map (Fig. 10) shows us that the wall we have just followed was at that time the boundary of the Citadel at this point, and that it continued on an alignment well within the present one. The boundary wall of the garden, therefore, is later than 1799. Now Muḥammad ʿAly built the palace which is

[1] The passage going south cannot have gone very far on account of the staircase which ascends in a line with it.

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now used as a military hospital, and the north façade of this building stands more or less on the alignment of the old wall. To build it, therefore, he must have destroyed a great length of the wall of Saladin, and as it is inconceivable that he would have left a great gap in the enclosure, the new curtain wall was undoubtedly built immediately; in fact the new wall was probably built to a great extent with the material of the old one, and rose as the other was progressively demolished. An examination of its architectural features confirms the view that it is due to Muḥammad ʿAly, who thus did away with the great re-entrant angle between the tower we have just examined and the north-west corner of the Citadel. In doing so he had to carry his wall across an immense depression (see Fig. 1 and Plate XX) which Saladin's alignment was evidently chosen to avoid. The exact junction between the western end of Muḥammad ʿAly's wall and the older work will be discussed in our next section.

Let us return to the corner tower. The plan shows that big changes must have taken place here, since the two mutilated ends of Saladin's wall are embedded in a later structure which fills the gap between them. Moreover we have seen that there is every reason for believing the outer casing to be due to Jânbalâṭ. Is the inner, vaulted part due to him also? Before attempting to answer this question, let us try to reconstruct this corner. Now the three corners we have so far met with in Saladin's work are all defended by a half-round angle tower, viz. : Burg Mubalaṭ, Burg ar-Ramla (core) and Burg al-Haddâd (core). We would therefore expect this corner to have been so defended. On walking round the exterior of the enclosure, traces of such a tower are not immediately visible, but there is something even more surprising to be seen, viz. : the remains of a great round tower, of the same proportions as Burg ar-Ramla and Burg al-Haddâd, of which three or four of the lower courses stand clearly out of the immense cone of débris which slopes away at this point (Plate XX, A)[1]. It was only after I had planned this part that I went round again to see if I could not find traces of Saladin's tower, which, on the analogy of Burg ar-Ramla and Burg al-Haddâd, must have formed the core of the greater one. I was rewarded by finding a curved section of over a metre and a half of faced

[1] Curiously enough these conspicuous remains are not shown on the 1 : 1000 map of the Survey of Egypt, nevertheless they are shown on the Army's map (my Fig. 1).



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masonry, one course high, in the position required by my theory, based on the prolongation of the two lengths of Saladin's wall on the plan which I had made. Although an immense quantity of débris slopes away from the base of the greater tower, the amount on the top of it is comparatively small and a few days devoted to partly clearing it sufficed to show that the space within the re-entrant angle consists of a fairly flat platform of rock on which the walls are built. This platform has been almost entirely cleared of masonry, nevertheless my excavations revealed a little more of the curved face of Saladin's tower, although no traces of the curtain walls which sprang from it remain. The tower must have measured from 6 m. 50-70 across, and I have therefore reconstructed it in dotted lines as shown. I also laid bare that part of the eastern curve of the outer tower, which was covered with débris and found that it also was built on rock, which however was at a lower level at this point.

It is now clear that all this must have been swept away by Jânbalâṭ or Ṭûmân Bây, who either found this great composite tower ruined or judged it obsolete. It is also clear that the present vaulted corner piece, which joins the two ends of Saladin's wall, cannot belong either to the work of Saladin or al-ʿÂdil which stood farther out, and I conclude that it is one with Jânbalâṭ's casing, to which its staircase forms a convenient means of access. It would also be useful as a platform for cannon placed here to command the great re-entrant bay, until the latter was done away with by Muḥammad ʿAly.

We cannot descend to Muḥammad ʿAly's wall from this point as its rampart walk is about 8 m. 20 below the top of this tower. To examine it, and the north-west corner of the Citadel, which is our next task, we must make a big détour, by returning to the great open space within the Inner Gate, and then passing into the quadrangle which serves the west wing of the Hospital.

The North-West corner. — This is without exception, the most complicated part of the whole enclosure, and we shall see that it has been repeatedly modified. To reach it we must pass into the quadrangle serving the west wing of the Military Hospital, and then through a low doorway A (Fig. 9) on the north-west side. This leads into a long narrow enclosure behind the ramparts; in front of us is a semi-circular archway (Plate XXV, B) — the inner exit of the Bâb al-Mudarrag — which we shall leave for a later examination, and pass through

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the doorway E (Plate XXV, B to right). We now find ourselves in another long narrow enclosure bounded on the left by the parapet F and the banquette G which serves it. The latter, which is supported by a number of arches, is above the level of our head, as we stand on the threshold of the doorway E, but the ground rapidly rises and becomes level with the banquette after about 35 metres. The door E and the banquette can best be seen on Plate XXIII and the parapet on Plate XXII.

This narrow enclosure, which is about 75 metres long, ends in a round tower H, seen to the left in Plate XXII, after which a flight (I) of six steps leads up to a trapezoidal area. The narrow enclosure we have just traversed is bounded on our right by high walls of varying types of masonry (Plate XXII), the last two thirds of which support the upper floor of the west wing of Muḥammad 'Aly's Palace (now the Military Hospital). The five square piers (*a a a a a*) serve to support a verandah.

My curiosity first led me to mount the flight of steps K, and, pulling aside some barbed wire, to enter the little doorway L, just visible in Plate XXII. My surprise may be imagined when I found myself in a great cruciform chamber recalling the interior of Burg Kerkyalân. I soon found my way into M, a cross-vaulted discharging chamber, with two arrow-slits in tunnel vaulted recesses both, however, almost blocked up. I then realized that the massive square block seen clearly in Plate XXII under the corner of the Hospital (and also in Plate XXI), was in fact a great square tower, whose very existence had hitherto been ignored, and moreover, that profound modifications must have taken place at this corner. Even without an examination of the round tower H, it was clear that this great square tower with its arrow-slits, must once have formed the north-western corner of the Citadel, and that the round tower belongs to a later period when the enclosure had been advanced at this point.

This view was confirmed when I crossed over to N, observing another almost filled-up arrow-slit at O. The discharging chamber N had another surprise in store for me; not only was there an arrow-slit at P, but there was a second at Q, proving that a curtain wall must once have taken off to the right of it. Continuing my examination, I passed through R into S, a tunnel-vaulted chamber with a rising staircase at one end, and a blind passage, leading out of it to the left. Returning to the entrance passage, I observed a walled up



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door at U. Taking the position of the arrow-slit Q into consideration, I believe that the staircase probably led up to the rampart walk and that U opened on to the interior ground level close against the curtain wall, hence I have indicated its probable take off by an arrow at this point.

To the right of U is a small doorway which leads into a fine staircase with a high tunnel-vault. It descends six steps, turns to the right and descends again until we arrive at a walled up arch, 5 m. 40 from the turn. On retracing our steps we find that it is possible to regain one of the arms of the cruciform chamber at W. This arm is encumbered with débris, and no steps are visible; a second arm at right angles to it presents a steep slope of débris, which, on being climbed, reveals a further slope at right angles to it. It is not possible to proceed much farther, moreover the tunnel-vault stops, as shown by the dotted line, and its place is taken by a timber ceiling. This, as is clear from Plate XXII, is the floor of the west wing of the hospital, the upper storey of which occupies what was evidently the platform of the tower, which this staircase must have been intended to serve.

An examination of the south-western arm of the cruciform chamber reveals a walled-up door at X. The walling-up, however, is incomplete as it does not reach to the top of the recess, and this fortunately permits a beam with a door-socket to be seen on the far side.

Opposite W is a corresponding door Y which, when I first saw it, was walled-up. I subsequently had it opened, and found that it led, not into a discharging chamber similar to M, as I had expected, but into a curious little passage, as shown. Opposite the entrance was a second doorway (*b*) which had been walled-up; the reason was obvious — the lintel had cracked, and it therefore was not safe to clear it; a second doorway, or recess, (*c*) had also been walled up. I felt that somehow or other I must get into the corner chamber, in order to see whether there was an arrow-slit on the south-western side, as such an arrow-slit would help to fix the position of the curtain wall as Q had done. I left the tower to examine the exterior and found a small window (*d*), the wall round which had been re-made. There was an iron grille in the window, but on climbing up a ladder, I found that it was loosely fixed and easily removed, after which I crawled through and found myself in Z, which proved to be an exact replica of M, — cross-vaulted, and with two arrow-slits in tunnel-vaul-

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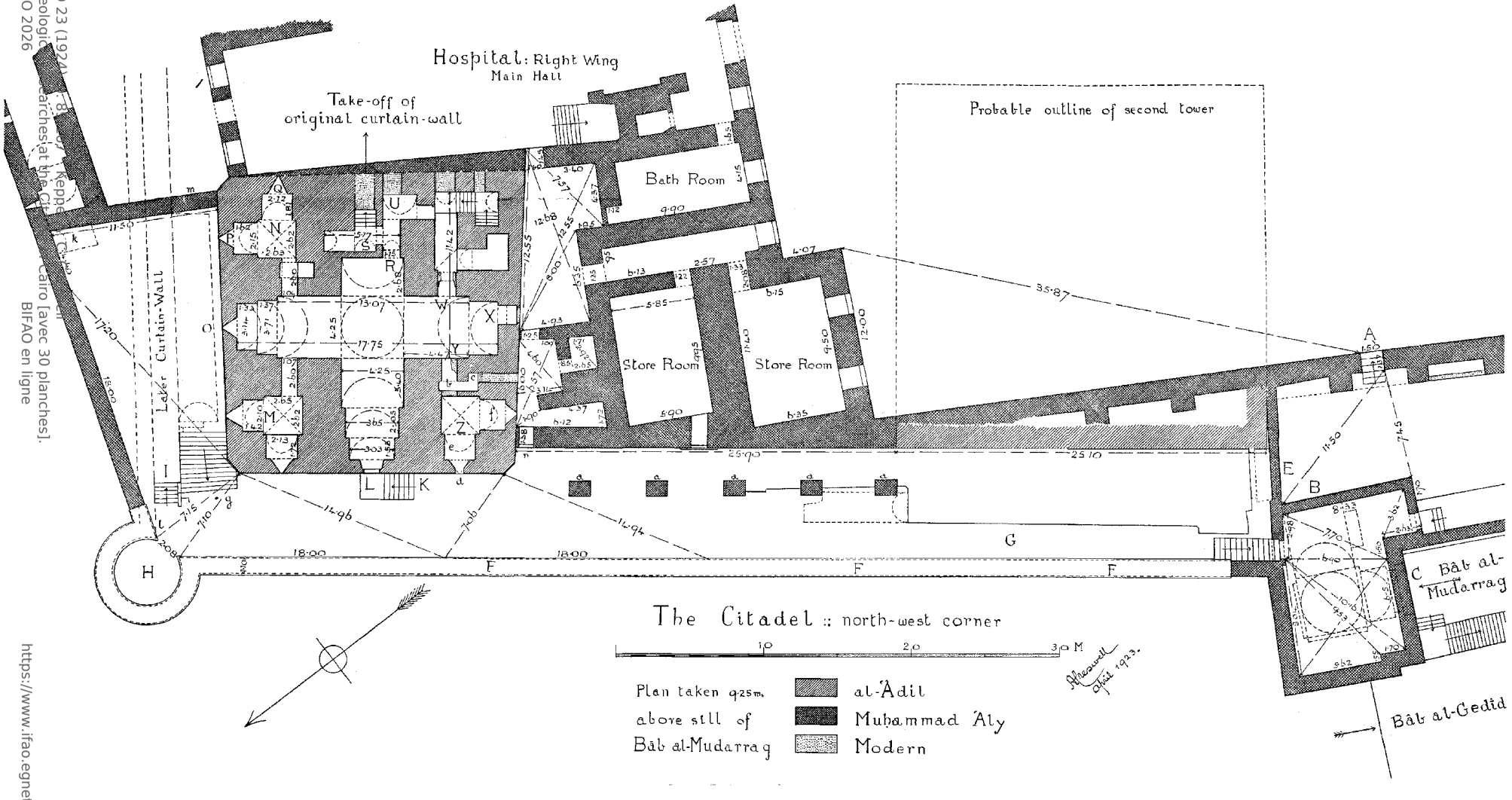


Fig. 9. — The Citadel : north-west corner.

ted recesses (*e* and *f*). A second curtain wall must therefore have taken off somewhere in retreat on *f*.

On emerging once more I passed round the tower to examine its masonry and observed a staircase (*g*) leading down into a long narrow chamber covered by a tunnel-vault, semi-circular in section. On the right side were three doorways which led into what turned out to be the lower storey of the tower, in plan almost a replica of the upper one, except that the passages connecting the arms of the cross with the corner chambers are placed differently. The arms of the great cruciform chamber are roofed with pointed tunnel-vaults and the centre part by a cross-vault. The condition of the whole is very bad, the walls have been lined in many places, and a square pier has been built to support the centre of the cross-vault. The chamber under Z is inaccessible, likewise the staircase corner, but $M_1$ and $N_1$ are in good condition, except that the arrow-slits on their north-western and south-eastern sides respectively, have been walled-up. In $M_1$ in fact, the very arch of the arrow-slit has been removed, and a filling inserted; the curved junction can be traced, but no voussoirs are left. The doors by which $M_1$ and $N_1$ are entered from the vaulted gallery are obviously arrow-slits which have been converted into doors; this is particularly clear in the case of $N_1$, where one of the tapering sides of the old arrow-slit may be seen behind the door. It should be added that the tunnel-vault of the long gallery rests on a lining wall about half a metre thick so that the side of the great tower is not visible. The low level of this storey (7 m. 23 below the parapet F), and its arrow-slits is an important fact, as it conclusively proves that the wall F F F cannot have existed when this tower was in use.

If we now mount the staircase I, we find ourselves on a flat area, covered with gravel; on our right is the great tower with its three arrow-slits, on our left is the parapet, which rises with the staircase (Plate XXII, to left) and in front of us is a high wall with a door on the left, close to the parapet. This door is reached by a ladder (at *k*), and, on passing through, we find ourselves on the ramparts of Muḥammad ʿAly's wall, the chord we have already spoken of, which cuts across the re-entrant curve made by Saladin's enclosure at this point, and provided space for the Palace (now Hospital) garden. We can walk along these ramparts, past the great half-round tower seen in Plate XX, 2, until we are stopped at the point where Saladin's wall

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turned inwards[1]. Muḥammad ʿAly's wall has an internal gallery of considerable width and height, and we can look into this gallery by a little window underneath the ladder.

Where does Muḥammad ʿAly's wall join the older work? An examination of the exterior shows that the courses run continuously without a break until they meet the round corner tower[2], the courses of which do not correspond. This therefore is the point of junction. But what was the alignment of the previous wall? Napoleon's map (Fig. 10) shows the old wall as parallel with the side of the great square tower, but his map unfortunately is on a very small scale. Nevertheless, assuming it is absolutely correct, is there any trace of such a wall? In this connection the position of the staircase I, at once assumes significance; as nearly as can be measured it is parallel to the tower. Can it be the original staircase of the old ramparts? An examination of the parapet where it joins the round tower provides an extraordinary confirmation of this. Although the upper courses have been cut away to the new alignment of Muḥammad ʿAly's wall, the lowest course by a wonderful fluke has escaped. The corner stone of this lowest course (*l*) is cut to an alignment, parallel to the great tower, and which, if continued, would touch the side of the staircase. Moreover, between the staircase and the parapet may still be seen some broken masonry which must be the cut-down top of the old parapet. I have therefore dotted in three lines, two being a continuation of the staircase, and a third for the parapet, the latter, of course, being assumed equal in thickness to F F F. The innermost of these lines (i. e. the inner side of the staircase) we now observe corresponds exactly with the side of the gallery at the bottom of staircase *g*. On descending once more, an examination of this side shows masonry blackened by exposure in those places where it has not been refaced, an additional confirmation of my belief that this is the old curtain wall, more recent however than the two which must have sprung from the great tower. Lest it

[1] On nearing this point the rampart level remains constant, but the parapet rises as shown in Plate XX, 1 and it is possible to proceed to a point corresponding with the vertical break in the masonry (see Plate XX, 1). It is not possible to proceed farther as the older rampart is, as may be seen by the exterior moulding, at a much higher level.

[2] The courses of the round tower, however, correspond with those of the curtain wall F F F, with which its masonry clearly forms one.

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be suggested that it is a curtain wall of Saladin, I hasten to add that it lacks the narrow headers, so characteristic of his work.

It will be observed that a triangular space is left between this curtain wall and that of Muḥammad ʿAly. On entering the latter by the door M we find that its internal gallery extends about a metre and a half under the area we have just examined. The rest of the triangle has presumably been filled with rubble. The old curtain wall can only extend as far as it is actually visible, i. e. to the end of the vaulted gallery at the bottom of staircase *g* and the wall *m;* after that its track is occupied by the open court between Muḥammad ʿAly's wall and the Hospital, a court of which the level is nearly as low as the floor of the vaulted gallery.

Date of square tower. — By its internal construction this great tower is closely related to Burg Kerkyalân, but its masonry has suffered and been re-faced to such an extent that it is difficult to find a representative piece; however, a careful examination near the ground level reveals several blocks with a dressing, still intact, resembling the rusticated work we have already observed in the two square towers and the two great round ones. The arrow-slits, also, are similar, being covered, not by a lintel as in Saladin's work, but by a tapering tunnel vault like half a cone laid on its side. The vaults of the corner rooms on the upper and lower floor are pointed in section, as also are the vaults covering the arms of the cross on the lower floor. On the upper level, although the vaults of the corner rooms are pointed in section, the arms of the cross are covered by semi-circular tunnel-vaults, strengthened, in the case of the north-western arm, by semi-circular arches, the whole of very new appearance. The centre part instead of being cross-vaulted is covered by a shallow dome on spherical-triangle pendentives of the same curvature, also of very modern appearance. I therefore attribute this tower to al-ʿÂdil, and conclude that Muḥammad ʿAly vaulted parts of the upper storey, then no doubt ruined, before building on the top of it.

If we retrace our steps, we observe that next to this tower is a piece of wall measuring 25 m. 90 in length, the openings of which — a walled-up door and several windows — have a thoroughly XIX$^{th}$ century appearance, the mouldings of the door in fact are obviously the work of Muḥammad ʿAly. On examination,

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it turns out to be part of Muḥammad ʿAly's Palace, now occupied by the Stores Section of the Hospital. I shall not describe it in detail as the plan (Fig. 10) shows all that is necessary. It will be sufficient for our purpose to point out that a direct measurement, taken through the window *n*, shows that the south-eastern side of the great tower must have been lined, as indicated on the plan, by a wall which forms one side of the main hall of the Hospital (west wing). On passing through this hall into the yard already mentioned, the eastern corner of the great tower is seen to be chamfered off like the northern and western[1].

On passing along towards the doorway E, another length of wall, remarkable for the size of its masonry, is observed (see Plates XXII and XXIII). This masonry has suffered terribly, and, from the amount of plaster adhering to its upper portion, it appears probable that it once formed the side of a large hall or store-room, and a row of square holes high up suggests a wooden roof. Nevertheless a second glance suffices to reveal the existence of quite a number of large rusticated blocks similar to al-ʿÂdil's work. The openings seen lead to nothing, as this wall is backed by another forming the south-western side of the Quadrangle which serves the west wing of the Hospital. I climbed from the top of the Bâb al-Mudarrag, along the wall built above the doorway E (see Plate XXII) and then on to the top of this massive wall. It does not rise quite so high as the Quadrangle wall, as may be seen in the Plate. These two walls meet at an acute angle as shown (Fig. 9), and there is a small space between them at the southern end, which allows the buttresses of the Quadrangle wall to be seen. This strip of wall is 25 m. 10 in length, and its southern end is clearly marked (see plan), but the opposite end is ragged, so that probably it once extended a little farther in that direction. Can it be the remains of a second great square tower? Seeking confirmation, I looked once more at Napoleon's map (Fig. 10), and there, clearly marked in this corner of the Citadel, are two heavy black squares, with a number 69 against them. On turning to the text, the explanatory Index reads : 69. — *Tours en partie ruinées.*

The tower shown next the corner clearly corresponds with the one we have already discussed, this therefore must be the other, which in Napoleon's day

[1] I doubt whether the corners were always so chamfered.

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Fig. 10. — The Citadel (from Napoleon's *Description de l'Égypte*).



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was evidently foursquare, so I have dotted it in accordingly[1]. I conclude that it was much more ruined than its fellow, so that when Muḥammad ʿAly built his Palace, he preferred to enfold the latter rather than face the cost of its destruction, but that the former was so far gone that he cleared the site for his Quadrangle, leaving one side of it only.

There have therefore been four successive stages at this corner of the Citadel, as follows :

(1) The Bâb al-Mudarrag and a curtain wall running up to a round corner tower, perhaps on the site of the great square tower.

(2) The insertion of the two mighty towers by al-ʿÂdil.

(3) The abandon of these two towers and the construction of the wall F F F, together with the round corner tower, and its continuation beyond, parallel to the north face of the square tower. The space between the new and the old alignment must have been filled up with a great mass of material to a level 4 or 5 metres above the base of the corner tower, builders' refuse, no doubt, being the chief source of supply.

(4) Muḥammad ʿAly's extension, which advanced the north façade of the enclosure, enveloping part of the curtain wall of the third period, which ran east from the corner tower, but destroying the rest.

Date of round tower and curtain wall. — The round tower is solid, and so is the curtain wall, at least no openings are visible on the exterior below the parapet. This suggests that it was built in the days of artillery, i. e. not earlier than Jânbalâṭ. Its parapet, which is of exactly the same masonry as the lower part, is arranged for musketry and cannon. This masonry, however, is quite different from that of the casing near the water tower which I have attributed to this Sultan. On the other hand, in the size of the stones and in the absence of the narrow headers characteristic of Saladin's work, it resembles the masonry of the Muqaṭṭam tower, except that it has been heavily pointed with cement, and the stones have not weathered so well. On the whole, I am inclined to place it in the first century of the Turkish period (i. e. 1517-1617).

