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Phoenician Jetty at Tyre

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Historically, we know of the ancient sea trade on the Lebanese shoreline, but the physical evidence has always been an attractive topic to many scholars. The pioneer surveys done by Ernest Renan and Antoine Poidebard have not revealed enough information that would lead to an excavation of a harbor remains. In the 1960's Honor Frost cast light on the surveys done by Poidebard and approached the matter by using her diving skills and under water Photography.

This article will highlight the latest work done on the harbor of Tyre; and will point out the uniqueness of the site in comparison to other similar harbors on the Mediterranean. The harbor of Tyre was known in History as the chief harbor of the Phoenicians and has witnessed many events such as sending and receiving great cargos mainly from and to Egypt. Also, the harbor was a difficult target for Alexander the Macedonian during his invasion of the East.

Introduction

It is well known that the Phoenicians were the pioneers in maritime activities. The remains of their settlements and colonies, and specially harbors, have been uncovered all over the Mediterranean, such as Carthage or Kition, and, on the «Phoenician coast», from Akko to Arwad. But, in the Phoenician Heartland, or today's Lebanon, in their main cities of Byblos, Beirut, Sidon and Tyre, no Phoenician harbor structure has been yet clearly identified.

Tyre, the most famous Phoenician cities, is located some 85 kilometers south of capital Beirut.

It was an island some 500 meters from the coast until it was joined to the land after Alexander's invasion in the second half of the 4th century BC, and now Tyre appears as a peninsula and not as an island anymore.

The Spring 2001 survey conducted for the Lebanese Directorate General of Antiquities (DGA) had two aims: first, to ascertain the archaeological potential of the area in order to protect it from modern harbor rehabilitation works and treasure hunters, and secondly, to assess the archaeological potential of the remains of the northern side at Tyre, to contrast it with the so-called Egyptian Harbor at the Southern side of Tyre. The results

of this survey, pointing at the high archaeological potential in the area north of the actual Northern harbor in Tyre, (Noureddine and H  lou 2005).

This survey also brought to light a submerged structure consisting in two parallel walls stretching out from the Northeastern tip of Tyre's peninsula, first detected in the aerial survey of Poidebard in the 30's and not studied since (Noureddine and H  lou 2005).

Intrigued by this structure that must have been part of a major ancient harbor installation, but for which we had no data securing its function or dating, I took the initiative to investigate it in more details and uncover its building techniques, since these are major factors in dating structures. Having obtained the permission of the DGA, I conducted, on my own expenses, an underwater observation and charting campaign, stretched from August to December 2005. The underwater drawing and

charting was time consuming, since the stones are numerous and the underwater visibility was not always favorable. Besides, the underwater surveys were sometimes very strong.

Many dives were conducted in order to complete the drawings. I started by fixing several metal rods as points of reference, and then used these to map the measurements of the blocks and their alignment. The results were added on Tyre's map using the coordinates of the points of reference, and then reproduced on the computer, as shown in Fig. 1 and Fig. 2.

Tyre's Harbor

It has long been assumed that, as with other Phoenician cities, Tyre or Sour had two harbors, Northern and a Southern one. This had already been stated by 19th century travelers. The location

