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Recent excavations at Marea in Egypt

Marea is an ancient port on the southern coast of Lake Mareotis, 45 km S/W of Alexandria. Her name is known to us through ancient Greek and Roman writers. It seems that it is clearly derived from the Hieroglyphic name of the town "Mrt" meaning the "port"[1]. Could the name of the lake "Mareotis" and the Latin word "mare", the French "mer" and the English "marine" have been derived from the name of the town?

Mahmoud Bey el-Falaki[2], refering to the geographer Ptolemy, correctly identified, in my belief, the site of the ancient town. The 3 or 4 ancient visible jetties representing quays for an ancient port support this, since we have no other such ancient quays along the south coast of the lake to be another likely site for the ancient port of Marea. Moreover the modern name of the site "Al Mina" is a mere Arabic translation of the Hieroglyphic name of the town "Mrt" meaning the "port".

The area represents a broad ridge of hard limestone running from east to west across the town, parallel to the south coast of the lake to the north and to the railway line of Hawarya to the south. The ridge slopes northward by nearly 200 m to a distance of 2 km towards the lake and by nearly a 100 m southwards to a distance of 3 km to the railway line. The land north and south of the hard limestone ridge is not solid as it is composed of calc arenite, useful for agriculture if well irrigated.

In her history, Marea goes back at least to the late Pharaonic Period (the Saitic Period) as one infers from the statement of Thucydides[3] regarding the unsuccessful revolt of Inaros, king of Marea, of the 27th Dynasty[4], against the Persian rule in Egypt. Islamic burials as well as Islamic artifacts (such as sherds of green glazed pottery and Fatimid coins) found in the excavations this season at Marea prove that Marea continued in existence till after the Arab conquest of Egypt in the 7th century. In spite of this long period in the life of Marea, a period of more than ten centuries, the town was forgotten and remained untouched after it had been abandoned till it became possible for the author to start the first excavations on the site with funds from the Alexandria University.

The Objectives of the Project

Marea is not such a small site as in most excavations. In the excavation of small sites, the archaeologist usually searches for a certain building or for a complex of buildings. Marea is different for it was a big town, a former capital of a small Pharaonic kingdom. It was the most important town on Lake Mareotis, next to Alexandria, at least till the reign of Justinian[5]. Therefore, the objectives of any excavations at Marea must be different from those expected in excavating a small limited site. We know nothing about the size of the town and only few sporadic hints in ancient writers about her history. At Marea we have to deal with a succession of civilisations and cultures. It is a town with features depicting human life as well as features of death.

In the absence of any references regarding the nature and location of her buildings with relation to the age to which they belong (as in the case, for example, of Strabo's description of the ancient Royal Quarter of Alexandria at the close of the Ptolemaic Period)[6], and in the absence of any archaeological records regarding the town, since no excavations were ever made at Marea, it was necessary, therefore, to start any field work there by making an archaeological survey in the area of the town. This had to be done before any systematic excavations were carried out on the site.

The Archaeological Survey

Because of the small funds allotted by the university for this survey, aerial photography or infra red photography as well as geophysical methods were not available. I had, therefore, to rely complete on trial trenches as well as on any useful informations from the local shepherds and inhabitants, and mainly on soil analysis

[1] H. Gauthier, Dictionnaire des Noms Géographiques contenus dans les textes hiéroglyphiques III (1926), pp. 53–54; "Inscription d'Achmoun au Caire belonging to the 30th Dynasty", published by G. Daressy, ASAntEg 10, 1916, pp. 234, 241.

[2] Mahmoud Bey el-Falaki, Mémoire sur l'Antique Alexandrie, ses Faubourgs et Environs... (1872), pp. 85, 86, 91, 96, 97, 101.

[3] Thucydides I, 104.

[4] E. Drioton – J. Vandier, Les Peuples de l'Orient Méditerranéen II, L'Egypte (1946), pp. 571, 575–576.

[5] A. De Cosson, Mareotis of the North Western Desert of Egypt (1935), pp. 25, 110.

[6] Strabo, Geography 17, I, 9–10.

since in some places remains of few walls and artifacts reflecting human settlement can be detected.

During the two seasons of the surveying which started at the beginning of January 1977 and continued in 1978 lasting 8 months in all, almost all our objectives were fulfilled. We now know roughly the size of ancient Marea. The extent of the town towards the north was determined through the three or four visible quays of the ancient port mentioned by De Cosson[7]. The discovery of burials in the west and south marked the limits of the town westwards and southwards since ancient cemeteries were customarily located outside the inhabited area, because, at least under the Ptolemies and the Roman rule, the dead was considered a pollution to the living and to the inhabited part of the town[8]. The eastern limit of the town still awaits determination.

Burials

Burials west and south of the town seem to have all been looted in antiquity. The cemeteries west of the town are all dug in the hard limestone ridge. They represent a Pharaonic cemetery, anthropoid pit tombs, early Ptolemaic loculi as well as early Ptolemaic chamber tombs. For the Pharaonic epoch the burials in the west were an expected phenomenon since almost all Pharaonic cemeteries on the Nile Valley are located in the west. Similarly, it was natural for the early few Greek settlers who came to Egypt with Alexander's army or under the first Ptolemies and who settled at Marea, to bury their dead in the west, following the custom of the majority of the inhabitants of Marea, namely the Egyptians.

The Saitic cemetery has a dromos carved in the ridge with burials in the form of pit tombs within rooms excavated on either side of the dromos. The dromos leads to a very big hall divided into two smaller halls by means of two pilasters carved against the long sides. The ceiling is carved in imitation of wooden beams in the manner common in Pharaonic cemeteries. False doors were also carved in the walls with a shaft in front of each one leading to the burial chamber below.

In some burials we found clay jars, not well baked and friable of local ware. They are containers with pointed bottom, wide opening rim and a short neck without handles. The wall of the jar is thick (one and a half cm) in relation to the height (30 cm). These jars recall in their form some alabaster jars found in the underground passages of the Step Pyramid of Saqqara and resemble Canaanite jars of the 14th cent. B. C.

In other tombs in the same cemetery we found burials of the Ptolemaic Period because they contained amphorae with a central pointed bottom with a rounded knob common in the 3rd century B. C., similar to those found in the Agora at Athens[9].

The anthropoid pit tombs may have represented poor burials in the Saitic period or may have belonged to believers in Osiris in the Ptolemaic or Roman Epoch.

