

VLADIMIR A. GORONCHAROVSKI

## FORTIFICATIONS OF ILURATON

Iluraton, the best known and best preserved archaeological fortress, was constructed by the rulers of the Bosporan kingdom in the first centuries A.D. It is located 17 km to the southwest of the modern city of Kertch in the Eastern Crimea and it covers about 3 hectares. Owing to the extraordinary condition of all elements of the fortification system and building complexes, this small town deserves special attention. The name of the town, undoubtedly of Barbarian origin, is first mentioned in the work of a Greek geographer Claudius Ptolemy<sup>1</sup>. The first person to identify the settlement at Ivanovka as Iluraton was V. F. Gajdukevič<sup>2</sup>. This identification is accepted by the majority of scholars<sup>3</sup>, though no inscription confirming this assumption has yet been found.

Archaeological exploration of the site of Iluraton has a long history. One may divide it into two stages. The first stage began in 1827 and was mainly the work of the well-known amateur-archaeologist Paul Dubrux (1770-1835). He was the first to describe the ancient ruins near the Tatar village of Kermesh-Kelechik (Fig. 1). Dubrux thought that it might be the acropolis of some ancient city, or a palace once belonging to the Bosporan kings<sup>4</sup>. Such assumptions were

certainly far-fetched, but the main contribution of Dubrux was to carefully locate and describe the fortifications and other building remains. In any case his observations had facilitated the work of subsequent generations of archaeologists working on the site. The second stage in the research of Iluraton was the systematic exploration of the site by the Bosporan expedition of the IIMK (Institute of History of Material Culture) of the Russian Academy of Sciences. It began after the Second World War and continued up to 2000. Over 50 years of intensive excavation resulted in unearthing a quarter of the territory of the hill fort (Fig. 2).

Excavations have shown that Iluraton was founded in the second third of the 1<sup>st</sup> century A.D. as one of main strongholds in the system of roads and fortifications of the European side of the Bosporus<sup>5</sup>. From a strategic point of view, Iluraton overlooked the routes leading to the Panticapaeum, the capital of the kingdom, from the southwest. The well considered choice of location of the fortress, as well as the full use made of natural defences testify to the high level of professionalism of the Bosporan military engineers.

<sup>1</sup> P t o l e m y (Claudius Ptolemaeus), *Guide to Geography, Geographike hyphegesis*, III, 6.

<sup>2</sup> V. F. G a j d u k e v i č, *Bosporskiy gorod Ilurat* (The Bosporan Town of Iluraton), "Sovetskaya Archeologija", XIII, 1950, p. 203.

<sup>3</sup> V. G. Z u b a r e v, *Antichnaja geografija Evropejskogo Bospora po Klavdiju Ptolemeju* (Classical Geography of the European Bosporus According to Claudius Ptolemy), "Drevnosti Bospora", I, 1998, p. 117.

<sup>4</sup> P. D u b r u x, *Opisanie razvalin i sledov drevnikh gorodov i ukreplenij, nekogda suszczestvovavshih na evropejskom beregu Bosfora Kimmerijskogo, ot vhoda v proliv bliz Enikal skogo majaka do gory Opuk vkluchitel'no pri Chernom more* (Description of the Ruins and Traces of

Ancient Cities and Fortifications Which Once Existed on the European Shore of the Cimmerian Bosporus from the Entrance to the Strait Near Enikale Lighthouse to Opuk Mount at the Black Sea), "Zapiski Odesskogo Obszczestva Istorii i Drevnostey", IV, 1858, p. 54-63; V. F. G a j d u k e v i č, *Bosporskiy gorod...*, p. 173 ff.; I. V. T u n k i n a, *O sud'be rukopisnogo nasledija Pavla Dubrjuksa* (On the Fate of the Manuscript by Paul Dubrux), [in:] *Bosporskiy fenomen: grecheskaja kul'tura na periferii antichnogo mira. Materialy mezhdunarodnoy nauchnoy konferentsii* (The Bosporan Phenomenon: Greek Culture on the Periphery of the Classical World. Material of the International Scientific Conference), Sankt-Petersburg 1999, p. 16.

<sup>5</sup> V. G. Z u b a r e v, *Antichnaja geografija...*, p. 118, Fig. 4.

