

# Tyre's Ancient Harbor(s) Report of the 2001 Underwater Survey in Tyre's Northern Harbor

IBRAHIM NOUREDDINE AND MICHEL EL-HÉLOU

*The northern side of the cement jetty at Tyre's harbor holds a major portion of city's maritime history.*

*Although a small team conducted the survey in 2001, the results were essential to begin systematic investigations of the maritime history of the ancient city to be able to distinguish the characteristics of its harbor installations given that a submerged jetty was mentioned by Poidebard back in the 1930's but was never defined or studied until our survey. Also, several features of harbor structures were confirmed, in addition to high potential for shipwrecks in the vicinity of Tyre's harbor.*

## Introduction

In the context of a feasibility study conducted by Dar Al Handasah, Taleb & Co, concerning the rehabilitation of the northern harbor of Tyre, and with the approval of the Directorate General of Antiquities, our team of two Lebanese archaeologist divers was asked to conduct a preliminary survey to assess the archaeological potential of the northern side of the modern jetty, and of an extension zone extending from the eastern end of the jetty.

Pioneer archaeologist A. Poidebard (1934-1936) and Honor Frost (1960's) were the first to notice the high archaeological potential of the area north of the jetty. The area east of the jetty had not been

previously explored. Therefore, the aim of the present project was, to check on the submerged features already mentioned, and also to conduct a modern survey of both areas.

Helped by the sea currents that had cleared some features, and also by the development of scuba diving equipment and its major impact on fieldwork, we surveyed the area for new features.

The enormous amount of manmade infrastructure such as walls, well-cut blocks, columns, and a variety of pottery revealed by our preliminary survey establish the high archaeological potential of the area as already pointed out by Poidebard and Frost, and that under the sandy bottom there are many more archaeological treasures waiting to be studied.

## 1. Historic Context

### [M.H]

Tyre or Sour, was built on a small rocky island (or more) situated at a distance of 500 or 700 meters<sup>1</sup> of the continent, and therefore Tyre must have depended since its foundation on maritime activities. The question relating to the presence of one harbor or more and the date of their construction is one that future archaeological excavation will have to answer. To help us formulate these questions, we now proceed to a brief review of the historical references to Tyre's harbors.

A systematic archaeological survey conducted in ancient Tyre<sup>2</sup> revealed several archaeological levels, the oldest of which dates back to 2,900 BC. This validates Herodotus' testimony, according to which Tyre was founded 2,300 before his days<sup>3</sup>, or around 2,750 BC, a testimony that was put in question by Justin and Flavius Josephus<sup>4</sup>.

Beginning in the third millennium BC, and during the whole second millennium, important commercial relations existed between Egypt and Phoenicia, in which Tyre nearly always played an important role. The famous letters of Tell el-Amarna illustrate the position of Tyre in the 14<sup>th</sup> century BC. At that time Tyre was a flourishing city governed by king Abi-Milki, who wrote letters EA 146-155. At the end of the following century Tyre's harbor was so prominent that a papyrus from the time of Ramses II referred to the city as Tyre-the-harbor<sup>5</sup>.

According to Josephus, in the 10<sup>th</sup> century BC. Hiram, the legendary king of Tyre, bound the two previously separated islets of Tyre which he extended on its eastward side by reclaiming an area from the sea. He enlarged the two existing ports and joined them by a channel crossing the city<sup>6</sup>. Commercial exchanges prospered between Tyre and Jerusalem (cedar, wheat, virgin oil), and Hiram provided the fleet for Solomon's maritime expedition to Ophir and Tarshish<sup>7</sup>.

Throughout antiquity Tyre was one of the most important maritime powers of the Mediterranean. The resistance of the island to Nabuchadnezzar's thirteen-year siege demonstrates the maritime superiority of the city<sup>8</sup>.

Arrian and Strabo provide the first information concerning the harbors of Tyre. In the 2<sup>nd</sup> century AD., Arrian described the seven month siege of Tyre by Alexander in 333 BC. He tells how a jetty was constructed to join the island to the continent, evokes the large number of Tyrian vessels, as well as the siege of the two ports: the Sidonian to the north of the island, and the Egyptian to the south of Alexander's jetty. Arrian writes that the walls facing the mole were about 150 feet high and of corresponding breadth stoutly built of big blocks of stone fitted in white gypsum<sup>9</sup>. Strabo, who visited Tyre in the first century AD., wrote that Tyre had two harbors, one closed, the second open. Tyrian houses were higher than the Roman ones<sup>10</sup>, from which observation we can see that, till Strabo's time, Tyre was still flourishing thanks to navigation and trade.

Based on an inscription dating to the early Byzantine period found by Renan and lost since then, the many restorations of Tyre's harbor amenities during this period are recognizable by the gray concrete that was then used<sup>11</sup>. In 551 AD, Phoenicia was ravaged by a violent earthquake followed by fires and a tidal wave that flooded the inshore cities. Many people were buried under the debris<sup>12</sup>. Tyre did not escape this disaster.

In 636 AD., Tyre fell to the Islamic *fath*. The Omayyad Caliphs, starting with Moawyah, gave Tyre a preponderant role and made it their main military maritime base<sup>13</sup>. The Arab geographer Ya'qubi described it in 891 AD, and wrote that Tyre : « *est une ville de la province de Jordanie ; elle est le chef-lieu des districts côtiers et possède un arsenal. ... Le site fortifié est magnifique.* » One of the important questions relating to Tyre's maritime activities at that time is the number of harbors that were in use. Mukaddasi in 985 mentioned only one harbor, situated inside a fortification of three walls and a chain of iron like dam<sup>14</sup>.

The strategic location of Tyre, and its fortifications might explain how Tyre resisted the Crusaders for 25 years after the fall of Jerusalem, falling only in 1124 AD., after a siege of five months and half. And why, once in their hands, it became, with its battlements, towers and port(s), one of the most important fortresses of the kingdom of Jerusalem, one that Saladin was never able to conquer<sup>15</sup>. The travellers who visited Tyre

at the time of the Crusaders, such as the historian Ibn Djobeir and the Spanish rabbi Benjamin of Tudela, mention only one harbor, situated inside the fortification, flanked of two towers and a chain of iron like dam. Benjamin of Tudela who visited Tyre around 1170, wrote: "*Sur...is a very fine city, with a harbor in its midts. At night time those that levy dues throw iron chains from tower to tower, so that no man can go forth by boat or in any other way to rob the ships by night. There is no harbor like this in the whole world. Tyre is a beautiful city.*"<sup>16</sup>

In the twelfth and early thirteenth centuries, in the years 1127, 1157, 1170, 1200, 1202 and 1203 AD., Tyre was hit by a series of disastrous earthquakes. In 1170 the earth shook three or four times a day for four consecutive months, destroying towers and fortifications. The big 1202 earthquake destroyed practically the whole city, flooding in addition some of the city's districts<sup>17</sup>.