The early Ptolemaic loculi were carved in the sides of a square shaft excavated in the limestone ridge to the depth of 6 m. Each loculus is square in its section except for its upper side which takes the form of a gabled ceiling, similar to the cellette found in the Shatbi Necropolis in Alexandria, belonging to the 3rd century B. C.[10]. They are just on line with and are reminiscent of the temple-like tomb of the Classical period found at Cyrene[11]. Each loculus was originally covered with a moveable stone slab on which the name of the deceased was painted or carved. The slabs of these loculi seem to have disappeared when the loculi were looted in antiquity.

Similar loculi were carved in the sides of a funerary chamber in a chamber tomb found near the former loculi. The tomb is composed of three parts: a dromos, an open square court and a funerary chamber. The dromos is a form of a sloping passage excavated in the ridge. It ends below in 6 steps leading to the open court. The court is 6 m square and 8 m deep. It is pierced on two neighbouring sides below by two doorlike openings: one leading to the dromos and the second to the funerary chamber. The tomb was looted in antiquity.

Inside the passage we found a small reddish clay oil lamp. The lamp is well baked and has a small round base. It has a central wide hole for the oil within two circles in relief. The hole for the wick is set within an angular nozzle. The nozzle which is long is connected to the round basin by means of a concave profile. The handle is a small knob fixed to the right side of the basin at the point where it meets the long nozzle. This type of lamps belongs to the 3/2 centuries B. C.[12].

South of the hard limestone ridge, about the middle of the town we uncovered in the soft calc arenite area some poor Byzantine dwellings composed each of two rooms. In them we found pottery of local ware of the type known in the town of St. Menas[13]. Within some rooms we found few Moslem burials with the face of the deceased turned S/E as it is customary in Moslem burials in Egypt. No objects were buried with the dead. Few pieces of Islamic pottery sherds with green glaze

[7] De Cosson, op. cit., pp. 134ff.
[8] W. Smith, A smaller Dictionary of Greek and Roman Antiquities (1884), pp. 184–190.
[9] V. R. Grace, Amphoras and the ancient Wine Trade (Excavations of the Athenian Agora 6 [1961]), fig. 11.
[10] E. Breccia, La Necropoli di Sciatbi I (1912), pp. XLIV, XLVI; II (1912), pl. III; XV, figs. 10, 11.
[11] J. Cassels, The Cemeteries of Cyrene, BSR 23, 1955, pp. 9, 10, 14.
[12] M. L. Bernhard, Lampki Starożytne (1955) N° 67 (III/II cent. B. C.); 81 (Late III/beg. II cent. B.C.), but with a handle, (cf. also BCH 32, 1908, p. 144, fig. 6), and N° 80 (III/II cent. B. C., the handle on the left) from Edfou.
[13] C. M. Kaufmann, La Découverte des Sanctuaires de Ménas dans le Désert de Maréotis (1908), figs. 47, 77, 78.

and some white lines and a piece of Fatimid coin were discovered just above the dead in an upper layer.

Further south, at a distance of nearly one kilometer north of the railway line we uncovered a chamber tomb excavated in the soft ground. The door of the tomb which faces north is outlined by three big blocks of basalt. It opens on a long sloping passage. The passage turns directly, just after the door, towards the east. It has 20 steps ending below in a slope just before the mourning chamber. It is lit by oil lamps set in two small semi-circular niches carved in its south side, in addition to daylight from the door.

The mourning chamber is square 3 × 3 m. It has a small bench, used as a seat for the visitors. The bench is 25 cm broad and 25 cm high and runs along the four sides of the room. The room gets its light through the door as well as from an oil lamp put in the small semi-circular niche carved in the east side, high up next to the door.

Three funerary chambers open in the middle of the east, north and south sides of the mourning chamber. Each opening is square (half a meter broad). It has a frame against which rests the slab bearing the name of the deceased who is buried in the funerary chamber behind. The bodies seem to have been laid on the ground in the funerary chamber because the opening is too small to allow a sarcophagus through. The three funerary chambers form a trechora or trefoil, a form known in the plans of Christian catacombs and churches as in the catacombs of Jerusalem[14] and a church in Algiers[15].

Because the ground in which this chamber tomb was excavated is not hard, the architect intelligently used several devices to preserve the passage and the rooms from collapsing under any pressure from above outside the tomb. Although the mourning chamber and the funerary chambers are square, the ceiling of each room was made in the form of a cross vault with the help of pendentives at the corners. The passage has a barrel vault except where it turns near the entrance where it takes the form of a helicon vault. To add to the strength of the ceiling near the entrance, it was constructed with big blocks of limestone. The blocks are rectangular, but of a different size. Several arches were also made to support the passage recalling the arches which support the seats of the auditorium in a Roman theatre, with the only difference that the arches in this tomb are not constructed but carved in the rock. A thick layer of plaster coating covered all the sides and ceilings of the passage and the chambers. Although it would have been easier for the architect to have the entrance facing the west, on line with the rest of the passage, yet he realized that by twisting the ceiling of the passage near the entrance, it would add to the strength of the passage vault. This twisting added also to the beauty of the tomb and saved the visitors in the mourning chamber from the wind and dust.

The tomb was empty of any artifacts. Its small size with three small funerary chambers shows clearly that the tomb is a family tomb. On account of its form, it certainly belongs to the Byzantine period belonging to a Christian family.

Through these burials we have not only been able to establish the extent of the town to the west and the south but also we are able to define the periods of human settlement at Marea. They thus date from the Saitic period to the Islamic epoch. In the west we found Saitic and Ptolemaic burials, but to the south we found Byzantine and Islamic tombs. We have thus established death in the town through the ages.

Life in the town in its different form remains as one of our main objectives. How the people of Marea got their fresh water, their food and how they earned their living and their daily bread.

The excavations proved that the people of Marea relied for their fresh water on several sources. It is well known that as there were originally seven branches for the Nile Delta, there were at least two navigable arteries connecting the Nile with Lake Mareotis[16]. We do not know how far to the east of Marea was the nearest of these channels to the town. This can only be defined through aerial photography and especially with infra red photography. In any case, it seems that this channel was not silted up in the early Byzantine period. This can be proved through the most eastern building discovered in the excavations south of the limestone ridge, namely, the early Byzantine cistern. It is noticed that just below the top of the round shaft of this cistern we found a square canal, 25 cm broad, running eastward and opening on the east side of the shaft. Certainly this canal, being near the top and extending to the east, seems to have brought fresh water from the channel of the Nile to fill up the cistern, perhaps by means of Archimedes screws.