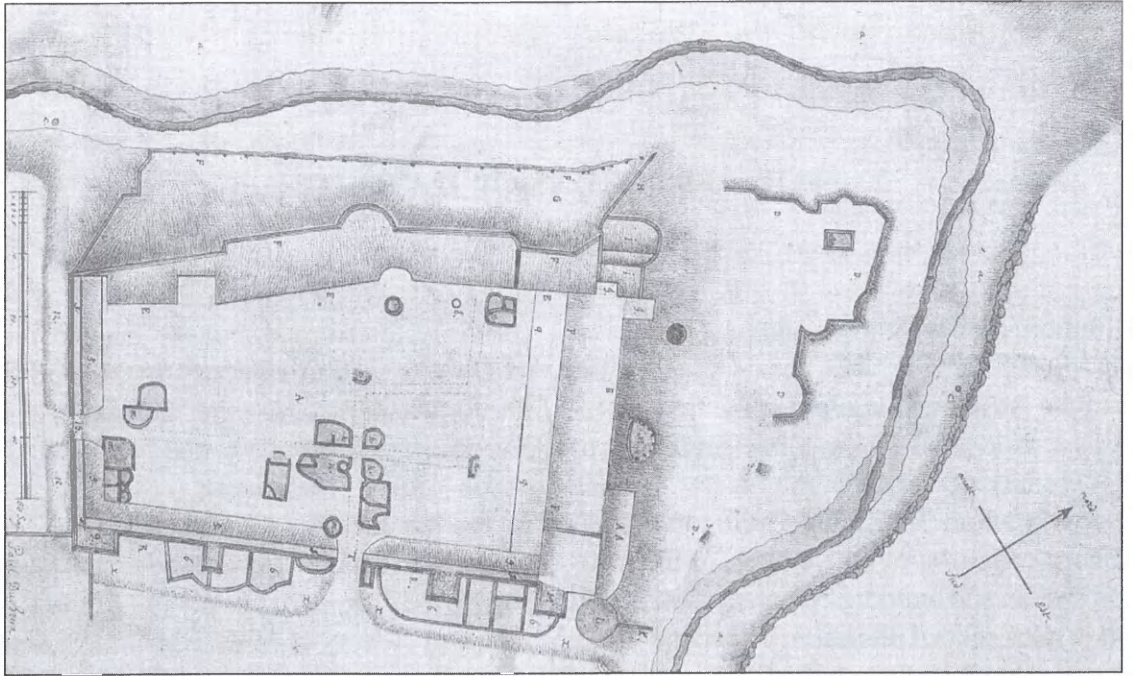


Fig. 1. Plan of Iluraton by P. Dubrux (1833).