[1] Burg Kerkyalân, Burg aṭ-Ṭurfa and the corner tower described above are all almost square, so it is a fair deduction thus to restore this tower; it is moreover shown square on Napoleon's map.



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There remains one point which I cannot solve, and that is : How was the second square tower connected with the Bâb al-Mudarrag? The position of the east corner of this tower relative to the inner exit of the Bâb al-Mudarrag raises a curious problem.

Attempted analysis of earlier curtain wall. — We are now in a better position to discuss the composition of the length destroyed by Muḥammad ʿAly. The problem may be stated as follows : A certain wall of Saladin, faced by Jânbalât, stops against the Isolation Ward of the Hospital, whereas the wall which leaves the north-western corner of the Citadel, hidden behind the new curtain of Muḥammad ʿAly, is probably xvi$^{th}$ century. The alignment between these two points is fortunately recorded on Napoleon's map, but where and how was the junction between the two types of wall effected?

I suggest that the wall of Saladin ran into the great square angle tower of al-ʿÂdil at the point marked by an arrow (Fig. 9) and that the casing of Jânbalât may quite well have extended along its whole length. But the length shown on Napoleon's map does not run into the side of al-ʿÂdil's great square tower. Exactly so; the enclosure was advanced by the xvi$^{th}$ curtain wall and the question is : where did it join the wall of Saladin? If we look at Napoleon's map (Fig. 10) once more, we observe that the great re-entrant angle is composed of six straight lengths. Now assuming, as I think we are entitled to do, that Saladin's wall did join the great square tower of al-ʿÂdil, it is obvious that it must have run behind the first two lengths (commencing from the north-western corner), which are in advance of the alignment required. I therefore conclude that they formed part of the xvi$^{th}$ century advancement of the enclosure, of which a fragment still remains, as we have seen, and that the remaining four lengths were part of Saladin's enclosure, which originally ran on behind the alignment of lengths 1 and 2. If the wall shown on Napoleon's map still existed, it is therefore at the meeting point of lengths 2 and 3, that I should expect to find the junction between the Turkish work and that of Saladin.

The Bâb al-Mudarrag. — Let us now return to the inner exit of the Bâb al-Mudarrag (Fig. 9 and Plate XXV, B). It is a plain opening, just over 4 metres wide, spanned by a semi-circular arch, with joggled voussoirs which extend to

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the border of the rectangular moulded frame which surrounds it, exactly as in the gateway of the Burg aẓ-Ẓafar [1]. This arch forms the outer end of a semi-circular tunnel-vault, 5 m. 13 long, which leads to a shallow dome, set on spherical-triangle pendentives of the same curvature, as in the Bâb al-Futûḥ and the Bâb Zuweyla. On our left, under the tunnel-vault, is a blind recess covered by a semi-circular tunnel-vault. On our right is a similar recess which has been filled up flush with masonry [2]. Under the dome, to our right and in front of us, are similar recesses, each serving what was once an arrow-slit, since converted into a cannon embrasure, and now partly walled-up. The arches of all these recesses have joggled voussoirs, and spring from bunches of three little engaged columns with lotus capitals. The whole interior has been repeatedly coated with thick layers of plaster, as many as five being visible in the left hand recess, where a great part of the plaster has fallen. Herz, c. 1893, at the instance of Prof. Casanova and with the permission of Colonel Thomas, removed many layers, the outer of which were blackened with smoke. Before this was done, there were as many sixteen layers in some places. During this process he discovered that the dome had been covered next the masonry with three successive layers, each decorated with inscriptions in red paint in the name of Sultan an-Nâṣir Muḥammad. The upper layers, being more or less damaged, were removed and only the undermost one remains to-day. The four pendentives were decorated with arabesques in green and medallions, containing the name and titles of the same Sultan in red. How are these three successive layers to be explained? Casanova has provided a convincing theory : an-Nâṣir Muḥammad reigned, as is well known, for three successive periods, 693-694; 698-708, and 709-741. He probably had the first inscription painted at his accession in 693, was deposed in 694, his name being whitewashed over by the usurper. He ascended the throne once

[1] The Burg aẓ-Ẓafar belongs to the second period (572-589 = 1176-1189) of Saladin's fortifications. See my *Brief Chronology*, in the *B. I. F. A. O.*, t. XVI, pp. 66-69. There is a fine arch, with the voussoirs treated in the same way, at the back of the upper part of the Bâb al-Futûḥ.

[2] It seems probable that this recess may once have served an arrow-slit, and have been filled up when the latter was rendered useless by the building of the curtain wall, which runs from this point to the round tower at the north-western corner.

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more in 698 and inscribed his name anew; abdicated in 708 and re-inscribed his name 709 [1]. The centre of the dome is decorated with a whorl in relief.

On our left, under the dome, is a short length of tunnel-vault, at the back of which is a pointed-arched opening [2], and on passing through it we find ourselves outside the enclosure. However, we are not exactly in the open, since the long flank of Muḥammad ʿAly's Bâb al-Gedîd forms, with the curtain wall of Saladin, a long narrow space closed at the far end by a small door, which we might have noticed, had we looked back, when we first passed through the latter gateway to visit the Citadel. If we now turn round, we observe that the archway through which we have just come is set in a shallow recess, covered by a semi-circular arch in a rectangular frame, with a moulded border and a small blank medallion in each corner (Plate XXIV, B). Over the inner arch is a large plaque of marble containing nine lines in Naskh. It is the foundation inscription of the Citadel, and records its construction, under the orders of Saladin, by his Wazîr Qarâqûsh in 579 (1183/4) [3]. The following is the English rendering of Lane-Poole : « The building of this splendid Citadel, — hard by Cairo the Guarded, on the terrace which joins use to beauty, and space to strength, for those who seek the shelter of his power, — was ordered by our master the King Strong-to-aid, Honour of the World and the Faith, Conquest-laden, Yūsuf, son of Ayyūb, Restorer of the Empire of the Caliph; with the direction of his brother and heir the Just King (el-ʿÂdil) Seyf-ed-din Abū Bekr Moḥammad, friend of the Commander of the Faithful; and under the management of the Emīr of his Kingdom and Support of his Empire, Ḳarāḳūsh son of ʿAbdallāh, the slave of el-Melik en-Nāṣir, in the year 579 (1183/4) [4]. »

Van Berchem has already emphasized the importance of this inscription as the earliest in Egypt in the Naskh character, and as one of the many innovations introduced by Saladin in the domain of architecture, art, and institutions

[1] *Citadelle*, pp. 627-628.

[2] Only one half of the iron plated door is in position (see Plate XXV, A, to left). It turns on a spindle set, in the usual fashion, in a great composite beam which runs across above the arch.

[3] See Mehren, *Câhirah og Kerâfat*, I, pp. 18-19; Casanova, *Citadelle*, pp. 569-571, and van Berchem, *C. I. A.*, I, pp. 80-86.

[4] *History of Egypt* (2nd ed.), pp. 201-203.

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both political and religious [1]. Henceforth the beautiful decorated Kufic script, the glory and pride of Fâṭimide art [2], was to be used no more for historical inscriptions but employed solely for decorative bands of Qurânic inscription to an ever decreasing extent. The Naskh character had already been in use in Syria for nearly a century, the earliest known example being the inscription on the minaret of the Great Mosque of Aleppo. This minaret, according to Abû l-Fidâ' (III, p. 268), was built in 482 (1089/90) by the Qâḍy Abû l-Ḥasan ibn Khashab with stone taken from an ancient bath. A number of XII^th century examples in Syria have been cited by van Berchem [3]. There is therefore no room for doubt as to the priority of Syria over Egypt in the use of the Naskh character for historical inscriptions; whether Syria can claim priority over all the lands of Islam is doubtful, since this script is found in Persia in the IV^th (X^th) century on the coins of the Samânides, although monumental inscriptions are so far lacking.

Just above this inscription is a slit through which missiles might be discharged on a storming party, attempting to force an entrance.

The gateway we have just examined forms the interior of a nearly square tower [4], and the manner in which Muḥammad 'Aly's gateway has been set alongside it may be seen in Figure 9 and Plate XXIV, A. The masonry of the curtain wall on the right, also that of the archway (up to the moulding) and to the left of it, with its narrow headers, is easily recognizable as the work of Saladin, but the masonry on the other side of the tower (Plate XXIV, A), seen before entering the Bâb al-Gedîd, is quite different. The difference is not merely a question of heavy pointing, it consists in the complete absence of

[1] *Notes d'archéologie arabe*, in the *Journal asiatique*, 8^e série, tome XVIII, pp. 69-79; his *Inscriptions arabes de Syrie*, in the *B. I. É.*, III, pp. 450-455; and the *C. I. A.*, I, pp. 85-86. See also VAN BERCHEM and STRZYGOWSKI, *Amida*, pp. 125-128 and 353, n. 1.

[2] A whole series of important memoirs have already appeared on the evolution of this most decorative style of writing. See S. FLURY, *Die Ornamente der Hakim- und Ashar-Moschee*, Heidelberg, 1912; *Islamische Schriftbänder Amida-Diarbekr XI. Jahrhundert*, Basel, 1920; and *The Kufic Inscriptions of Kisimkazi Mosque, Zanzibar, 500 A. H.*, in the *J. R. A. S.*, 1922, pp. 257-264.

[3] *Op. cit.*, in the *B. I. É.*, III, pp. 451-452.

[4] See Fig. 10. In spite of its somewhat trapezoidal shape, careful measurements show that the two arms of the interior are exactly at right angles to each other, no doubt to avoid difficulty with the pendentives of the dome, which otherwise would have to be distorted.

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the narrow headers which distinguish Saladin's work. This masonry, moreover, is one with that of the north-western corner tower, which is solid, and which, as we have seen, must have been built long after al-ʿÂdil's great square corner-tower had gone out of use. Remarkable also are the battered faces in contrast to the vertical face containing the entrance arch. It is evident that the builder of the round north-west corner tower and the curtain wall which runs from it to the Bâb al-Mudarrag tower has cased the latter at the same time, but on two sides only. Further confirmation of this conclusion is provided by the two cannon embrasures, once arrow-slits. The west and north walls in which they are pierced are 1 m. 63 and 1 m. 02 thick respectively, whereas the thickness of the outer wall in all the discharging chambers of the curtain walls varies from 45 to 60 centimetres only, and in the half-round towers is never much more than a metre. The casing on one of these sides even, does not appear to have been quite complete, as may be seen by mounting to the top of the tower[1], which may be reached from the top of the curtain wall on either side, and climbing over the parapet to the flat roof of the Bâb al-Gedîd, which is about a metre lower (see Plate XXIV, A). The outer face of the tower is then seen to be set back 70 centimetres at a point 2 metres from the south-west corner (Fig. 9). What is the explanation of this curious feature?

Casanova has concluded from a number of somewhat ambiguous and contradictory passages in Maqrîzî, Jauharî and Abû l-Maḥâsin, that Barqûq in 790 (1388), built a covering wall perpendicular to the Bâb al-Mudarrag, in order to cover the annexes of the Citadel[2]. Under this arrangement one first had to enter by the Bâb ad-Darfîl and pass along on the inner side of this wall, ascending all the time until the Bâb al-Mudarrag was reached. Although the position of this Bâb ad-Darfîl is uncertain, such a wall is clearly shown on Napoleon's map, bordering a street marked *Sekket-el-Chorafeh,* and this wall ends at the Bâb al-Mudarrag tower. The pathway in question still exists, and it is bordered on the south side by a massive wall partly remade, the alignment of which approximates to that shown on Napoleon's map. The upper end of this wall (seen in Plate XXIV A, to right) is evidently due to Muḥammad ʿAly, and

[1] The whole of the original crenellations have been replaced by a parapet with embrasures for cannon.

[2] *Citadelle,* pp. 678-680.

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a walled-up gateway (just beyond the right edge of Plate XXIV, A) bears an inscription in his name, dated 1240 (1824/5)[1].

Now supposing that the wall built by Barqûq in 790, which Casanova believes to be the wall recorded in Barqûq's inscription of Rabîʿ II 791 (April 1388[2]), took off from the outer face of the Bâb al-Mudarrag tower at its south end, then the XVIth century builder to whom I attribute the round north-west corner tower and the curtain wall to the south of it, when he came to case the Bâb al-Mudarrag tower, would have been unable to case its outer face completely. Muḥammad ʿAly, on removing the covering wall of Barqûq to make room for the Bâb al-Gedîd, brought about the present state of this tower.

Casanova has shown[3] that the Bâb al-Mudarrag owes its name to the rock-cut staircase[4] which led up to it. This staircase ascended perpendicularly to the curtain wall and then divided, the left branch leading up to our gateway, the right to the Bâb as-Sirr, or Secret Gate, which stood roughly on the site of the present Middle Gate[5]. One would have expected to find that the rock was cut away on the outer side of this staircase, after it turned to the left, so as to leave a drop of several metres and thereby force all approaching the Bâb al-Mudarrag to keep close to the curtain wall, where they would be at the mercy of the defenders, — a device in fortification that goes back to the days of Tiryns and Mycenæ[6] and of which the Citadel of Urfa provides a

[1] Published by CASANOVA, pp. 729-730.

[2] Published by VAN BERCHEM, *C. I. A.*, pp. 89-90, and CASANOVA, *op. cit.*, pp. 679-680.

[3] *Citadelle*, p. 580.

[4] This staircase is shown on Napoleon's plan (Fig. 10), and is actually referred to in the inscription of Sultan Gaqmaq on the curtain wall alongside. Belon du Mans (1548) says: «Le chasteau est assis sur dur rocher, dedens lequel rocher on a taillé des degrez, pour y monter plus facilemẽt, ressemblãts quasi à ceux qui font au chateau d'Amboise». *Les Observations de plusieurs singularitez..... en Grece, Asie, etc.*, p. 109. The sloping approach to the Bâb al-Mudarrag is paved to-day, so that the rock is hidden, but it is paved in steps nevertheless.

[5] Qalqashandy speaking of the gates of the Citadel, says: «The second is Bâb as-Sirr, through which pass, by privilege, the Emîrs of high rank, and superior officials, such as the Wazîr and Secretary of State. One reaches it from the foot of the hill on which the Citadel is built, by passing along the face of the north [read north-west] wall, to the entrance opposite the Great Îwân. This gate is always closed. If anyone authorized to pass through it presents himself, they open it, but close it again immediately.» See Wüstenfeld's transl., p. 87, and Casanova's transl., *Citadelle*, p. 593. It therefore opened, as does the present Middle Gate, directly into the Southern Enclosure, or Palace City.

[6] See PERROT and CHIPIEZ, *History of Art in Primitive Greece*, II, p. 111.



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mediæval example in the Middle East, as also does Birejik. It is therefore surprising to observe from the rock visible in several places (e. g. on the west flank of the Bâb al-Gedîd, Plate XXIV, A), that it cannot have been cut away in this fashion.

Curtain-wall to south of Bâb al-Mudarrag. — High up in this curtain wall, and close to the gateway are three inscriptions (Plate XXIV, B); two are cut on the wall itself, the third is carved on a slab embedded for the purpose. There are also two depressions, which must once have held two more inscription slabs. The three inscriptions which remain refer to works carried out by Sultan Gaqmaq in Dhu l-qa'da, 851 (January-February 1448), by Qâyt-Bây, in a year not named, and by Ṭûmân-Bây in Ramaḍân 906 (March-April, 1501) [1]. A little to the right of them (12 metres from the face of the gateway) is an arrow slit. The curtain wall continues in a straight line to a half-round tower 42 metres from the face of the gateway. The masonry of this tower, and of the curtain wall on either side of it, resembles that of the north-west corner tower and the curtain wall which runs south from it; the masonry recognizable as Saladin's changes to this newer work in the neighbourhood of the little doorway already mentioned, alongside the rear face of the Bâb al-Gedîd. If we now return through the Bâb al-Mudarrag, we find that Saladin's masonry extends right along the inner face as far as the back of the half-round tower. It is not possible to examine it farther as it is hidden, from this point onwards, by a lining of rough masonry which helps to support the west side of the Officers Quarters. In any case, however, it is evident that part, at least, of what looks like a newer wall seen from the exterior is merely Saladin's wall refaced. But what has happened to the tower? It is just possible to enter it from the back by crawling. On doing so we observe, to right and left, the lintel covering the entrance to the internal gallery of the wall [2], but no more, as the floor level has been raised by rubbish to this point. On ad-

[1] They have been published by Casanova, *Citadelle*, pp. 701-704, by van Berchem, *C. I. A.*, I, pp. 91-94, and that of Ṭûmân-Bây by Mehren as well, *op. cit.*, I, pp. 19-20. Casanova reads Gumâdâ I, 851, instead of Dhu l-qa'da in the inscription of Sultan Gaqmaq.

[2] The gallery which runs to the right obviously served the arrow-slit we have observed at 12 metres from the Bâb al-Mudarrag.

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vancing a little we observe to right and left the springing of the arch [1] which covered the recesses serving the arrow-slits intended to give a flanking fire. Less than half of these two arches remain, and the interior stops short against a flat wall of poor masonry in which is a deep narrow slit, scarcely splayed at all, and quite useless except for the moderate amount of light which it admits. It is now clear that the front half of the old tower has been cut away and a new front added, considerably smaller than the old one, and provided with one useless slit instead of three efficient ones. One is tempted to ask : Can the remnants of an old tower of Saladin form a core for the north-west corner tower, as is the case here? The answer, however, must be in the negative, as the presence of the great square tower of al-'Âdil precludes the possibility of there ever having been a tower of Saladin, and a curtain wall, outside it, — a wall which would have rendered the arrow-slits of its lower storey useless.

From this tower the curtain wall runs, with one slight change in direction, to the great round tower which forms one end of the dividing line between the two enclosures. Whatever thread of Saladin's work may exist inside it is concealed on one side by the wall supporting the Officers' Quarters and on the other by the refacing, which is possibly of the XVI$^{th}$ century. Were the internal gallery, which is now choked with rubbish, cleared, it would be easy to find the end of Saladin's work.

The Bâb al-Qarâfa. — The gate of this name which figures in the mediæval descriptions of the Citadel, is thus described in the fragment of Shihâb ad-Dîn which has fortunately been preserved to the present day [2] :

« The Citadel is entered by two gates : one, which is the principal, is turned towards Cairo; the second leads towards the Qarâfa (cemetery). Between the two is a vast place, of which the side is turned towards the east. On the left are dwellings facing the setting sun. To the south is the provision market [3]. »

[1] These arches have joggled voussoirs, like the arches of the recesses inside the Bâb al-Mudarrag.

[2] Shihâb ad-Dîn, the author of the *Masâlik al-Abṣâr*, lived from 697 (1297/8) to 749 (1348/9). He must have written his work shortly after 714 (1314), as he speaks of « the Qaṣr al-Ablaq of an-Nâṣir, recently constructed ».

[3] Published and translated by Casanova, *Citadelle*, p. 668, from MS. 583 in the *Bibliothèque Nationale*.



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Qalqashandy (died 822 H. = 1418) gives further details; he says that there were three gates « of which the first is on the side of the Qarâfa and the Muqaṭṭam, it is very little used and very difficult of access[1] ».

Maqrîzî's account is similar to that of Shihâb ad-Dîn :

« The Citadel is entered by two gates : one, which is the principal, is turned towards Cairo, and called the Bâb al-Mudarrag..... the second is Bâb al-Qarâfa. Between these two is a vast space, at the sides of which are dwellings and stalls; on the south side, a market for provisions[2]. »

Now in the above quoted passage from Qalqashandy the word translated Citadel is Qal'at al-Gebel, Citadel of the Mountain, which as Casanova has shown[3] refers to the northern enclosure, the southern which, incidentally, is not built, on the rock like the former[4], being designated as al-Qal'a only.

We can now establish the following points regarding the Bâb al-Qarâfa :

(1) It opened into the northern enclosure.
(2) It was opposite the Bâb al-Mudarrag.
(3) It faced the Muqaṭṭam and the Qarâfa.
(4) It was little used and the approach to it was very difficult.

Casanova places it in the re-entrant angle formed by the northern and southern enclosures on the side facing the Muqaṭṭam, and in the neighbourhood of the Bâb al-Gebel, although he does not go so far as to identify it with the latter as it now is. On the contrary, he suggests that the latter was on the opposite side of the Muqaṭṭam tower in Napoleon's time, and that it has since been transposed[5]. An examination of Napoleon's plan (Fig. 10) shows that the Bâb al-Gebel was in its present position, and this is confirmed by his Plate 69 (reproduced by Casanova, Plate XII), which shows a view of the interior of the northern enclosure taken from just within the Inner Gate[6], recognizable on

[1] Wüstenfeld's transl., p. 87. Arabic text given by Casanova, *op. cit.*, p. 686.

[2] *Khiṭaṭ*, II, p. 204, l. 34; translated by Casanova, *op. cit.*, p. 579.

[3] *Op. cit.*, p. 578.

[4] See my *Brief Chronology of the Muḥammadan Monuments of Egypt, B. I. F. A. O.*, XVI, pp. 73-74.

[5] *Op. cit.*, pp. 581-583, 590 and 694.

[6] The Inner Gate bears an inscription of Muḥammad 'Aly (published by Casanova, p. 729) dated 1242 (1826/7) and the archway,

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the right by one of its polygonal towers. A piece of curtain wall runs along to the Muqaṭṭam Tower, and the exterior curtain wall runs away from the latter towards the left. That this curtain wall is seen from the interior is shown by the fact that the vaulted hoods of the arrow-slits are visible in it, also the entrance to the Muqaṭṭam Tower, which may be seen to-day facing north-west, also a staircase ascending to the rampart walk. Casanova has apparently taken this view to represent the re-entrant angle outside the Muqaṭṭam Tower as the tide of his plate reads «Bâb al-Djabal (ancienne Bâb al-Ḳarâfat), en 1798».