The shaft is 75 cm in diameter by 6 m deep. At the bottom it opens on its eastern side on a big vaulted chamber 3 × 10 m excavated in the ground. Like all cisterns the shaft has small holes on two opposite sides from top to bottom used as steps when cleaning the cistern, being empty of water. All the sides of the cistern: underground chamber, shaft and canal are coated, according to the recommendations of Vitruvius[17], with a layer of reddish plaster. The plaster coating was made red because it is mixed with grounded burnt potsherds in order to make the plaster coating waterproof.

The second alternative for fresh water at Marea was the rain water which falls heavily in winter. The water was collected in cisterns excavated in the ground. Two

[14] C. M. Kaufmann, Handbuch der christlichen Archäologie (1913), fig. 21 (for the Catacombs of Jerusalem).
[15] Kaufmann, Handbuch, op. cit., p. 171.
[16] Mahmoud Bey el-Falaki, op. cit., p. 84; J. H. Breasted, A History of Egypt from the earliest times to the Persian Conquest (1906), map 13.
[17] Vitruvius, De Architectura V 10; VI 6.7; VII 4,1,3.

Ptolemaic cisterns were discovered close to the Ptolemaic tombs to the west of Marea. Each cistern has a long square shaft, one meter broad and 20 m deep. A flight of steps in the form of small holes were cut in two opposite sides of the shaft for the feet. They run from top to bottom. Down below, there is an opening in the side of the shaft leading to a small vaulted chamber carved in the rock. Neither the sides of the chamber nor those of the shaft are coated with red plaster as in Roman and Byzantine cisterns. The solid limestone of the ridge in which the cistern is dug was in a way waterproof and kept the waters in the cistern intact.

A third source for fresh water at Marea was in the form of Roman wells. Of these we found one south of the ridge about the middle of the town. It has a round broad shaft dug in the soft ground to the depth of 15 m. Because the ground is not hard limestone, the upper 6 m of the sides of the shaft were built up with rectangular blocks of limestone. The upper edge of the well was lined with blocks of basalt with rounded edges so as not to cut the ropes when lowering the jars to be filled with water from the well.

Thus water was available for the inhabitants of Marea in one way or the other. Food, on the other hand, was garanteed as one can infer from literary and archaeological evidence. Virgil[18], Horace[19], Athenaeus[20] and others praised the wine of Marea. From this we understand that there were wine factories. Subsequently the land around Marea was arable and full of vineyards and not arid or a barren desert as it appears at present. This fact was proved in the excavations in two ways. Two wine factories were discovered south of the limestone ridge. We also noticed the use of burnt and unburnt brick in the construction of the walls of some buildings, as for example in the Byzantine House discovered south of the ridge and as in the construction of the lighthouse of the East Port. It is a known fact that architects use for their buildings the material which is available in abundance in the neighbourhood. In this way buildings in Mesopotamia and the Nile Valley are mostly constructed with burnt or unburnt brick ; while in Jordan, for example, stone is used instead, since the layer which is good for agriculture is rare and in some parts of the country very thin and cannot be spared for architecture. So at Marea, had the earthern layer on the surface of the ground been thin, it would have not been used as a building material. Thus we can conclude that the land around Marea was fertile in antiquity.

Apart from cultivation, the people of Marea could have got some kinds of food stuff through trade via the ports of the town or on land routes. Such food stuff was certainly on sale in some of the shops discovered in the town next to the Middle Port.

Similarly, the activities of the inhabitants of Marea regarding their living and daily bread can be found in the former feats, namely agriculture, industry, navigation and trade as depicted in the discovery of the respective buildings and artifacts related to these activities. In any case, all these activities seem to have been going on as long as the lake was navigable because the ports of the town were the main and most important factor for life in the town. Marea in that respect is similar to Alexandria. The port of Alexandria in use in antiquity was mainly the East Port till the 12th century. In 1167 the Nubian minister Karaga of Sultan Youssef Salah el Din, as Idrisi informed us, blocked the East Port of Alexandria by throwing columns into it against the Turkish fleet[21]. After that Alexandria died almost completely and the port of Rosetta flourished when the Alexandrians immigrated to it. Life returned to Alexandria in the 18th century when Mohammed Ali developed the present West Port. Similarly Marea died out as it seems shortly after her ports became out of use when the 5 branches of the Nile Delta and the arteries connecting the Nile with Lake Mareotis were silted up. Because of this no fresh water from the Nile fed the lake, but instead dust and sand from the Libyan Desert as well as evaporation made the waters in the lake shallow. When the lake became not navigable, the ports went out of use.

The Ports, the Streets, the Shops, the Mill (figs. 1–3; pls. 34,2. 35)

The ports of Marea are the most conspicuous thing along the coasts of the lake. There are 3 or 4 visible jetties protruding into the water, forming three ports laid side by side: the East Port, the Middle Port and the West Port.

It is noticed that the rectangular limestone blocks of the two upper visible courses of the second quay from the west were bound together with red mortar formed, according to Vitruvius, by mixing the mortar with grounded pottery sherds since they are exposed to the humidity and the waters. These courses stand on other visible courses whose blocks are bound together with white mortar. This indicates that the lower courses are Hellenistic while the courses with red mortar are Roman, because red mortar is not known in Hellenistic constructions. This quay forms the western side of the Middle Port.

Along the southern side of this port we uncovered the Roman strand which runs along the coast from east to west. It is 12 m broad and paved with rectangular blocks of the hard local limestone. Therefore, it represents, as it seems the Roman *decumanus* (pl. 34,1).

The Roman *cardo* was identified through the main drain which was supposed to run under it from north to south, meeting the *decumanus* at right angles and pouring into the Middle Port. The drain is square in section, half a meter broad. As it is customary in Roman drains, it is

[18] Virgil, Georgics II, 91.
[19] Horace, Odes I, 37.
[20] Athenaeus I, 33.
[21] A Rowe, BArchAlex 35, 1942, pp. 132–133.

