

The Underwater Archaeological Survey conducted by the Greek Mission in Alexandria, Egypt (1998-2010)

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The Hellenic Institute of Ancient and Mediaeval Alexandrian Studies, Athens, obtained a concession from the Supreme Council of Antiquities of Egypt¹ in 1997, to survey the underwater coastal area of Alexandria east of the Eastern Harbour [The *Megas Limin* of the Greeks - *The Portus Magnus* of the Romans - The Mina El Sharki of the Islamic Times]. The original area of the concession covered 5 km of littoral from Cape Silsileh, Chatby to the suburb of Roushdy. In 2008 the area was extended eastwards by another 5 km, reaching the Sidi Birshr Promontory² (Fig. 1). The survey has been carried out up to a distance of 900 m from the coast. However our priorities stand in the shallows, in the waters neighbouring the coast where, because of the rise of the Mediterranean, and the subsidence of the Alexandrian littoral remains of manmade structures are nowadays submerged³. The depths vary from a few centimetres in the shallows to 28 m at the deepest point. The Greek Mission, with the cooperation of the Department of Underwater Antiquities of Alexandria and of the Department of Marine Geology of the Patras University, has performed twenty two campaigns from 1998 to 2010 another two are planned for the year 2011. In total 65 divers of the Hellenic Institute⁴ were involved in the surveys as well as 12 divers from the Department of Underwater Antiquities of Alexandria⁵.

The area of the concession has been divided into 7 sub-sites:

Sub-site Chatby 1 is the most interesting and challenging, because it coincides with the submerged Acra Lochias that was part of the Basilia, the Royal Quarters of the Ptolemaic



Fig. 1 Satellite imaging of the eastern coast of Alexandria showing the area of the Greek Mission concession. The seven sub-site locations are marked.

Period and has revealed a varied and large number of artefacts. Sub-site Chatby 2 bears some remains that are attributed to the *Martyrium* of St. Marc. Besides surveying in the sea area, we also opened some trenches on the beach that revealed a large amount of pottery sherds all datable to the 5th and 6th centuries AD. Sub-site Ibrahimieh 3 consists of a large reef, where a great number of mediaeval stone anchors have been found [over 50 anchors] as well as the lead components of a very large Late Hellenistic or Early Roman composite anchor. Sub-site Ibrahimieh 4 revealed the remains of a large stone quarry co-existing with some rock-cut burials. Unfortunately, after our preliminary survey the area was completely reclaimed and obliterated because of the widening of the Corniche road. At Sub-site Sporting 5 the remains of a large Necropolis in the shallows has been only partially covered by the Coastal Road widening and the dropping of concrete blocks, but our survey continues as remains of structures in deeper waters have been recently found. Sub-site El-Hassan 6 is a reef located at some 500 m North East of the eastern entrance of the Eastern Port, which was in ancient and mediaeval times a hazard to navigation. A large number of amphoras and pottery sherds were found witnessing to the presence of several ancient shipwrecks most dating to late antiquity. At Sub-site Sidi Bishr 7 the remains of what certainly was a large Necropolis were traced. The whole coastal area of this necropolis was used as a stone quarry at an undetermined period; what is preserved above sea level is a small portion of a large hypogeum with a semi-submerged corridor at the Sidi Bishr promontory as well as remains of burial on the islet of Gezira Gabr El Khour. A vast area on the sea floor shows marks of quarrying activities and is scattered with numerous stone blocks. A very brief description of what was found on each of the above mentioned sub-sites is given hereunder pending the final publication.

Chatby 1 is the location⁶ of ancient Acra Lochias, where stood in Ptolemaic times, according to ancient sources, a palace, the temple of Isis Lochias (Fig. 2) and the *Mausoleum* of

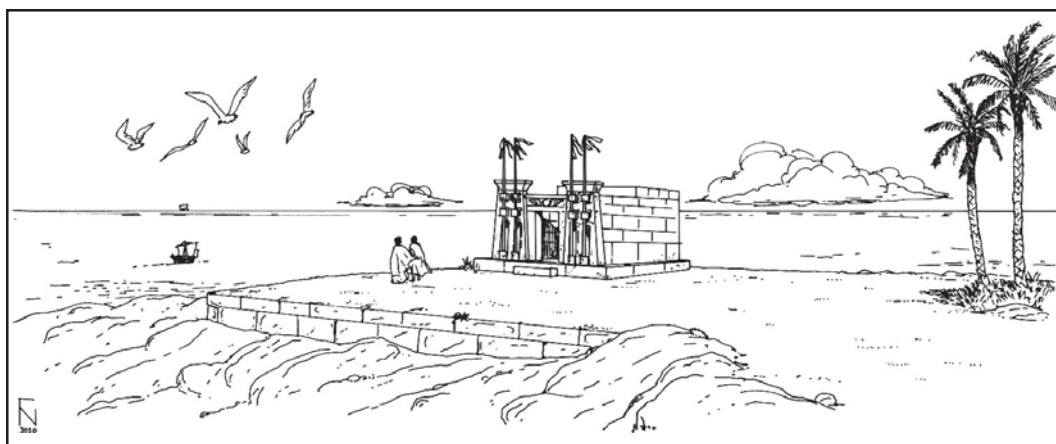


Fig. 2 Sub-site Chatby 1: A hypothetical reconstruction of the Temple of Isis Lochias based on the find of a monolithic Pylon. (Drawing by Yiannis Nakas based on a proposal of Harry Tzalas)