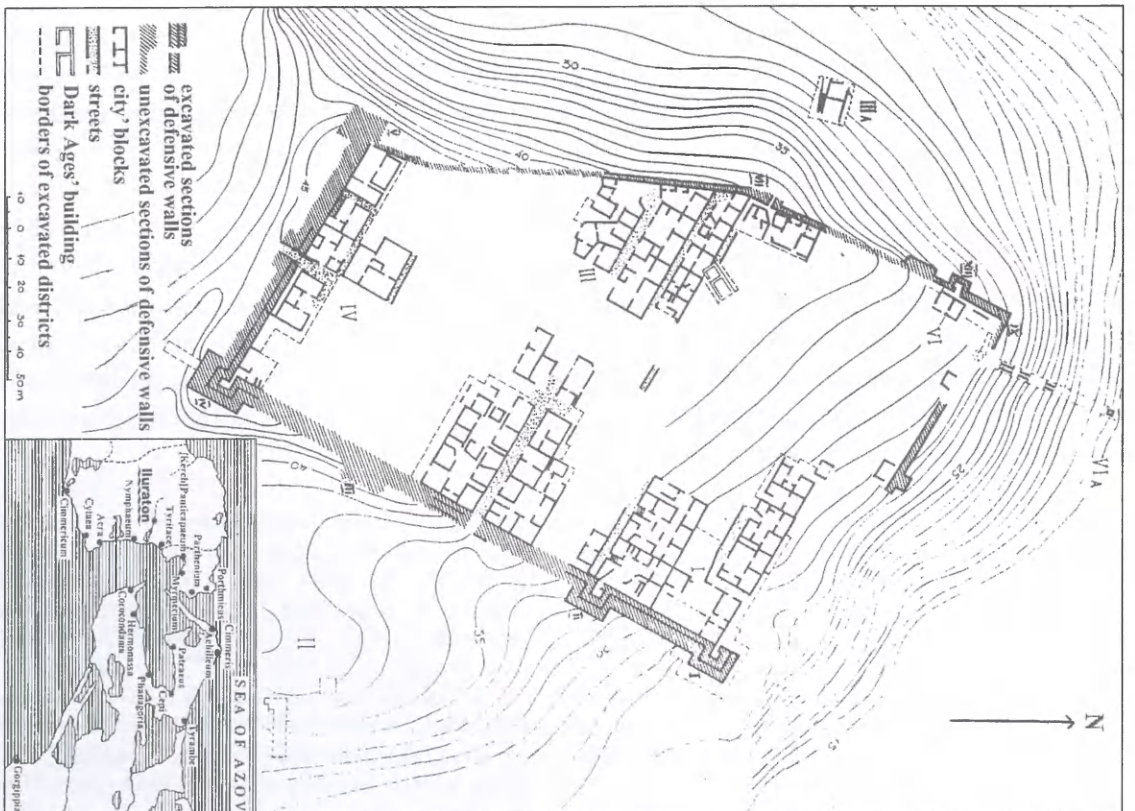


Fig. 2. Plan of the site of Iluraton (the excavations of 1947-2000).

The ruins of Iluraton are located on a flat rocky plateau about 45 m high, near a small river, which flows into Churubash Salt Lake 5 km further. In antiquity this lake was probably a gulf of the sea<sup>6</sup>. Near Iluraton, the river valley is narrow with steep slopes. It has a narrow flood plain and the remains of two terraces. The rocky plateau consists of powerful horizontal layers of limestone and waterproof layers of clay, due to which freshwater springs are to be found in the slopes of the valley.

Study of the topography of the north-eastern slope (Fig. 3) has revealed a quite wide ramp by the eastern corner of the fortress. Most likely of natural origin, the ramp had apparently been adapted by the local inhabitants to ascend in easy stages from the valley up to the plateau. Carriages or horsemen could easily reach the plateau thanks to this structure. Gradually moving away from the defensive wall, the road approaches the northern corner tower, where the river makes an abrupt turn. Probably there was a ferry here, for on the opposite side of the valley there is convenient access to the gorge rising upwards. The road leading along the north-eastern part of the settlement was marked on the plan by P. Dubrux<sup>7</sup>.

The slope of the valley under the north-western wall of the fortress is also of interest from a topographic point of view. It consists of a high flood plain terrace. It has not got a fixed summit and it clearly lowers towards the north. The rocky plateau on which the fortress lies also lowers towards the north-east. The difference in height between these two flat surfaces is about 15 m. This resulted in a particular system of urban spatial organization, which features several artificial terraces from 0.6 up to 2 m high. The stone extracted during the construction of these terraces was used for building on the site.

The long lasting archaeological excavations at Iluraton have revealed the basic elements of

the fortifications and the stages of construction of the fortress, which was a military-administrative centre for the adjacent agricultural district<sup>8</sup>. It needs to be stressed that it is almost impossible to determine the initial appearance of the fortifications, because the earliest layers were practically destroyed during subsequent construction works on the site, when the terracing was carried out.

The size of early Iluraton is unknown, but it was most probably the same as in the later periods. The presence of finely carved rusticated facing of the blocks at the front of the base on the inside of the south-western defensive wall attracts our attention<sup>9</sup>. Here, along a stretch of the wall next to Tower V, up to four rows of limestone block have survived. This section of the wall differs from the usual appearance of the fortifications at Iluraton so strikingly, that V. F. Gajdukevič initially quite naturally assumed a secondary use of these rusticated slabs taken from some earlier fortification work, situated, perhaps, exactly in this same place<sup>10</sup>. The question was finally clarified by the discovery of remains of fortifications from an earlier period on the opposite side of the settlement: a small tower measuring 4.4 x 2.8 m and an adjoining section of the defensive wall with rusticated stretchers on the outer face (Fig. 4: 1). It had earlier been assumed that it was pointless to search for the remains of a defensive wall here on account of the natural destruction of the rock. Nevertheless, the tower was discovered by chance exactly where P. Dubrux had marked it

<sup>6</sup> V. P. Z e n k e v i c h, *Berega Chernogo i Azovskogo morey* (The Coasts of the Black and the Azov Seas), Moskva 1958, p. 175, 194.