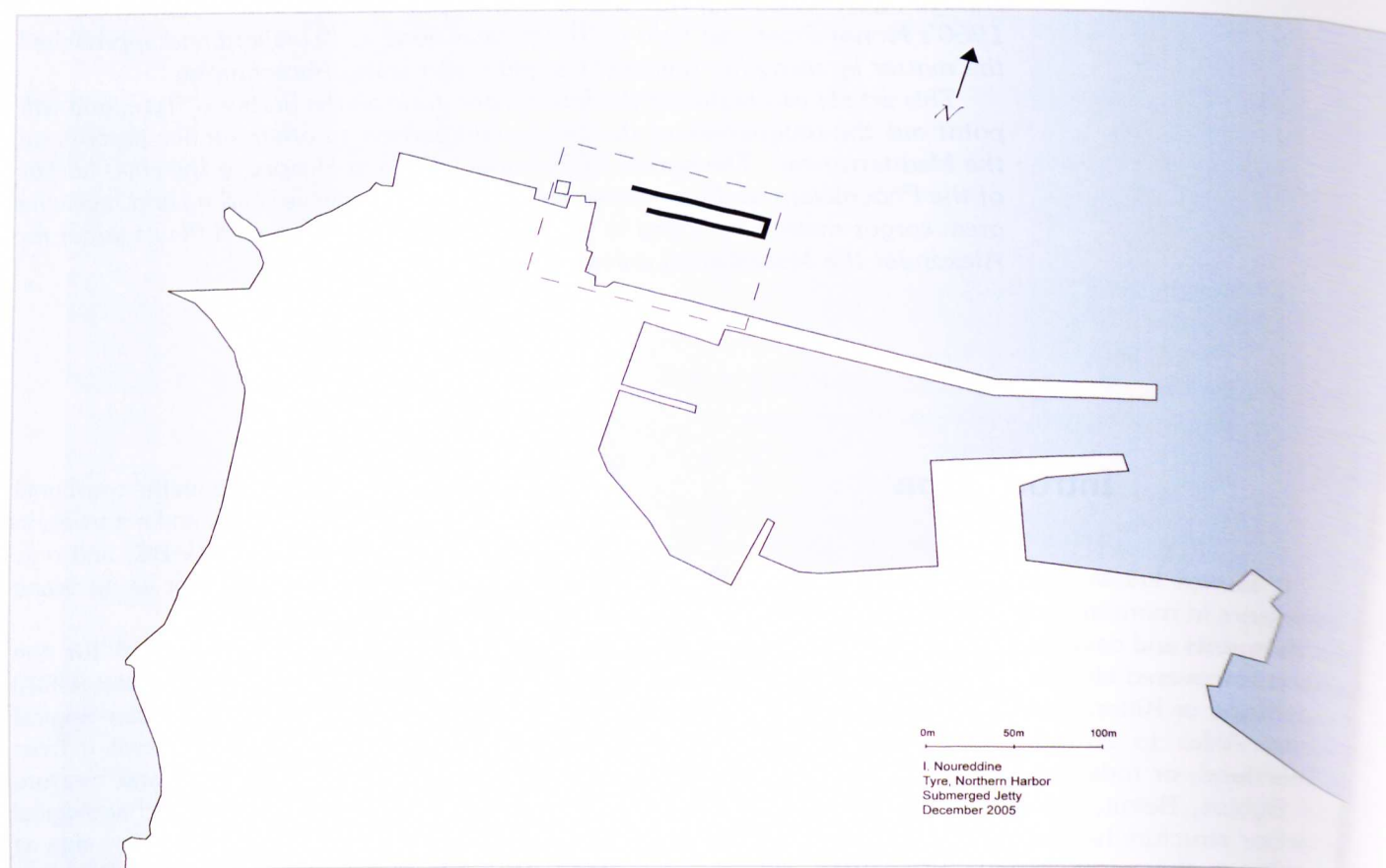


Fig. 1 - The location of the submerged Phoenician jetty in accordance with Tyre's peninsula.