Cleopatra VII⁷. Cape Silsileh, today's promontory, exists solely because in Medieval and Post-Medieval Times (until the beginning of the 20th century) there was a constant filling of this subsiding narrow strip of land in an attempt to protect the Eastern Harbour with a sort of breakwater. An enormous amount of ancient remains gathered from the neighbouring shores were dumped as filling material on what is today the Silsileh headland. The geological⁸ and archaeological surveys conducted eastwards of Silsileh revealed that some 90% of the submerged surface of ancient Akra Lochias is in the area of the Greek mission concession (Fig. 3). Some 400 architectural elements: large granite and quartzite - bare or inscribed - blocks and slabs, broken columns, capitals, together with broken granite seats, catapult projectiles as well as several unidentified pieces lie on the sea floor. The largest are: a monumental granite base of over 2 m in height⁹ (Fig. 4) the tower of a monolithic diminutive pylon weighing over 7 tons (Fig. 5), and the threshold of a monumental door of an estimated weight of 11 tons (Fig. 6). Because of their weight and their important distance from the shores our assumption is that each of these elements mark the site of specific building and are not part of the transported material dumped in the sea as a buttress to the action of the waves. Nor can these heavy pieces be moved by

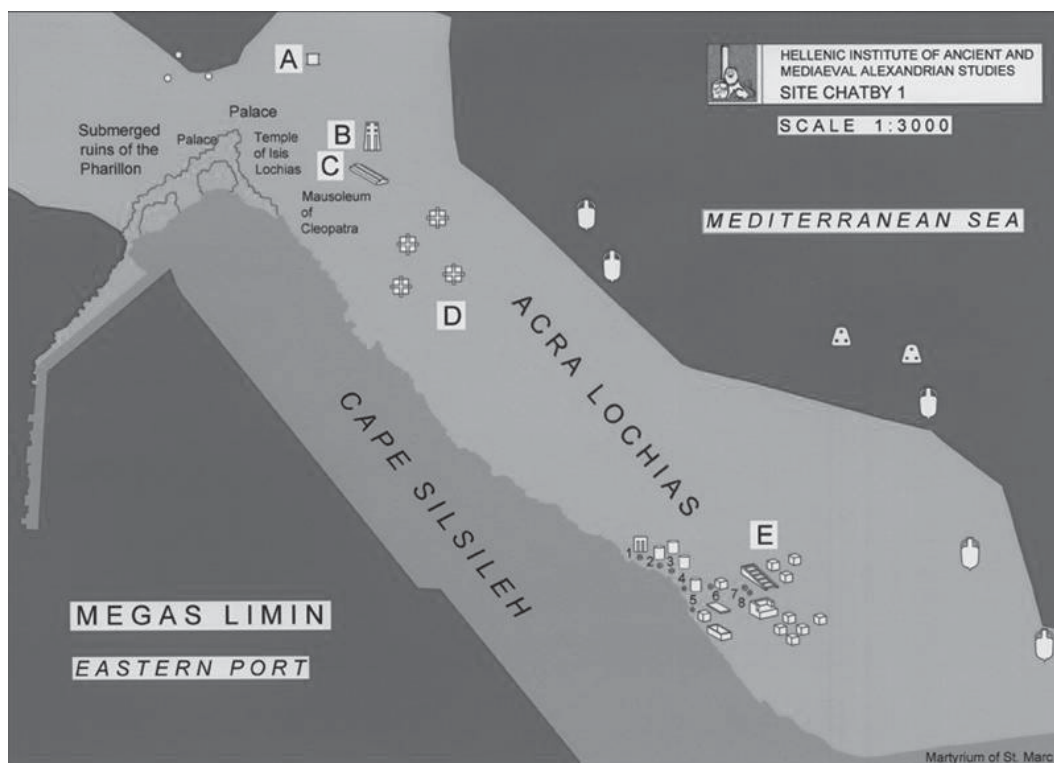


Fig. 3 Sub-site Chatby 1: Map showing the Silsileh promontory, as well as the now submerged remains of Akra Lochias, that was part of the royal Ptolemaic quarters. (Harry Tzalas) Based on the side-scan-sonar surveys of the Department of Marine Geology of the Patras University.