<sup>7</sup> V. F. G a j d u k e v i c h, *Ilurat. Itogi archeologicheskikh issledovaniy 1948-1953 gg.* (Iluraton. Results of Archaeological Investigations of 1948-1953), "Materialy i Issledovaniya po Archeologii SSSR" (further cited as MIA) No. 85, 1958, p. 12-13.

<sup>8</sup> V. A. G o r o n c h a r o v s k i, *Oboronitel'nye sooruzheniya Ilurata* (Fortifications of Iluraton), [in:] *Problemy issledovaniya antichnykh gorodov* (Problems of Investigation of Classical Cities), Moskva 1989, p. 36 ff.; idem, *Krepost' Ilurat v sisteme oborony zapadnoy granitsy Bosporskogo tsarstva v I-III vv.* (The Fortress of Iluraton in the Defensive System of the Western Border of the Bosporan Kingdom in the 1<sup>st</sup>-3<sup>rd</sup> Centuries A.D.), [in:] *Fortifikatsiya v drevnosti i srednevekov'e* (Fortifications in Antiquity and the Dark Ages), Sankt-Petersburg 1995, p. 60; idem, *Krepost' Ilurat: itogi izuchenija* (The Fortress of Iluraton: Results of the Studies), [in:] *Bospor Kimmerijskiy, Pont i varvarskiy mir v period antichnosti i srednevekovja. Materialy III Bosporskiy chteniy* (The Cimmerian Bosporus Pontos and the Barbarian World in the Classical and Dark Ages Periods. Materials of the 3<sup>rd</sup> Bosporan Symposium), Kertch 2002, p. 68 ff.

<sup>9</sup> V. F. G a j d u k e v i c h, *Ilurat: raskopki 1954-1960 gg.* (Iluraton: Excavations of 1954-1960), [in:] *Bosporskie goroda* (Bosporan Cities), Leningrad 1981, p. 133, Fig. 50.

<sup>10</sup> *Ibidem*, p. 135.

on his plan with a letter N<sup>11</sup>. Remains of the early defensive wall were preserved to a length of 27 m. The wall was 2.5 m wide with a three-part structure: two masonry faces, where the blocks had been laid with their broken sides facing inwards, with a fill of rough-stones in between them. The durability of this masonry was not only ensured by its own weight, but in addition wooden beams were also laid width-wise in the wall. Cuts for them were discovered both in the tower, and in the curtain wall. Taking into account the relatively high seismic activity in this area of the Crimea, this construction detail seems to have been well thought out.

According to the principles in vogue at the time, the fortifications were constructed on a base of trimmed stones consisting of well carved limestone stretchers. The measurements of the front face of these blocks are between 0.9 x 0.45 m and 1.2 x 0.42 m, and they bear signs of cutting and trimming by saw. They also bear signs of later working by an instrument such as a chisel or adze, with a working edge measuring between 4 and 10 cm. The masonry on the front face is stepped, and bears no sign of any bonding mortar. The blocks were then trimmed to an even height. Consequently, given the fact that the rustication at the edge of the blocks is only 1-2 cm wide, this trimming was a technical method available for the best adjustment of the variously sized limestone stretchers. The application of such methods in Iluraton's south-western and north-eastern defensive walls allows us to state that the traditions of the late Hellenistic building technique were still preserved in the Bosporan fortifications of the earliest centuries A.D. In this respect Iluraton is by no means out of the ordinary. In the Black Sea region rusticated stretchers can also be found in the Roman period defensive walls at Tiritaka<sup>12</sup>, and at Abritus and Philippopolis in Thrace<sup>13</sup>.