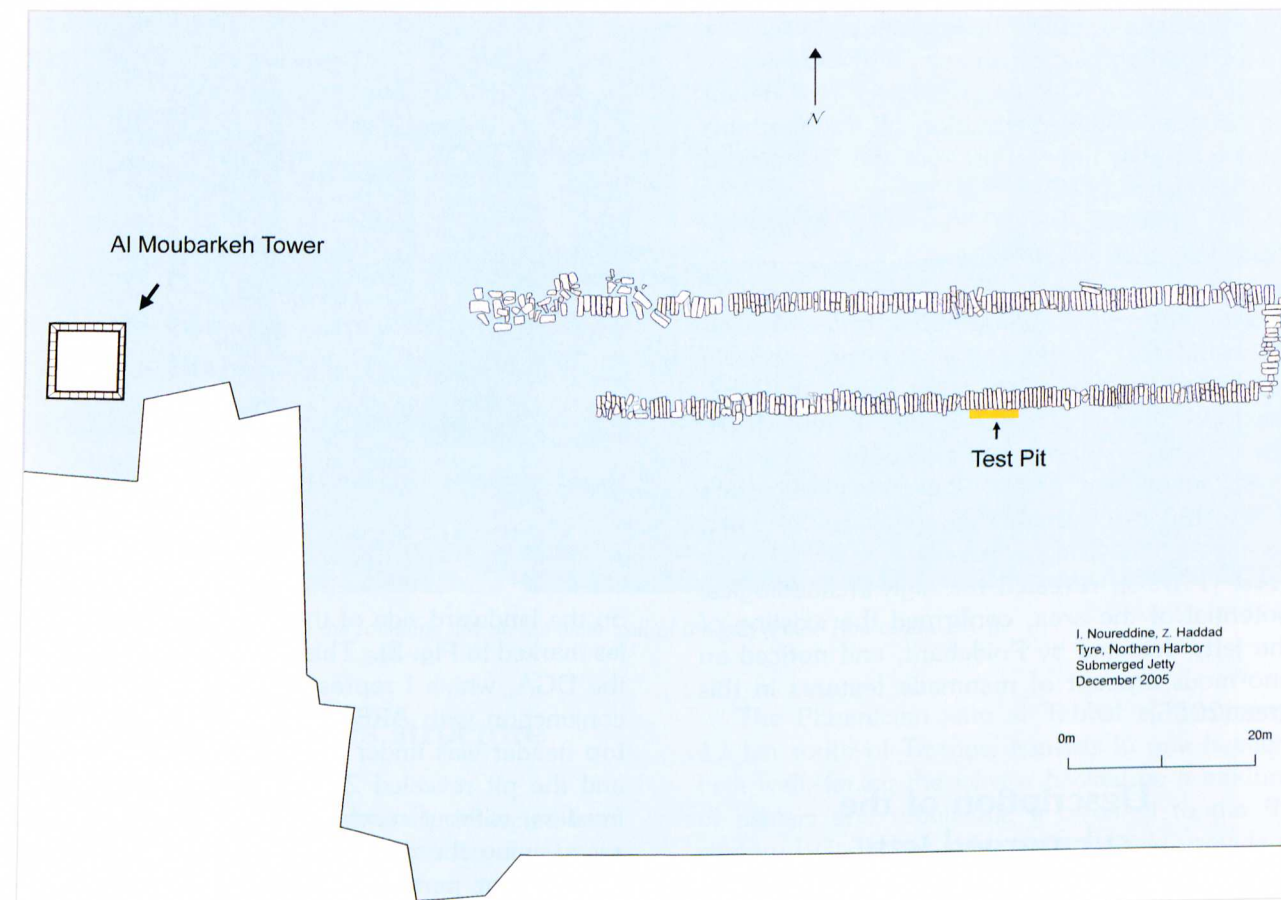


Fig. 2 - The drawing of the Phoenician jetty (see the test pit mark).

and even existence of the Southern harbor is still being discussed, but the existence of the Northern harbor at Tyre is not controversial, since it was documented by several of those travelers, such as Jules de Bertou in 1843, John Kenrick in 1855, and Ernest Renan in 1874.

The pioneer aerial photographer and archaeologist A. Poidebard, SJ, focused mainly on finding the so-called Egyptian or Southern harbor, with mixed results (Poidebard, 1939; Frost 1972). As for the Northern harbor, his contribution was limited to detect a submerged jetty located on the northern side of Tyre, as mentioned above. This jetty appears in one of his aerial photographs (reproduced here as Fig. 3). On this base he confirmed the existence of the Tyre's Northern harbor and pointed to the need for further studies of this area.

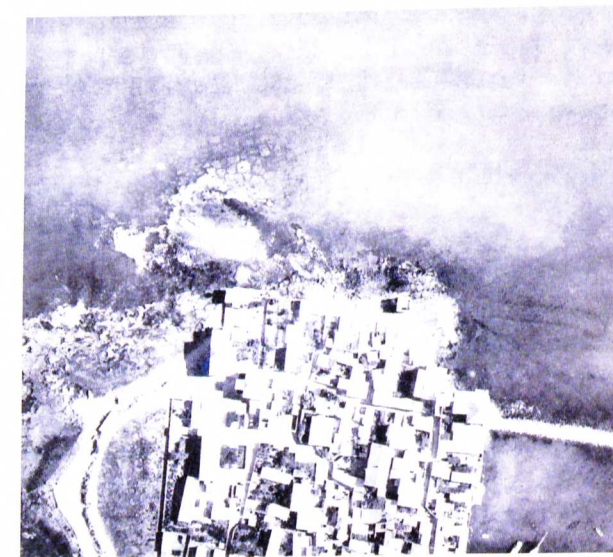


Fig. 3 - Aerial photograph by A. Poidebard 1939.