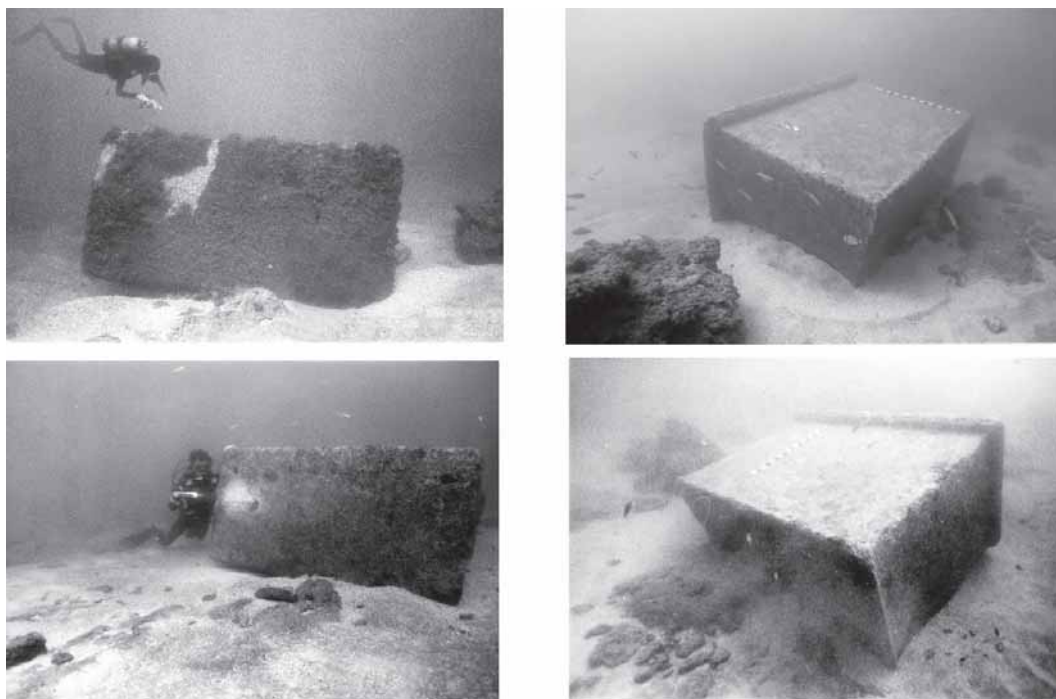


Fig 4 Sub-site Chatby 1: A monumental base made of red granite. (George Nomikos)

the action of the waves and the swell, so they can be considered as being more or less *in situ*. The tower of the pylon is a unique find for Alexandria. There is no other pylon found in the city and in its immediate neighbourhood¹⁰. Because we know that pylons are related to sanctuaries and stand at their entrance, and as there was only one temple on Cape Lochias, the Temple of Isis Lochias, it would be reasonable to assume that this architectural element was part of that shrine. The tower is made in a single piece of red granite and there is no other monolithic pylon in Egypt. Because of its weight, the threshold has not yet been lifted, but preliminary studies indicate that it was part of a monumental door *circa* 6 meters high. It possibly compares with the entrances of some known Macedonian tombs in Northern Greece¹¹. According to ancient sources, interpreted by archaeologists of the end of the 19th century and the early 20th, the location of the Mausoleum of Cleopatra stood where that large architectural element lies today and further investigations may confirm such hypothesis. According to ancient authors the *Mausoleum* was very near to the Temple of Isis Lochias and the above architectural elements are lying on the seabed at a distance of *circa* 50 m from each other.

Ancient authors, when referring to the end of Cleopatra and Mark Anthony, mention that this happened in her *Mausoleum*, on Akra Lochias and that this structure with a heavy door ‘which once closed could not be opened again’ was nearly ready at the time of her



Fig. 5 Sub-site Chatby 1: The tower of a monolithic red granite pylon. This is the only pylon ever found in Alexandria. (George Nomikos)

tragic death. It is also stressed that Octavian gave a royal burial to his adversaries but not in the Mausoleum which Cleopatra had prepared. According to Dio Cassius, Cleopatra VII, during the last period of her kingdom built a separate mausoleum for herself: *‘for Cleopatra had collected it all (her treasures) in her tomb which she was constructing in the royal grounds, and she threatened to burn it all up with her in case she should fail of even the slightest of her demands’* (Roman History LI, 8.6)¹². Plutarch, referring to the same circumstances, adds that this monument was a high and luxurious construction, adjacent to a temple of Isis: *‘and she herself, now that she had a tomb and monument build surpassingly lofty and beautiful, which she had erected near the temple of Isis, collected there the most valuable treasures’* (Antony, LXXIV, 3)¹³. Among some 40 granite and quartzite blocks scattered in the shallows of this sub-site, we have during our last campaigns found 7 blocks with hieroglyphic inscriptions (Fig. 7). A slab bears the low relief representations of the torso of a Pharaoh and on another a Pharaoh head is carved in low relief¹⁴. Some other interesting finds are: the mutilated parts of at least two ‘naiskos’¹⁵, (Fig. 8) a monolithic granite block, carved with series of five steps (Fig. 9) and the central part of a flour-mill stone. The Pylon tower has been transported to the Kom El Dikka laboratory for conservation. It will soon stand in that archaeological site where



Fig. 6 Sub-site Chatby 1: A large threshold made of red granite. (Irimi Chryssocheri and George Nomikos)

other artefacts that were found in the waters of Alexandria are displayed. During our next campaigns¹⁶ we will focus our efforts on raising more inscribed blocks and making moulds of the inscriptions in order to understand more about the large monument that these blocks formed. Chatby 2: From travellers' relations, literary sources and also from old maps of the 15th and the early 17th centuries, it is known that the location of our sub-site Chatby 2, was near the alleged site of the *Martyrium* of St. Mark¹⁷ and there stood a Proto-Christian church and a *Martyrium*. The remains of this important building were still visible at the end of the 15th and until the early 17th centuries as is witnessed by the map of the Codex Urbinat¹⁸ and the plan of the Archivos General de Simacas¹⁹ although we know that the church was destroyed in 1218 by the Governor of Alexandria fearing that the building could be used in an attack against the town²⁰. A further testimony is the pottery sherds, all dated to the 5th and 6th centuries AD that were found in trenches opened in the nearby beach, as well as some architectural remains in the shallows. Among these finds two large capitals datable to the 5th century AD (Fig. 10 and Fig. 11) are probably part of the remains of that early Christian church dedicated to Mark the evangelist²¹.