The space between the hill slope and the wall in this part of the fortifications was levelled with debris up to a height of 3.5 m, which resulted in the difference in height between the tower base and the much higher pavement of the later inhabited complex of the 2<sup>nd</sup>-3<sup>rd</sup> century A.D. Dating material comes from the layer at the foot of the north-eastern defensive wall, which mainly consists of red-lacquer ceramics dating from a period not later than the second third of the 1<sup>st</sup> century A.D. This dating is confirmed by the discovery of an ass of Queen Gipepiria in the wall's fill. Material from the sockets cut in the rock along the line of the Big Longitudinal Street, from the lower layers of an ash pit beyond the south-eastern gate of the fortress, and from grave assemblies in the *necropolis* do not conflict with such an inference. One can also note that the earliest coin discovered on the site so far is an ass of King Aspurgus dating back to A.D. 37/38.

The problem of water supply was probably also resolved during this earliest phase of construction. The topography of the site, however exploited, had one major disadvantage: there was no source of water within the defensive walls, which would have brought about the surrender of the place when under siege. The only remedy was to construct a system of cisterns for collecting the rainwater<sup>14</sup>, which in ancient times was considered even healthier than spring water<sup>15</sup>. Bell-shaped cisterns with a capacity of from 7 to 10 cubic metres have been cut into the hard native rock in the courtyards of many houses and even in the main street. The especially thorough trimming of the mouth of the cistern is distinctive. Normally a square slab with a round hole about 0.6 m in diameter cut in it was put over the top of the opening. The hole was covered with a round stone lid, which slightly exceeded the mouth in size. By one side, an enclosure formed by limestone slabs up to 0.5 m in height piled sideways is usually found. In one case an empty pythos about 1.5 m deep, closed with the same type of lid, was found in line with the street. Quite possibly, it had also acted as a cistern. Certainly, such constructions could not have entirely satisfied the

<sup>11</sup> V. F. G a j d u k e v i č, *Ilurat. Itogi...*, p. 13, Fig. 3; I.V.; I. V. T u n k i n a, *Russkaja nauka o klassicheskih drevnostjah juga Rossii (XVIII-seredina XIX v.)* (Russian Science about the Classical Antiquities of the South of Russia (the 18<sup>th</sup>-the Middle of the 19<sup>th</sup> Centuries), Sankt-Petersburg 2002, Fig. 53.

<sup>12</sup> V. F. G a j d u k e v i č, *Ilurat. Itogi...*, p. 162.

<sup>13</sup> T. I v a n o v, *Abritus*, Sophia 1980, p. 49, 91, 118, 208. Fig. 39, 101, 136, 230.

<sup>14</sup> A r i s t o t e l e, *Politika*, VII. 10. 2.

<sup>15</sup> Marcus V i t r u v i u s, *De architectura*, VIII. 2.1.



Fig. 3. View of the north-eastern slope of Iluraton.

demand of Iluraton's population for drinking water in case of hostilities.

P. Dubrux had, however, passed the following remark: "A little bit lower than the northern corner tower at the foot of a rock there is a cavity now filled with earth, which in former times probably constituted a secret passage through which the defenders of the fortifications could leave and return to the fortress"<sup>16</sup>. V. F. Gajdukevič also thought the structure to be the exit from a tunnel cut down into the rock. In his opinion a long ditch-like cavity which runs down the slope near the northern corner of the fortress could have been formed as a result of earth sinking into the collapsed underground passage. This depression ends with a big funnel-shaped hollow 1.5 m deep. The presence of such a construction in this place is explained by the location of water sources in a nearby gully<sup>17</sup>.

The water-bearing strata caused springs to appear at the bottom of the rocky plateau. Therefore it was possible to assume that the inhabitants of Iluraton had dug a well in a low-lying place to guarantee constant supply of water in case of a prolonged siege. And indeed in 1981, at a depth of 2.5 m below contemporary ground level, the massive masonry of a secret siege well with almost square mouth – 1.85 x 1.8 m<sup>18</sup> – was discovered

(Fig. 4: 2). It was excavated to a depth of 7.85 m. When the fill was removed, it was found to consist of fitting calcareous blocks fixed in place by a limy solution with an admixture of sand. The height of the rows varied from 0.45 to 0.67 m. The especial care taken to build it points to the importance of this construction. Excavation of the well yielded insufficient dating material. We may, nevertheless, conclude that it dates back to the 1<sup>st</sup> century A.D., as without a construction of this type the fortress could not have existed.

