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**CONTRIBUTION TO THE STUDY OF THE OLD ALGIERS'S WALL
AND THE DEVELOPMENT OF ITS CONSTRUCTIVE SYSTEM**

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Abstract:

The old city of Algiers is located in the area of the youngest structure on the African continent consisting of the folding chain of the Tell Atlas. It is arranged in a triangular amphitheater whose base runs along the Mediterranean Sea and the summit reaches the Qasbah, citadel of Algiers; a disposition that shelters it from attacks and external threats for a long time. This defensive position is reinforced by a very deep ditch located on the sides of the triangle and on the side of which stood high and solid stone walls forming the ramparts of the city. The narrations of travelers, historians and soldiers evoke the splendor and resistance of these works and constitute an undeniable source in the recognition of the defensive system of the old city at that time. This said, the discovery of very interesting archaeological traces during the consolidation of part of the walls of the Qasbah "citadel of Algiers" on the side of the battery 4 is an essential element in the commitment to a reflection on the development of the defensive system of Algiers . As well as the different phases of construction of the wall of the city (at least in the eastern part), based on tangible physical evidence.

Key words: The Old Algiers's Wall, Defensive System, Citadel of Algiers.

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Introduction:

The present article is a contribution to the knowledge of the fortification system of the medina of El Djezair in the light of a chance discovery made in the upper part of the city. The data resulting from this discovery will provide precious indications that will deepen and update knowledge on the evolution of the defensive system of Algiers before and over the three centuries of the Ottoman period (1516-1830), during which the regency of Algiers knew an unprecedented economic and political development. Its very name was linked to that of its fortifications; it was then nicknamed "El-Djazair al-mahrûssa" (the well-guarded one) for its incredible resistance to the attacks perpetrated against it by the European fleets. One of the greatest concerns of the leaders of the regency of El Djezair was to reinforce the fortifications of the medina, which was always under threat. An important defensive system comprising walls, bastions, batteries, and forts spread along the bay of Algiers. (Djeddi, 2018, p. 57)

The protection of Algiers was ensured by 1650m of ramparts, forts, 13 interior batteries and 16 exterior batteries, connected between them by the paths of the batteries. The whole was organized in a line along the coast from Tamentfoust (ex: Cap Matifou) in the east to the bay of Sidi Fredj in the west (Boutin, 1808, pp. pp 26- 39), directed towards the sea to protect the medina and its surroundings from foreign attacks. (Devoulx, 1875)

The enclosure, forming the fortifications, of the old city of El Djezair formed a triangle having for summit the citadel of the Casbah built in 1516 (Klein, 1910, p. 28). These ramparts developed a line of 750 meters on the side of Bab-Azoun, and 900 meters on the side of Bab-el-Oued (Klein, 1910, p. 28), presenting an original aspect. This enclosure was sometimes double and even triple. Ditches were interrupted by embankments. The city walls were surrounded on the outside by a ditch 6 to 8 meters deep and dug in the shape of a triangle, whose width varied between 11.50 and 14.50 meters. The summit was crowned with bastions allowing 214 cannons to defend the city.

Following the demolitions undertaken during the colonial period, only a few parts of the ramparts of the Casbah remain today, notably in the upper Casbah, which has somewhat preserved its traditional features. Near the site of Bab el Djadid destroyed by the piercing of the Boulevard de la Victoire, there remain, on both sides, elements of the old enclosure: to the west a section of rampart that joins the southern corner of the citadel and to the east the bastion 8 with a part of rampart. Further west and below, Bastion 11 is still relatively well preserved.

The city walls on the north side (Paul Mares)

Situation:

The citadel of Algiers where the discovery took place, is located at an altitude of 118 meters above sea level (geographical coordinates: latitude 36° 47' 2.06" N, longitude 3° 3' 19.70" E), crowning the medina of El Djezair on the south-west side and formed, before the French occupation, the angle of slope from which descended the ramparts of the old city in step to

the sea. Known today as the "Palace of the Dey", the Citadel complex is located in what was called, at the time, el-Djebel (the hill) and extends on a surface of approximately 11000m². It is a real complex, a fortress in the fortress, dominating all the roadstead of Algiers and including, in addition to the ramparts, fourteen sectors counting palaces, mosques, residences for the Aghas and Janissaries, gardens, batteries and a gunpowder factory.

Site plan of the citadel and satellite image

The Qasbah, Citadel of Algiers, has been classified, in its global and indivisible entity, Historical Monument, in 1887, renewed by the ordinance of December 20, 1968 and reaffirmed by the law 98/04 of April 17, 1998. It is also, by its geographical situation, registered in the classification perimeter of the Casbah of Algiers, classified national heritage in 1991 and World heritage of Humanity by UNESCO, since 1992.