In the sixties, pioneer underwater archaeologist Honor Frost conducted surveys to investigate the existence of the Southern harbor in Tyre, noted the archaeological importance of the northern area, but did not report on the submerged northern jetty (1972).

Nick Marriner and Christophe Morhange suggested that «high-resolution topographical surveying, urban morphology, coastal stratigraphy, old photographs, gravures and archaeological diving allow us to precisely determine the maximum extension of the MBA northern harbor» (2005) (see Fig. 4, reproduced from Fig. 17 in Marriner et al. 2005).

As mentioned above, the survey of spring 2001 by Nouredine and Hélou, the first archaeological diving project in Tyre since Honor Frost (1960's), revealed the high archaeological potential of the area, confirmed the existing of the jetty detected by Poidebard, and noticed an enormous amount of manmade features in this area (2005).

Description of the submerged jetty

The area around the jetty varies in depth between 1m and 4m, and the seafloor is covered with scattered masonry blocks over a thick layer of sedimentations that can reach to more than 4 meters of thickness.

The jetty consists in two parallel walls built from headers, preserved for a length of 85 and 70 meters respectively, connected at their Eastern extremity by a 13m wall that closes the structure (Fig. 3).

The walls are submerged in depths varying from 1.5m to 3.5m and the area between them is partially filled with rubble and scattered blocks.

All 3 walls are built in the same manner, from carefully prepared headers varying in size between 1.9m up to 2.25m in length and 55cm and 45cm height and width (Fig. 2). These walls had at least 3 visible courses at the time of the 2001 survey.

To perceive the lowest rows or the foundation course, a test pit was excavated in October 2004,

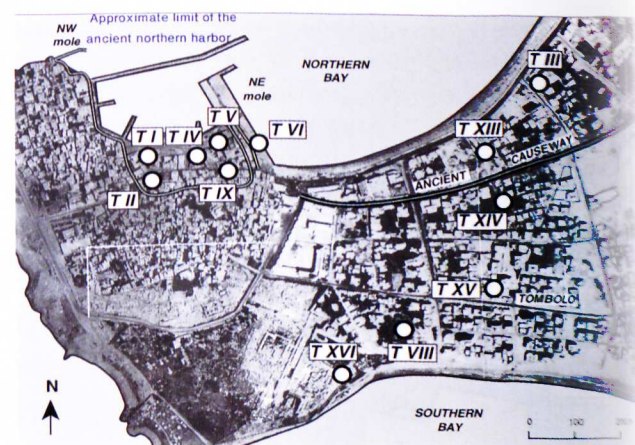


Fig. 4: Limits of the MBA harbor, Fig. 17 in Marriner et al., 2005

on the landward side of the inner wall of the jetty (as marked in Fig. 2). This work was mandated by the DGA, which I represented, and conducted in conjunction with ARESMAR. At that point, the top header was under around 2 meters of water, and the pit revealed 2 further courses of similar headers, without reaching the bedrock, and thus ascertaining the depth of the foundations of the wall at that particular point (Fig. 5). In other words, at least five courses of the wall, or more than 2.5 meters, are preserved at the point of the test pit.

This test pit revealed masons and quarrying marks on the headers, to which we will come back below.

There are many scattered blocks around the header built walls, which probably fell from the higher courses that must have reached above the sea level. As shown by soundings, the «harbor» area south and southeast of the jetty holds an enormous amount of archaeological remains, with visible pottery sherds datable from the Ottoman back to at least the Hellenistic period.

The jetty starts due East of the al-Moubarkeh, or «the blessed one», a square-shaped tower of eight meters side, which is exactly aligned with the void between the two submerged walls of the jetty (Fig. 1 and Fig. 2). This suggests that the Moubarkeh and the jetty were initially part of the same structure. The Moubarkeh as it stands is a medieval tower, but its foundations are older and have not been utterly confirmed.



Fig.5 - The façade as shown by the sounding test on the inner wall of the jetty (Photo Nouredine 2004).

Function of this structure

Tyre's northern side is naturally protected from the «Berwanzi», as Lebanese fishermen and sailors call the dominant Southwestern wind, and from the waves it generates. The above-mentioned walls have the ideal topographical orientation to provide the needed protection against the rare but still common Western wind, and also specially against the violent Northern storms.