Ibrahimieh 3 is a large reef lying at a depth of 13 - 15 m and at a distance of some 450 m from the shore. Some 50 small and medium size stone anchors were traced (Fig. 12).



Fig. 7 Sub-site Chatby 1: A block of quartzite bearing a hieroglyphic inscription. (Harry Tzalas)

They date to the Mediaeval Times (11th - 12th centuries AD) and were used on small fishing vessels²². A characteristic elongated opening at the top, for the lashing of the rope, led us to propose a theory for a different method of anchoring: These small anchors would be dropped consecutively, one after the other, as the beads of a *chapelet* to secure a grip on the sea bed. The advantage of this 'anchrage à chapelet' is that while it is difficult to use a heavy anchor of say 50 or 60 kg to immobilize a small fishing craft, using three or four smaller anchors of 10 to 15 kg each is an easier process. But unexpectedly the lead components of a very large composite anchor were found on this same reef: The lead stock and the assembly collar plus the missing wooden parts must have originally weighed a total of some 600 kg and the height of that anchor was over 4 meters. This is the testimony that a large ship, probably a grain cargo of over 30 meters in length of the Graeco-Roman Times was taken adrift and had to drop an anchor in a desperate attempt to avoid grounding. It is at sub-site Ibrahimieh 4, that our survey started in 1998 because we were aware that shortly the widening of the coastal road would obliterate most of the remains of a large stone quarry that were visible in the shallows. In the limited period of time available we did whatever was possible to survey and understand these intricate



Fig. 8 Sub-site Chatby 1: Mutilated black granite 'naiskos'. At a later stage it was re-used as a tannery basin. (Harry Tzalas)



Fig. 9 Sub-site Chatby 1: Steps cut in a monolithic block of red granite. (Harry Tzalas)

remains in which some burials coexisted with the deep carvings of the quarry. This is the largest quarry known for the extraction of stone from the shores of Alexandria and it is regrettable that after the widening of the Corniche these remains have been totally obliterated. Notwithstanding the same widening of the Corniche road at Sporting 5 sub-site, only 10% of the ancient remains in the shallows were affected. We started surveying what seem to be surviving from a Necropolis and more precisely the foundations of a large rectangular-shaped structure adjacent to a massive circular construction. A preliminary, basic drawing was made focusing on the endangered zone that is nearer to the shore. The deep carvings and remains of structure expand deep into the sea. There are obvious marks of quarrying activities and as with other coastal burials the Sporting Necropolis was used at an unidentified period for the extraction of stones. Two small, badly eroded calcite stone capitals were retrieved with a limited number of Late Roman pottery sherds. The Tomb of Stratonice is marked exactly on that location on maps raised at the end of the 19th and early 20th centuries by archaeologists and historians²³.

El Hassan 6 is a reef that lies at a depth of circa 13 m under sea level and at a distance of some 500 m North East of the eastern entrance of the Eastern port. Its subsidence must be

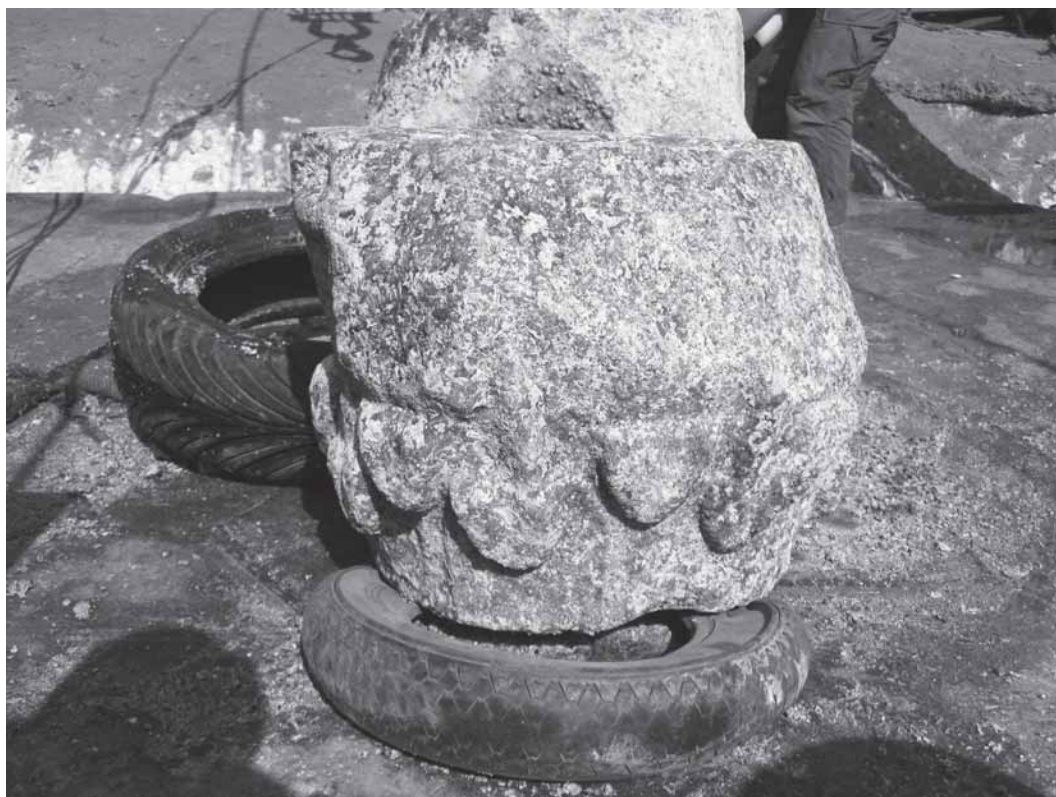


Fig. 10 Sub-site Chatby 2: A large Early-Christian capital made of black granite raised from the area where stood St. Mark *martyrium*. (Eugenia Nikolopoulou)