Historical overview

Originally made up of ramparts and batteries built on the orders of Aroudj as early as 1516 and then enlarged by Mustapha Pasha, the citadel was part of the city's defensive system supporting the fortresses and batteries of the medina. During the reign of Ali Khodja penultimate Dey of Algiers, the citadel was converted into residence of the Dey and seat of the regency. It was once again fortified during the reign of Hussein Dey who also made it the seat of the administration, justice and finances.

A considerable part of the citadel rests on the ramparts: the old Harem, a part of the Dey's palace and the new mosque, the whole southern wing of the Beys' palace as well as the batteries. These ramparts are an integral part of the city walls and formed the defensive system that kept the city safe from outside attacks. All along the enclosure, a ditch dug all around the city doubled the ramparts and participated in the protection of the medina.

The ramparts have been fortified several times as the city was coveted by the French, Spanish and English, but the most important works date from 1540. Built of stone, the wall became extremely strong and solid and was flanked by bastions and crenellations. In fact, after each war, the Deys proceeded to the arrangements, reconstructions and installation of new cannons.

Plan of the Citadel in 1937, before the creation of street "Avenue du Maréchal de Bourmont, currently Med Taleb". (archives: ANAPSMH)

After the French occupation, a street (Avenue du Maréchal de Bourmont, currently Med Taleb) was laid out inside the citadel, splitting it in two and considerably weakening its ramparts.

This historical overview of the ramparts of old El Djezaïr shows that the wall as it appears today represents a succession of several stages of construction, the study of which would enrich the history of the old city as well as the evolution of its defensive system, especially since the restoration studies of the citadel entrusted to the Polish workshop PKZ did not take into consideration the ramparts, which constitutes a great gap in the interpretation and study of the whole.

Context of Discovery

In 2012, a considerable part of Battery 4 located in the southwest of the citadel enclosure along the Zouaves ramp and leading to Mohamed Taleb Avenue next to the arched passage collapsed. Immediately afterwards, emergency works were started for the dismantling of the surrounding wall and its reassembly after the reinforcement of structures. During the consolidation of the rampart wall, and following the dismantling by part of the wall with the release of the interior filling, very interesting archaeological remains discovered. Indeed, ancient structures have been uncovered: a semi-circular tower made of stones and rubble as well as two arched openings and the traces of a covered way have appeared behind the wall which has collapsed. This is the first (previous) construction phase of the ramparts with towers and curtains whose construction technique of herringbone and rubble is typical of buildings of antique period.

Collapse of a part of the battery 4 wall

Two construction phases are thus outlined: an ancient enclosure with towers and curtain walls, then an Ottoman enclosure with ramparts and bastions. The current wall of the enclosure built in a reinforced system would thus probably be only a reinforcement of the doubled enclosure wall and represents in fact a posterior step carried out for the consolidation of the enclosure of the city.

Description

The information provided by this discovery reveals the rather complex construction of the ramparts walls with, in particular, at least two stages of construction that could be observed, the last of which corresponds to the actual walls of the Ottoman period. The techniques and the construction materials are different for each construction phase:

The first phase:

It corresponds to the phase of fortification in towers and curtains known since the highest antiquity. Indeed, the rampart walls are made up of curtains flanked by towers that protrude from them and that go beyond the parapet walk of the latter. In our case, the tower is semi-circular. It is a fortified structure built in solid brick, white rubble and lime mortar. Lime plaster preserved in some places confirms that the walls were plastered over their entire surface.

Discovery: Appearance of the remains

In the extension of the rampart wall, to the north-west of the tower, there are two vaults built in solid yellow and red bricks with an interior diameter of about 1.50 m. A back wall parallel to the first one contains a third vault similar to the first ones. It is built with the same bricks laid out in a herringbone pattern (*opus spicatum*) reminiscent of roman and medieval construction techniques, alternated with assizes of rubble stone or brick laid on a

field and joined with lime mortar. The whole of this structure is embedded in a new structure built during the Ottoman period and which completely encompasses it.

The second phase:

The defensive wall is made up of thick wall which brings together bastions, crenellated curtain walls and walkways. The collapse of a part of the ramparts revealed the construction technique of the walls made of two facings (internal and external) with an internal filling. The facings are made of orange to light yellow bricks laid in a panneresse and bound with a lime and earth mortar. The interior filling of the walls is of a pinkish ochre tone made of a mortar of the adobe type composed of earth fill mixed with a small amount of lime.