Some interesting technological details were revealed while cleaning up the walls of the well. Three rows of grooves had been cut in advance into the calcareous blocks between 2.05 and 2.2 m from each other. These grooves were located along a joint between the rows of blocks. When the perimeter of the construction settled down, the grooves were left varying about 7 cm in level from one another. The grooves, which occur on opposite walls, lie opposite one another. They were probably used for keeping beams in place during the construction process. They might have formed a rigid support on which boards were laid to form a temporary floor. The successive layers of stonework could have been laid working from

<sup>16</sup> P. D u b r u x, *Opisanie razvalin...*, p. 56.

<sup>17</sup> V. F. G a j d u k e v i č, *Ilurat. Itogi...*, p. 20.

<sup>18</sup> V. A. G o r o n c h a r o v s k i, *K voprosu o vodo-snabzhenii kreposti Ilurat* (On the Question of the Water

Supply at the Fortress of Iluraton), [in:] *Bospor Kimmerijskiy i Pont v period antichnosti i srednevekovja. Materialy II Bosporskih chteniy* (The Cimmerian Bosphorus and Pontos in the Classical and Dark Ages Periods. Material of the 2nd Bosporan Symposium), Kertch 2001, p. 31 ff.

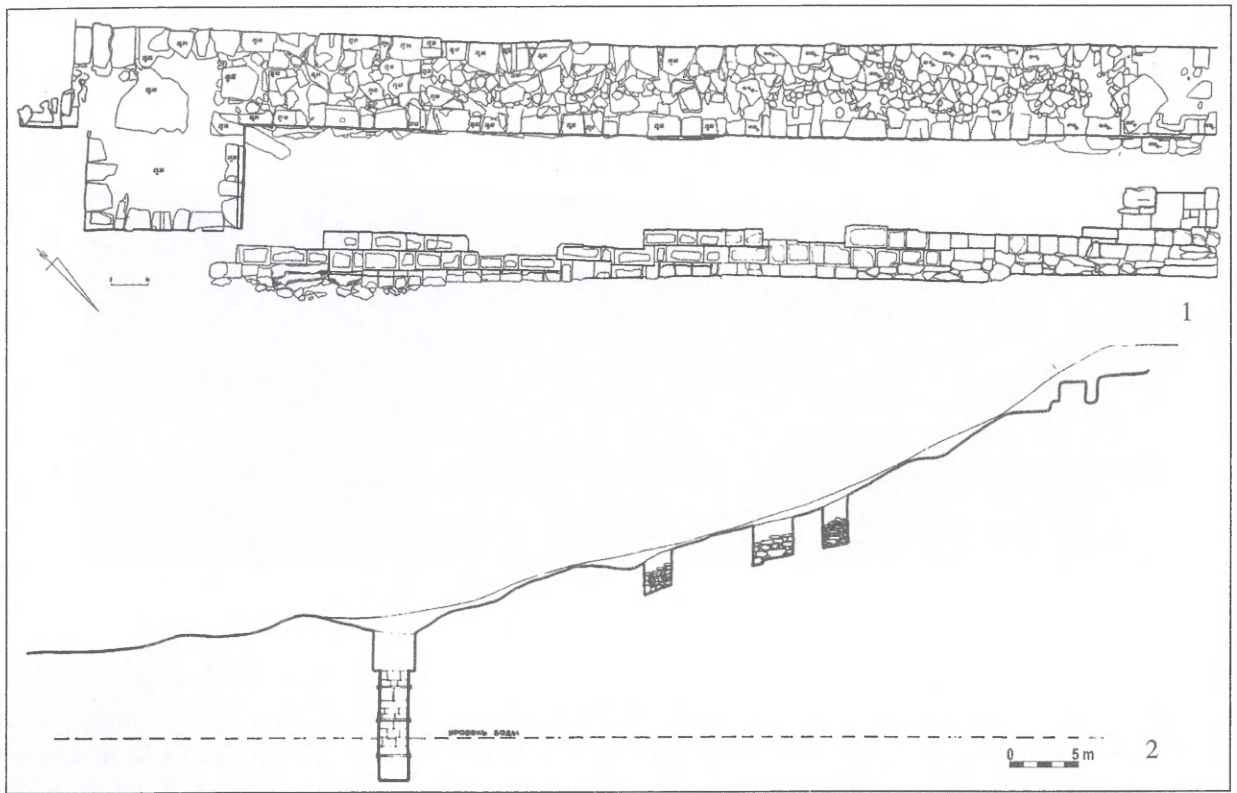


Fig. 4: 1 – north-eastern defensive wall with a small tower (a plan and the facade); 2 – section of the north-eastern slope of Iluraton with its well and underground passage.