Nor can this gateway have been transposed at an earlier date as there are no signs whatever of a walled-up doorway or a new piece of curtain-wall in the neighbourhood indicated, in fact the curtain-wall in question, between the Muqaṭṭam Tower and Burg Ṣofṭa, is quite intact and clearly the work of Saladin.

The little enclosure round Bâb al-Gebel (Plate IV, A) bears an inscription of Yekan Pasha dated 1200 (1785-6)[1]. This, as a matter of fact, is probably the date of the Bâb al-Gebel itself, since it is no more than a hole made afterwards in a very thick wall[2]. The sides of the opening, which are not faced, reveal the interior rubble filling of the wall, and there is neither arch nor lintel, but merely rough beams which have been inserted when the opening was made. To form an outer defence the little crenellated enclosure, shown in Plate IV, A, has been added, and the date of the latter is therefore, as I have said, most probably the date at which the main wall was cut through[3].

Where then is the real Bâb al-Qarâfa? I had long been puzzled by the great double-tower Burg al-Imâm, and thought, since it measures 27 metres in breadth and 18 metres in depth, that there must at least be interesting vaulted chambers inside it, although no arrow-slits were visible on the exterior and its top presented an even expanse of gravel. Nevertheless, it remained a

by its mouldings, is clearly his work. This, however, is all that can be attributed to him, as the polygonal towers which flank it are mentioned by Pococke in 1735. See his *Description of the East,* vol. I, p. 32: «On each side of the inner gate is a tower of many sides».

[1] Van Berchem, *C. I. A.*, I, p. 94, and Casanova, *op. cit.*, pp. 716-717.

[2] The continuation of this wall may be seen to the left in Plate IV, A.

[3] The latter, which forms part of the southern enclosure, has no internal gallery, and its masonry is different from anything in the northern enclosure.

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puzzle to me until one day, when exploring behind the blocks of barracks along the inner side of the enclosure at this point, I noticed a small narrow opening A (Fig. 6) one side of which had been broken away. I looked through and saw a dimly-lit vaulted chamber. I at once crawled through and found myself in a tunnel-vaulted chamber B about 7 metres in length, at right angles to the curtain wall. On the left side were two recesses C and D provided with arrow-slits, which — most significant fact — were pointing into what appeared to be the solid interior of the tower. I immediately realized that this double tower must once have consisted of two salients with a deep recess between them. Moreover I knew that such a recess, commanded by a cross fire, could only exist for the purpose of defending a gateway, in other words I felt sure that what I had found could be nothing else than the long lost Bâb al-Qarâfa of Shihâb ad-Dîn, Qalqashandy and Maqrîzî.

I passed into E as already related (p. 113) and saw a long gallery full of débris, with faint beams of light crossing it in the distance, but in the direction of F it was impossible to proceed, as the rubbish rose to within 20 centimetres of the ceiling.

Here indeed was a place which would repay clearance, more even than the long galleries already described and, a part of the second grant being available, work was commenced at F, and the discharging chamber G was soon revealed. The vital question now was : would the passage stop short or turn? It turned and a second discharging-chamber H was reached. This proved that the gateway did not run directly through from front to back, but was of a more highly evolved type, a bent entrance, like the Bâb al-Mudarrag. When the foot of staircase I was reached further progress became, for the moment, impossible as the ceiling above had given way a little beyond the first few steps and débris came sliding down as fast as it could be removed. It was therefore decided to start from above. My first thought was to determine the extent of the entrance bay, so I indicated what I thought to be a likely spot, and, as luck would have it, on digging down less than 30 centimetres, we struck the corner J; a trench quickly made exposed the two edges K and L.

A continuation of the work on these alignments revealed a fact of the greatest interest, viz. : the springing of a great vault which covered the whole entrance bay (M) between the two towers. This bay had been cross-vaulted in

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the centre and tunnel-vaulted at either end. The vault had fallen, but the first metre or so of the springing of the tunnel-vaulted part was soon revealed, likewise the outline of the cross-vault on the flanks of the towers. Excavation along N and O revealed the existence of an uncovered pit at the inner end of the entrance vault, corresponding to the *propugnaculum* of a Roman fortified gateway [1].

Excavations, commenced at P, led to the clearing out of the staircase leading down into H, where our work had been temporarily arrested. This staircase is divided by two landings into three flights, as shown. The lower part is covered by two lengths of ceiling, at different levels, composed of flat stone slabs resting on a continuous splay-face corbel course. Moreover the gallery between H and G and at F is roofed in the same way, and the four arrow-slits in H, G, D and C are each covered by a lintel with a relieving block above. In other words, we have here all the characteristics of Saladin's work, whereas the masonry of the exterior is similar to that of the great square towers and of the two mighty round ones — Burg ar-Ramla and Burg al-Haddâd, which suggests the hand of al-ʿÂdil. It was only after the excavations were almost finished that the solution of this puzzle appeared.

The distance between the ceiling of the gallery F and the gravel surface at the top of the tower being about 5 metres, I was anxious to see whether there was a second storey, so work was continued on the top of the left-hand tower, the plan of which was ultimately revealed, as shown (Fig. 6). Its main element, the cruciform chamber, was apparently cross-vaulted in the centre, and the arms tunnel-vaulted but no trace of these vaults remain, as only four courses (1 m. 80) of the side walls are standing. A recess, provided with an arrow-slit, commands the great vaulted entrance passage, another fires outwards, and two others give a flanking fire to the curtain-wall. A passage leads up to the rampart walk, by a flight of steps at Q, and a staircase at R must have

[1] Roman fortified gateways generally consist of an outer and inner entrance on the same axis with a courtyard, called the *propugnaculum*, between. Such a gateway still exists in Qaṣr ash-Sham' at Old Cairo. This feature, however, was known much earlier. It occurs for example at Khorsabad, in one of the city gates excavated by Place (see Perrot and Chipiez, *Art in Chaldæa and Assyria*, Fig. 50); and in the Ishtar Gate at Babylon (see Koldewery, *The Excavations at Babylon*, English transl., chap. VI).

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led up to the main platform, supported by the vaults which once covered these rooms and the great entrance bay.

The next thing of importance was to find the main archway, proving this to be a bent gateway, an archway which it was obvious could only be at L. Nevertheless it was farther down than I thought and it was not until the excavations had attained a depth of 4 metres that the extrados of a great joggled arch appeared. Even this was not the arch of the gateway, but merely the arch of a recess framing it.

An enormous amount of earth and débris had now been removed and it was necessary to apply once more to the *Comité* for further funds, which, thanks to the friendly support of Aḥmad Bey Said, the new architect to the *Comité*, were eventually granted. Work was continued at two points simultaneously, (*a*) the great entrance bay, and (*b*) the far end of the gallery in the curtain wall between this gateway and Burg ar-Ramla, which I had found so full of bats.

This gallery proved to be of absolutely the same type as the other length, with the same kind of discharging chambers, corbel course, ceiling, arrow-slits and windows, and, what was very satisfactory, it led into the lower storey of the left-hand gateway tower. This, as we shall see, was to provide the clue to the conflict of architectural features noted above, where I pointed out that internally everything indicated that it was the work of Saladin, whereas the external masonry suggested the hand of al-ʿÂdil.

At the same time the complete clearance of the entrance bay revealed the exterior face of the four arrow-slits of C, D, G and H; and the sill of the great doorway was reached at a depth of no less than 9 metres from the original gravel surface on the top of the tower. This great doorway is set back in an arched recess; both recess and gateway proper are spanned by pointed arches with deep voussoirs, those over the recess being joggled. There is here a remarkable feature : the voussoirs of the gateway arch have their edges bevelled off, the bevel measuring about a centimetre and a half across, a dressing only found elsewhere in Cairo in the Fâṭimide fortifications, erected by Badr al-Gamâly between 480 (1087) and 485 (1092)[1]. In the entrance bay, above the

[1] It is rare in the Moslem architecture of Syria, being almost confined, so far as my knowledge goes, to the works of Nûr ad-Dîn. The following is a list of the examples known to me,

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archway, is a shallow rectangular recess, which from its broken surface must once have held an inscription slab, unfortunately no longer there[1]. The archway opens into a great tunnel-vaulted passage, the far end of which is walled-up, but it comes out immediately behind the curtain-wall running north, in a place now occupied by a miniature rifle range. The wall in question is about 70 centimetres thick, but, from the miniature rifle range, one can look through a hole and get a glimpse of the vault and arch. The present ground level of rifle range and of the interior of the Citadel at this point is about 5 1/2 metres above the sill of the great archway. There is a deep recess to right and left of the vaulted passage way, and about half a metre above the ground level, which no doubt served as benches for the guard to sit on.

The clearance of M revealed a very interesting feature, viz. : a great vertical break in the masonry on both sides at *b* and *b'*. This break rises from the base to the upper floor, and is so complete, that in the corner *c*, a walking stick can be passed right through from one side to the other. But most interesting of all was the lower chamber of the left-hand tower, which provided the key to the history of the whole structure.

all of which are at Aleppo : Gâmi' ash-Shaibîyeh, 545 (1150); Madrasa Khân at-Tûtûn, 564 (1168/9); Muristân of Nûr ad-Dîn, 541-570 (1146-1174), and the Madrasa of Shad Bakht, 589 (1193). M. de Lorey has called my attention to an example (undated) at Damascus.

[1] It was a keen disappointment to find that this slab had gone. I had great hopes that it would be found amongst the débris which filled the great entrance bay, but it did not appear.

Van Berchem, in the Appendix to his *Corpus inscriptionum arabicarum* (pp. 726-727), says: «M. Stanley Lane-Poole a retrouvé, dans les papiers de son grand-oncle, W. E. Lane, la copie d'une inscription qu'il a bien voulu m'autoriser à reproduire ici. Cinq lignes, probablement de même type et de mêmes caractères que ceux du n° 49. Inédite :

«Has ordered the construction of this blessed gate and of the wall which adjoins it, al-Malik an-Nâṣir, he who has unified the language of belief and crushed the servants of the Cross, Ṣalâḥ ad-dunyâ wad-dîn, Sultan of Islam and the Moslems, Abu l-Muẓaffar Yûsuf, son of Ayyûb, son of Shâdhi, who has revived the Empire of the Khalif. In the months of the year 576 (1180-1181).»

Van Berchem remarks : «Les termes de construction, rapprochés de la date, prouvent que ce texte décorait une des portes de l'enceinte bâtie par Saladin au Caire, où Lane l'aura relevée, peut-être en place, durant son long séjour dans cette ville». Can this be the missing inscription, preserved, perhaps in the Palace of Muḥammad 'Aly, and copied by Lane. Saladin's work at the Citadel lasted from 572 (1176) to 579 (1183-84), so 576 may well have been the date at which the Bâb al-Qarâfa was finished, since, being the gateway to the open country, it was no doubt completed before the Bâb al-Mudarrag, which merely put the Citadel in communication with the town.



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This chamber, which can now be entered either from the passage in the curtain wall, or from M, by the enlarged arrow-slit *d*, shows that the gateway has undergone a transformation similar to Burg ar-Ramla and Burg al-Haddâd. On entering, we find ourselves in a small chamber of a type similar to that which we have found in the half-round towers of the enclosure. The centre part of the chamber, however, is tunnel-vaulted, and to right and left is an arched recess, each of which must once have served an arrow-slit giving a flanking fire. The wall at the back of the northern recess has been cut away and we can pass through the opening into another chamber provided with an arrow-slit of the type which we have met with in al-ʿÂdil's work. The outer end of the tunnel-vaulted chamber has also been cut away, so that we can pass into R. If we turn round on entering either of these rooms, we observe the curved face of the inner tower, just as in Burg ar-Ramla and Burg al-Haddâd. Al-ʿÂdil therefore has re-inforced the flanking towers of this gateway in the same fashion as Burg al-Haddâd and Burg ar-Ramla. Complete confirmation of this view was found on clearing the upper storey of each tower, when the upper edge of the inner tower was revealed as a complete semi-circle (*f* and *f'*) some 15 or 20 centimetres above the part beyond it. Al-ʿÂdil, therefore, must have removed the upper part of Saladin's two towers, added the outer part and failed to raise the floor, which was to form part of the new upper floor, to quite the requisite level. The same raised semi-circle appeared after the floor of the right-hand tower had been thoroughly cleared [1], but the plan of this floor was only partly recovered, the whole of the forward part having completely disappeared. In the chamber below, however, it is not possible to pass into the two outer rooms, although the arrow-slits have been mutilated and converted into doorways, as the openings are blocked-up with big, roughly squared stones laid dry. Whether rooms exist beyond, or whether the space is merely packed solid with stones I cannot say, but the absence of any

[1] The total amount of débris removed during my researches is as follows :

| | |
|---|---|
| South façade and south-east corner tower . | 103 c. m. |
| Corner tower to Bâb al-Qarâfa . . . . . | 565 |
| Bâb al-Qarâfa to Burg ar-Ramla . . . . . | 1.163 |
| | 1.831 |

at a total cost of L. E. 237.

In addition, the Military Authorities removed 347 cubic metres from the gallery between Burg ar-Ramla and aṣ-Ṣaḥrâ, in connection with a scheme for ventilating the Married Quarters («P» Block).

This gives a total of 2,178 cubic metres.

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signs of arrow-slits on the exterior, points to the latter conclusion. In the northern recess the same curved sill is visible as in the opposite tower.

At what date was this splendid gateway walled-up? It was open in Maqrîzî's days, although he says that it was little used and difficult of access, so we are therefore led to a date after the middle of the xv$^{th}$ century. It consequently seems most probable that the wall, nearly 2 metres thick, which closes the great entrance bay was built, during the Turkish scare, by Jânbalâṭ and Ṭûmân Bây in 906 (1501). But its upper part was not destroyed at the same time. It would appear that it was used as living quarters by the guards of the wall for some time after, and that the arrow-slits on the inner side were opened out into doorways to give access to the space enclosed between the towers, the level of which was raised about a metre and a half at the same time, and paved with small slabs (*balâṭ*). Things remained so for some time and then, for some reason or other, the whole upper part was demolished, the material being pitched into the entrance bay, which was filled up with débris to the level of the rampart walk. A great quantity of stone, including three of the great voussoirs of the arch at the inner end of the vault, still cemented together [1], were found above this pavement during the removal of this débris. This pavement is still there, except just in front of the entrance proper, where it was removed and excavations continued down to the sill (Plate XXVII, B).

No trace of the approaches to this great gateway are visible to-day, which is not surprising as they were no doubt destroyed at the time of the walling-up, but it is clear, from Plate XXVI, A and B, that it must have been approached across a ditch, exactly like the gateway at the Burg aẓ-Ẓafar, where the recent excavations have revealed a stone platform outside the gateway, with a ledge at its outer edge, the ditch with a massive of stone pier in the centre which rises to the exact level of the ledge, and the counterscarp of rubble masonry. Mrs. Devonshire, on the strength of its xviii$^{th}$ century name Burg al-Imâm, has suggested to me that it may have been inhabited by the Imâm of the mosque of Sidi Sariya which is comparatively near to it. This suggestion appears to me to be quite probable, especially as we often hear of towers being

[1] Each voussoir measured 75 cm. in depth, and 38 and 27 cm. in breadth at its outer and inner end respectively.



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alotted as residences or prisons, e. g. the Khalif was given a tower to live in, and Shagaret ad-Durr was imprisoned in one called the Red Tower.

Summary of analysis. — Having now examined the whole circuit of the Northern Enclosure, we can now summarize our results as follows :

(1) To Saladin must be attributed the long thread of curtain wall, set with half-round towers, which commences on the east side of the Muqaṭṭam tower, and runs along the south, east and north sides of the enclosure, until it turns in and stops short against what is at present the Isolation Ward of the Hospital. To him also are due the two postern gates, the inner part of the Bâb al-Qarâfa, and the Bâb al-Mudarrag as well as the curtain wall which runs south from it, including the hinder part of the half-round tower between the latter gateway and the Middle Gate.

In other words, Saladin's enclosure was a complete one, as strong as the time at his disposal permitted him to make it. Called away to Palestine on May 11th 1182 at a critical period in the wars of the Crusades, he left it (as it proved, for ever) to embark on a series of campaigns which were crowned by the capture of Jerusalem in Sha'bân 583 (October 1187). His brother and successor al-'Âdil, in a period of temporary tranquillity, and with the resources which he possessed as Suzerain of the Ayyubide States, decided on the further fortification of some of the chief cities and strategic points of the Empire [1]. The Citadels of Aleppo, Damascus, Bosra and Cairo, and remains of towers on Mt. Tabor still bear witness to his energy.

(2) To al-'Âdil must be attributed the three great towers on the south side — Burg Ṣofṭa, Burg Kerkyalân and Burg al-E'lua — the additions to the Bâb al-Qarâfa, the outer part of Burg ar-Ramla and Burg al-Haddâd, the inner part of Burg aṣ-Ṣaḥrâ, the great tower whose base is shown in Plate XX A, and the two great square towers at the north-western corner of the enclosure.

[1] Abû l-Fidâ', in the *Recueil des Historiens orientaux des Croisades*, I, p. 84, n., and Maqrîzî, *Sulûk*, Blochet's transl., p. 290, quoted by Sobernheim, *Die Inschriften der Zitadelle von Damascus*, in *Der Islam*, XII, pp. 5-6.

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(3) To Jânbalâṭ and Ṭûmân Bây, I believe, must be attributed the casing wall added to the northern face from Burg aṣ-Ṣaḥrâ westwards, also the walling up of the Bâb al-Qarâfa.

(4) To an unknown Turkish hand in the XVI$^{th}$ or XVII$^{th}$ century I attribute the great Muqaṭṭam tower and its truncated fellow at the side of the Middle Gate, also the massive curtain wall between them, including the polygonal towers which flank the Inner Gate, but not the archway itself. Also the round north-western corner tower and the curtain wall which joins it to the Bâb al-Mudarrag, the casing of that gateway and the refacing of the wall running south from it.

(5) To Muḥammad ʿAly must be attributed the great curtain wall which bounds the Hospital garden and ends at the north-western corner tower. Also the archway of the Inner Gate, the glacis added to the south façade on either side of Burg Kerkyalân, a remade piece of curtain wall at the west side of Burg Maṭar, and most of the parapet throughout the enclosure.

Future research. — In the Northern Enclosure there is not much more to be done except the penetration and exploration of the lower level gallery which evidently runs along the south façade. The exploration of this gallery would probably reveal a lower storey in Burg Kerkyalân and Burg al-Eʿlua and also settle the question as to whether Burg Maṭar was a gateway or not. The gallery in the curtain wall running south from the Bâb al-Mudarrag should be cleared.

In the Southern Enclosure everything still remains to be done. It is evident that its present outline is of much later growth that that of the Northern Enclosure and that the original boundary line of Saladin is far within it[1]. It is my

[1] I say «far within it» for the following reasons. ʿImâd ad-Dîn, who was the Secretary of Saladin, and must therefore have had all the official documents under his eyes, tells us that in the office of accounts he had seen particulars as to the extent of Saladin's fortifications which he proceeds to reproduce. He says that the circumference of the Citadel was 3210 Hâshimite cubits, which at 0 m. 656 = 2103 m. 76. Now we have seen that one part of the enclosure of Saladin made a great loop, one end of which ran into the Muqaṭṭam tower, and the other into the great tower alongside the Middle Gate. The length of this loop can easily be measured, as the outline of the part cut away by Muḥammad ʿAly is recorded on Napoleon's plan. This loop

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conviction that part of the curtain wall of Saladin still exists, buried in the immensely thick length of wall between the Muqaṭṭam tower and the tower of late date which covers the so-called Well of Joseph. From the traces of masonry which peep through the gravel outside and to the west of the Inner Gate I should say that excavation at this point would give interesting results. The tower with the headless eagle is certainly later than Saladin and al-ʿÂdil, and the curtain-wall to the south of it is later still. It joins this tower to the tower with the inscription of an-Nâṣir Muḥammad, and is flush with the outer face of each, the junction being marked by a complete vertical break in the masonry. It is obvious that it has been built in advance of a previous curtain wall to which these two towers formed a salient.

In one of my walks round this enclosure I found the *sâqiya* illustrated on Plate XXX. From its position it is evidently that marked near the L of EL QA-LA'H on Napoleon's map (Fig. 10). One side of it has gone, but its south face still bears a long but blank inscription panel with a medallion, also blank. As an-Nâṣir Muḥammad built the Great Aqueduct [1], it is to him that I attribute this *sâqiya*, and the decorated outline at the end of the sunken panel is quite in keeping with his period. There must have once been several, probably three, which raised the water of the Great Aqueduct, step by step to the level of the palaces. Shihâb ad-Dîn (c. 1313) speaks of them as follows : « In these palaces are channels of water from the Nile raised from basin to basin by *dûlâbs* turned by oxen until it reaches the level of the Citadel [2] ».

measures roughly 1400 metres; there are therefore about 650 metres to account for. It is easy to see that these 650 metres would form an enclosure very much smaller than the present southern one which measure about 1300 metres.

[1] In 711 (1311). See my *Brief Chronology*, loc. cit., *B. I. F. A. O.*, XVI, pp. 88-93.

[2] Reproduced and translated by Casanova, *op. cit.*, p. 669.

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# APPENDIX.