It is a constructive system that allows to reinforce the earth filling (economical and fast) by more resistant strata with lime binders.

construction technique of the walls made of two facings
(internal and external) with an internal filling

Hypotheses of interpretation:

In this state of knowledge, we have the certainty that the bastioned fortification built during the Ottoman period came to lean in the sixteenth century at least in the high part of the Casbah at the level of the fortress (citadel of Algiers) against an older fortification with towers by including it entirely. Archival documents mention similar discoveries made during the demolition of Algiers ramparts in the colonial period. In 1883-1884, to the north of the city and during the creation of the old "boulevard de Centaure", the destruction of the Turkish rampart brought to light, over a length of 100 to 150 meters, a wall made of small white rubble laid in parallel layers joined with a mortar of Roman origin (Gavault, 1887). A little further on, a protrusion from a tower whose interior door was still visible was observed. This confirms that preserved parts of the enclosure of Icosium must have served as a foundation for that of El Djézair which supported, on their compact mass, the Turkish rampart of sand and adobe. It should be noted here that the traces discovered are located at one hundred meters only of the citadel of Algiers and that they are in the continuity of the discovery of the Battery 4 (Bennoui, 2013).

Other historical sources report that the citadel was built from 1516 to 1590 on the emplacement of a Berber Casbah of Selim Ettoumi before becoming the residence of the Deys under Ali Khodja (1817-1818) (Boutin, 1808). On an old plan we can see two towers mentioned by Haedo, one of which rises to the south and the other to the north.

Plan of Braun 1570-1572

The citadel was then considered an ancient fortification (Haedo, 1870) and the builders would have used a core of rubble masonry remaining from an older wall from the Middle Ages or perhaps in parts from the Roman period to raise the new ramparts which they had covered with thick assises of adobe with a brick facing on the outside protected by an excellent coating.

One could wonder about the edification of the citadel whose construction was carried out in a short time (1596-1599) (Colin, 1901); this could not be possible without the presence of an old core which was reused to accelerate the work. which could not be possible without the presence of an old core that was reused to speed up the work. (Gavault, 1887)

A little further down this time and in the lower Casbah, the remains of a quarter of a round tower of 6 to 8 meters in diameter with the beginnings of a wall welded to its circumference were discovered in the ravine located between the El Emir Abd El Kader high school and the mausoleum of Sidi Abderrahmane (Gavault, 1887). It is very interesting to note, moreover, that on the walls of the ottoman ramparts appear in places bumps coming from the shape of towers hidden behind the embanked wall (Gavault, 1887)

Within the framework of the project of study of restoration and enhancement of the citadel of Algiers, entrusted in 1980 to the Polish restoration workshop PKZ, soundings by electrical

resistance were carried out in a few places of the citadel to recognition of the internal structure of the selected fragments of the ramparts and of the large-scale masonry structures within its enclosure. (Andrzej, 1985)

Soundings by electrical resistance

It was essentially a question of knowing if the internal structure of the ramparts fragments was homogeneous or if it could contain unknown parts (cavities, masonry structures, difference in filling materials). The results of the geophysical tests revealed a heterogeneous inner filling consisting of earth fill laid in layers on top of structures and other backfill material in which stone or masonry structural elements are placed, and recommended that excavations or notches be made in the rampart wall to verify the results.

Several years after the geophysical investigations carried out, the collapse of the Battery 4 rampart and the appearance of masonry structures inside the rampart confirmed the results. It would be interesting today to proceed to the analysis of material samples and artefacts collected in order to establish a more precise chronology of the structures discovered. It would also be interesting to carry on archaeological investigations in some places of the wall to establish a diachronic study on the evolution of the defensive system of the medina of El Djezair.

Conclusion

The chronology of the fortification of Algiers and the various phases evoked in the research carried out still remains very approximate, which makes the character of the present study still very preliminary. However, the discovery of well attested elements, such as the vestiges that have appeared, the indications of archival elements or the results of geophysical analyses, has led us to take advantage of the file to publish the first data concerning the rampart of El Djezair while waiting for the establishment of a more thorough and more advanced study. The collected data will make it possible to reconsider the evolution of the defensive system of Algiers during the antique or medieval periods whose limits would be extended beyond the Berber Qasbah of Sidi Ramdhane to arrive at the line of crest where the citadel of Algiers is located. Indeed, and if it is admitted that Icosium did not exceed the limits of the old doors of Bab El Oued in the North and Bab Azzoune in the South, it does not remain about it less than it extended towards the west to reach the crest of the hill, thus giving to the Roman and medieval city the same extent as the Ottoman city.

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