For this reason, it is clear that the East/West oriented walls were built as a breakwater to protect the internal area of the old Northern harbor (Fig. 2). The width of the construction when it was still complete, 13 meters, would have also made it suitable as a jetty or pier on which to unload cargo from moored ships.

Dating according to the building technique

Header construction is typical of Phoenician harbor work (Carayon 2005). The closest parallels to the sunken jetty at Tyre are the jetties at Tabbat al-Hammam and Atlit.

The Phoenician jetty at Tabbat al-Hammam, 17 km south of Tartous, consists in one header-built wall, facing the waves, backed by a mixture of ashlar and rubble fill. It is dated to the 9th century BC. Tabbat al-Hammam would provide a *terminus post quem* for the construction date of the jetty at Tyre.

The Phoenician jetty at Atlit, 30 km. south of Haifa, is in fact, a smaller replica of the one at Tyre, with its two parallel header walls and a third wall of headers at their tip, enclosing ashlar and rubbles to make a breakwater against the Northern winds (Raban and Linder 1993). The headers are the same size as those at Tyre, with an average length of 2 m, 0.4-0.55 wide and 0.6 high, but the width of the whole structure at Atlit is only 9.8 meters—as opposed to about 13 meters at Tyre.

The Atlit jetty has been dated to the 7th century BC, based on the fact that its construction is more sophisticated than the one at Tabbat al-Hammam, and also on the artifacts found within the harbor basin, such as the Assyrian helmet. Since Atlit was either a Tyrian or a Sidonian colony (Jones 1993), and since the two jetties are constructed in the exact same manner, it would be reasonable to estimate that both were constructed around the same date.

A *terminus ante quem* for the Tyrian jetty is provided by the outside jetty of the early Hellenistic harbor at ancient Amathonte, near Limassol in Cyprus, built in the same header technique, but using substantially larger blocks (3 meters in length).

The construction of the Phoenician jetty at Tyre must have involved some form of crane as the one illustrated by T. Kozelj for constructing the jetty at Amathonte (1988) (Fig.6).

Masonry and quarrying marks

According to experts in cut stones and quarrying, the headers were cut from the quarry – which it would be interesting to find – and brought to the jetty without final sizing and shaping.