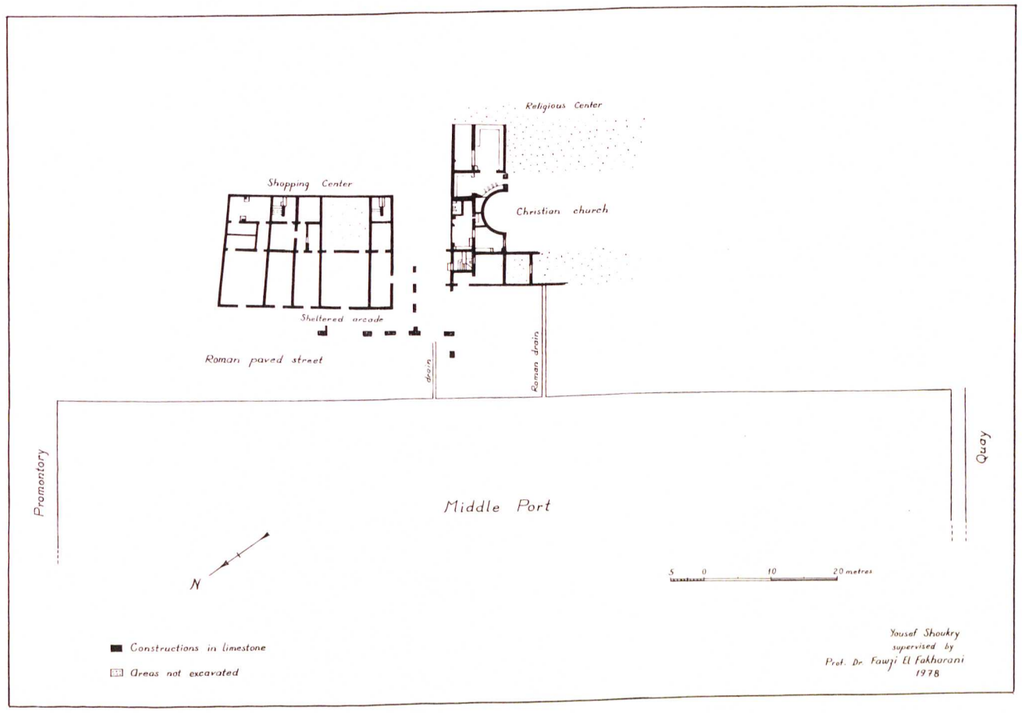


Fig. 1 The Middle Port, civic constructions, church

coated with a thick layer of reddish plaster and runs 15 cm below the pavement of the *decumanus*.

While the *decumanus* remained in use in the Byzantine period, we find that the Roman *cardo* did not continue in use in that epoch, since an early Byzantine church of the basilical form runs across the Roman drain and above it. It is noticed that along the southern side of the Roman paved *decumanus* runs a sheltered platform for the passers by to protect them from the rain and the heat of the sun. The roof of this arcade rests on its northern side on stone blocks supporting perhaps wooden or stone pillars while its southern side rests on the northern walls of a series of Byzantine shops. Since the shops, which will be described below, belong to the Byzantine epoch, therefore this arcade must belong to the same epoch as it does not continue all along the Roman *decumanus*.

The shops open on the sheltered arcade. Five shops were discovered in the second season of this survey. They are very interesting as they are different from the shops found in any other ancient town. Each shop is composed of two sections. One section is for business, but the other section is residential.

The first section in all shops opens on the sheltered arcade. In the first shop towards the east, this section is composed of a big hall for the exhibition of goods and a small room at the back of the hall used as an office for the transactions. In the hall we found several big jars for oil. The jars are of the form and type used nowadays in the countryside in Egypt by peasant women for carrying water on their heads or used for storing other liquids or white cheese.

The jars are each half a meter high, with broad bottom without a base. Each one has a narrow mouth and a small neck with two small looped handles set vertically against the neck. The jar is in white yellowish clay, decorated in the upper half of its body with narrow horizontal incisions. This type of jars seems to have developed from the Byzantine storing jars of the 5/6 centuries found in the Byzantine House in our excavation and in the town of St. Menas[22] only 15 km south of Marea. Since they are prototypes of the modern jars known in Egypt by the name *"Ballas"*, therefore I am inclined to assign them to the end of the 6th century or early 7th century A.D.

The south wall of the exhibition hall in the first shop to the east is pierced by two doors, one for the office while the other opens on the corridor of the residential quarter. The corridor leads to two rooms set side by side,

[22] Kaufmann, Découverte, op. cit., fig. 94.

the office may have been used as a store or as a living room. The bed rooms may have been in the upper floor of the other shop since the residential quarter of the two shops are now connected by means of the doors of the former shop, now opening on the corridor in the separating wall.

Another broader shop was built up to the west, identical, as it seems, with the first shop described above. A narrower shop like the second shop described above was built up to the west. It has two doors in its west and south walls of the exhibition hall and a similar door in the west wall of the first room of the residential quarter. These two doors open on a side street, unpaved crossing the *decumanus* at right angles. This last shop has at its back a staircase, as in the second shop, leading to the upper floor. It is noticed that the side walls of these shops are not identical in measurements, a clear hint to its Byzantine dating.

It is noticed (fig. 3) that the three quays to the west which jut out into the lake are connected to the shore or meet the *decumanus*. The width of the *decumanus*, especially after the addition of the arcaded platform in the Byzantine period, show clearly the great volume of goods and traffic in the town. Because the quays of the West Port and of the Middle Port are connected to the shore, and to the *decumanus*, we learn that these two ports were used for goods coming into the town or going out of it.

The third quay from the west is constructed north of a promontory of land extending into the lake east of the Middle Port. The fourth quay is connected to a former island in the lake located east of the promontory. The island forms, together with the quay which is connected to the promontory and the quays between them which were discovered in the excavation, the East Port. This port is very interesting as it differs from the other two ports to the west in its construction and function.

The East Port passed in its construction through two stages. At first the two islands to the east of the promontory, namely the big one mentioned above, which is joined to the fourth quay and the island south of it joined to it by a quay 500 m long and 3 m broad was in its turn connected to the promontory by a long quay of 1 km. Thus the East Port was formed. The ships which entered this port through the harbour in the north could easily turn round and leave the port through the same harbour in a manner as in the other two ports to the west. As the port is very wide there will be no hampering in the traffic within the port when the ships turn round as they go out of the port.

In the second stage of the construction of the East Port, in order to enlarge the port, a straight quay—one kilometer long extending from north to south—was constructed running almost parallel to the east coast of the promontory and close to it. The newly constructed quay stops short before a small island to the south leaving between it and the island another harbour south of the quay. On its northern side this quay rests against the long quay which runs from the east island to the east coast of the promontory. In order to allow for a passage in this extension for ships sailing inside the port through the northern harbour, the part of the quay which connects the east coast of the promontory to the point of junction with the extension quay was removed. Thus ships can sail inside this East Port after the extension in one direction. They enter via the north harbour and leave the port via the south harbour. This is the first instance we know of, if not a unique one, in which we have one way traffic in ports. In the part of the port left between the extension quay and the promontory, ships could not turn round without hampering the traffic. Therefore it was a necessity for ships to sail in one direction inside this part of the port. Since, after the extension, no quay was connected to the mainland of the promontory, and because of the unusually long quays of this port, which should have been the most important of the ports of Marea as it faces Alexandria, the capital, and the Mediterranean as well as closer to the Nile, this port must have had a different nature and function from the other two ports to the west. It must have been a transit port. Goods coming from the Mediterranean and Europe by seafaring ships must have been unloaded at this port on the long quay to be loaded again on river boats to sail in the Nile and vice versa. Thus it was a port for transit navigation. Had boats been carrying goods from the quays across the port to unload on the mainland, traffic would have been hampered. This confirms the transit nature of this port.