the result of a late tectonic activity. In the Codex Urbinatensis map of Alexandria of 1472²⁴ the present reef is marked as a shoal. In antiquity as well as in medieval times this treacherous shoal presented an imminent danger to navigation as it stands on the course of a ship attempting to enter the Port from East. A limited number of dives has confirmed our assumption that several ships must have hit this deadly obstacle and sunk. A large number of amphorae, concreted on the seabed cover the reef and its contour. Because of its distance from Cape Silsileh the El Hassan Reef is not presently threatened by modern building activities, so it is not in our immediate plans to carry out a complete and detailed survey of this sub-site. This will have to wait as our priorities lie with other endangered areas.

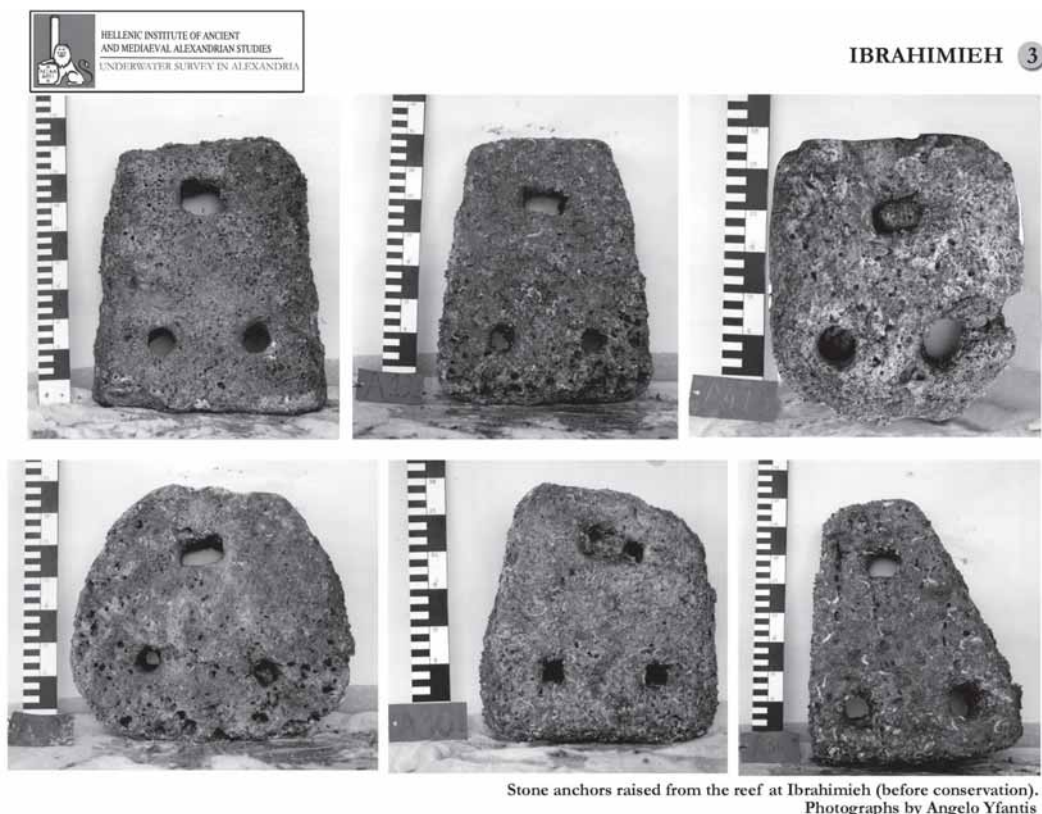
Sidi Bishr 7: All the length of the Corniche from Silsileh to Sidi Bishr has been badly affected by the recent widening of the coastal road and all the antique remains along the coast and in the shallows have been obliterated because of the land reclaiming and the laying of concrete blocks as buttresses to the action of the waves. There is also a constant construction of coastal recreation buildings appearing on the reclaimed land. The areas



Fig. 11 Sub-site Chatby 2: An Early-Christian capital made of grey granite raised from the area where St. Mark martyrium stood. (Harry Tzalas)

more affected are the suburbs of Stanley, Glymenopoulo and San Stefano. Eastwards, Sidi Bishr is the furthestmost area of our concession and was surveyed for the first time in November 2008. The land area was surveyed and photographed in a preliminary manner. Satellite imaging as well as an old cadastral map of 1942 was used. The geomorphology of this rocky, bare surface extending from the sea to the Corniche road is described as follows: A triangular-shaped rough surface is what remains evident of that ancient Necropolis. It is delimited Southwards by the Corniche coastal road - which was recently widened - Eastwards by a sandy beach, artificially formed, North by the sea and Westwards by the remains of a manmade circular structure carved in the rock which, when the ceiling collapsed formed the existing cove. Several new, modern constructions are adjacent to this cove.