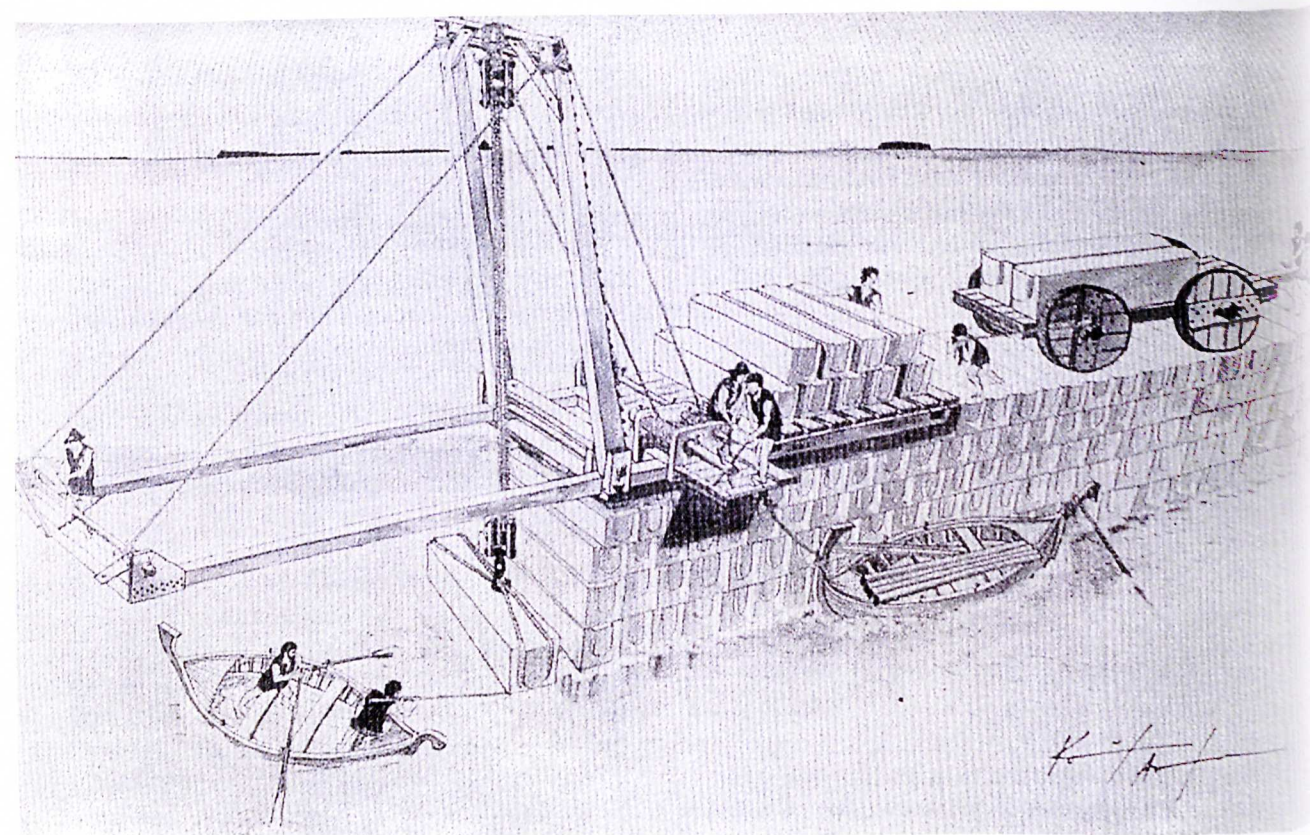


Fig.6 - The crane used in the classical period to build such a jetty (T. Kozelj 1988).

As revealed by the excavations of the test pit, the headers at Tyre have some particular quarrying and mason marks on their sides (Figs 7 and 8). These marks are older than the Hellenistic period (Orlandos 1968).

Dr. Jeanine Abdul Massih, who examined photographs of these marks, estimate that they could date at the latest to the Persian period (Nylander 1970), and possibly to the Phoenician period (personal communication).

Further studies and observations on stones marks on the rest of the headers making up this jetty could give us some important data on the Phoenician building techniques and on the dating of this jetty.

Conclusion

Based on the above, I present the hypothesis that these parallel walls are the remains of the Phoenician jetty of the Northern Harbor at Tyre that belonged to approximately the 7th or 8th century BC, and which is one of the largest jetties of its kind.

Finally, the actual underwater mapping of the jetty structure at the northern harbor at Tyre was completed in December 2005, and I was recently diving on the jetty structure and realized some change in the upper rows of the structure since locals are still moving blocks in search of treasures.

Given the pace of destruction of both the Northern and Southern underwater archaeological sites of Tyre at the hands of «treasure hunters», there is an urgency to conduct thorough archaeological digs, as well as campaigns to increase the awareness of the local population, and especially the fishermen, of their underwater archaeological patrimony, as well as interest them in its preservation.

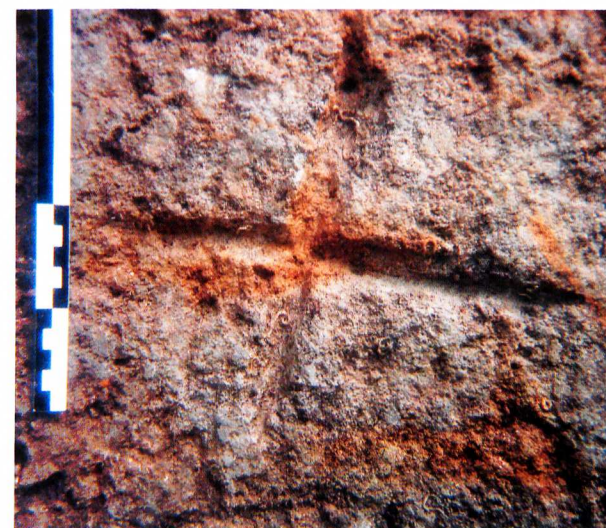


Fig.7 - Masonry / quarrying marks on the sides of the jetty's blocks (Photo Nouredine 2004) (see also Fig. 5).



Fig. 8 - Masonry / quarrying marks on the sides of the jetty's blocks (Photo Nouredine 2004) (see also Fig. 5).

Acknowledgments

Underwater Archaeology in Lebanon is lately finding its way to the world, to assure its important spot in the region and the substantial information it would add to this field. In this work, there are many people that I would like to warmly thank, first: Mr. Frédéric Hussein, General Director of Antiquities, for trusting me with several sites on the Lebanese shoreline.

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