In 1291 AD., Tyre was thoroughly destroyed by the Mamelouk. It remained just a small fishing town until the twentieth century. Count Constantin François de Volney, who visited Tyre in the 18<sup>th</sup> century, tells: "*The rubble stones that cluttered the port were so numerous that the children could go by ford, of one tower in ruin to another.*"<sup>18</sup>

In concluding this brief historical survey, it might be worth noting the following early archaeological surveys of Tyre's harbor.

Around 1864 the Renan mission noticed that: "*le port du nord ou port Sidonien. C'est le port actuel, en le supposant plus creux qu'il n'est maintenant. Les tours et les murs qu'on y voit aujourd'hui datent en grande partie du moyen age*"<sup>19</sup> also confirmed later by the Poidebard mission<sup>20</sup>.

Finally, in 1934-1935 the Poidebard mission using aerial photographs and bathyscope (*lunette de calfat*) observations, confirmed the presence of an old submerged jetty to the north of the modern one, which had already been signaled by Bertou and Guérin<sup>21</sup>.

The magnificence of Tyre, the time when "*all the ships of the sea with their mariners were in thee to exchange thy merchandise,*" (Ezekiel 27.9), is gone. Now it is up to the archaeologists, with their trowels, bathyscope, scuba-diving gear and all their modern technologies, to reveal the vestiges of its past splendor.

## 2. The Survey Method

From March 4 to March 31, 2001, our team of two Lebanese archaeologist divers conducted, in coordination with the DGA and with the funds of Dar Al Handassah, a survey in the northern port of Tyre. Thirteen daily surveys were conducted.

The surveyed area covered about 340m x 60m next to the northern side of the modern jetty, in addition to a narrow extension area, 25m x 100m, extending from the tip of the modern jetty towards the east.

The whole area was divided according to a grid system, into 8 "virtual" squares varying approximately between 40m x 60m each, in addition to the extension area of 25m x 100m.

The squares were defined on a coordinate grid, whose x, east-west axis was defined by the modern jetty, and its y axis simply north-south. Fixed points placed on the east-west jetty that could be seen from the water (**Fig. 1**), were used to define the coordinates on the x axis. The limit of the survey area on the y, or north-south axis, was established by sighting the ancient "Al-Mubarkeh" tower. Consequently, each square was defined by the intersection of x and y lines, the x being the line parallel to the jetty starting from the west, and the y being the perpendicular line stretching to the north from a point on the jetty into the water.

Each square was surveyed individually, and all measurements within the squares were done according to the same coordinate system.

Since the aim of the survey of the northern side of the jetty was to locate and document archaeological features, and since the depth of water varies between 2 and 9 meters, two basic surveying methods were combined as needed, snorkeling and scuba diving.

We started the surveys by snorkeling in parallel, using a rope to fix the distance and facilitate communication. We scuba-dived daily, for periods of 1-to-2 hours, for closer examinations and measurements. The whole area was surveyed using the "parallel search system" by swimming on a fixed compass headline for a given distance. The distance is maintained by counting kick cycles or time. At the end

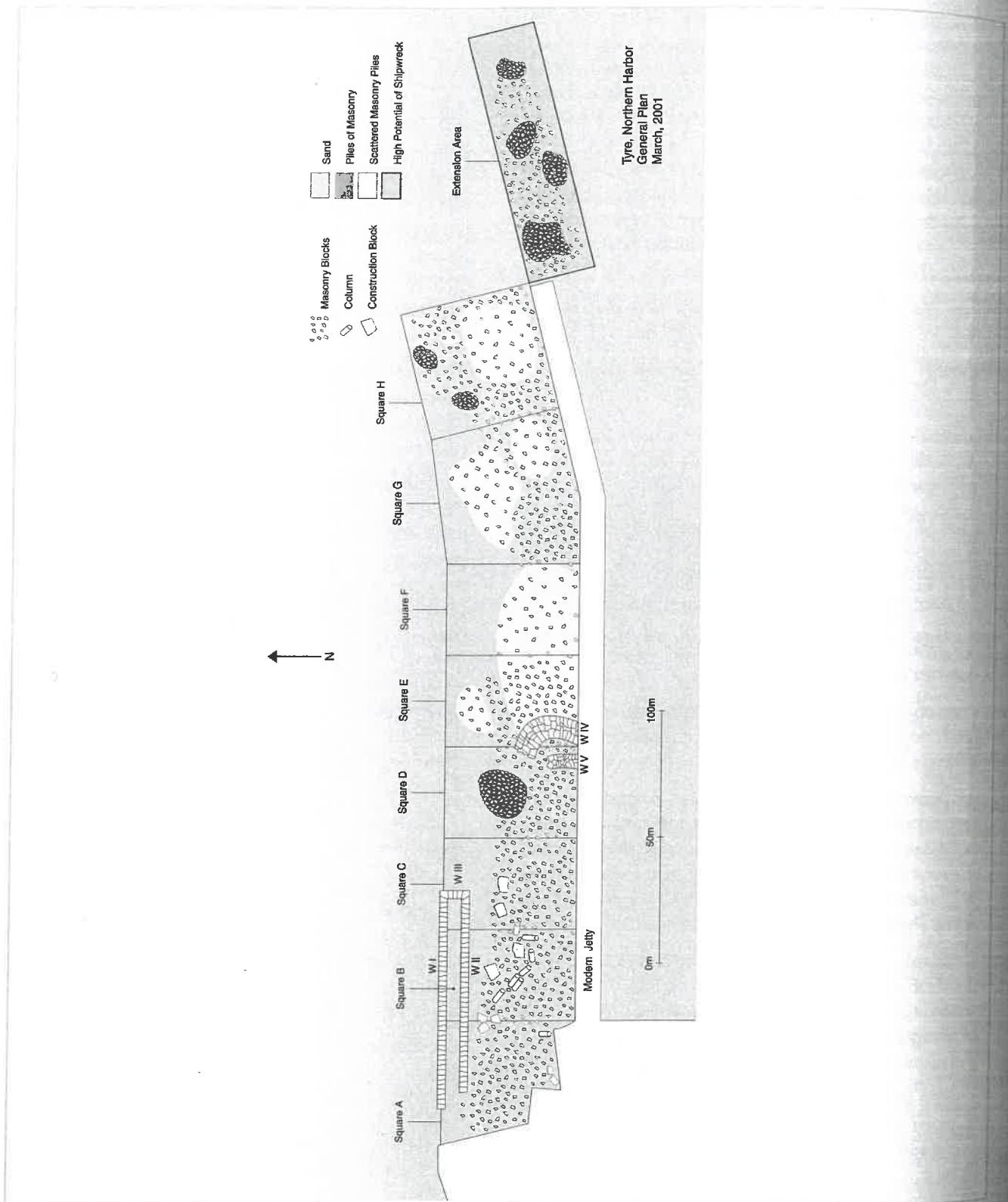


Fig. 1 - General map of the surveyed area.



of the swim line we turned 90° to the line of search, swam a short distance (depending on the visibility) and then turned 90° to return parallel to the previous line. This procedure was repeated many times, allowing a relatively large area to be covered quickly.