To facilitate this function, the island to the east which falls south of the big island with the fourth quay must have been occupied by a lighthouse constructed with limestone rectangular blocks, joined by red mortar. Also burnt brick was used in its construction. In its location between the quay extending westward in the direction of the promontory and the north quay in the direction of the big island, the lighthouse recalls the location of the lighthouse of Eretria in Euboea[23].

The big island to the north with the stone constructions on top and the small private port and its location on the East and most important port, next to the lighthouse and facing the capital, must have been occupied, like Cap Lochias in Alexandria on the East Port, by the palace of the king or the governor of Marea. To confirm that we notice that as on the East Port of Alexandria where we found the Ptolemaic palaces, the most important buildings of the city looked over that port, at Marea too stone buildings of importance and even the only granite column to be seen among the ruins of Marea can be seen on the promontory opposite the East Port.

[23] A. S. Georgiades, Les Ports de la Grèce dans l'Antiquité qui subsistent encore aujourd'hui (Exposition Maritime International de Bordeaux) (1907), pl. III.

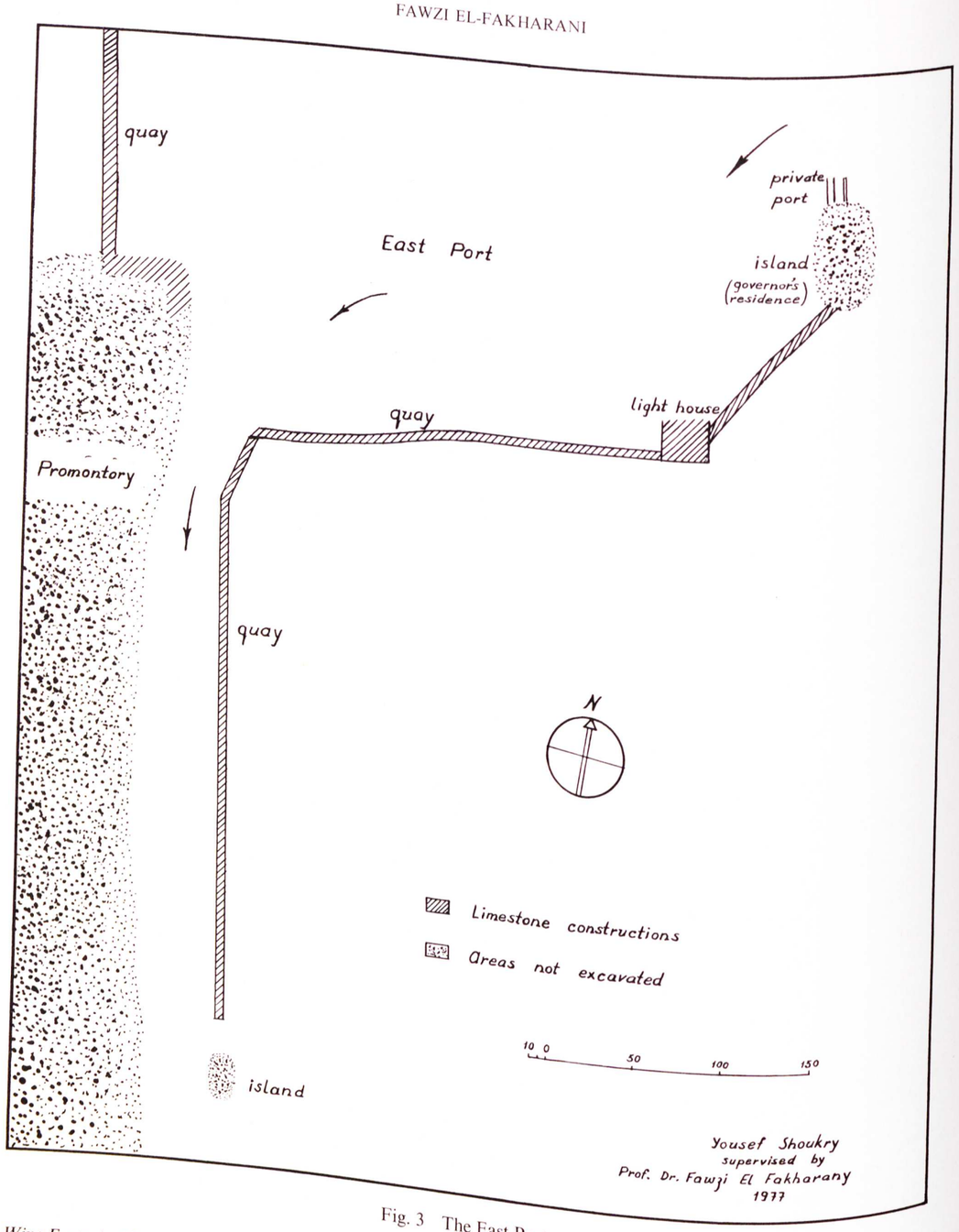


Fig. 3 The East Port

Wine Factories (fig. 4; pls. 36,1.2; 37,1–3)

Ports and shops mean in human activities trade and navigation as well as fishing. On the other hand industrial activities can be presented at Marea in a way by wine production, and glass manufacture. Two wine factories were discovered at Marea south of the limestone ridge. The most interesting of the two factories