## MÂCHICOULIS.

The earliest examples of stone *mâchicoulis* occur in the pre-Muḥammadan architecture of Northern Syria, and three of these are dated : (1) at Kfel-lûsîn (Fig. 11), in a tower built 492 A. D., according to an inscription on the lintel over the entrance [1]; (2) at Refadeh in a two-storey house, dated 516 A. D. [2], and (3) at Dâr Qîtâ, in a watch-tower dated 551 A. D. [3]. Other examples, undated however, may be seen at Jeradeh in a tower-house assigned by Butler to the IVth century [4], at Serjibleh, in a house of five storeys (Fig. 12) assigned by Butler to the VIth century [5], at Kefr Hauwâr in four towers standing in a row on the edge of the town [6], at Refadeh in a tower [7], at Khirbet Hass [8] and at Deir Qulah, a monastery in Palestine, assigned by Conder to the VIth century [9]. In the Haurân an example in the barracks at Umm al-Jamâl (?Θαντια), probably built c. 412, has been published by Butler [10].

Of these ten examples only three can possibly have been for the purpose usually assigned to mâchicoulis, viz. : to enable the besieged to drop molten lead, boiling oil or projectiles on a storming party attacking a doorway below. All the others are latrines and cannot have served any other purpose. The oldest examples, that at Jeradeh, is found in a tower six storeys high completely preserved to its uppermost cornice. It is within the town and is an

(1) Butler (H. C.), *Ancient Architecture in Syria, Part I: Northern Syria*, p. 225 and ill. 227-228. One figure being uncertain, the date may be read as 492 or 522 A. D., but the profile of the cornice according to Butler is more in keeping with the earlier date.

(2) *Ibid.*, pp. 256-257.

(3) *Ibid.*, pp. 189-190.

(4) Butler, *Architecture and Other Arts*, p. 129 with illus.

(5) *Ibid.*, pp. 253-255, and *Ancient Architecture in Syria*, I, pp. 230-231 and ill. 232.

(6) *Ibid.*, pp. 232-235, and ill. 234.

(7) *Ibid.*, p. 238 and ill. 275.

(8) De Vogüé, *Syrie centrale*, I, p. 95 and pl. 58.

(9) *Survey of Western Palestine*, II, pp. 315-319.

(10) *Ancient Architecture in Syria, Part II : Southern Syria*, pp. 170-171 and ill. 144-145.

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integral part of the town wall, which is formed for the greater part by the rear walls of houses. It measures 5 1/2 metres square and 28 metres high, and it is set in a re-entrant angle. It was divided into six storeys, and on one

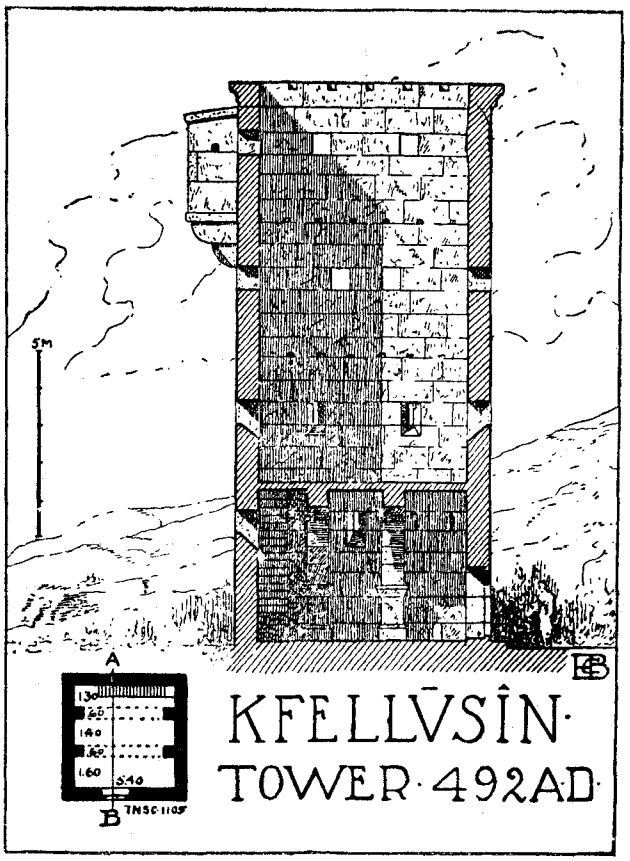


Fig. 11. — Kfellûsîn : Tower (from Butler, *Ancient Architecture in Northern Syria*).

side, at the top storey but one, is a small compartment, built out from the wall upon two large corbels. This overhanging chamber which is entered by a narrow doorway, is about 2 m. 25 high, 2 m. 30 wide, and 80 centimetres deep on the inside. In the middle of the stone floor is a circular aperture 25 centimetres in diameter. Butler says that there can be no doubt that this closet was the *latrina* of the watch, and could have had no other purpose, for it is on the town side of the tower and not above any point of attack. Moreover

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he adds that a mass of broken cylinders of clay was found in the ruins beside the wall, suggesting that an earthern conduit may have led from the closet to a sewer of some sort.

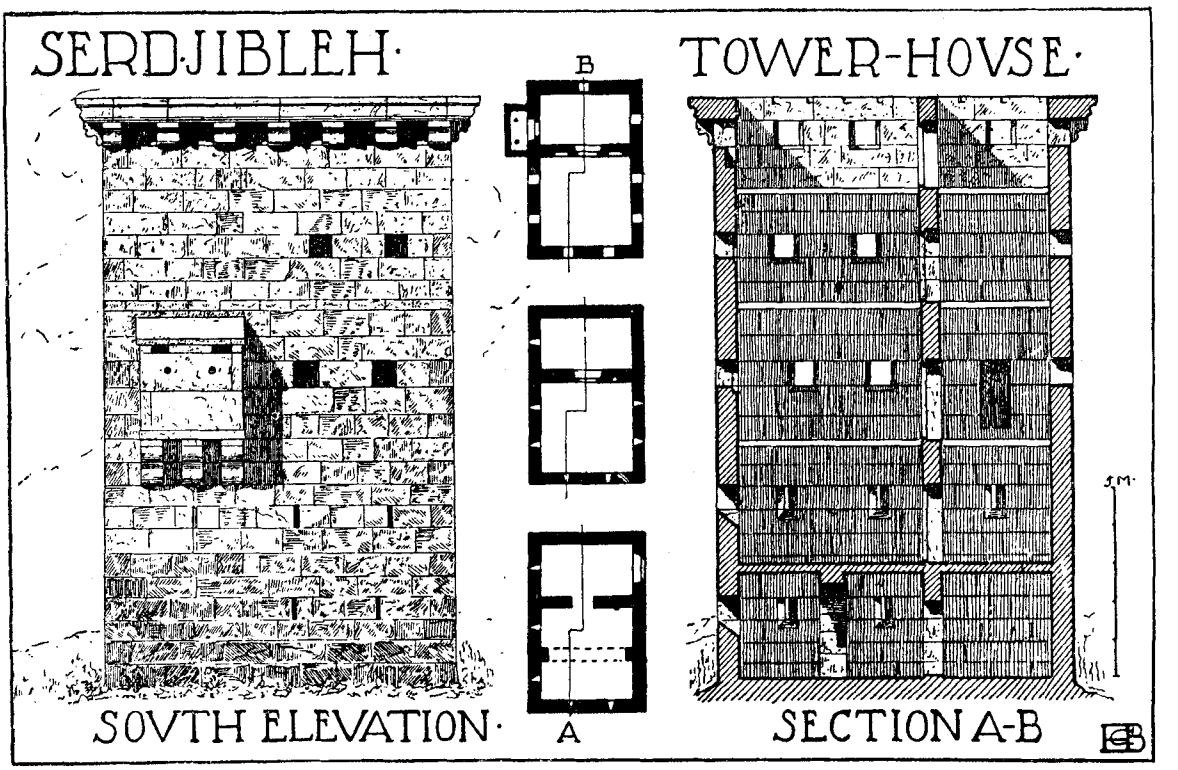


Fig. 12. — Serjibleh : Tower (from Butler, *Ancient Architecture in Northern Syria*).

The tower at Kfellûsîn, dated 492 A. D. (or 522), is 15 metres high and is divided into four storeys. The top floor was provided with a large latrine corbelled out from the west wall whereas the entrance to the tower is on the opposite side. Double corbels carry a large flat stone, which constituted the floor, pierced with two holes. Upon this floor were built the walls, consisting of three high courses of stone only 12 centimetres thick. The whole was covered by a slightly slanting roof of stone slabs which were carried under the main cornice of the building.

The two-storey house at Refadeh, dated 516 A. D., has an overhanging latrine on the upper floor in the east wall.



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The tower-house at Serjibleh, assigned by Butler to the VI^th century, is oblong in plan (9 metres × 6 m. 20), over 17 metres high, and divided into five storeys. On the third storey is a rectangular structure built out from the walls and supported on three brackets. Its walls are of thin slabs of stone, pierced with small round windows, and there is a slanting roof of stone slabs. From inside, a small doorway opens into the overhanging structure, which, having two round apertures in its stone floor, can only have been a latrine. Butler thinks it must once have been connected with a main sewer of some sort, as many broken pieces of tile pipe were found in the débris below it. Here again the entrance the tower is on the opposite side to this projecting structure, which therefore does not command it.

At Kefr Ḥauwâr the four little towers mentioned above are each provided with a latrine, placed on the south side, the side away from the entrance. The construction however is somewhat different from those already described, there being no real corbels, as the floor is composed of a single slab, projecting on both sides of the wall. This treatment is rendered possible by the extremely small scale of the structure, which is only about 60 centimetres wide internally and about 1 m. 66 high. There is one small circular hole in the floor. Butler does not suggest a date.

The watch tower at Refadeh appears to have been four storeys high, and in the second storey, at the angle, is an overhanging latrine like that just described. The entrance to the tower is not in this side.

We thus have six examples which can only have been latrines, and which cannot possibly have served to protect an entrance. We will now discuss those examples which were for defensive purposes. The earliest of these is found at Dâr Qîtâ in what appears to have been an isolated watch tower (dated 551 A. D.) standing a little to the north-west of the centre of the town. It is about 5 1/2 metres square, with an entrance on the west side, and three storeys of it are still preserved. In the third storey, and directly over the entrance, are two brackets carrying a slab with a hole pierced in it; round the edges of the slab are the remains of thin walls which once surrounded it, just as at Kefr Hauwâr. Butler is convinced that this little overhanging chamber was undoubtedly built for the delivery of missiles upon an enemy attempting to force an entrance, and that similar ones placed over entrances, are probably the

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prototype of the continuous machicolations which frequently surmount the wall of later mediæval fortifications. These remarks would of course apply to the little tower of the guard at Khirbet Hass, published by de Vogüé [1], which has a similar overhanging chamber above the entrance, and also to the tower set astride the only approach to the Monastery of Deir Qulah in Palestine [2].

Out of the ten examples of mâchicoulis cited we may therefore say that their function is clear in nine cases, but the tenth, the tower at the south-east corner of the Barracks at Umm al-Jamâl offers difficulties. This tower, which is exceedingly well preserved, is six storeys high, and in the top storey in the centre of each side is a little bottomless overhanging chamber resting on corbels. Two sides of this tower coincide with the outer walls of the barracks, but none of the *mâchicoulis* commands a doorway, nor can they have been used as latrines as there is no floor. Butler suggests that the tower may been a belfry, in which some sort of resounding instrument, the *semanterium* perhaps, was placed, in which case the ropes or chains for ringing it would have passed through these bracketed chambers; but why is this tower provided with four? Butler in another place, when discussing these curious chambers, admits that he can find no satisfactory explanation for this last example [3].

In the Palace of Tekfur Serai, at Constantinople, built by Constantine VII, Porphyrogenitus (912-959 A. D.) [4], on a re-entrant angle of the Theodosian Wall is an elaborate example on the second floor (Plate XXVIII). Gurlitt does not appear to have recognized its function [4], but it can only have been a latrine, as it is on the town side of the Palace, and does not command the entrance, which was on the opposite side.

These are all the existing examples of *mâchicoulis* known to me down to the x[th] century, and the majority, as we have seen, had no military function. It is the same in the following century, for which I can only cite three examples : a pair which defend the gate of the Bâb an-Naṣr (Plate XXIX, A) and one in the curtain wall to the east of it. There is no doubt that the latter was merely a latrine, as it does not defend a gateway, nor any point specially open to attack, and the ground commanded by it, which is very small, owing to its comparatively low altitude, is adequately commanded by the embrasures in the west

[1] *Syrie centrale*, I, p. 95, and Pl. 58.
[2] *Survey of Western Palestine*, II, p. 315.
[3] *Ancient Architecture in Syria*, Part I, p. 234.
[4] Gurlitt, *Die Baukunst Konstantinopel*, p. 7.



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side of the Bâb an-Naṣr and in the east side of the square tower next to it. M. Enlart, in a passage in his learned *Manuel d'archéologie française* [1], appears to suggest that *mâchicoulis* of stone were introduced into Syria by the Crusaders. In view of this, the importance of the pair which defend the Bâb an-Naṣr must be emphasized, built as they were in 480 (1087), which is ten years before the First Crusade left Europe.

From the foregoing we may confidently assert that the employment of mâchicoulis for a military purpose was rare in the East until the XII^th^ century, in fact it is probable that they only became general during the wars of the Crusades [2]. The Bâb al-Futûḥ and Bâb Zuweyla lack this feature and it is likewise wanting in the fortifications of Saladin [3]. Al-ʿÂdil, however, thirty years later grasped the importance of this feature and employed *mâchicoulis* at Damascus, Bosra and Cairo. We have seen that Burg al-Haddâd had three, and Burg Kerkyalân five, and there is little doubt that Burg Ṣofṭa was provided with them also.

The introduction of *mâchicoulis* into Western Europe for military purposes was even later, and there does not appear to be any authentic mention of them before the end of the XII^th^ century [4]. Mâchicoulis when continuous were called *hurdicia* or *alures*. A *mandamus* of Henry III runs : « To make on the same tower (of London) on the South side, at the top, deep alures of good and strong timber, entirely and well covered with lead, through which people can look even to the foot of the tower, and better defend it, if need may be [5] », but only two English examples are known dating from the XII^th^ century, (1) the *alures* of the Castle of Norwich in 1187, and (2) those round the Castle of

(1) « Lorsque les Croisés se furent installés en Palestine et en Syrie, ils ne trouvèrent guère de bois pour hourder leurs forteresses : déjà, du IV^e^ au VIII^e^ siècle, les architectes d'églises de Syrie avaient dû remplacer des arcs et des dallages par la même nécessité, les ingénieurs des châteaux des XII^e^ et XIII^e^ siècles remplacèrent les hourds par des parapets de pierre portés en encorbellement sur des consoles » (II, p. 474).

(2) For a discussion of this question, see VAN BERCHEM and FATIO, *Voyage en Syrie*, I, pp. 143-146. No doubt still more light will be thrown on this question in M. Enlart's forthcoming work on the architecture of the Crusaders in Syria.

(3) With one exception. In the North Wall of Cairo, between the half-round tower to the west of the Bâb al-Futûḥ and a pentagonal tower still farther west is a *mâchicoulis* which, however, was undoubtedly a latrine like that next the Bâb an-Naṣr.

(4) E. S. ARMITAGE, *The Early Norman Castles of the British Isles*, p. 372.

(5) *Ibid.*, p. 387.

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Winchester in 1193, and two in France : (1) Richard's *hurdicia* at Château Gaillard, 1184, and (2) Châtillon, «hoarded» by the Duke of Burgundy in 1186 [1]. They appear to have become universal during the XIII^th^ century, and stone corbels to support them begin to make their appearance about this time, but machicolations entirely of stone, supported on double or triple rows of corbels do not become common till the XIV^th^ century [2].

Of the latter type Château Gaillard is in Dieulafoy's opinion the first example. I quote from his admirable monograph [3] :

« Ce point est très essentiel, car ce n'est pas faute de bois que Richard recourut à la pierre et qu'il substitua des mâchicoulis maçonnés, robustes, incombustibles et durables à des défenses mobiles sujettes à l'incendie, faciles à briser. L'introduction de mâchicoulis de pierre dans un pays aussi riche en forêts que la Normandie à cette époque indique, en effet, un parti pris d'imitation bien prononcé, bien réfléchi. On retrouve l'expression du même désir, mais moins bien réalisé, dans le château des comtes de Flandre reconstruit à Gand en 1180. J'ajouterai que l'emploi des mâchicoulis maçonnés ne se répandit en France que dans la seconde moitié du XIII^e^ siècle et ne se généralisa qu'au XIV^e^. C'est ainsi que les fortifications élevées à Carcassonne par Philippe le Hardi, vers 1280, ne présentent aucune trace de mâchicoulis, bien que la pierre fût abondante et de bonne qualité dans la région, et que les défenses eussent été conçues et établies avec un grand luxe de précautions. Si l'on excepte le château Gaillard, les premiers progrès dans cet ordre d'idées se constatent au château de Courcy, où des consoles de pierre furent scellées dans la maçonnerie pour recevoir les hourds, et peut-être au château de Laval, où il existe une tour que l'on couronna, postérieurement à sa construction, de hourds en pans de bois assemblés avec la charpente de la toiture et posés à demeure sur des solives saillantes.

« Par ordre d'ancienneté, on pourrait citer parmi les plus anciennes bretèches ou échauguettes maçonnées celles qui se trouvent au Puy-en-Velay, à Royat et au château de Montbart. Toutes font partie d'édifices bien datés, élevés longtemps après la mort de Richard, ou ont été ajoutées après coup (consulter à

(1) E. S. ARMITAGE, *The Early Norman Castles of the British Isles*, pp. 372 and 387.

(2) *Ibid.*, p. 372.

(3) *Le Château Gaillard*, in *Mémoires de l'Acad. des Inscriptions et Belles-Lettres*, XXXVI, pp. 11-12.

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ce sujet Viollet-le-Duc, *Dict.*, articles : *Architect. mil.*, *Hourd*, *Mâchicoulis*). Tel est le cas de la dépendance de l'église de Puy-en-Velay, que l'on surmonta d'une défense au XIIIe siècle, plusieurs années après sa construction, et de la tour de Montauban. M. Devals, qui s'est occupé de cette tour, estime qu'elle faisait partie des anciens remparts de la ville et qu'elle date du XIIe siècle (Congrès archéol., année 1865, p. 312). Ce n'est pas le lieu de discuter cette opinion; mais s'y rangeât-on, qu'on ne pourrait s'empêcher d'observer que le style des consoles et du couronnement accuse pour les mâchicoulis une date plus récente. Du reste, au commencement du XIIIe siècle, on ne connaissait dans cette région que les hourds en charpente, ainsi que l'attestent maints passages de la *Chanson* (*Histoire de la croisade contre les Albigeois*, *Doc. inéd. sur l'Hist. de France*, 1re série; voir notamment les vers 3988 et suiv., 6313 et suiv., 6854 et suiv.). Au surplus, on remarquera que les adjonctions faites à Carcassonne sous Philippe le Hardi ne comportaient pas de cours de mâchicoulis et que, dans les fortifications méridionales remontant même à la seconde moitié du XIIIe siècle, on citerait à peine quelques bretèches ou quelques échauguettes isolées. »

## JOGGLED VOUSSOIRS.

This feature, which we have observed in the recesses of the Bâb al-Mudarrag, the mutilated half-round tower to the south of it, in the recesses round the top of Burg Kerkyalân, and in the outer arch of the Bâb al-Qarâfa, was known long before Islam. The Porta Aurea (Plate XXVIII, D) and the Porta Ferrara in Diocletian's palace at Spalato are perhaps the earliest examples, and in this case they are applied to a horizontal arch. Diocletian reigned from 284 to 305 A.D.; his palace was probably built c. 300 A.D., and there are reasons for believing that it was built by Syrian architects[1]. Semicircular arches with joggled voussoirs carry the monolithic dome of the Mausoleum of Theodoric at Ravenna, which was built c. 519 A.D. (Plate XXIX, B)[2]. Although this feature is unknown in the pre-Muḥammadan architecture

[1] Strzygowski, *Orient oder Rom*, pp. 167 and 208. For an illustration of the Porta Ferrara, see T. G. Jackson, *Byzantine and Romanesque Architecture*, I, fig. 5.

[2] Rivoira, *Moslem Architecture*, p. 53 and fig. 78; see also Hutton (E.), *Ravenna*, pp. 193-195, and Strzygowski, *Die Baukunst der Armenier*, Abb. 638.

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of Northern Syria, it is a remarkable fact that a curious counterfeited example, occurs at Qaṣr al-Mudakhkhin, near the point where the old Roman road from Antioch enters the plain of Sermeda. On the north side of a little chapel is a long stone above the lintel cut to form a segmental arch. The face of the stone is carved with deep lines that simulate the joints of voussoirs, each joint being provided with a mortice and tenon (Fig. 13)[1]. It is also found in the Kharput Gate at Diyarbekr. In the left salient, above a niche, is a lintel hollowed out underneath; above this a shallow relieving arch of three joggled voussoirs. As we have already seen, this gate is dated 297 H. (909/10), and one of the dating inscriptions is cut on the course immediately above this relieving arch[2]. This is probably the earliest example in Islam.

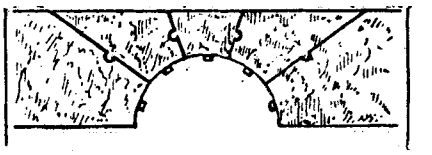

Fig. 13. — Qaṣr al-Mudakhkhin : Arch with joggled joints counterfeited (from Butler, *Ancient Architecture in Northern Syria*).

Another example (unpublished) is found over the entrance to the tall octagonal minaret of the Great Mosque at Urfa, where there is a deep joggled voussoir above the lintel of the doorway. The date of this minaret is not known, but it is certainly early[3], although I do not feel convinced that Sachau[4] is right in assigning it to the Byzantine period, as all the surviving examples of Syrian church towers are square.

It first appears in Egypt in the Fâṭimide gates of Cairo and after that is widely used, and attains considerable elaboration even before the end of the Fâṭimide period, e. g. in the Mosque of al-Aqmar over the entrance. Only the simplest form is found in the Citadel.