### 3. Presentation of the Submerged Features

**Wall I:** A wall oriented E/W, 95m in length, coming from square A in the extreme west through square B and ending in square C. The wall is formed

by one row of large blocks which can reach 2.25m long, 0.45m large and 0.55m high. The blocks are laid in "header shape", or "stones laid across". The wall has at least 3 visible courses (**Fig. 2**).

**Wall II:** A parallel wall to wall I, 85m in length, with the same characteristics. The wall is located 8m to the south of wall I (**Fig. 3**).

**Wall III:** This wall is oriented N/S, 13m in length, connecting both wall I and wall II at their extreme eastern end. This wall has the same characteristics as walls I and II. During our original survey we located a round-shaped structure, 1.90m in diameter, at the extreme southern end of wall III, which was laid on

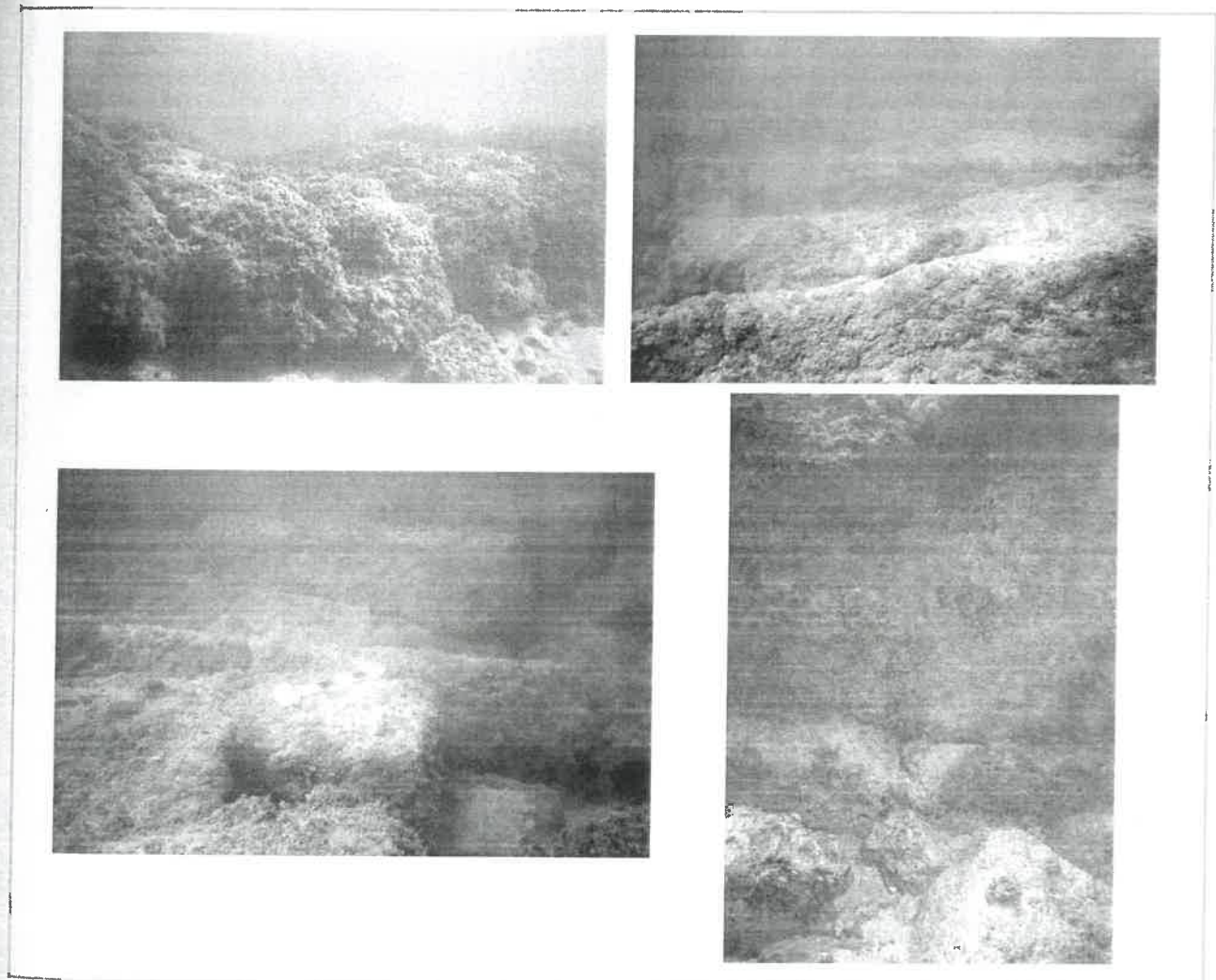


Fig. 2 - Wall 1, oriented E/W with 3 visible courses.