The rocky surface as delimited above bear two large perforations which communicate with subterranean corridors that are today partly submerged. 'Bir Masaoud', also called the 'Devil's well' is today fenced with a modern low stone wall: it is the ventilation shaft of an ancient Necropolis (Fig. 13). With a rough sea the sea water reaches the fencing of



Stone anchors raised from the reef at Ibrahimieh (before conservation).
Photographs by Angelo Yfantis

Fig. 12 Sub-site Ibrahimieh 3: Medieval stone anchors raised from the reef. (Angelos Yfantis)

the well and its spray siphons all around the neighbouring surface. At calm sea, the level of the water in the well is of approximately 3 m from the base of the protective low stone wall that encircles it. Divers from the Mission did enter the semi submerged chamber and corridor from the sea and reached the well perforation after swimming for an approximate distance of some 30 m. There are some other smaller perforations of the rock's surface; some are obstructed by stones dumped purposely in them. Some others are minuscule holes difficult to discern which become obvious only under extreme pressure of the waves from the North and are apparent because of the siphoning of the sea water.

This entire rocky surface shows marks of erosion and well defined marks of quarrying. Most of the quarrying activities are visible by the cliff near the sea. In the sea area, as a buttress to the action of the waves and in order to protect the sandy beach that has been artificially formed eastwards of the rocky promontory surrounding 'Bir Masaoud', a quay has been built with the use of a large number of concrete blocks. This has created a sort of artificial lagoon in front of the sea entrance of Bir Masaoud and numerous antiquities have been destroyed. Looking at the littoral from the sea one notes the abrupt cutting of

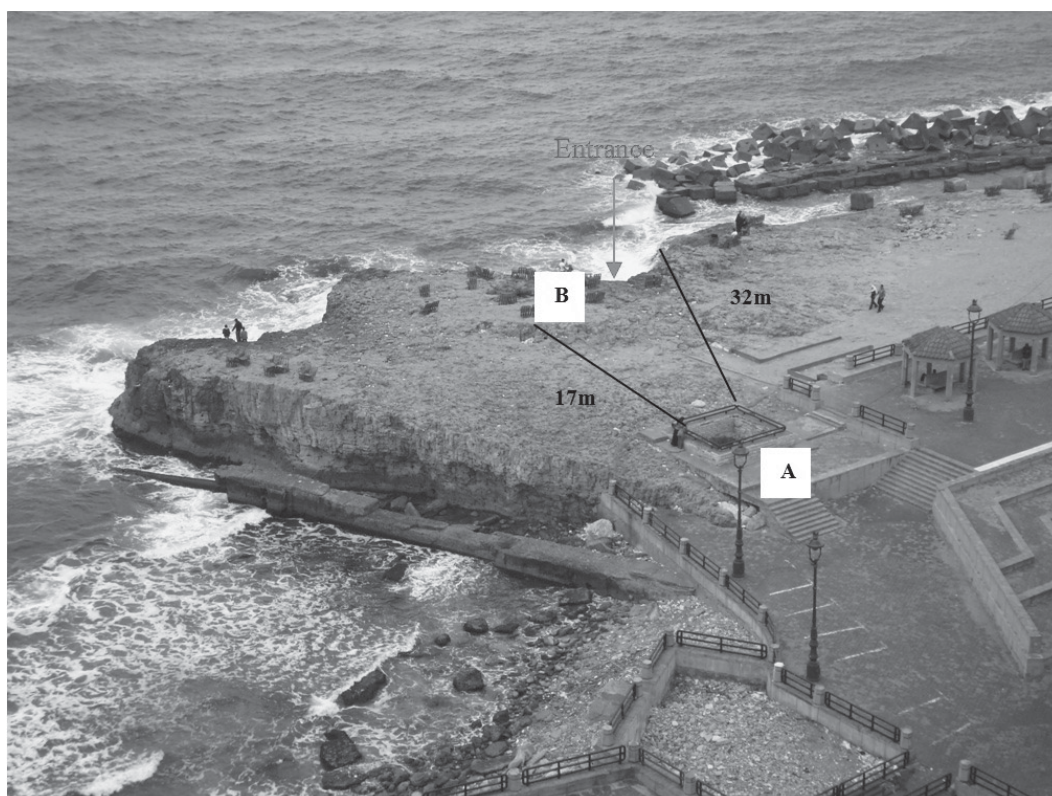


Fig. 13 Sub-site Sidi Bishr 7: Aerial view of the Sidi Bishr promontory with the above sea level remains of the Necropolis. 'A' marks 'Bir Masaoud', the ventilation shaft of a large hypogeum. 'B' marks the entrance from the sea of the partly submerged hypogeum tomb. (Kyriakos Savvopoulos)

the Sidi Bishr promontory. The height of the cliff formed by the quarrying process and the action of the waves has resulted in a cut off cliff of some 6 meters height above the sea water level. The depth of the water at the feet of the cliff is at some 3.5 to 4 m. That cliff has a wide, irregular orifice, part of which is submerged leading to a large chamber, a *hypogeum*. A corridor leads from this *hypogeum* to the 'Bir Masaoud well'. The ceiling of the *hypogeum* is cut irregularly in the shape of a vault. Between the ceiling and the surface of the water there is a height of some 3 m, while the depth of the water there is of some 3 m. The seabed in the wider areas surrounding the promontory, as well as the interior semi-submerged *hypogeum* are covered with numerous blocks, slabs, stones and what seem to be broken columns' drums; there are also numerous unidentified stones and possible broken architectural elements. Because of the heavy concretion covering all these 'stones' and the very limited time of favourable weather at our disposal, they could not be identified. So it is premature to say if these hundreds of pieces are ancient or just modern concrete debris dumped in the sea, covered by incrustation and marine growth and rounded by the action of the waves.