K. A. C. Creswell.

[1] Butler, *Ancient Architecture in Syria, Part I: Northern Syria*, p. 209.

[2] Van Berchem and Strzygowski, *Amida*, pp. 17-18 and Plate III 2.

[3] Rivoira (*Moslem Architecture*, p. 134) says that it must be ascribed to the XII^th^ century, though without supplying the necessary evidence, «a practice», as he remarks in another place (p. 121), «which is more convenient than convincing».

[4] *Reise in Syrien und Mesopotamien*, p. 194.

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The Citadel (northern enclosure) seen from the Muqattam.

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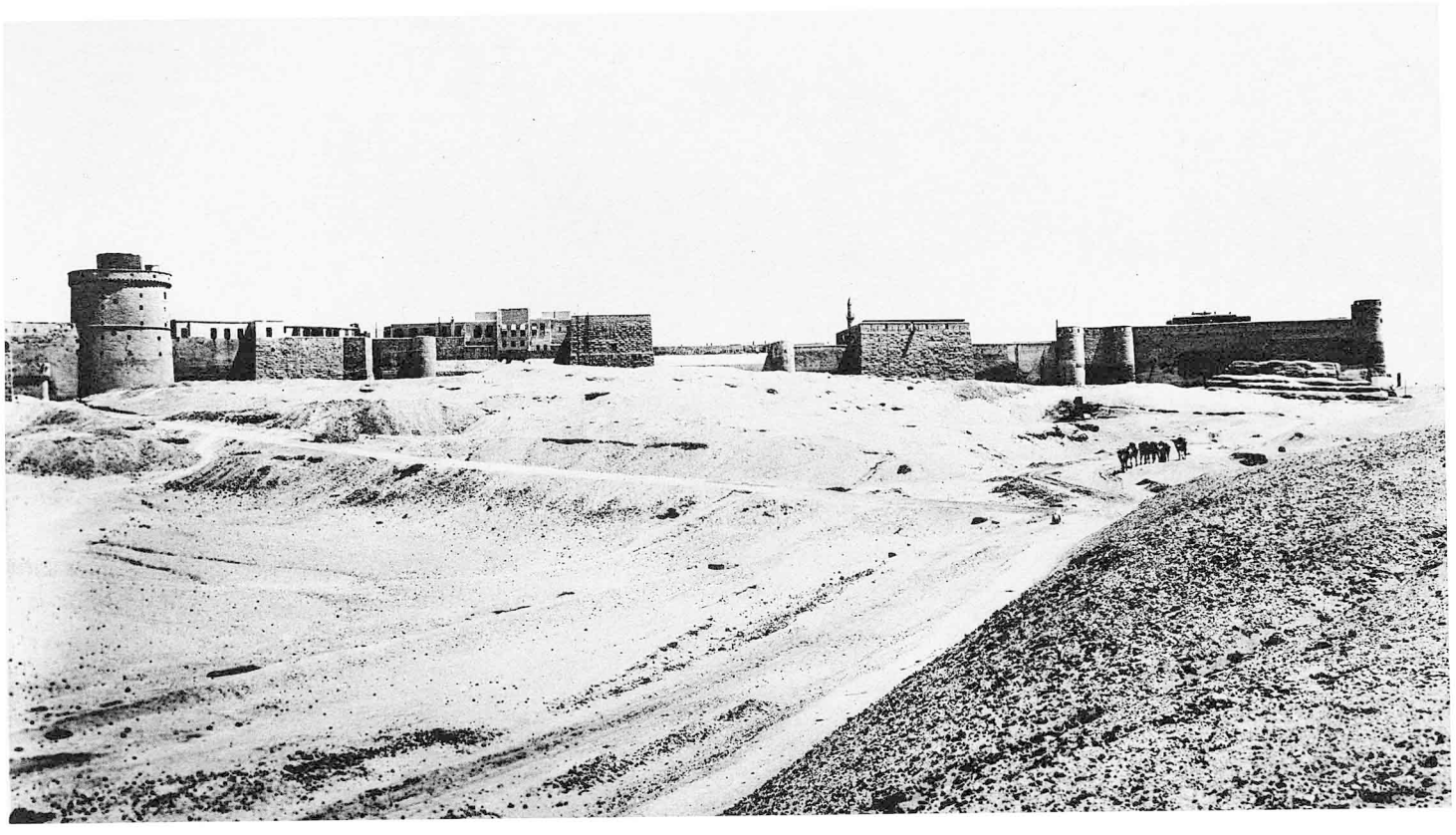

The northern enclosure, south façade.

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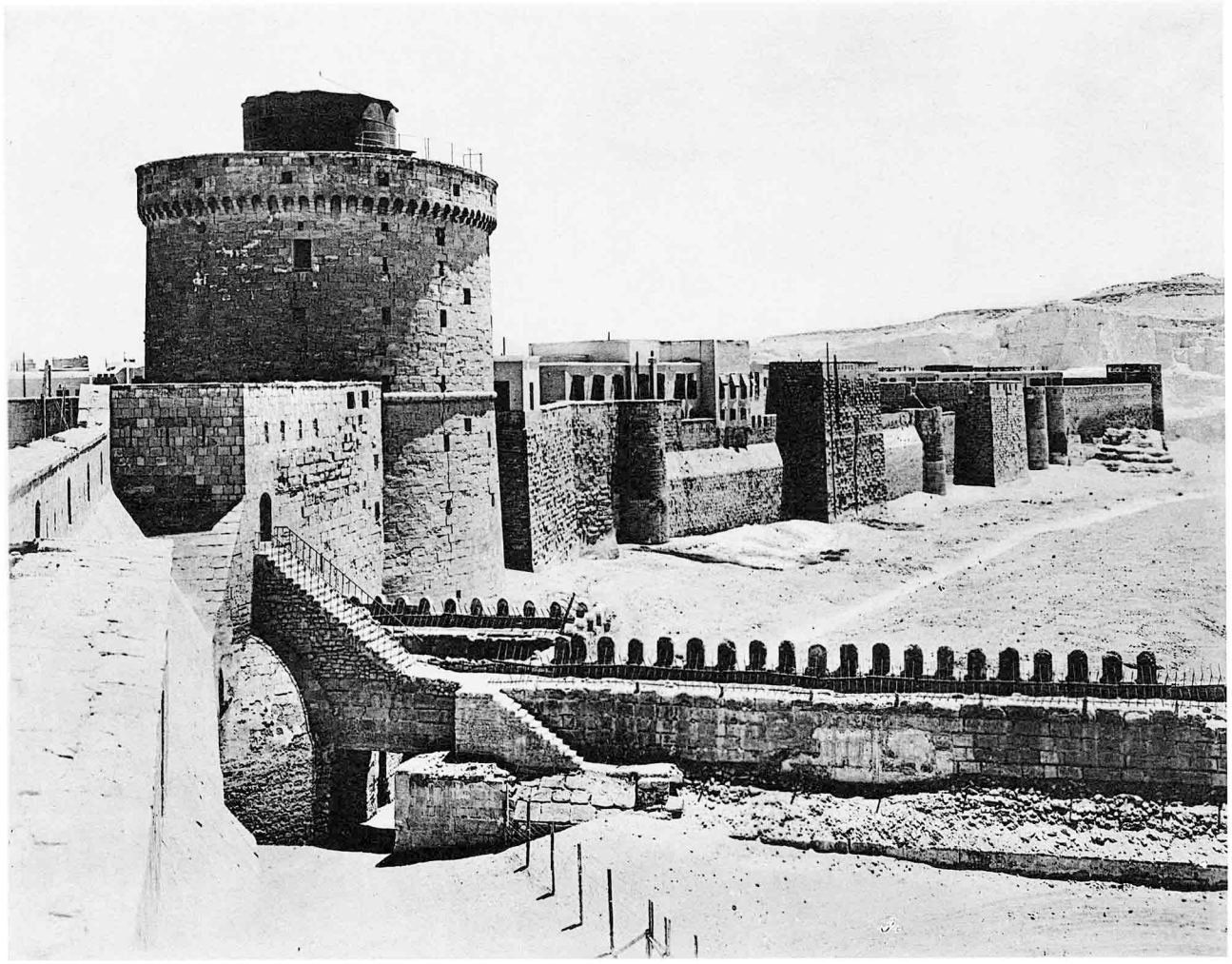

The northern enclosure : south façade from the Muqattam Gate (Bâb al-Gebel) to Burg al-Muballat.

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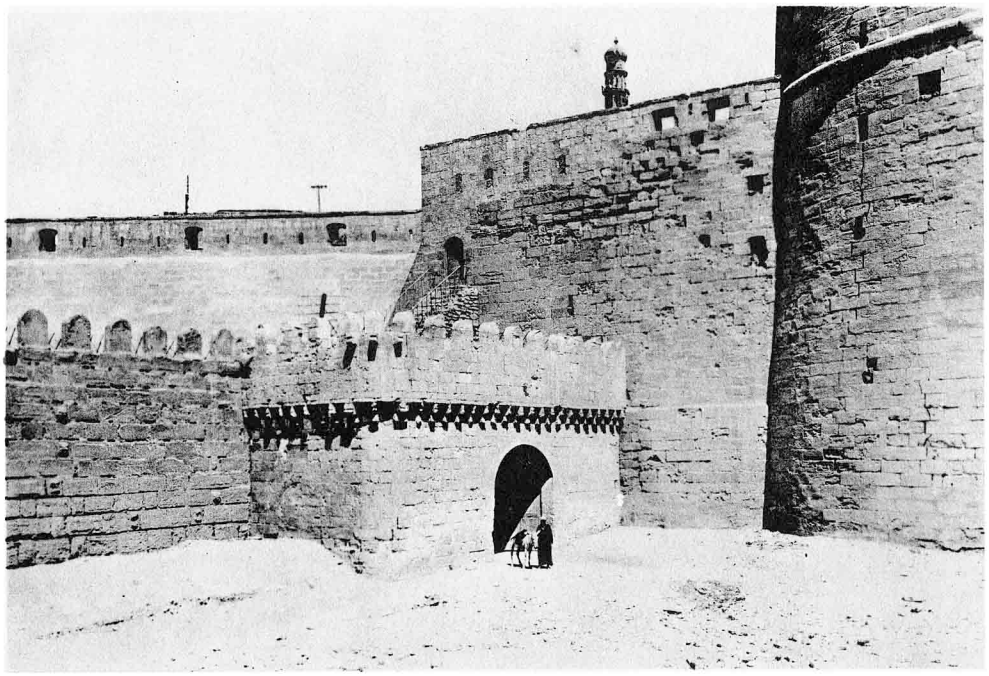
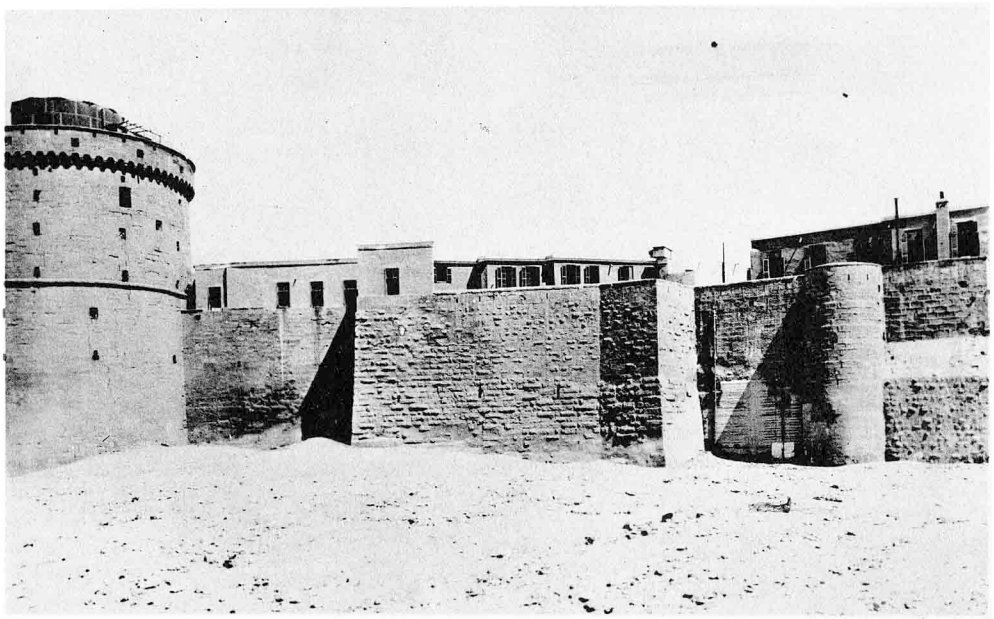


A. — The Muqattam Gate (Bâb al-Gebel).



B. — The Muqattam tower and Burg al-Eloueh.

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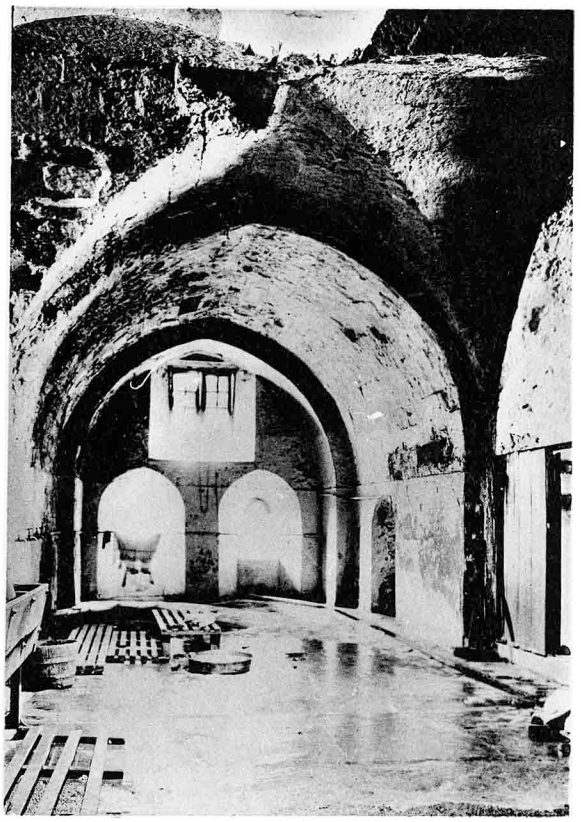
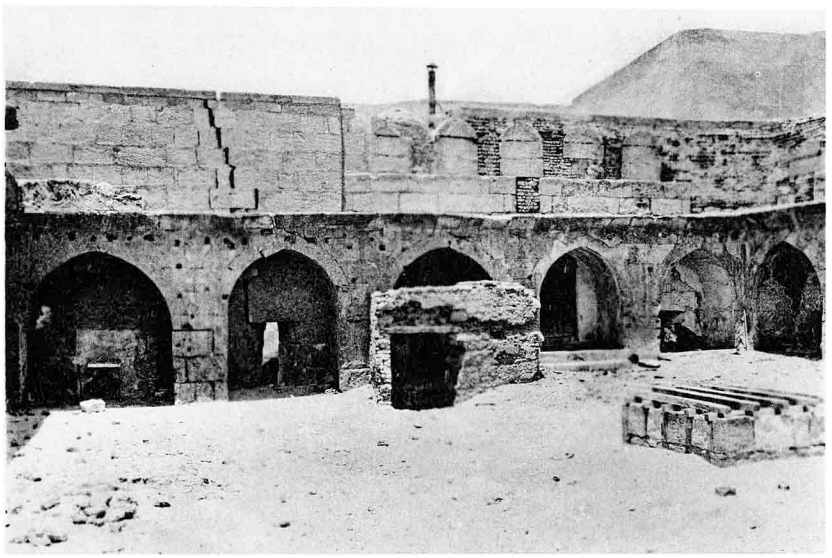


A. — Burg Kerkyalân : interior, looking east.



B. — Burg Kerkyalân : summit, west side.

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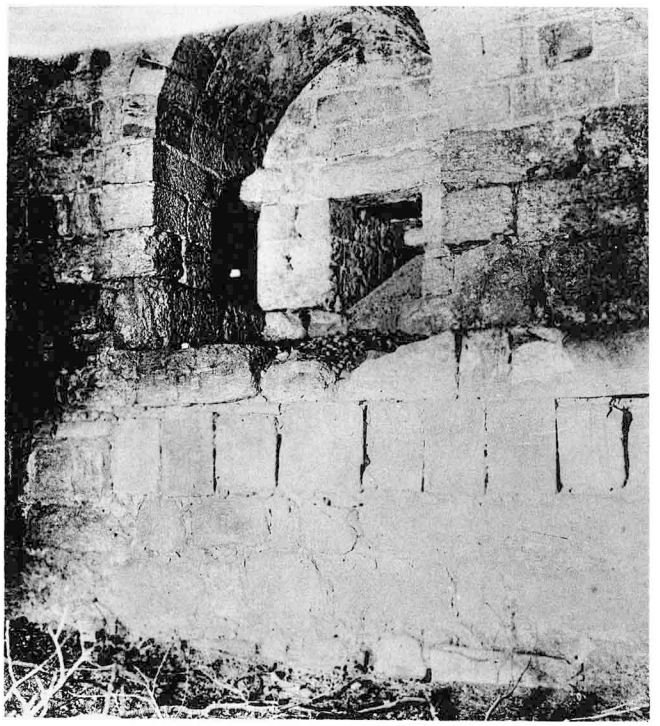
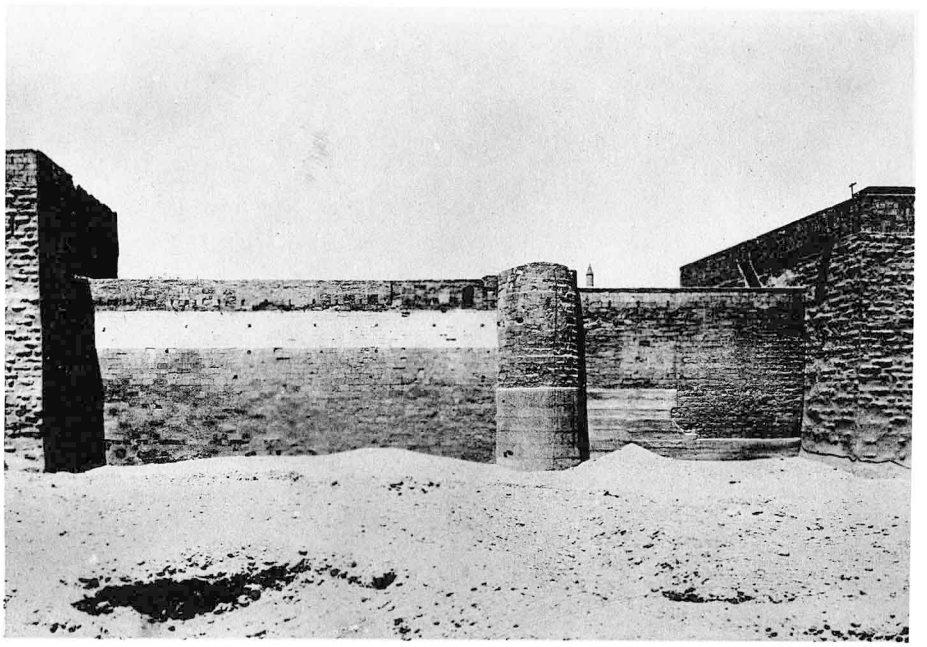


A. — Tower at Suffurieh (near Nazareth) : unusual type of embrasure.



B. — Burg Kerkyalân to Burg at-Turfeh.

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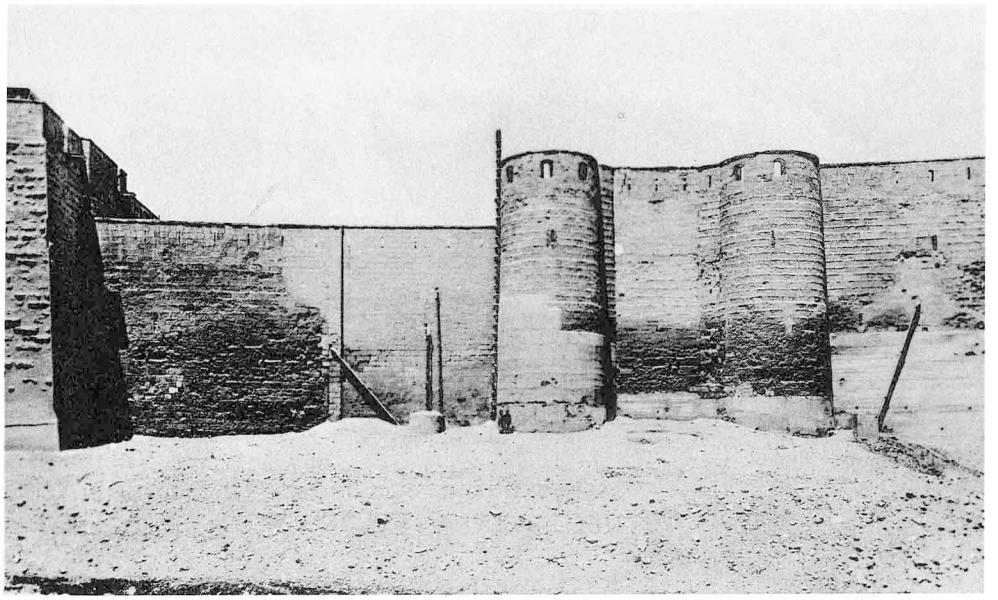
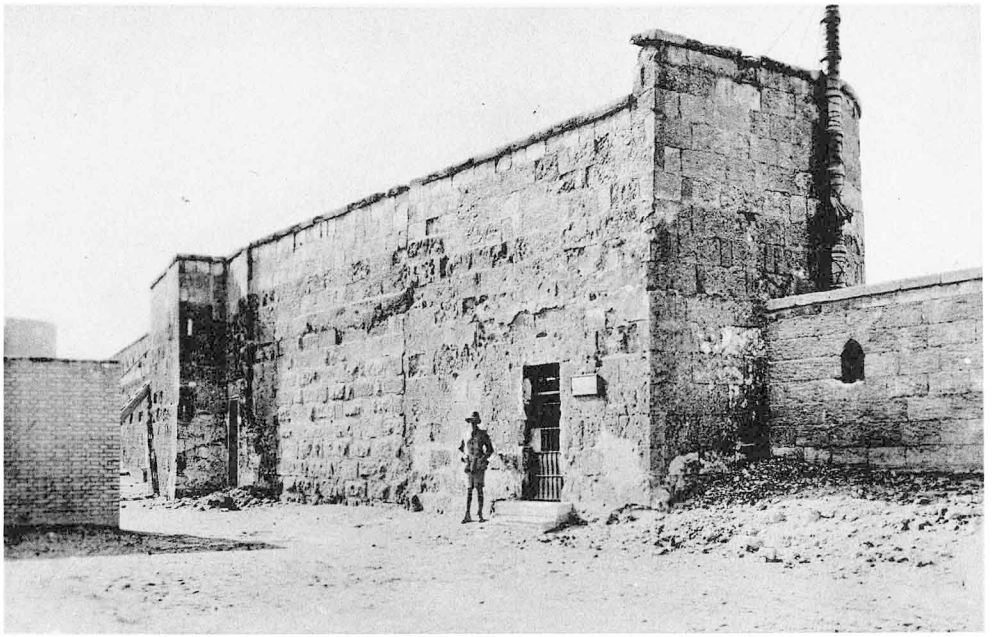


A. — Burg al-Matar.



B. — Burg al-Matar : inner face.

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The northern enclosure : south façade, from the east.