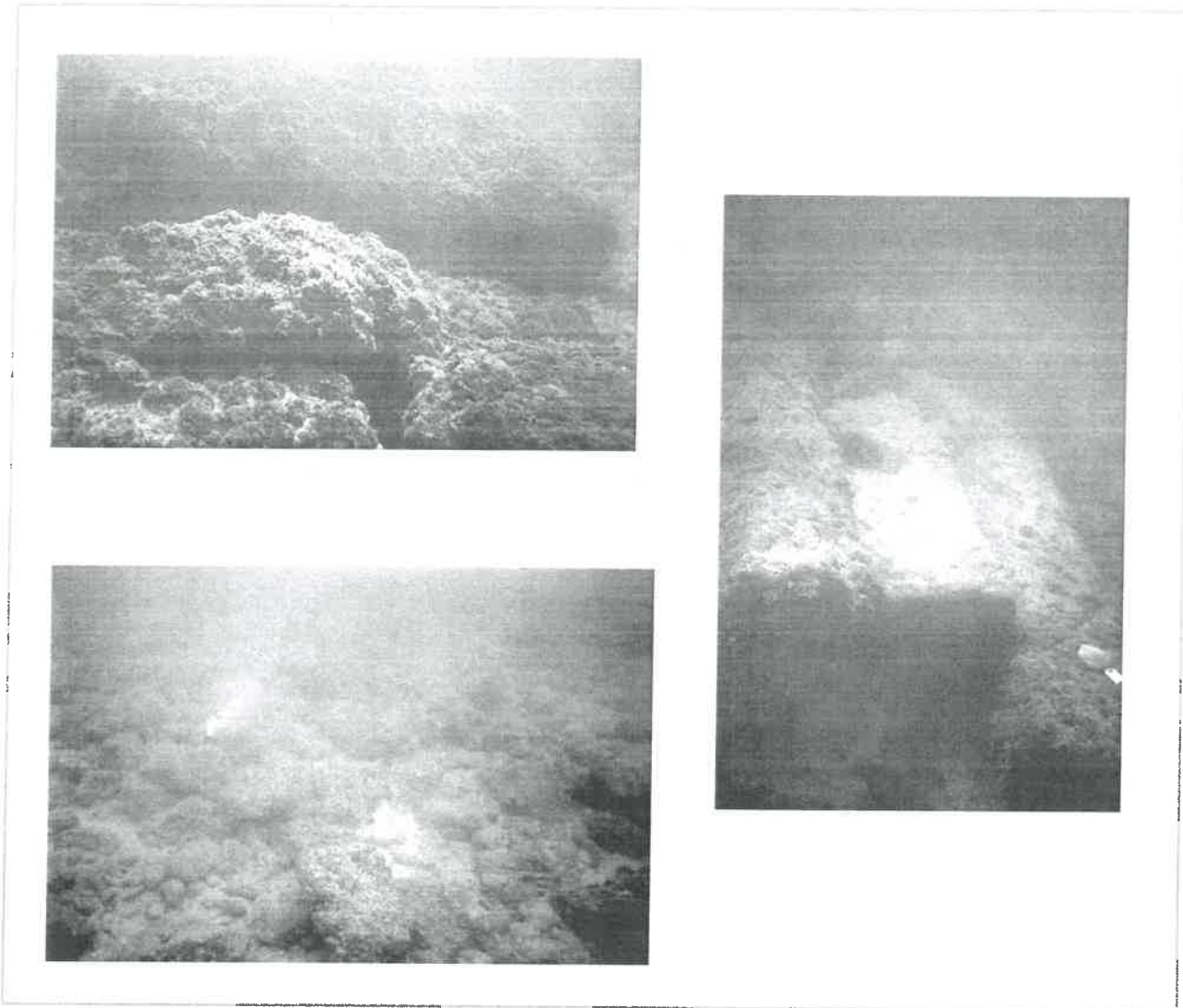


Fig. 3 - Wall 2. Oriented E/W parallel to wall 1.

gray hydraulic mortar (**Fig. 4**). This round structure has subsequently been destroyed by scavengers, who left on the site the iron lever they had used.

It seems clear that walls I, II and III, are connected and belong to the same construction. They are probably the remains of the ancient harbor's wave-breaker jetty, and most probably, given the shape of the blocks and construction techniques, date to the "Classical period".

**Wall IV:** A wall oriented N/S, 25m long and 9m large, located in square E and overlapping on D (**Fig. 1**), formed by several adjacent rows of blocks of varying sizes. The dimensions of the largest block are about 1.90m long, 0.45m large and 0.55 high. The wall is curved towards the west (**Fig. 5**).

**Wall V:** A wall oriented N/S, 13m in length, located in square D is formed by three rows of blocks of varying sizes. The dimensions of the largest block are about 1.60m long, 0.75m large and 0.55m high.

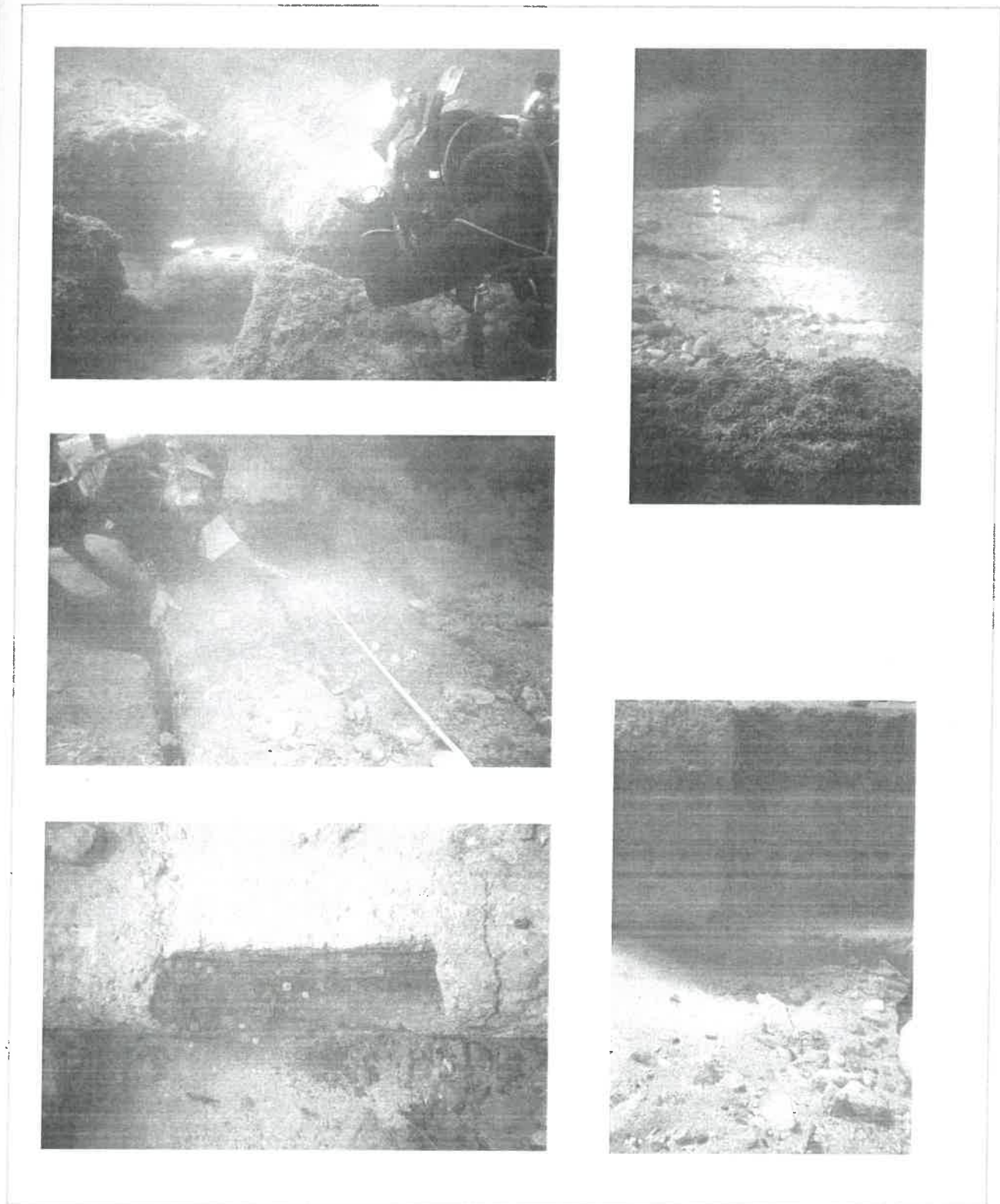
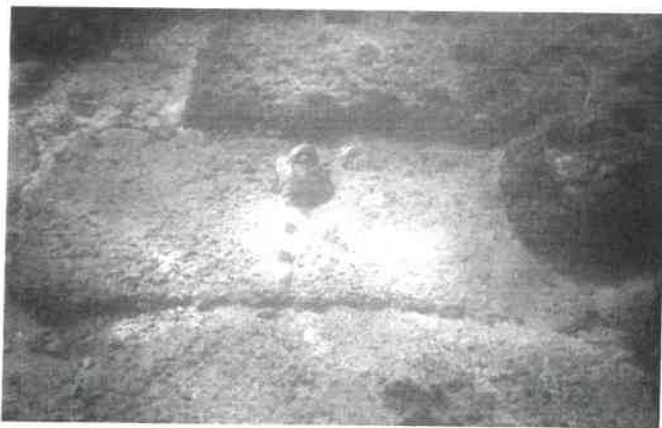