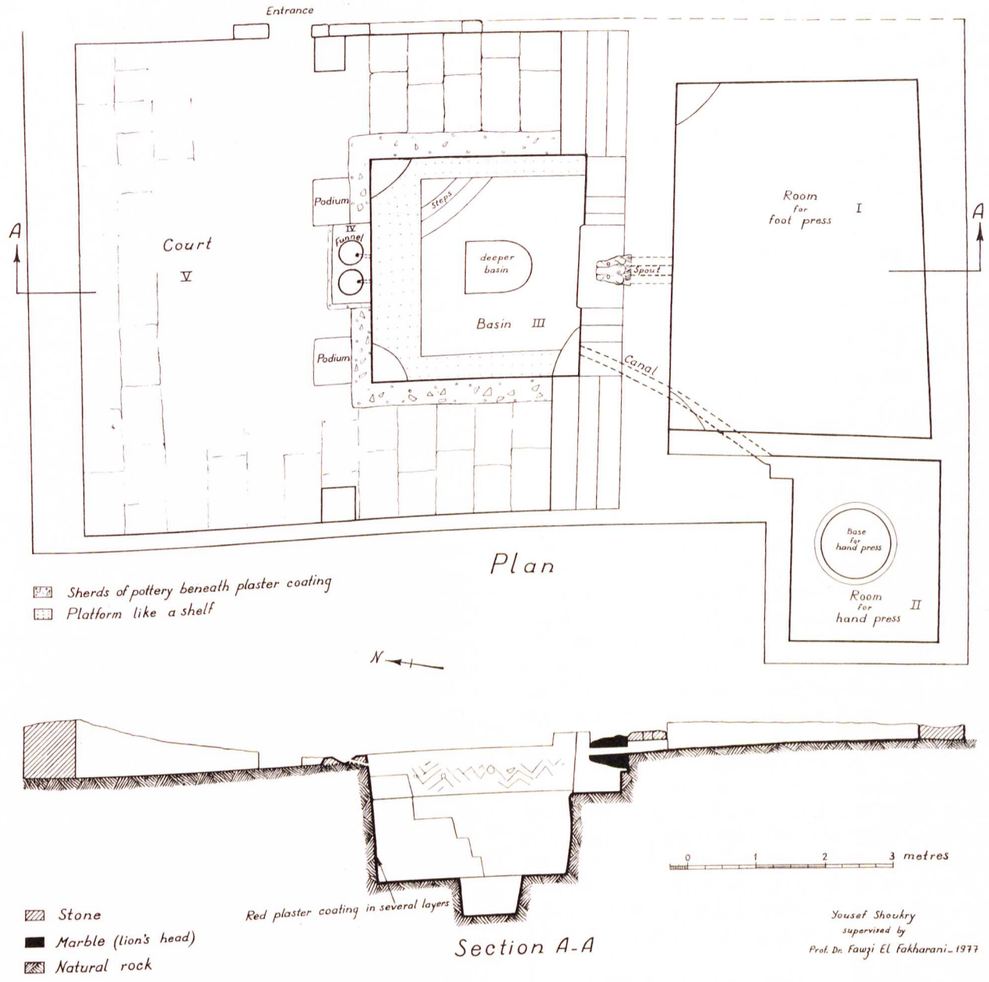


Fig. 4 Wine Factory

falls about the middle of the town. The function of the building was deducted shortly after the digging in the building started. It was noticed then that four coats of red plaster (because of the powder of pottery sherds in its composition) were applied to the side of a basin belonging to the building. The four coats were a clear indication that the basin contained a precious liquid and not mere dirty water left after bathing as in public and private baths of the Roman and Byzantine periods. In baths, one or two coats at most of red plaster were usually applied to the walls of the basins since the water is not kept in the basin for a long time before it is drained off. In our building, the application of four layers indicate that the basin contained a precious liquid and not water. Since Greek and Roman poets praised the wine of Marea, it was clear that the basin contained juice of grapes for the production of wine.

The building contained two rooms used for squeezing two kinds of grapes. The floor of the big room slopes towards the center in the direction of a marble spout in the form of a lion's head. The two corners of the north side of this room are built up in a round form to allow the juice to flow towards the center. The walls and floor of this room were coated also with four layers of red plaster. The other room is smaller and has a round base in the center to support a hand press. It has also a canal to convey the juice to the same basin in which the juice from the first room is collected via the lion-like spout. The walls and

the floor of the second room are also coated with four layers of red plaster. As in the illustration of a wall painting in the tomb of the noble Nakht at Thebes, belonging to the New Kingdom, a big quantity of a kind of grapes was pressed with the feet in the big room while a smaller quantity of another kind of grapes were pressed with the hand press in the smaller room[24].

The juice from the two presses pours into the big square basin which is dug in the soft ground. Because the ground is not very solid the edge of the basin was strengthened with potsherds. To make the sides of the basin water-proof, the mortar of the sides had to be scratched to allow the red plaster to hold firm to it. Four coats of plaster were applied. The sides and floor of the basin slope slightly towards the center. The floor of the basin in its turn is pierced by another smaller and deeper basin in order to collect in it any residue from the juice, such as seeds or skins of grapes. The big basin is surrounded on all four sides by a broad edge resembling a shelf. This shelf is broader under the spout with the lion's head, and on the opposite north side. The shelf on either side of the lion's head is approached by means of a flight of three steps, but at the north side by one big step at each corner. Three big steps lead from the north shelf to the floor of the big basin for cleaning the basin. With comparison to some simpler wine factories identified by the author at Kom Truga south of Alexandria, it is clear that the shelves were made to support wooden beams. Cloth was spread on top of the beams to act as a filter or a sieve for the juice of grapes as it pours into the big basin from the spouts.

Up the edge of the basin above the north shelf, we discovered two funnels dug into a small rectangular podium in the middle of the north side of the paved floor above the basin. The funnels have each a central hole opening on the north wall of the big shelf. Along the north side of the basin, on the paved floor above and at a distance of one meter from this rectangular podium, there is a small square podium on either side to support each an amphora.

The blend of two kinds of juices of grapes is not sufficient to produce the famous taste of wine of Marea. This wine needed the necessary aromatic flavour[25]. Thus one amphora contained juice of another aromatic fruit while the other amphora contained the essence of certain flowers. The quantities are taken according to proportion and measures. The exit of the funnel hole in the north wall of the big shelf above the big basin was closed by means of a small wooden peg or cloth to be removed after the funnel was filled up from the amphora next to it so as to allow the fruit juice or the flower essence to run into the big basin from the funnel. The operation is then repeated according to proportion of aromatic flavour and smell needed in relation to the quantity of mixed grape juices in the big basin.

Thus the whole operation for the production of wine in our factory was as follows. Let us say, for example, 100 kilograms from a certain kind of grapes to be pressed in the foot press (I [fig. 4]) plus 25 kg of another kind of grapes from the hand press (II) plus 4 funnels measure of juice of an aromatic fruit from the amphora plus 2 funnel measures from the essence of flowers from the other amphora. All of these are mixed up after being filtered through the cloth which was spread above the big basin. Amphorae were then filled completely up from this blend of liquids of the big basin. The filled amphorae were then closed up with a stone stopper air tight with the help of cement. The amphorae, full with this mixture will have to be buried in the group or put aside in the store room for several years for fermentation before use. Thus we have seen the different operations needed for the production of wine, namely pressing, filtering, blending the juices and the aromatic flavour and smell and fermentation. The two wine factories discovered in the excavation recall the one found by Kaufmann in the neighbouring town of St. Menas belonging to the 5/6 cent. A.D.[26]. The carelessness in the measurements of the sides of the rooms, walls and basin and in the angles confirm this dating.