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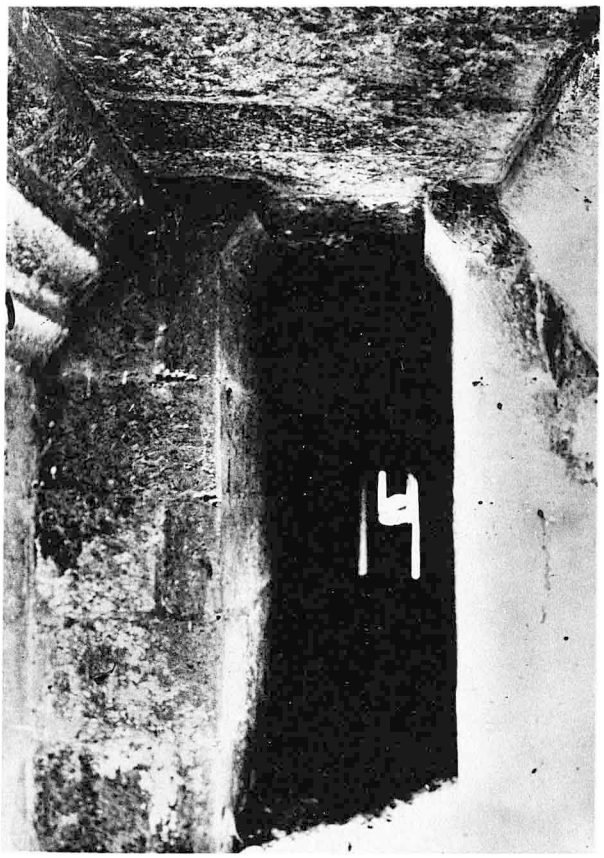

A. — Gallery in curtain wall, near Burg al-Matar.

B. — The northern enclosure : east side.

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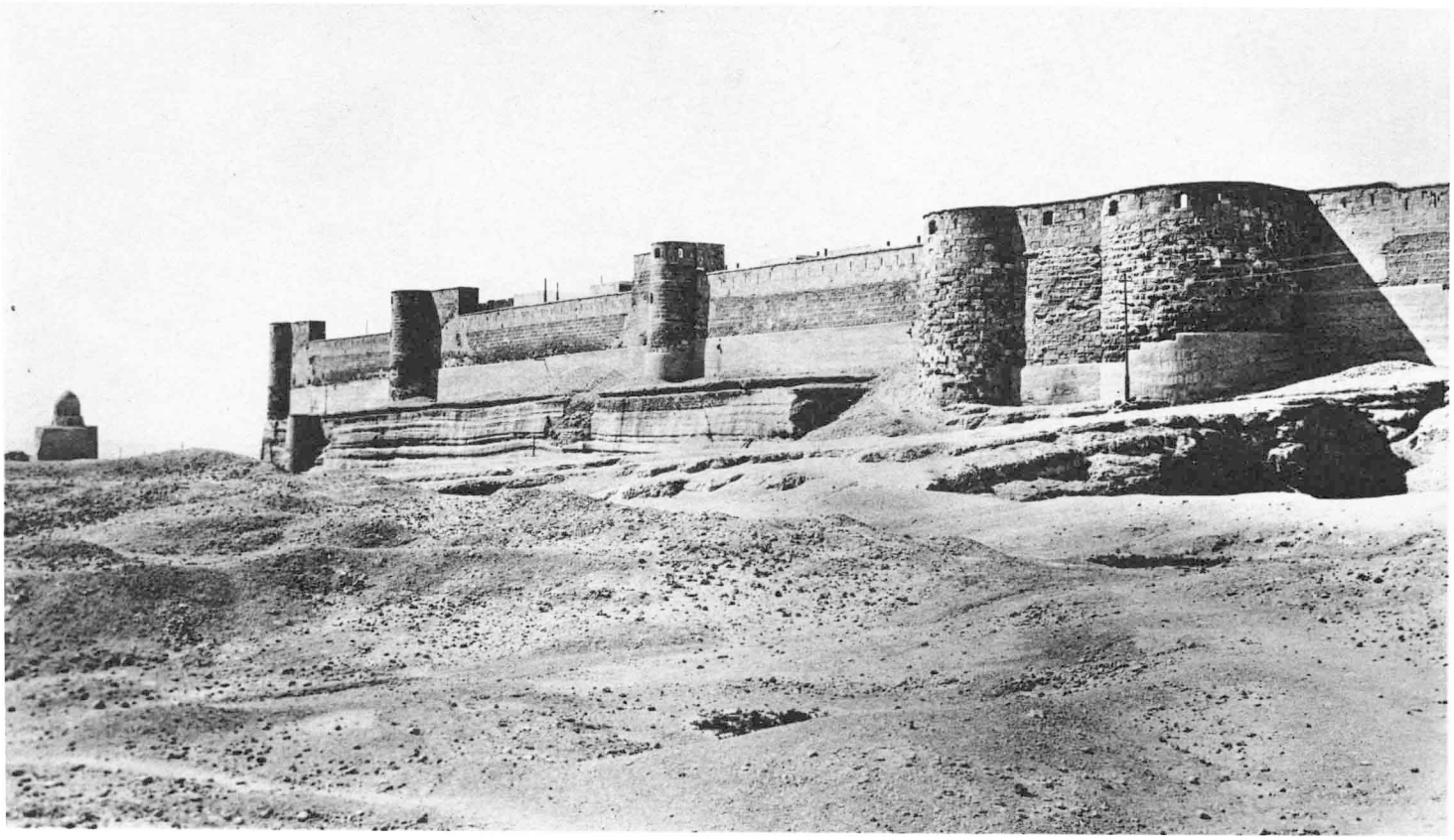

The northern enclosure, east side : Burg al-Muballat to Burg al-Imâm (Bab al-Qarâfa).

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The northern enclosure, from the north-east : Burg al-Imâm (Bâb al-Qarâfa) to Burg al-Haddad.

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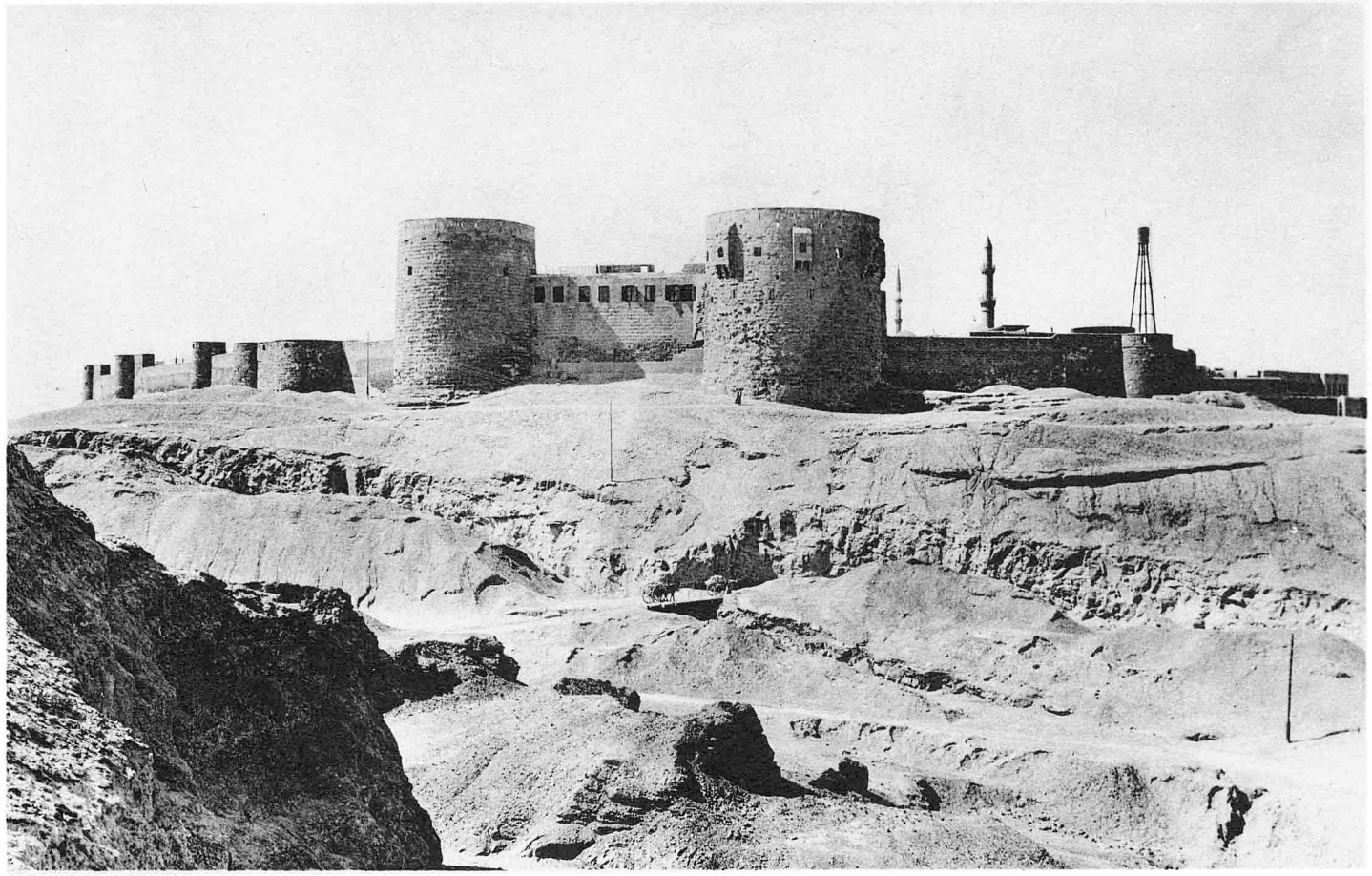

Burg ar-Ramleh and Burg al-Haddad.

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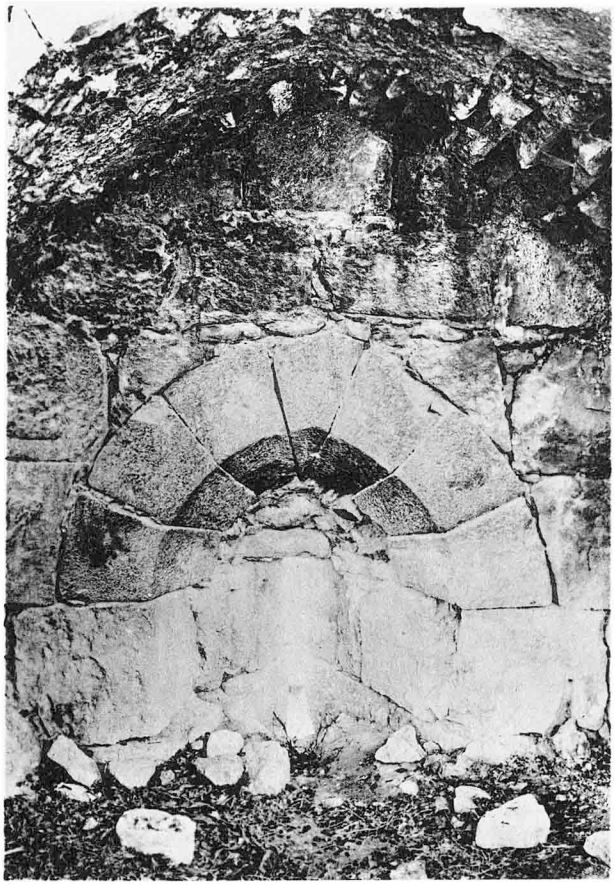
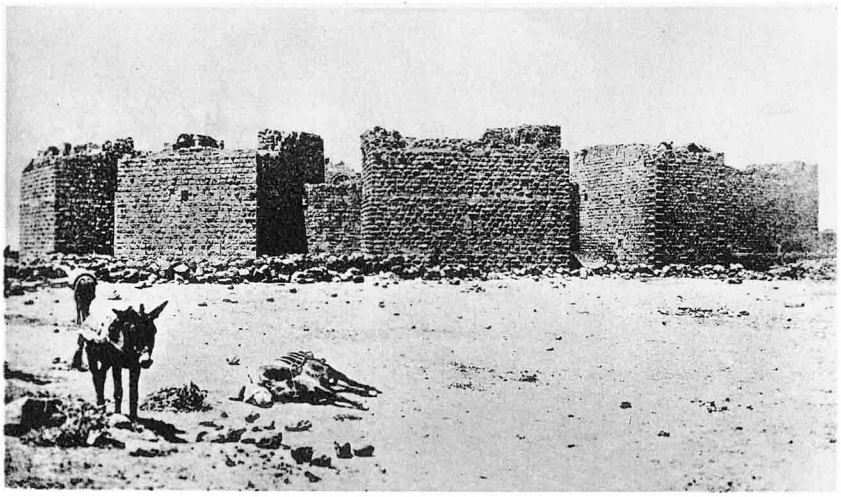


A. — MOUNT TABOR : arrow slit in fortifications of al-'Âdil.



B. — BOSRA : The Citadel.

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A. — Burg al-Haddad.

B. — Postern gate (walled up) near Burg al-Haddad.

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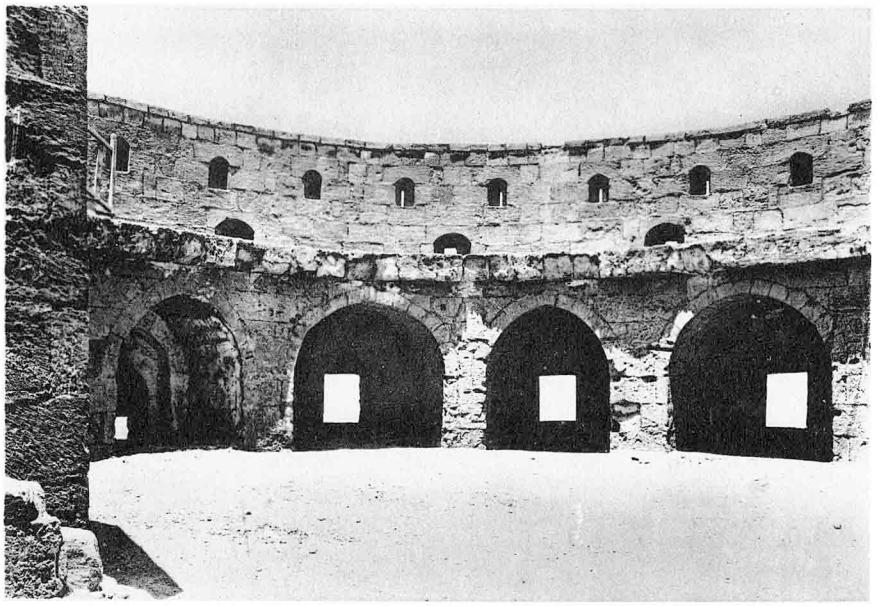

A. — Burg al-Haddad : summit.

B. — Burg al-Haddad : the only unmutilated arrow-slit.

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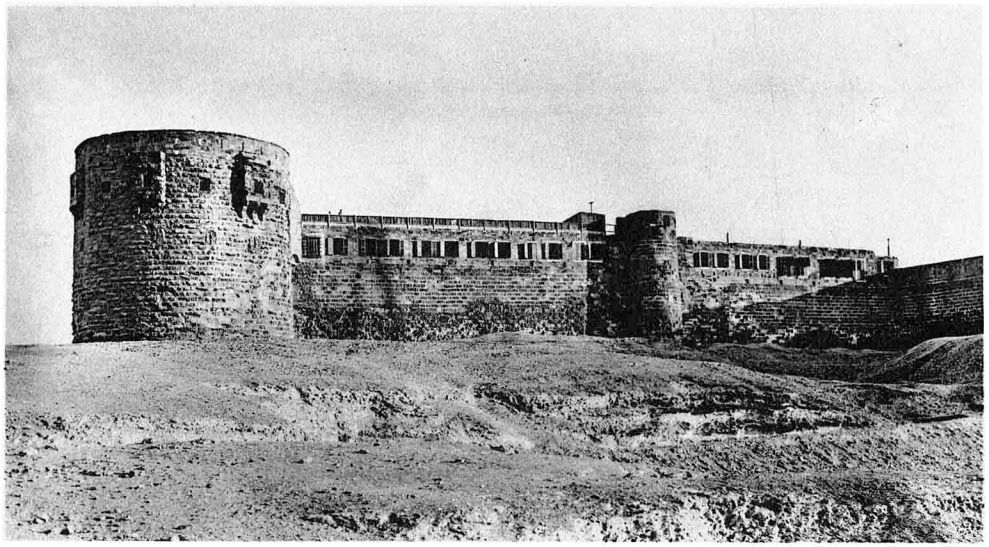
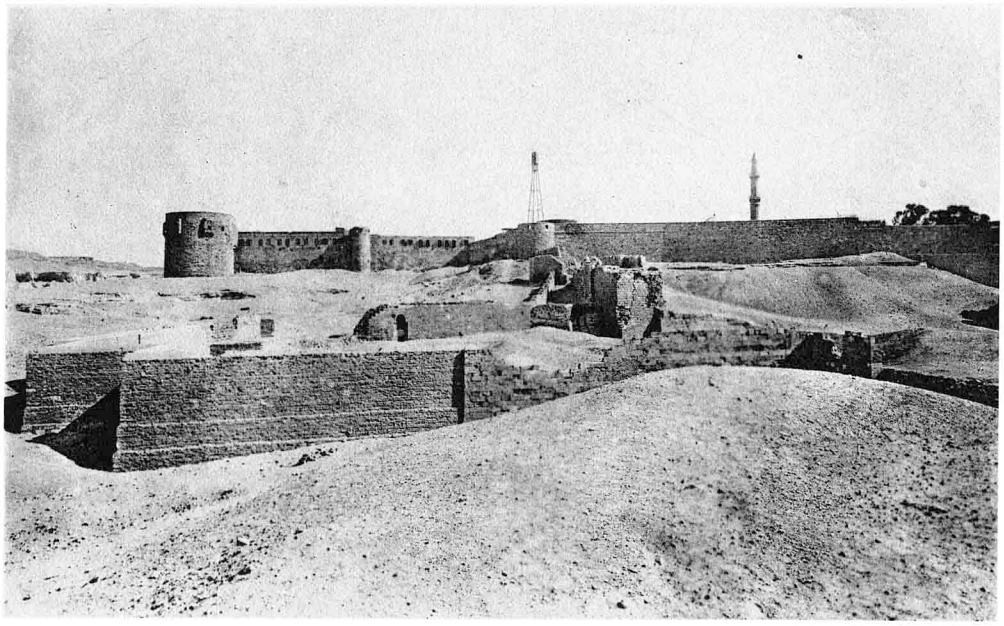