Fig. 4 - Wall 3. Oriented N/S and connecting both wall 1 and wall 2.





*Fig. 5 - Wall 4. Oriented N/S and curved towards the west.*



This wall could belong to the same construction as Wall IV.

Both Walls IV and V extend under the modern jetty, and their blocks are all laid in header shape "stones laid across".

**Columns:** These can be grouped in two groups.

The first group is found spread in squares B and C between wall II and the modern jetty, numbering six broken pink granite columns of the same diameter, 0.95m, and are preserved in lengths varying between 4 and 6m, and one gray granite column, of a different diameter, 0.55m, and 5.40m in length, found in square B (Fig. 6).

The second group consist of columns spread all along the modern jetty, various diameters, mainly of pink but also of gray granite, preserved to various

length, and sometime reused in, or covered by the modern jetty.

Over the whole surveyed area we found randomly scattered piles of well-cut blocks (mostly limestone), small pieces of granite columns and ancient pottery sherds. The concentration of these artefacts is higher in the area from square A to square F, for the first 35m from the northern side of the modern jetty.

The whole surveyed area is filled with sediments, becoming thicker in squares G and H, but even there cut stones and pottery shreds are still seen half hidden in sand (Fig. 7). Examining the sandy area by using a metal probe attested the presence of buried features.

In addition, three major piles of cut stone debris were observed in different areas, one in square D, and two in square H.

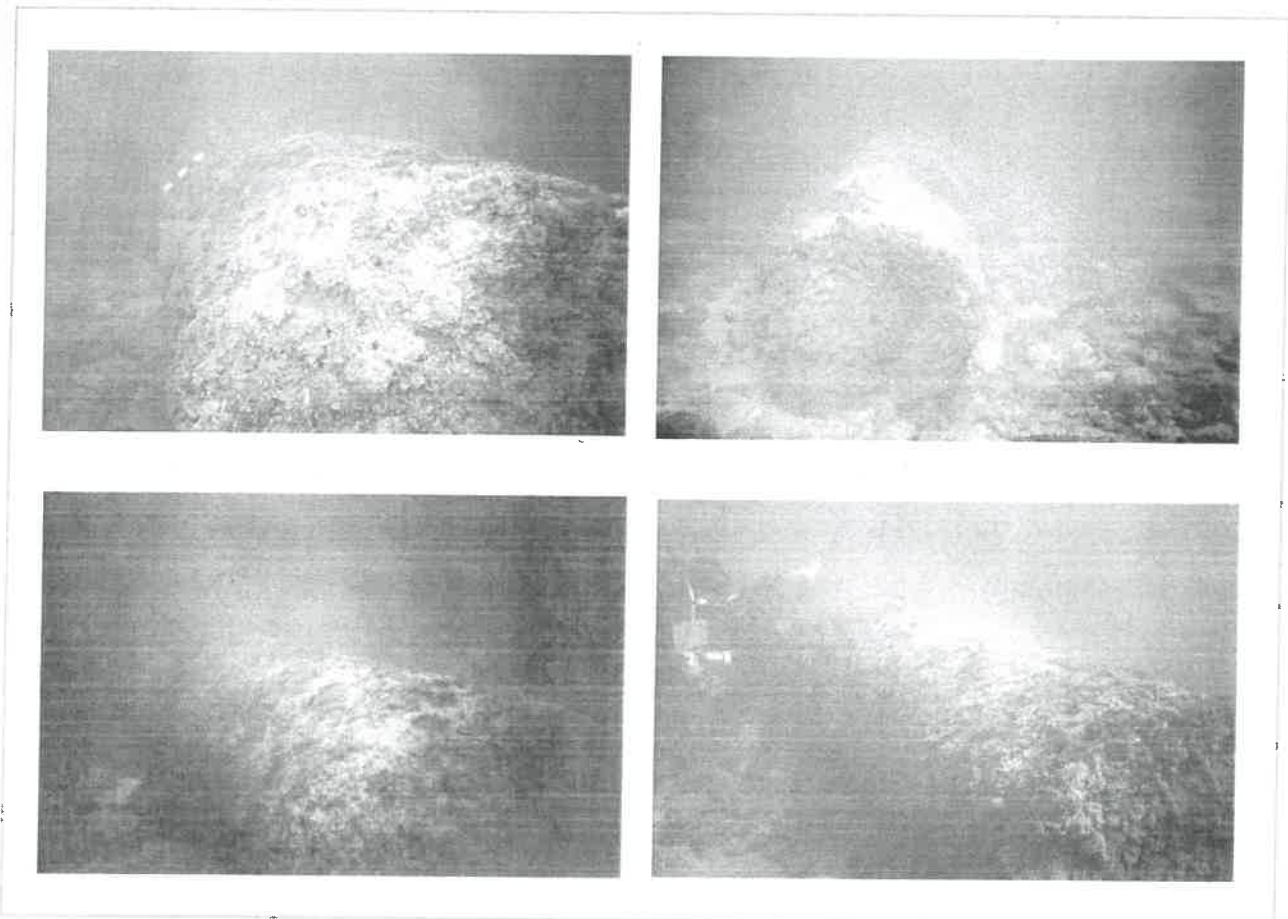
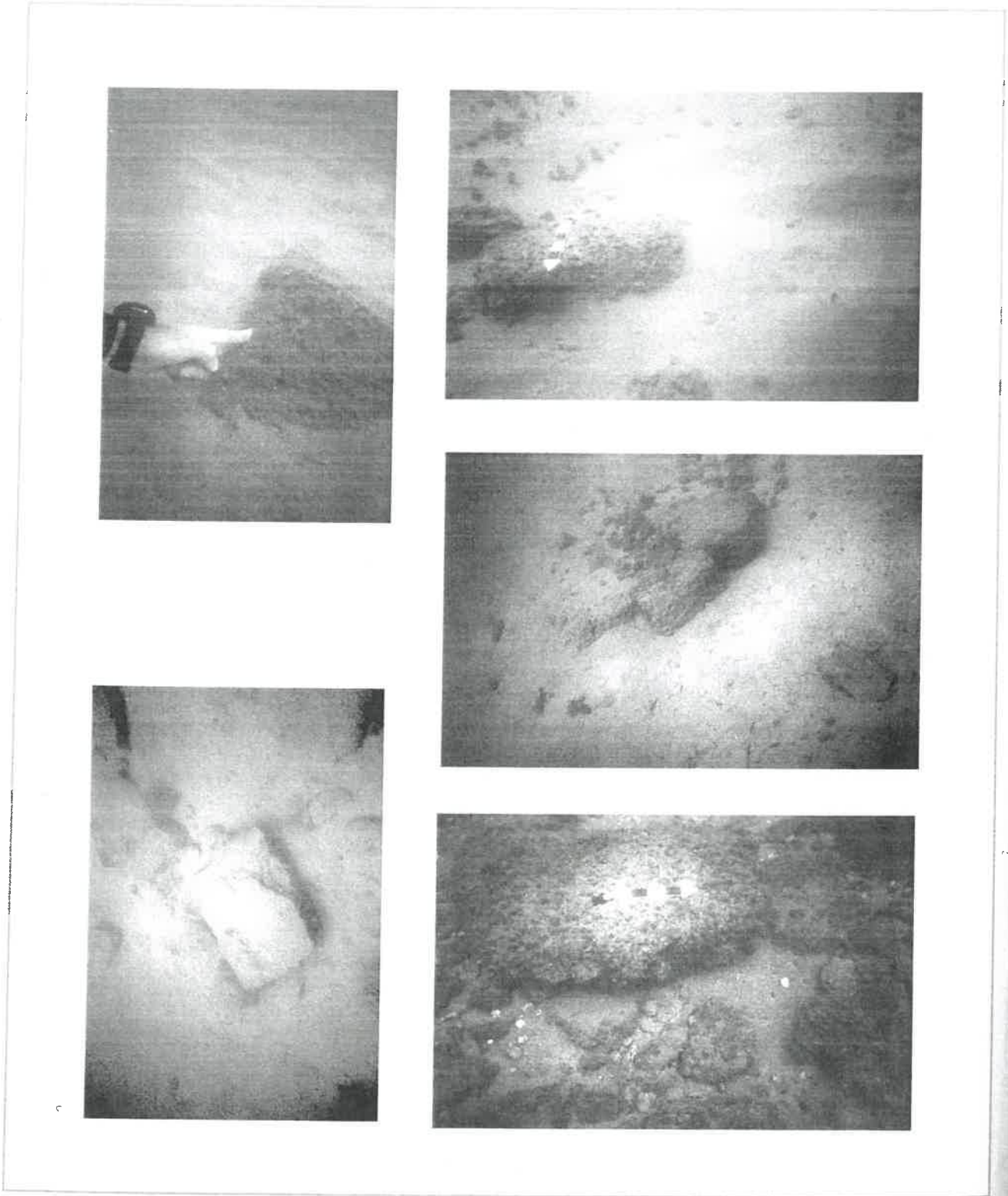