The weather conditions were such that the underwater *hypogeum* and the submerged corridor could not be even partially surveyed and it is hoped that this will be possible during our next campaigns. East of the Sidi Bishr promontory and across the beach called Sidi Bishr No. 2 an islet now called Miami Island has been identified as Gezira Gabr El Khour which formed part of a small port installation referred to in Pirī Reis Portolan²⁵ as Kürül Güdāk. An attentive survey of this island has led to the identification of the remains of numerous ancient burials that were at an unknown period used as stone quarry. A large hypogeum tomb was excavated. It is obvious that this islet as well as the wider sea area extending north were part of the large Necropolis of Sidi Bishr. Sidi Bishr, together with the Early Ptolemaic Necropolis of Chatby²⁶ and the Necropolis of Moustapha Kamel which covers the whole Hellenistic period, and the submerged remains of Sporting represent the very last visible remnants of the extended Eastern Necropolis which spread along the eastern coastline of Alexandria. Contrary to the Necropolis of Sporting which because of its low level was totally submerged, some scant remains of the Sidi Bishr Necropolis being at *circa* 6 m above the present level of the sea were spared.

These remains have never been marked on any archaeological maps of the 19th and 20th centuries, nor are they specifically referred to in any archaeological survey. The reason being that at a time when Alexandria and its suburbs were covered with extended ancient remains, the limited ruins of Sidi Bishr were not considered worth being mentioned, least surveyed. Travellers and map makers of the 19th and early 20th centuries, in their relations and annotation refer in brief to 'a coast covered by ruins'. In our superficial survey at Sub-site Sporting 5 it was suspected that at an unidentified period before being submerged the Necropolis, was used as a stone quarry²⁷. At Sidi Bishr as well as on the Gezira El Khour islet the quarrying is very obvious not only in the submerged parts which now lie at some 4 to 5 m depth but also on the apparent remains that are high above the water level. A methodical survey of the preserved remains which are above water level, of the subterranean corridors, now partly under the water, the wider area which is today totally submerged as well as the relation of these ruins with two neighbouring islets and reefs will be undertaken during the future campaigns. In concluding it should be stressed that the most important of the sub-sites in the area of our concession are Chatby 1 and Chatby 2 where a methodical survey of the sea bottom and the raising of the ancient remains will shed light on this area that once was part of the royal quarters and where the proto-Christian site of St. Mark *Martyrium* stood in its vicinity. Sporting 5 and Sidi Bishr 7 sub-sites need protection from the constant dumping of concrete blocks and an attentive survey must be carried out in the near future. Sub-site El Hassan 6 although of capital importance, due of the presence of ancient shipwrecks, is not presently threatened because of its important distance from the shores and the depths of over 13 m. Its methodical survey and excavation can thus wait. The ancient quarry at sub-site Ibrahimieh 4 has been completely covered by the extension of the coastal road and the reef at Ibrahimieh 3 has been adequately surveyed; their final publication should be expected soon.

Conclusions

With Athens, Rome, Constantinople, Alexandria is one of the great capitals of the ancient world. It remained an important city and a cultural centre for nearly a millennium and had a decisive impact on Western civilisation. Sadly, repeated wars, social unrest and devastating natural phenomena have destroyed the ancient monuments of the Great City. The scant remains of its glorious past are buried deep beneath 19th and 20th century cosmopolitan Alexandria, a vision of Mohamed Ali. Only the Column of Diocletian stands as a faint reminder of the city's greatness. But due to the rise of the Mediterranean Sea - at the rate of one meter every thousand years - and the subsidence of the littoral, important remains of the city's past are submerged, and thus have been spared. For these last thirty years, archaeologists-divers have been bringing back to light precious testimonies of Greco-Roman and Medieval Alexandria.

Acknowledgements

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Endnotes

¹ I would like to express my many thanks to Dr. Zahi Hawass, Secretary General of the Supreme Council of Antiquities of Egypt and to the Director of the Foreign Missions Affairs Dr. Mohamed Ismail Khaled for the repeated renewal of our concession, as well as to Dr. Ibrahim Darwish, Mr. Alaa Eldin Mahrous and Dr. Ashraf Abdel Raouf for their continued assistance.

² The Eastern littoral and its suburbs were known in antiquity as Eleusis [pros Eleusini thalassa], Nicolpolis, Juliopolis.

³ It is known that from the time of the last melting of the glacier, *circa* 10,000 years BPT the waters of the Mediterranean rise at a rate of *circa* one meter per 1,000 years; in Alexandria this phenomenon coexists with a subsidence of the littoral.

⁴ Mentioning all the names of my collaborators in the limited space of an article is impractical, but I would like to refer to those who have repeatedly taken part in our campaigns: The marine archaeologists Irine Chryssocheri, George Koutsouflakis, Spyros Thermos, the Egyptologist Dr. Kyriakos Savvopoulos, George Papatheodorou, professor of Marine Geology, the architect-diver Silvana Gargiulo, the chief divers Phaedon Antonopoulos and George Nomikos.