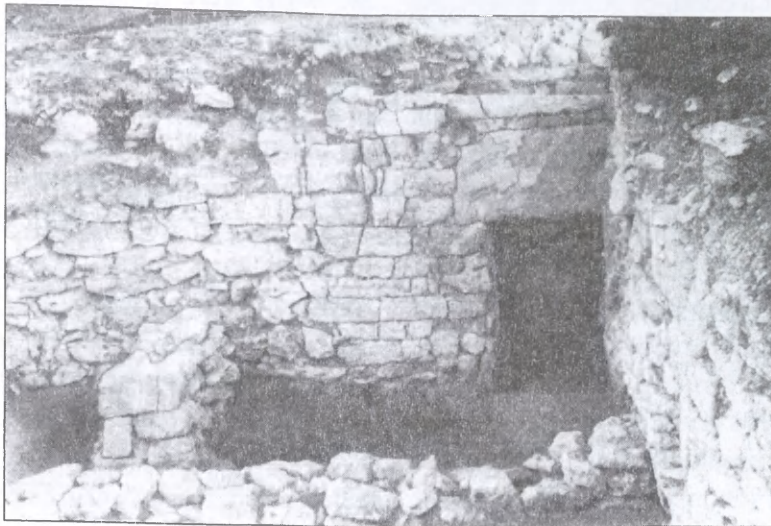
this base. A piece of a wooden beam 0.12 x 0.1 m in section was found in one of these grooves, lying under the water table. It was made from the trunk of an old pine tree of large diameter. When the well was in operation, the grooves were probably used to construct a system of floors and ladders along which it was possible to move up and down in order to clean out the bottom of the well. There was undoubtedly also some mechanism for drawing water built alongside it. As a whole, given its significant dimensions, the well should have provided an effective enough system for gathering the water carried along water-bearing strata.

The remains of a stone construction were removed from the bottom of the well, which once covered its mouth. It consisted of blocks of sawn limestone, 0.7 x 0.25 x 0.22 m in size, the total number of which would have reached 142. As some of the surviving blocks had rectangular grooves carved in them, it is likely that wooden joists were also used in the construction. It is also possible, however, that there was a floor in the construction. There is every reason to believe that they may have been used to cover an underground passage about 40 meters long, running from the

line of the defensive wall down to the well in a number of flights each with a pisé floor.

This and similar constructions on the Bosphorus can probably be linked to the influence of architectural traditions derived from the Pontic Kingdom and used by Mithridates VI and his successors. Staircase descents of this type, cut into rock and leading to underground water tanks, are widely known in Cappadocia, Pontus, Paphlagonia, Armenia Minor and Phrygia. Fortified settlements in these areas were, as a rule, situated on remote tops of hills or rocky plateaus, which were usually waterless. Therefore the paramount problem was to cut descents down to the water, at times comprising up to two hundreds steps. Two types of tunnels are to be found: some led to a source of water located beneath the rock, while others led to an underground reservoir cut into the rock itself<sup>19</sup>. Iluraton's underground passage belongs to

<sup>19</sup> H. von G a l l, *Zu den kleinasiatischen Treppentunneln*, „Archäologischer Anzeiger”, 82, 1967, p. 509; S. Ju. S a p r y k i n, *Byl li na Bospore hram Asklepija? (Was There on the Bosphorus a Temple of Asclepius?)*, [in:] *Severnoe Prichernomorje v antichnoe vremja (The North Black Sea Coast in Classical Times)*, Kiev 2002, p. 186-190.



1



2

Fig. 5: 1 – entrance opening of Tower IV; 2 – remains of a ladder near south-western defensive wall.

the first group. It had a rather simple structure, as the shaft was cut down from ground level through a layer of clay. Its walls were strengthened with stone masonry made of huge limestone joist slabs, which reached 1.8 metres in height. The underground passage was 1.4 metres in width, whereas three stone slabs from the collapsed covering structure found inside were 1.05-1.1 m long. Consequently, they must have been laid in at least two or three ledges on each side.