Fig. 6 - Large pink granite columns.



*Fig. 7 - Pottery and well-cut stones found half hidden in the sand.*

**The Extension Area** : The extension area (25m wide x 100m long) extends from the jetty towards the east (**Fig. 1**), therefore at the entrance of the present harbor, is covered by sediments, brought there through the combined action of natural currents and of the dredging of the modern harbor.

At the time of our survey, well-cut stones mixed with pottery sherds and some nearly-complete jars (**Fig. 8**) "often an indication of the presence of shipwrecks"<sup>22</sup> were visible in only four distinct groups. Here again, probing the sand with a meter-long metal probe, we established the presence of buried archaeological features in the whole extension area.

#### 4. An Outlying Tower of the Medieval Harbor [M.H]

The structures and block size of the "Classic jetty" or walls I, II and III are different from those of walls IV and V :

walls I, II and III form a regular structure, whose layout is made up of one row of large blocks which can reach 2.25m. in length by 0.45m. in width.

What remains of walls IV and V (**Fig. 5**) protudes from under the modern jetty (**Fig. 1**). They are formed of blocks of various sizes, made up of several adjacent rows (wall IV is 9m. in width). These blocks have not been cut to the same pattern, and are reused blocks coming from older constructions.

According to the Poidebard survey<sup>23</sup> the modern jetty, built in the 30's, overlies the breakwater or jetty of the Medieval harbor, to which Poidebard referred to as the «*mur des croisés*». This interpretation is confirmed by a variety of sources, such as Renan's<sup>24</sup>, old maps (**Fig. 9**)<sup>25</sup>, engravings (**Figs 10**)<sup>26</sup> and pictures (**Fig. 11**)<sup>27</sup>.

Since the structure and construction of walls IV and V indicate that they are of Medieval origin, we can propose that they are a remnant of the attached amenities of the «*mur des croisés*».

Furthermore, the curved shape of the remains of wall IV, and the size of part of the blocks used in its

construction, would indicate that it could be the remaining base of an outlying tower of the Medieval harbor (**Fig. 12**)<sup>28</sup>.

Future surveys and excavations are needed to establish the above point, as well as to determine the existence and location of older harbor installations in the northern area of Tyre?

#### 5. General Topography and Prevailing Winds [I.N]

The submerged structures mentioned in this survey as walls I, II and III indicate the existence of a substantial early jetty, which would have been capable of protecting the large ships of its time. In order to determine the period and exact function of these structures several factors should be studied, such as: wave direction, seabed formations and changes in sea level since antiquity.