The Byzantine House

About 200 m to the north west of the wine factory described above we discovered another building of great interest and importance. The building represents a Byzantine house. It is, perhaps, the first house with a peristyle discovered in Egypt recalling houses with peristyle in Delos and Pompeii.

The peristyle which falls in the eastern part of the building is very big and square. In its S/E side it has a rectangular bed for fruit trees, vegetables or flowers while we find at its N/W corner a pot of flowers made of the upper half of a broken amphora turned upside down with its rim buried into a small plastered earthen construction. The S/W corner of the peristyle is occupied by a wine press. The rest of the floor of the peristyle is paved with rectangular blocks of stone, common in the floors of other Byzantine buildings discovered at Marea.

Of the wine press the heavy circular limestone disc still remains. The disc which is very heavy, one and a half meter in diameter, has a central square hole to fit in the wooden handle in order to turn it round when pressing. Next to the disc there is a red plastered earthen construction containing four built-in big stone funnels whose central holes open on a sloping passage. The funnels and the passage are also coated with several layers of red plaster. The passage leads to a narrow covered canal

[24] N. de Garis Davies, The Tomb of Nakht at Thebes (1917), pp. 69f., pls. 23.26.
[25] Daremberg – Saglio DA 920, s. v. Vinum.
[26] Kaufmann, Handbuch, op. cit., fig. 82, p. 232 (5/6th cent.); id., Découverte, op. cit., fig. 104.

ending outside the western facade of the house at a round red plastered basin dug into the ground. Each funnel was certainly a kind of measure for the amount of juice or aromatic juice or essence required for the mixture. In the ground next to the press, we found two amphorae buried in the ground with their stoppers cemented air tight.

The peristyle was open to the sky. On all four sides it was surrounded by sheltered corridors or colonnade. The roof of each corridor was sloping towards the peristyle to allow the waters of the rain in winter to fall in the peristyle. On the side of the peristyle, the roof was resting on columns of marble or different kinds of stone and of different thickness, a typical Byzantine feature in private constructions. The columns stand on stone bases of different form and height. The other side of the roof rests on the front wall of the rooms which look over the corridor on all sides of the peristyle. The rooms get their air and daylight through the doors which open on the corridors around the peristyle.

Two steps lead from the street to the house opposite the south corridor on its eastern side. We could not uncover the rooms which look over the northern corridor because a modern ditch for irrigation was dug through them. No rooms look over the eastern corridor except for a cistern built one meter high up in order to furnish the bed of vegetables in the peristyle with water by using a narrow covered canal dug under the paved floor of the east and south corridors.

The rooms which look over the western corridor are of great importance. The first room at the N/W corner was constructed with small stones in *opus incertum* joined together with a thick layer of mortar with the help of big blocks of stone set on "T" form, a method common in buildings of the 5/6th centuries as in the bishop's palace of Tocra in Libya. The walls are coated with a thin layer of white plaster. In this room we found a big white jar for storing, of the type found at St. Menas town[27] belonging to the 6th century.

While the door of this room opens to the east on the western corridor, we find that the door of the next room to the south opens into the staircase which is connected to the west corridor. This room is very interesting for it has an unique architectural feature. At some time in the Byzantine period, as a cross discovered under the stair-case also indicates, after the construction of this room, a stone podium, one meter high and a meter broad, was built up against the whole north wall of this room. The podium thus covered the plaster coating of the north wall and of parts of the east and west walls of this room, a clear indication of its construction at a later date. The podium which received a white plaster coating is pierced from top to bottom by several holes set in a line side by side. The holes are wide enough to support a wine amphora. They open on a tunnel of an equal width as the podium and running under it. The tunnel ends like the podium at the eastern wall of the room but extends westward beyond the building to open in front of the facade in a gabled roof. The stones of the gabled roof do not fit properly because of the thick layer of mortar binding them. The roof recalls the gabled roof of a tomb in the center of the town of St. Menas[28]. The use of a thick layer of mortar for joining the stones and the carelessness in fitting the stones is common in Byzantine buildings. The podium with its holes resembles a public latrine. Yet its location above the tunnel which opens in front of the facade of the house stands against this hypothesis. It is important to mention that we found a line of ashes a meter and half high from the ground of the tunnel under the podium on three sides of the tunnel at its end. Below this line of ashes we found several cooking pots, jugs and frying pans as well as pots for serving at the table. All this pottery is of red or white clay. Some of the vessels are blackened at the bottom through cooking. This indicates that the tunnel was used as a kitchen. Fire needed a strong draught of air in order to blaze for quick cooking. The draught passed through the gabled entrance which falls at the western facade of the building, and had to go out through the holes of the podium up through a chimney in the roof of the building. Because of the blazing fire, the podium and the room in which it is built would become warm. We have accordingly a kind of central heating. People could even sleep on this podium in winter, as they do nowadays in the countryside in Egypt. Besides, wine amphorae can be fitted in the holes to get a kind of cooked wine or filtered wine. Thus we see that this podium is a unique feature with several useful functions.

The podium is later in date than the room, since the tasks fulfilled by the podium are connected with the construction of the tunnel below. It is clear that both of them were designed at the same time but later than the time of the construction of the rooms and the peristyle. Since we have two symmetrically set tunnels on the western facade of the building with two pedimental (gabled) blind windows in between, it is clear that the whole facade was built later than the rooms behind. To confirm this, we find that the facade which is one and a half meter deep covers behind it the white plaster coating which was covering the outside surface before the addition of this facade. Above the blind gabled windows of the facade there is a floor like terrace, one and a half meter deep till the outer surface of the walls. Because the tunnels are dug lower than the gabled blind windows of the facade we find that each tunnel is surmounted by an arch. These arches certainly supported a floor running above the tunnel and on a level with the floor caused by the depth of the added western facade above the windows. As the result of that we can get a continuous terrace on

[27] Kaufmann, Découverte, op. cit., fig. 94 (The one on the right and the one on the left in the photo).
[28] C. M. Kaufmann, Die Ausgrabung der Menas-Heiligtümer in der Mareotiswüste (1906), fig. 30.

the western side of the building running from end to end approached by the steps which lead to the upper floor.