⁵ Several associations and individual persons have contributed financially to our campaigns, I will, for practical reasons, limit myself to acknowledging the main and regular sponsors: The J. F. Costopoulos

Foundation, the Ministry of Culture of Greece, the Psyhas Foundation, the Stavros S. Niarchos Foundation, Powertek Berhad, Port Said, East S.A.E, Suez Gulf S.A.E, Sidi Krir Generating Company, Mr. Ananda Krishnan of Kuala Lumpur and Mr. Antonis Nicolaras, Piraeus.

- ⁶ The name of the Chatby suburb is due to the tomb, or turba, of a holy man known as Sheih el Chatby. His funerary chapel was transferred eastwards, in the early part of the 20th century to a nearby location in the vicinity of St. Mark College.
- ⁷ On his plan of 1898 G. Botti places on the Lochias Promontory a 'Royal Palace', the 'Temple of Isis Lochias' east of the tip, then south, near Chatby the 'Tomb of Cleopatra VII'.
- ⁸ Carried out by the Department of Marine Geology of the Patras University.
- ⁹ This base is comparable to another found in the sea in the 1960's and exhibited in the garden of the Maritime Museum at Stanley.
- ¹⁰ The nearest built pylons are those of *Taposiris Magna* at some 40 km west of Alexandria.
- ¹¹ Macedonian tombs have marble doors; here we assume that the door was made of granite or of wood.
- ¹² Translation by Ernest Cary, Loeb Classical Library, (1917).
- ¹³ Translation by Bernadotte Perrin, Loeb Classical Library, (1920).
- ¹⁴ Paolo Gallo, 'Fête-sed sous l'eau de la Méditerranée' Proceedings, *First Hellenistic Studies Workshop*, Alexandria 12-18 July 2009, (Ed.), K. Savvopoulos. pp. 64-88, Alexandria, 2010.
- ¹⁵ Naiskos, diminutive of Naos, the Greek word for temple, a lockable shrine for storing religious images; generally made of wood or stone and placed in temples or tombs.
- ¹⁶ Two campaigns are planned for the year 2011, during spring and autumn.
- ¹⁷ Marurice Martin, 'Alexandrie Chrétienne à la fin du XIIème siècle d'après Abu l-Makarim', *Alexandrie médiévale 1*, (Ed.), by Christian Decobert and Jean-Yves Empereur, Etudes alexandrine 3, 1998, IFAO, Cairo (1998) and Jean Gascou, 'Les églises d'Alexandrie: Question de méthode' in the same volume.
- ¹⁸ Veduta d'Alessandria, Anessa con altre al Codice Urbinate 277 della Biblioteca Vaticana ossia codice Latino di Tolemeo. Il Codice fu scritto per Ugonem Cominelli de Macerii supra Mosam in Francia Florentiae die quinta Januarii 1472 reproduced for the first time in Gaston Jondet, *Atlas Historique de la Ville et des Ports d'Alexandrie*, Societé Sultanieh de Géographie d'Egypte, Cairo, (1921). There is another version of this map kept in the National Library in Paris, with minor differences from the Vatican Codex. This map is also reproduced and commented on in Harry Tzalas, 'The Two Ports of Alexandria, Plans and Maps from the 14th century to the time of Mohamed Ali', *Underwater Archaeology and Coastal Management 'Focus on Alexandria' UNESCO*, Paris (2000). Also see Harry Tzalas, 'The Codex Urbinate 277 and the Plan of Simancas, Two of the Earliest Maps of Alexandria' in *Tradition and Transition*, Proceedings at a Conference held in October 2007 at the Institute of Nautical Archaeology, A & M University of Texas, in honor of George Bass and K. Van Doorninck.
- ¹⁹ A map made in 1603 by an Italian spy, unknown until the 1980's, was then found in the General Archives of Simancas, Vallalolid, Spain, attached to the documents E1102-36 and E1103-34. See Harry Tzalas, 'The Two Ports of Alexandria, Plans and Maps from the 14th century to the time of Mohamed Ali', *Underwater Archaeology and Coastal Management 'Focus on Alexandria' UNESCO*, Paris (2000).
- ²⁰ Maurice Martin, *supra cit.*
- ²¹ Evaristo Breccia also notes the Martyrium of St. Mark on his *Plan d'Alexandrie à l'époque ptolémaïque avec quelques sites antiques*, made in 1922.

- ²² Harry Tzalas, 'An unusually large concentration of stone anchors, East of Cape Lochias, Alexandria, Egypt. A Preliminary Evaluation', *Proceedings of the 7th Int. Symposium on Ship Construction in Antiquity*, Pylos 1999, *Tropis* VII, Vol. II, Athens (2002).
- ²³ See plan of T. Neroutsos, in T. Neroutsos, *L'Ancienne Alexandrie*, Paris, 1888 and of M. Bartocci in E. Breccia, *Alexandria Ad Aegyptum*, Bergamo, 1914.
- ²⁴ See notes 18 and 19.
- ²⁵ Pirī Reis, *Kitab I Bahariye*, The Historical Research Foundation Centre, Istanbul, 1988.
- ²⁶ Evaristo Breccia, *Catalogue Général des Antiquités Egyptiennes (Musée d'Alexandrie)*, *La Necropolis di Sciatbi*, Cairo (1912), Vol. 1 and Ernest Sieglin, Expedition, *Ausgrabungen in Alexandria*, Leipzig (1908).
- ²⁷ For quarrying activities at the end of the 19th century see: T. Neroutsos, *L'Ancienne Alexandrie*, Paris, 1888, pp. 2, 74 and 75.

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