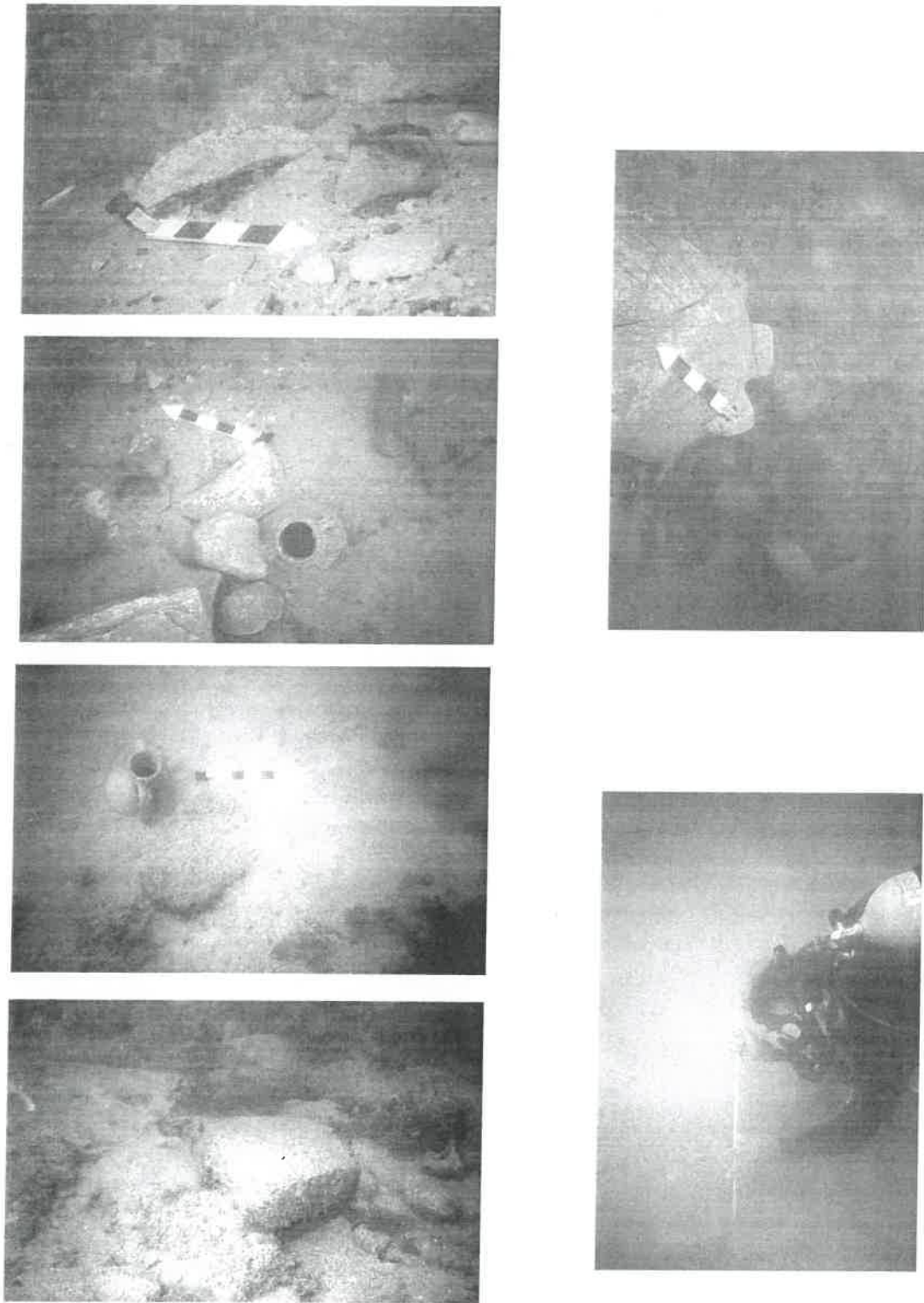
The survey of March 2001 in the northern side of Tyre documented several signs of an early jetty. Two 90m long parallel walls oriented East-West were found, and most probably functioned as a jetty protecting the inner area from waves created by the northern winds.

This confirms Poidebard's notes in the 1930's stating that what he had seen from an aeroplane was a sunken jetty<sup>29</sup>. Also, a recent sounding trench conducted next to the southern side of the landward wall II (**Fig. 1**), by the DGA and ARESMAR, Université de Perpignan, in order to cast light upon the function of these sunken walls, has so far revealed 5 courses of blocks, making each wall preserved to more than 2.5m height.

Therefore the hypothesis of these doubled walls being a jetty becomes more credible, in addition to the fact that Tyre's northern side is naturally protected from southern and southwestern wave actions.

Ideally, the entrance of a port should be located on the lee side of the harbor, and if it must be located on the windward end of the harbor, then sufficient of the breakwaters should be provided so that the harbor interior is protected from wave action<sup>30</sup>.





*Fig. 8 - Probing confirmed the presence of several archaeological features.*



Fig. 9 - Map of Tyre by Bertou in Poidebard 1939: Pl. II.

In Tyre, throughout the year more than 75 to 80 percent of the time winds blow from the south and the southwest, often creating large waves, whereas the northern winds blow 15 to 25 percent of the year, so it is advisable to choose a creek on the northern or northeastern side of any promontory or cape, if one requires a shelter for sea vessels or for building a harbor.

Specifically in Tyre, the eastern winds which blow smoothly for few days during the beginning of spring, barely disturb the waters in the northern harbor, therefore creating no threat at all to the crafts harbored there.

Nowadays, there is only one active port in Tyre, it is the commercial and fishermen's harbor, which is located on the north side of Tyre. The main jetty

protecting this harbor is oriented east west, 340m long, and it is made of huge blocks of cement. The entrance of this harbor is located on the lee side.

The submerged massive walls I, II and III, built at the extreme extension of the peninsula, and still preserved to a minimum of 5 courses, fit all the above factors required of a breakwater.

Puzzling questions remain about the shape of this jetty (U shape), the reason why there is an 8m empty space between the parallel walls, and what was there when it was functional.

Dating structures underwater is not as easy as it is on land. However, the building technique displayed by these walls makes it possible to date the jetty back to the Classical period, known to be a period of bulky constructions and extensive expansion.