A. — Burg al-Haddad and curtain wall running west.



B. — Façade running west from Burg al-Haddad.

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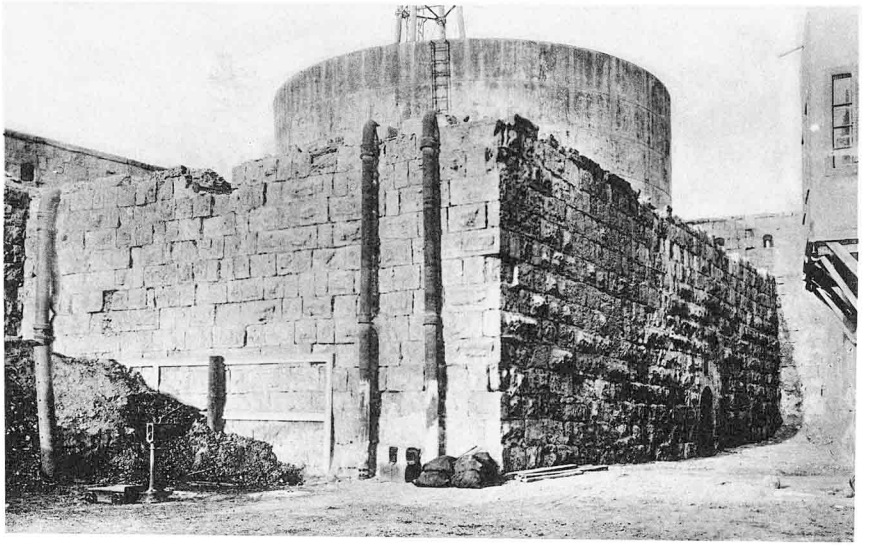
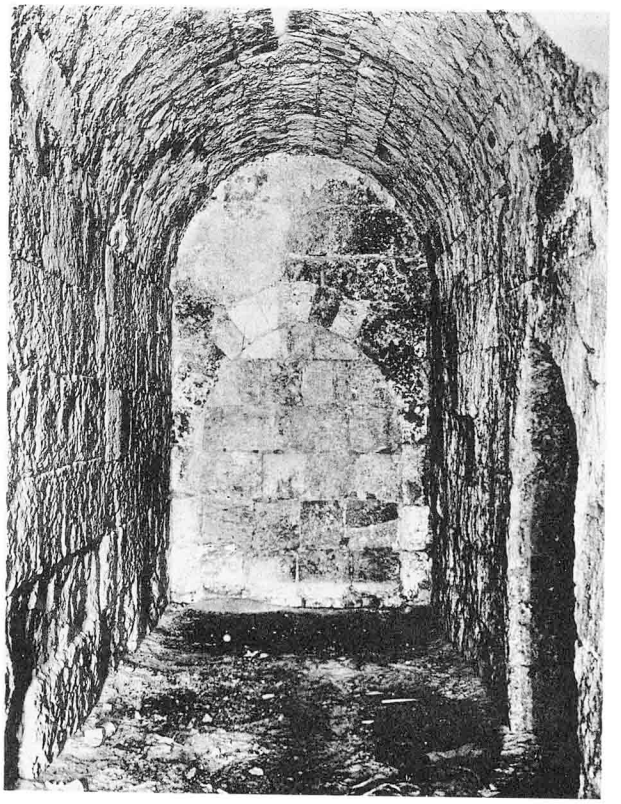


A. — Burg as-Sahra, from within.



B. — Postern gate in Burg as-Sahra.

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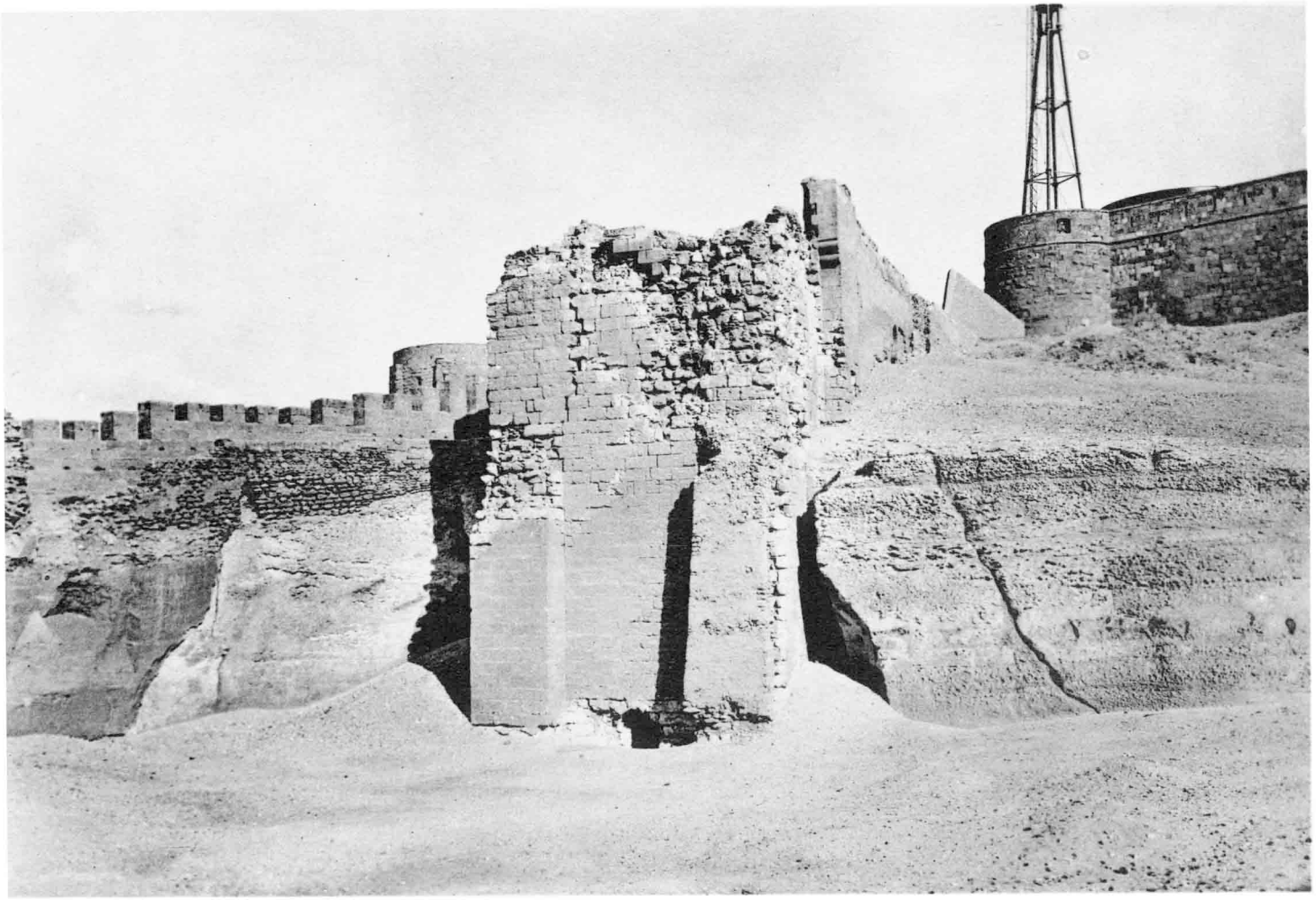

*Sakiya* just outside Burg as-Sahra.

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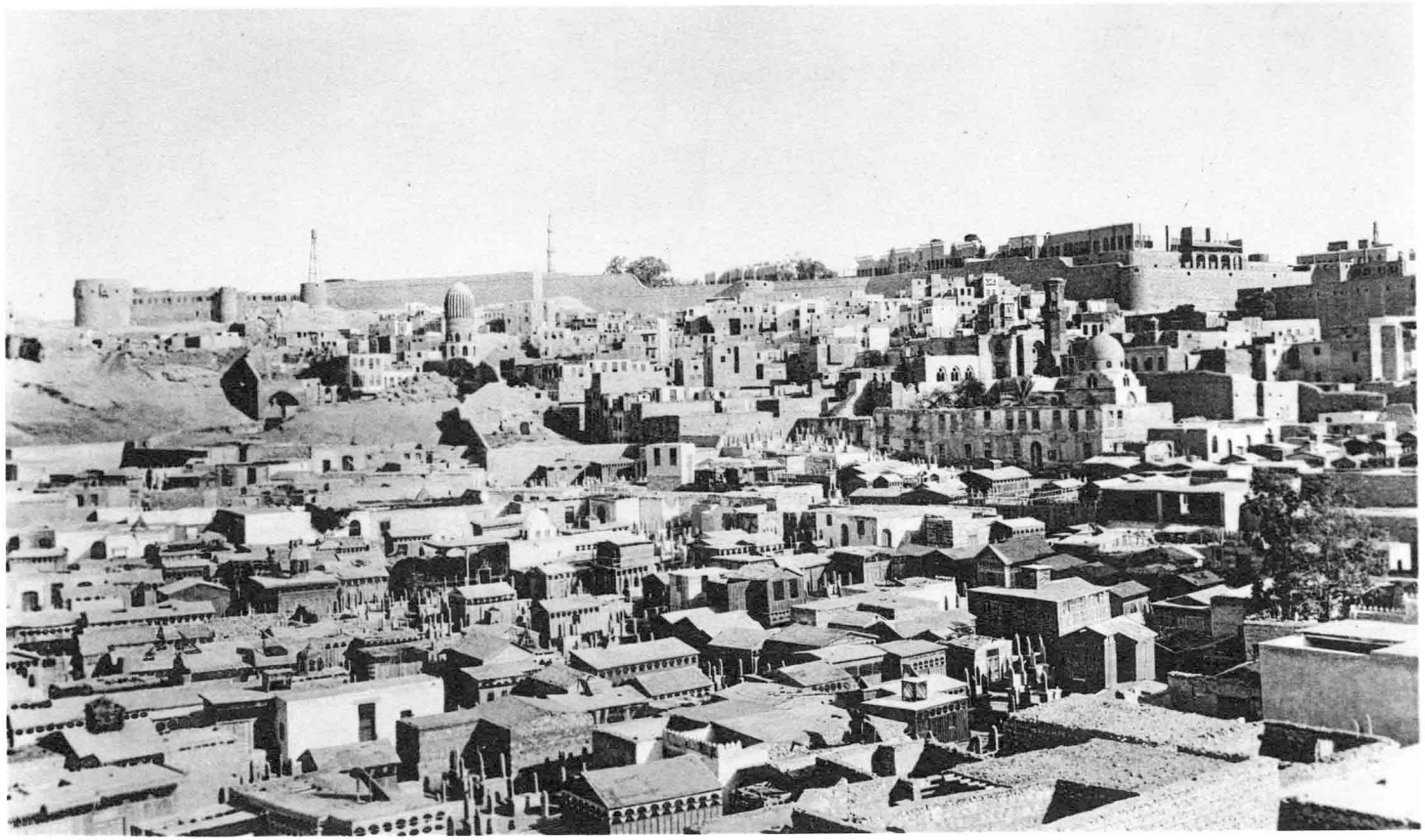

The northern enclosure, north façade.

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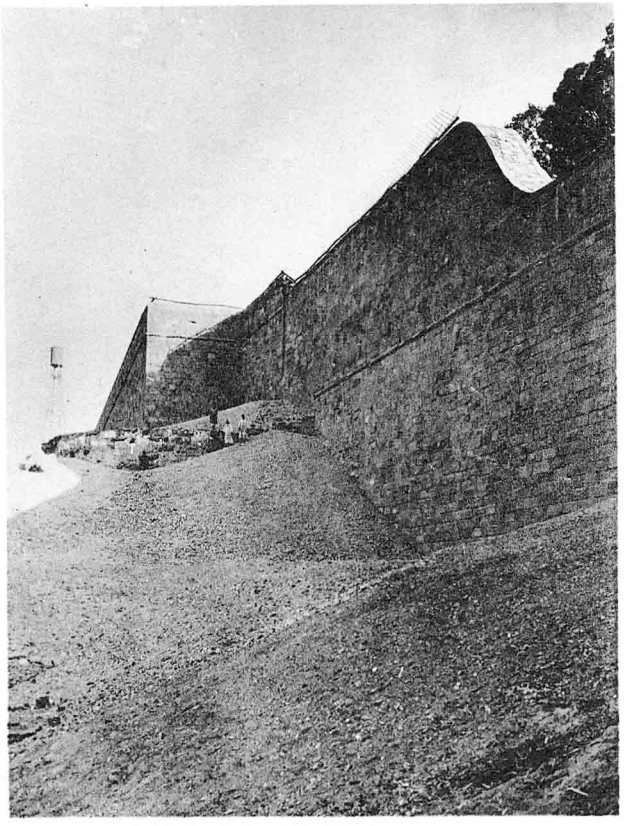
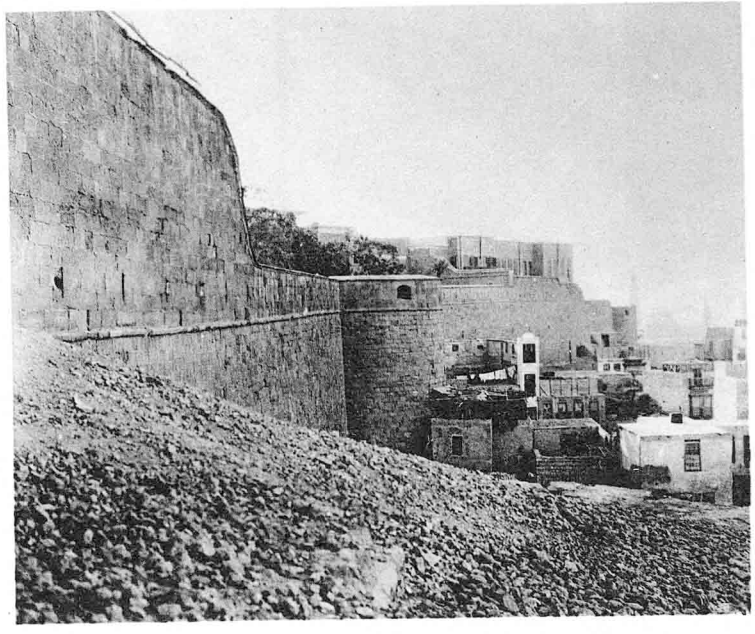


A. — North façade, curtain wall of Muhammad 'Aly.



B. — North façade, curtain wall of Muhammad 'Aly and his tower.

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The northern enclosure, nort-west corner. Bâb al-Mudarrag and Bâb al-Gedîd to right.

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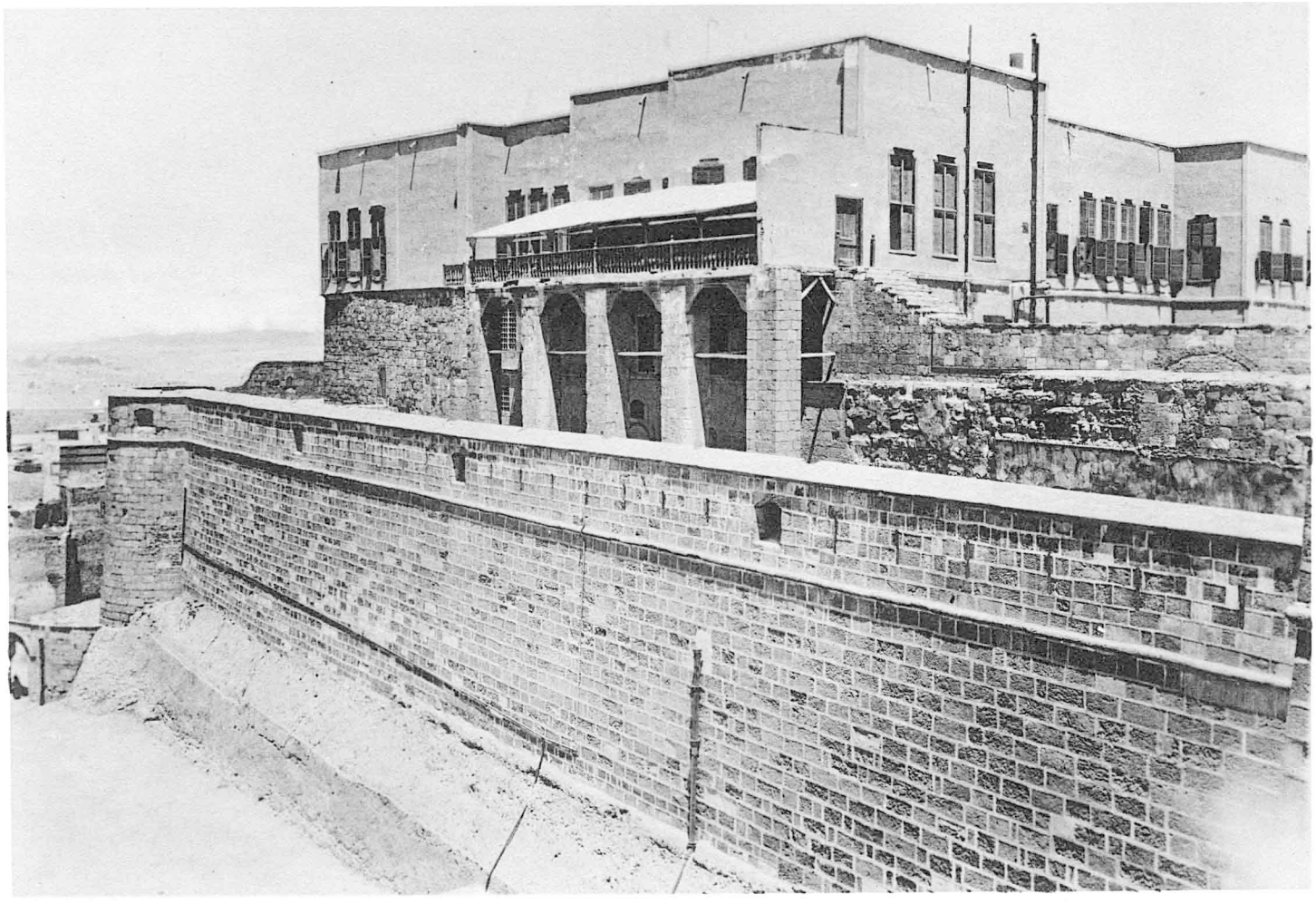

The northern enclosure, north-west corner from the top of the Bâb al-Gedîd.

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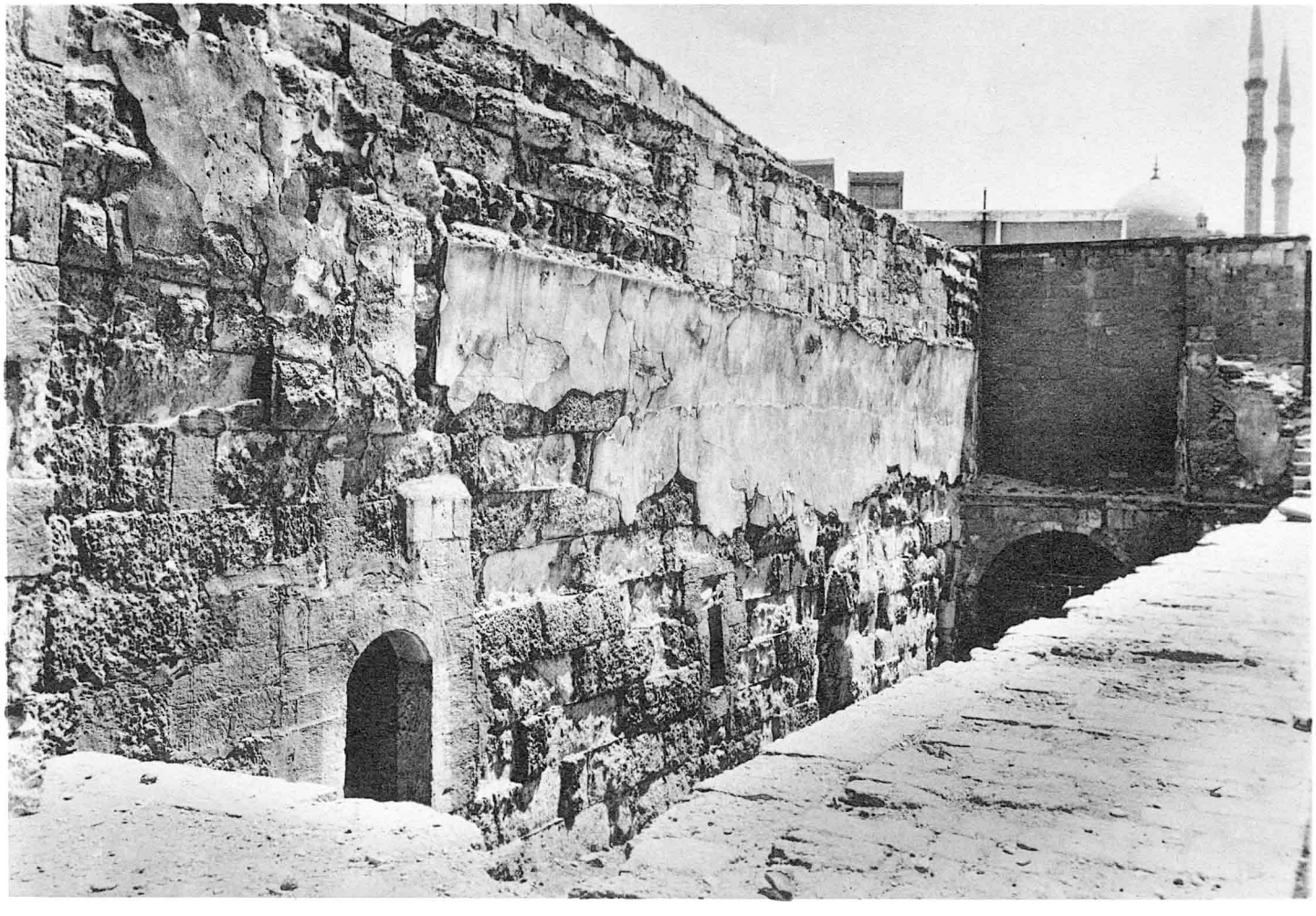

Remains of great tower echeloned with the Bâb at-Mudarrag.