The arrangement on the south side of the house is somewhat different. Instead of having one room with a podium above the southern tunnel as in the case of the former northern tunnel, we find two smaller rooms, with the podium divided accordingly into two parts. It seems that the heating here was for procuring hot water because we found a small bath east of these two rooms and on line with them. The bath is a square construction one meter high and one meter broad. It takes the form of a basin. The basin has a seat built inside it against its northern wall. Another seat is built against the same wall on its outside surface and like the other seat half a meter high. The inside seat was for sitting while bathing but the outside one seems to have been used as a step to help one to get in and out of the basin. At the bottom of the eastern wall of the bath there is a hole leading into a drain. Another hole leading to the same drain pierces the extension wall of the east wall of the basin next to the outside seat. The whole bath was coated with a thick layer of red plaster as in Roman and Byzantine basins.

An interesting feature is found in the filling of the western walls of the west rooms, just behind the facade with the gabled tunnels. The wall is one meter thick built with unburnt brick. The blocks were joined together with mortar of similar nature and composition. The use of unburnt brick in architecture shows clearly that the area around Marea was fertile in antiquity.

The pottery found in the north tunnel and in the rooms resemble 6th century pottery found in the town of St. Menas[29]. Several oil lamps in clay of the African type were found in the building and are like those found at St. Menas[30]. A small iron cross was found under the staircase. The peristyle indicated that the building was a house, belonging on account of the method of its construction and the artifacts found in it to the Byzantine period.

In conclusion we realize that this survey has fulfilled almost all its preliminary objectives. We now know the extension of the town in all directions except the east side of the town. Of her history we have an idea about the succession of civilisations and the duration of settlement in it as well as the features of life and the treatment of the dead in all periods of her history.

The excavations gave us a picture of the climate in this area in the past and the geographical conditions of the land and the lake, regarding agriculture, navigation and the islands in the lake. We have also a clear proof of Pharaonic remains in this part of the Egyptian Libyan desert.

[29] Kaufmann, Die Ausgrabung, op. cit., fig. 47; id., Découverte, op. cit., figs. 74, 94.

[30] Kaufmann, Découverte, op. cit., fig. 163, nos. 1, 2 (on the right on the top line and no. 1 on the line below).

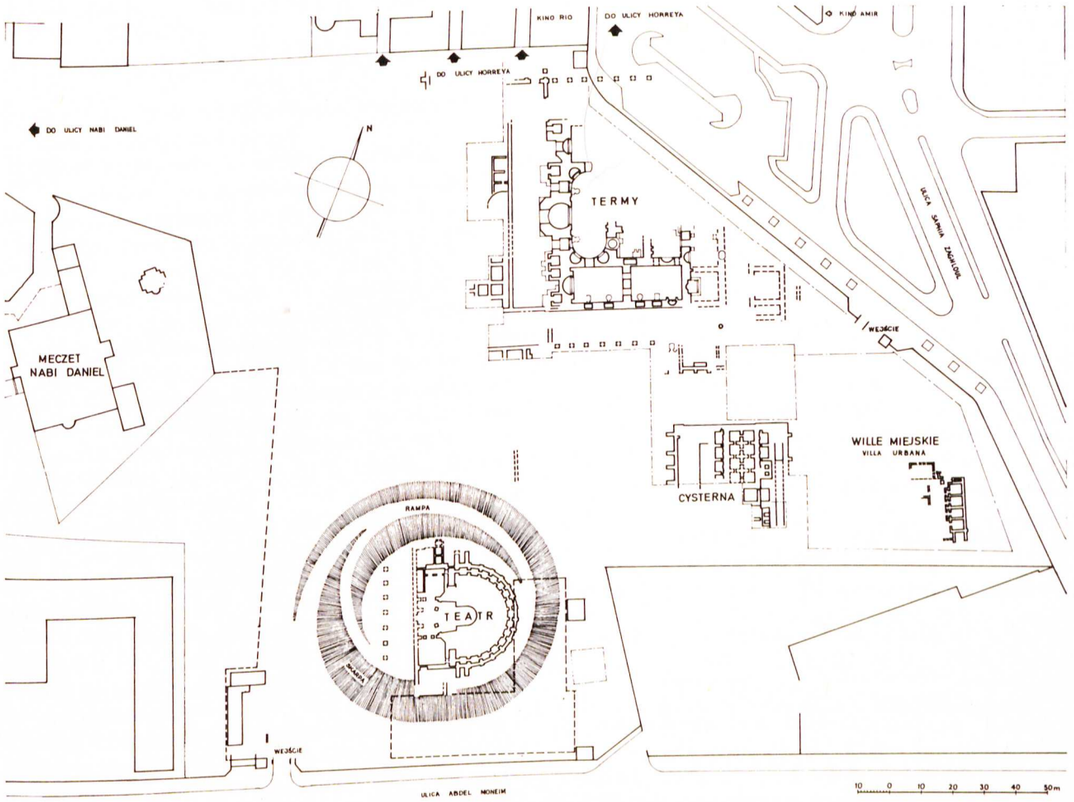
Wojciech Kołataj

Recherches architectoniques dans les thermes et le théâtre de Kôm el-Dikka à Alexandrie

Commencés en 1960, les travaux archéologiques à Alexandrie du Centre Polonais d'Archéologie Méditerranéenne, sous la direction du Professeur Kazimierz Michałowski, sont continués jusqu'à l'heure actuelle[1]. Mais je me limiterai aux années 1966–1972, quand j'y ai personnellement participé. C'est une période trop longue et un matériel trop riche pour présenter les résultats d'une manière satisfaisante en un court exposé. Je suis architecte, et non archéologue, aussi je me consacrerai aux résultats des recherches architectoniques[2]. C'est pourquoi les dessins et la documentation photographique sont ici indispensables (pl. 33,2; ill. 1).

[1] J. Lipińska, Etudes et Travaux (Warschau) 1, 1966, 181ff.; W. Kubiak, BArchAlex 42, 1967, 55ff.; W. Kołataj, Etudes et Travaux 2, 1968, 155ff.; id. 6, 1972, 147ff.; M. Rodziewicz, ibid. 9, 1976, 169ff.; id. 10, 1978, 347ff. et 11, 1979, 195ff.

[2] W. Kołataj, La dernière période d'utilisation et la destruction des thermes romains tardifs de Kôm el-Dikka, Etudes et Travaux 9, 1976, 217ff.



Jll. 1 Plan général des fouilles polonaises à Kôm el-Dikka