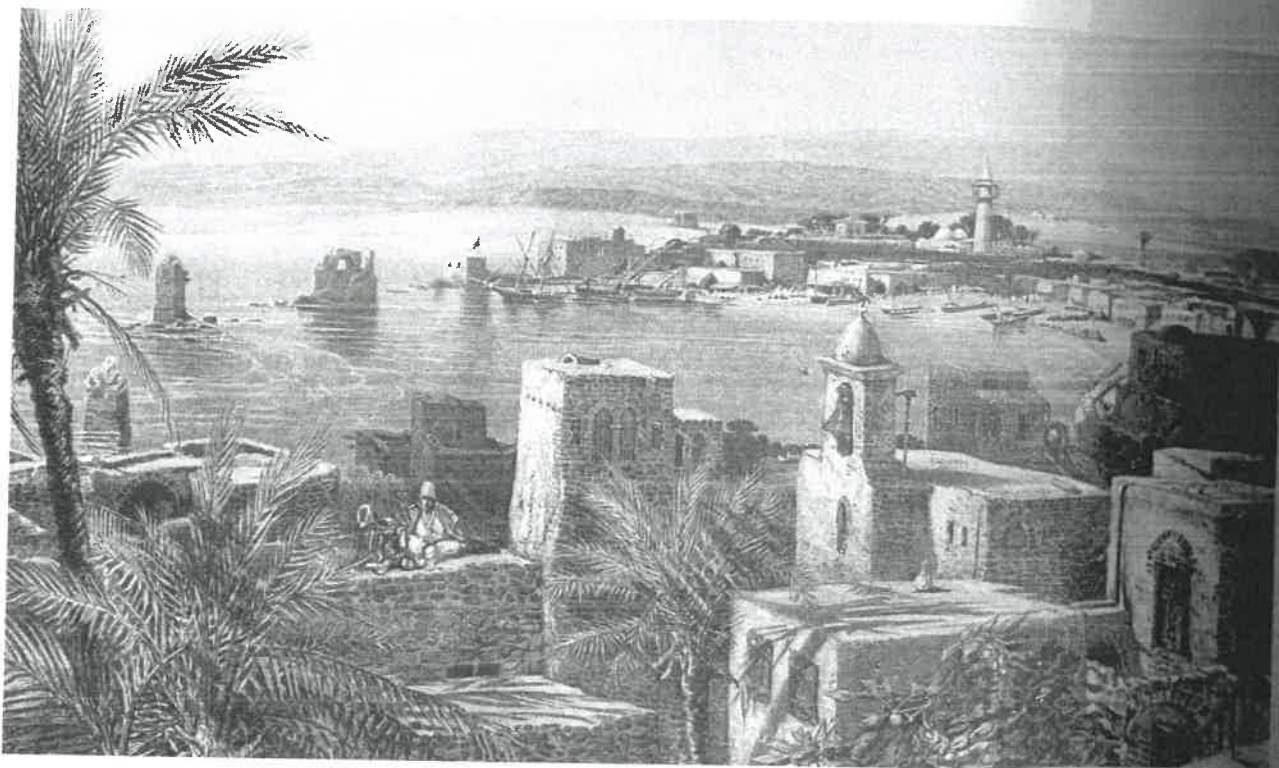


Fig. 10 - View of Tyre and the "Sidonian Port". *Picturesque Palestine III*, Charles W. Wilson (ed.), 1881.



Fig. 11 - Aerial view of Tyre and "Sidonian Port" 1938 (in Jidéjian, N., 1996: 18).





Fig. 12 - An outlying town of the medieval harbor. Léon de Laborde, *Voyage de la Syrie*, 1831.

Another factor that helps us in dating this jetty is the AL-Moubarkeh Medieval tower, which is still standing, and whose foundations date back to the Hellenistic period<sup>31</sup>. Walls I and II are preserved starting just 10m east of the location of Al-Moubarkeh, a fact that leads us to propose that it was once part of the same Hellenistic period construction.

In conclusion, having identified the probable Hellenistic jetty, one wonders about the whereabouts of the earlier jetties. Is it possible that the Hellenistic jetty was built over the remains of the Iron Age jetty or even the Bronze Age jetty, if any? Or is it that, throughout the Bronze and Iron Ages the harbor had been expanded, to reach its peak size in the Classical period? If so, then the pre-Classical jetties should be found more landward.

#### Note:

In the summer of 2002 a Lebanese French team surveyed the southern side of Tyre's peninsula, the area considered to contain the so-called "Egyptian Harbor." The survey revealed enormous amount of masonry blocks, columns, and walls from different eras. But the existence of a harbor could not be confirmed, especially when a quarry was found some two meters under water, not far from (Bab El-Mina) or the entrance of the port, a fact that leads to conclude that the area, at some point, was subject to high seismic activity. Part of the city appears to have collapsed submerging these walls, below sea level. Moreover, according to Poidebard's map, the RADOUB basin is closed by two intersecting walls without an evident opening, thus creating a dilemma as far as a port is concerned. On the other hand, there is some historical evidence for the existence of the Egyptian harbor mentioned by Arrien "the next day the Cypriote ships gathered in front of the

*Sidonian harbor while the other ships gathered to the South of Alexander's jetty facing the Egyptian harbor*<sup>32</sup>. Hence, more investigations, especially towards the shoreline next to the basin of the Radoub, would answer some of these questions and would cast light upon the subject.

## Conclusion

Based on the fieldwork, observations and analysis, in addition to a review of the historical background of the area, this survey resulted in the following several points:

First, the fact that walls I, II and III represent one massive construction, in addition to the way they are situated, and their building technique, where the large blocks which can reach 2.25m in length are cut to the same pattern and lie on hydraulic mortar, we can propose that this construction is most probably a jetty dating to the Classical period.

Second, the whole surveyed area holds enormous amount of man-made features that are mixed with a thick layer of sediments thus, objects such as pottery sherds, nearly complete jars, columns, and well cut stones are found abundantly.

Third, the existence of groups of stones (see survey map) could indicate ancient harbor amenities or shipwrecks? Therefore, these piles need to be studied thoroughly in the future.

Fourth, the eastern side of the surveyed area, located close to the entrance of the modern harbor (**Fig. 1**), holds enormous quantities of sediments mixed with pottery sherds along with roughly complete jars that are still visible. This area therefore has a high potential for holding archaeological traces of shipwrecks and needs to be studied thoroughly in the future (**Fig. 1**).

Fifth, both wall V and the curved wall IV, obviously continue to the south under the modern jetty, so further investigation inside the present harbor is a necessity - especially when fishermen state that they have already seen large constructions submerged inside of the harbor.

Finally, the northern side of Tyre, next to the modern harbor, is a very rich archaeological site. Further investigation of the whole surveyed area is a must especially around the eastern extension area given that modern machinery is constantly removing sedimentation to clear the entrance of the actual harbor, thus jeopardizing archaeological features.

## Acknowledgments

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## Notes

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- 2- Bikai P, *The Pottery of Tyre*, p. 1.
- 3- Hérodote, *Histoire* 2. 24.
- 4- Jidejian N, *Tyr à Travers les Ages*, p.41.
- 5- Gras M. Rouillard P. Teixidor J, *L'univers Phénicien*, pp. 45. 46.
- 6- Jidejian N, *Tyr à Travers les Ages*, p. 59.
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- 13- كمال الصليبي، منطلق تاريخ لبنان، ٦٣٤ - ١٥١٦، ص ٥١
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- 15- Maalouf A, *Les Croisades Vues par les Arabes*, pp. 113. 114. 221 to 224. 227.
- 16- Jidejian N, *Tyr à Travers les Ages*, p. 258.
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Christophe Morhange  
et  
Muntaha Saghie-Beydoun



Avec les contributions de

A. Ala Eddine, M. El-Amouri, R. Awarki, M. Boudagher-Fadel, M. Bourcier, N. Carayon, P. Carbonel, C. Doumet-Serhal, K. Espic, H. Frost, J. -Ph. Goiran, M. El-Hélou, M. Marquet, N. Marriner, M. Masri, G. Noujaim-Clark, I. Nouredine, I. Rycx, M. Sartre, M. Seco Alvarez, A. Seif, L. Stefaniuk

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