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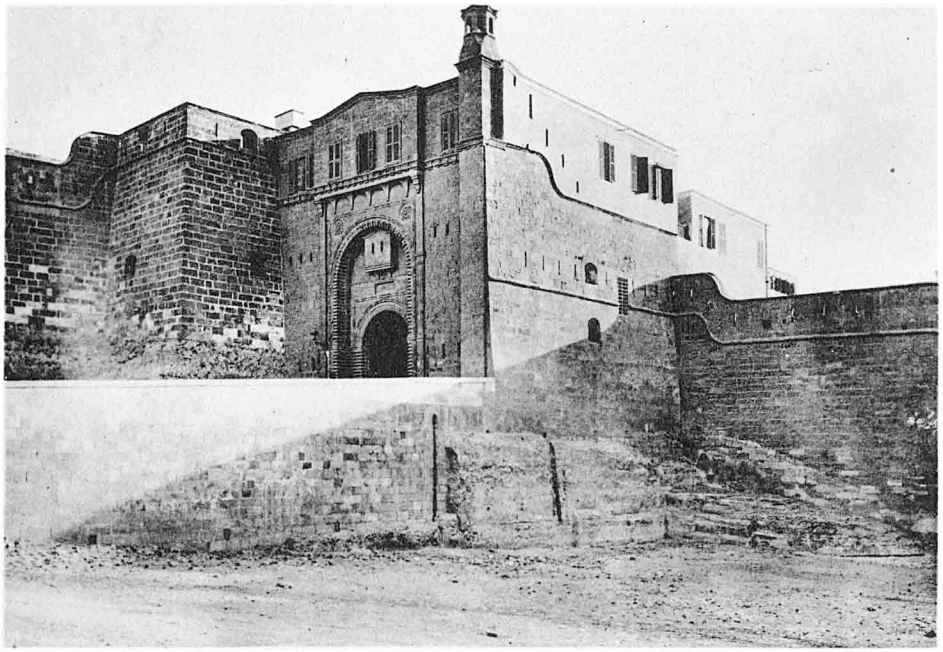
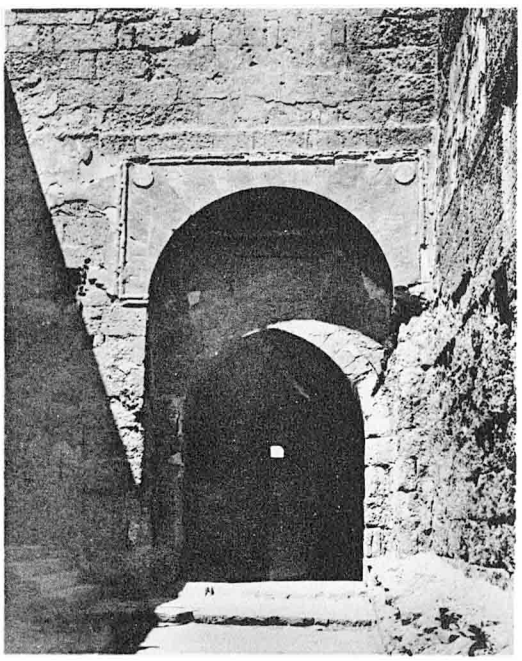


A. — The Bâb al-Mudarrag tower and the Bâb al-Gedîd.



B. — The Bâb al-Mudarrag, from without.

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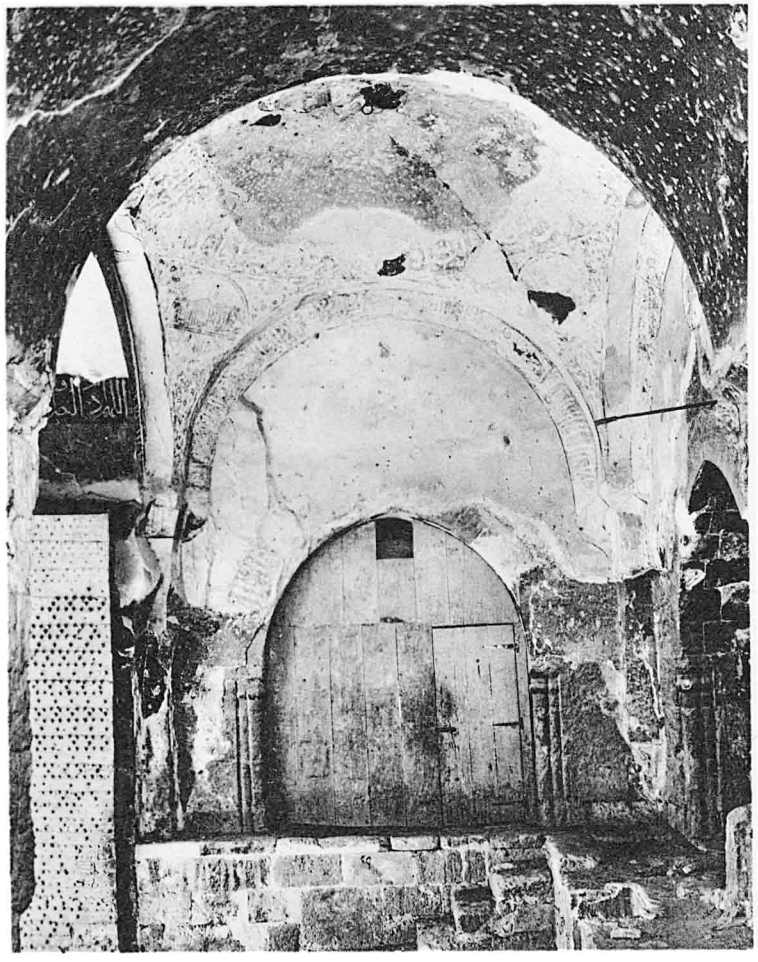
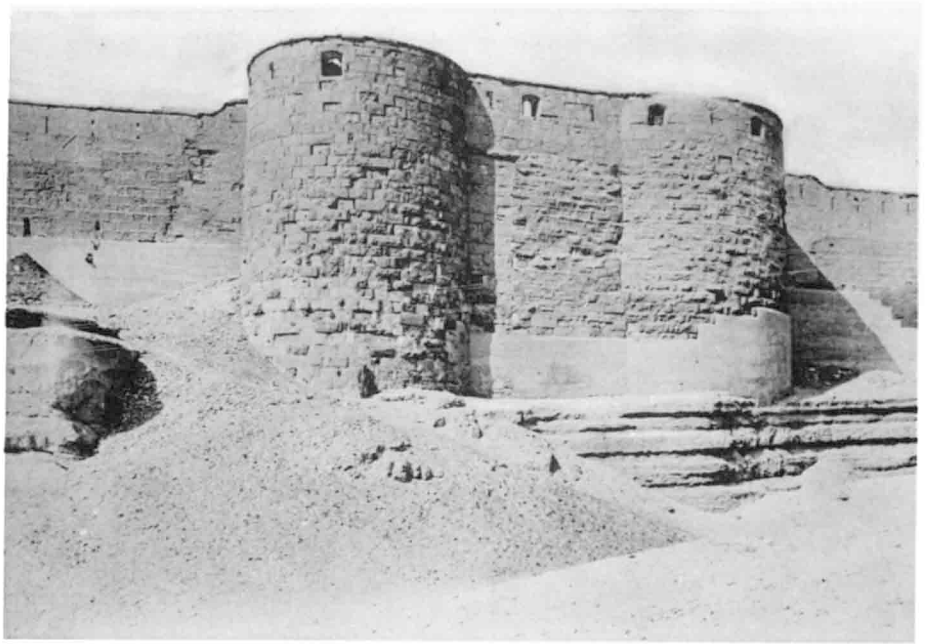


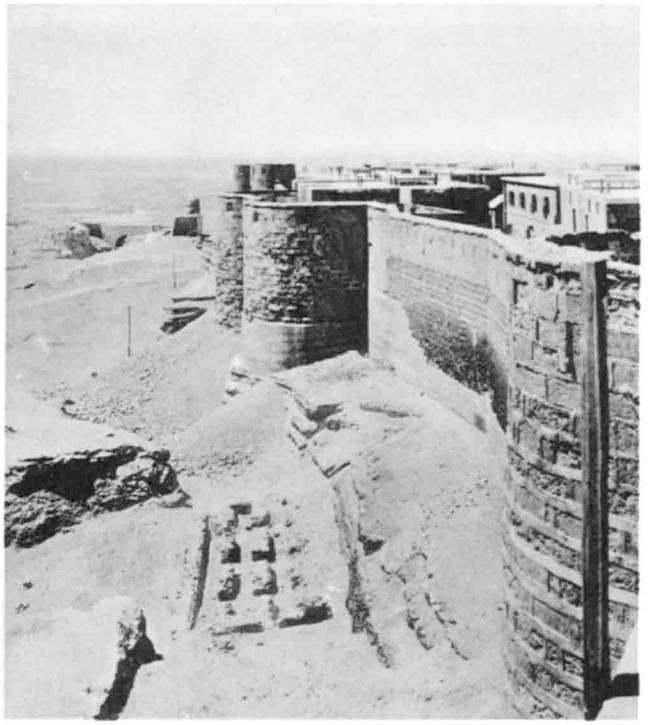
A. — The Bâb al-Mudarrag : interior.

B. — The Bâb al-Mudarrag, from within.

IMP. CATALA FRÈRES, PARIS.



A. — Burg al-Imâm, the old Bâb al-Qarâfa.



B. — Northern enclosure,
east side, showing the Bâb al-Qarâfa and rock-cut ditch.

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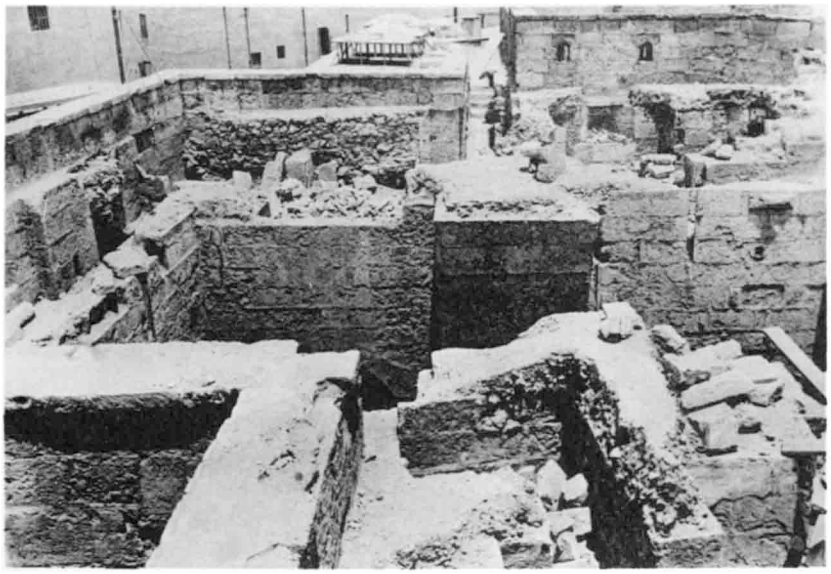
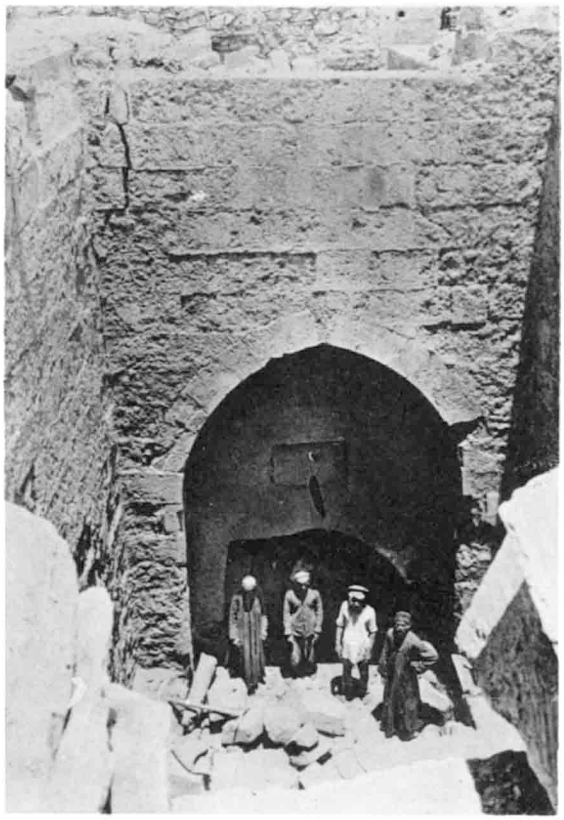


A. — The Bâb al-Qarâfa : the great entrance bay, after the excavations.



B. — The Bâb al-Qarâfa ; inner entrance partly excavated.

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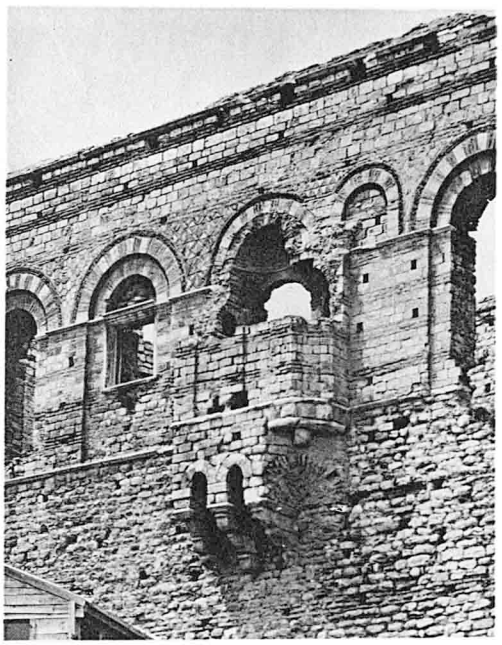
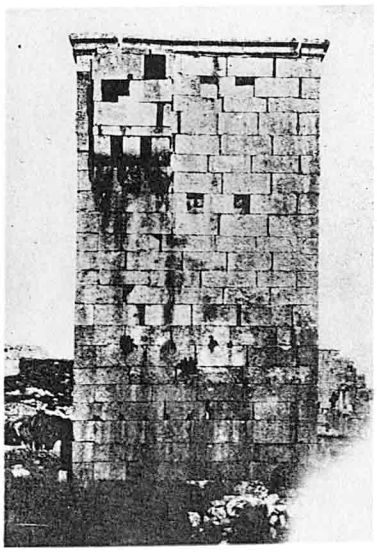
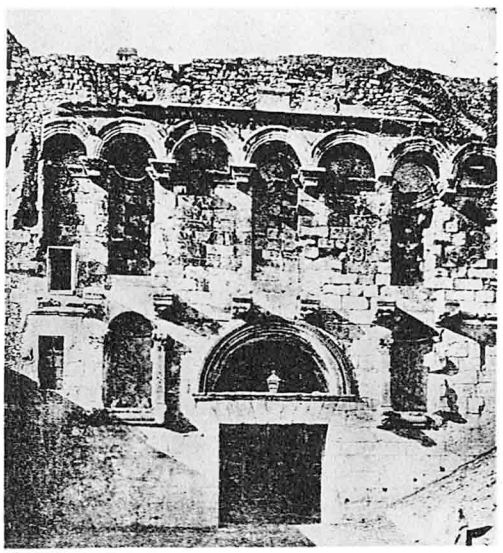
A. — JERADEH (N. Syria) : Tower
[From Butler].



C. — CONSTANTINOPLE : Palace of Tekfur Serai.



B. — KFELLUSIN (N. Syria) : Tower
[From Butler].



D. — SPALATO : The Golden Gate.

Types of machicoulis.

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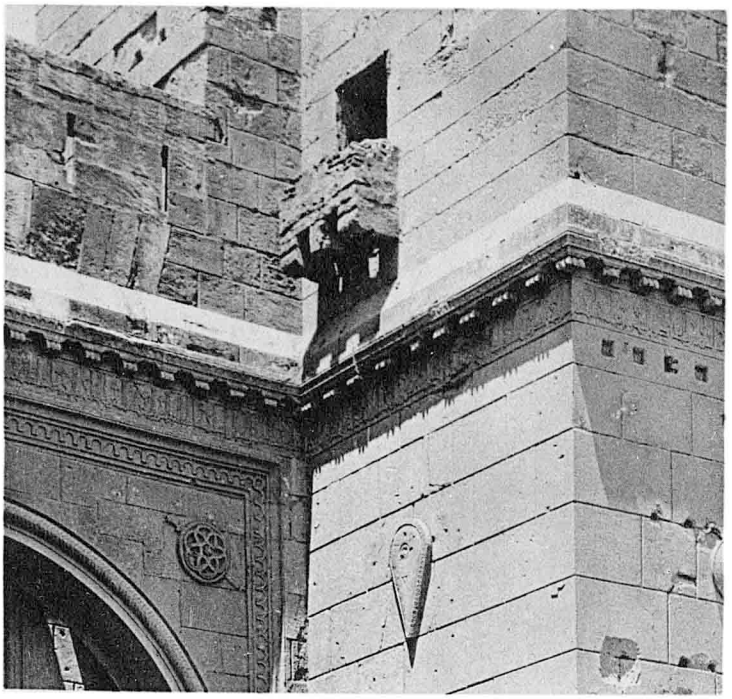
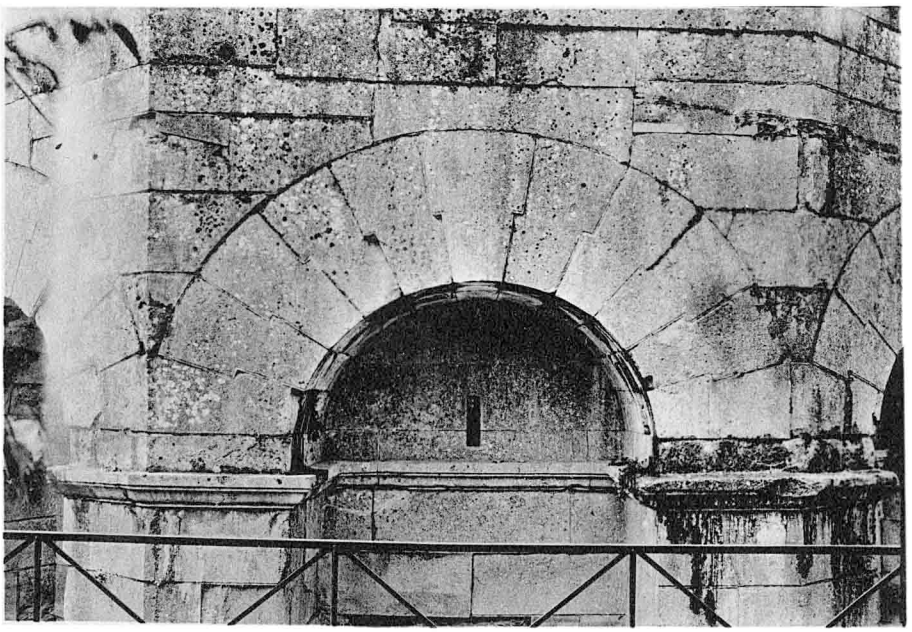


A. — CAIRO : Bâb an-Nasr.



B. — RAVENNA : Mausoleum of Theodoric.

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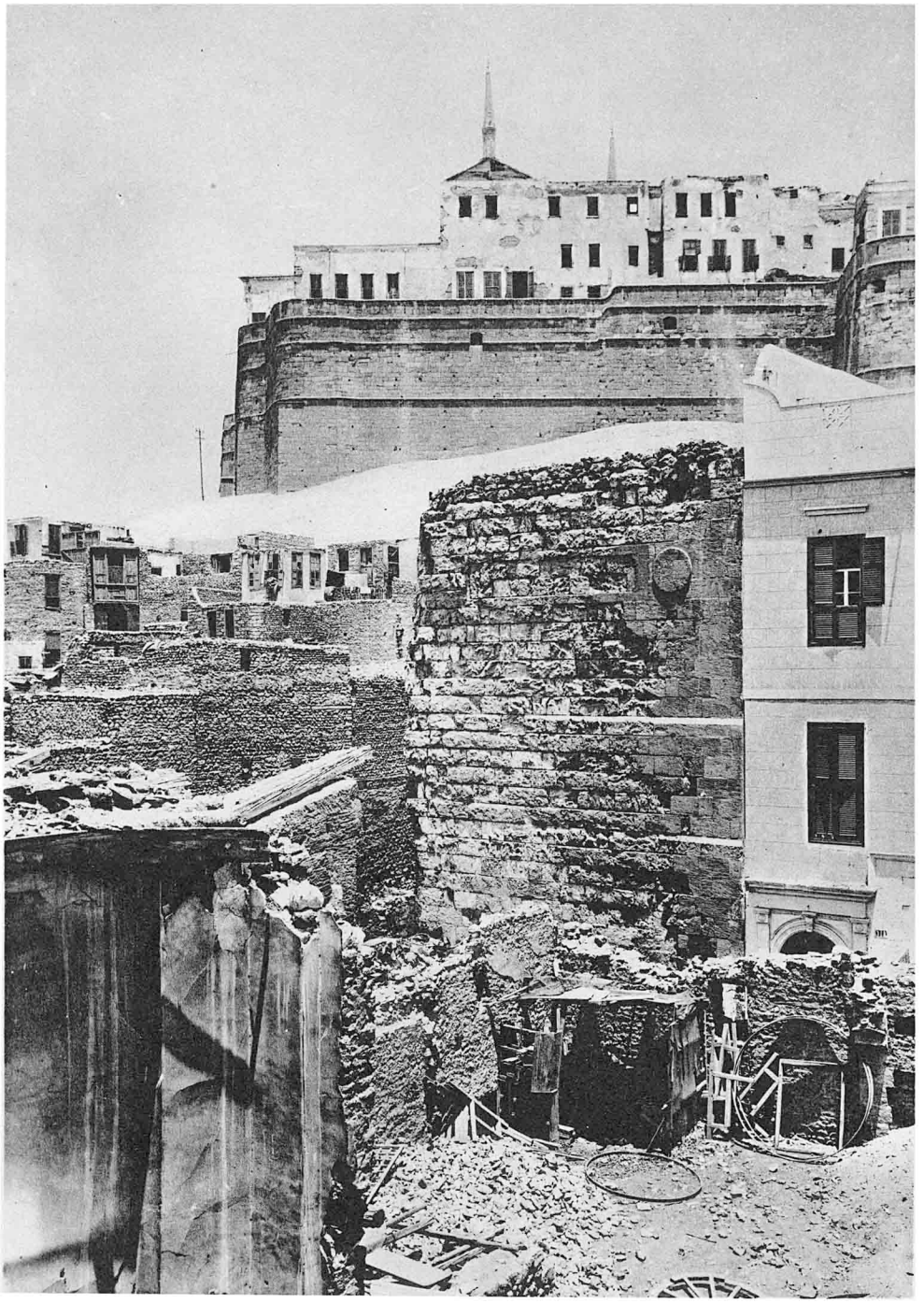

The Citadel, southern end. View showing one of the *sakîyas* which raised water from the great aqueduct to the palaces.

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