An underground passage runs next to corner Tower IX, near its south-eastern wall. A round hollow some 1.25 m in diameter was noticed here, and excavations have shown that it was formed by the washing in of rocks. It gradually narrows to a depth of 1.5 m, where it dips downwards.

Cracks and holes were noticed to the right and left from cold air penetrated the passage. It seems that the top part of the passage, which was sited directly under the defensive works, was cut into the rock and, obviously, led to the courtyard of a nearby house. Taking into account the location and size of this underground passage, in which two persons could hardly pass alongside one another, it was possible to assume, that it was not a unique structure in the water supply system of the fortress. In 1999-2000 in the same place, on the north-eastern slope of the settlement, a hollow about 5 metres in diameter was excavated, located on the same horizontal level as the well found earlier, some 80 metres to the south-east of it. A trench 3.6 meters in width was found cut down

into the base clay. At a depth of 5.1 m, fragments of a masonry construction were found: two blocks of sawn limestone assembled in a line. They seem to come from the mouth of another well, which most probably connected the fortress to the area of the Big Longitudinal Street by an underground passage. From there it would have been possible to supply water easily to any of the city housing blocks.

The early fortress probably did not exist for a long time and it was destroyed about the end of the 1<sup>st</sup> century A.D. The still existing threat of attack from Sarmatians and the Crimean Scythians on the western boundaries of the kingdom brought about a full reconstruction of the entire defensive system and inhabited quarters of Iluraton some decades later.

A large-scale reorganization of the fortress was carried out not earlier than the second quarter of the 2<sup>nd</sup> century A.D., judging from a fragmentary building inscription carved on a thin marble slab:

[Ἄγαθῆι τύχηι  
Βασιλεύοντος βασιλέως Τι]βερίυ  
[Ἰουλίυ Ροιμητάλκω φιλοκ]αίσα–  
[ρως καὶ φιλωρωμαίου, εὐσεβοῦς κτλ].

The absence of coins from the time of King Sauromates I (92/93-123/24) in the archaeological strata also supports our assumption about the date of the beginning of the second building period at Iluraton.

The lower rows of rusticated blocks in the north-eastern defensive wall are built over with huge limestone blocks measuring up to 1.5 x 1.1 x 1.1 m laid using a completely different technique. The same picture is found in the south-western wall, which was obviously constructed in haste, as were the north-western and south-eastern lines of defence, which were completely rebuilt. Only the great haste with which the defences were constructed in the face of a real military threat can be an explanation for using in their most vulnerable parts any suitable building materials, such as stone feeding troughs for animals and anthropomorphous gravestones, which came in handy<sup>21</sup>. After re-building the fortress,

the walls were 2.4 m thick on three sides, and only 1.8 m on the north-western side. Noting the carelessly closed up breach near the southern Tower V<sup>22</sup>, we may conclude that the walls did not provide reliable protection for city. The breach may have been caused by an attack of the Crimean Scythians using battering-rams. An image of a battering ram, shown as a vehicle with a shed roof, has been preserved on the plaster in one of the buildings at Neapolis Scythica<sup>23</sup>. Furthermore, one may wonder why Iluraton's defensive system was reinforced and why the reorganization of some of the inhabited quarters took place, which determined the layout of the site uncovered by excavation.

The third building phase dates to the end of the 2<sup>nd</sup> century A.D., when vigorous measures to strengthen the state defences were undertaken by King Sauromates II. At this time, three of the defensive curtains were additionally strengthened. External masonry, 4m thick, acting as an extra defence against battering rams and strengthening the curtain was added to the south-eastern defensive wall, preserved to a height of 3.15 m, along its entire length of about 200 m. It consisted of five rows of masonry up to 1.7 m high, built at an angle of 67° from the base. Along the curtain between Tower I and the gate anti-battering ram masonry was attached directly to the defensive wall (6.4 m in overall thickness). Beyond the gate and on the south-western line of defence, the space between the main wall and the external anti-battering ram masonry is filled with densely stamped rubble and a limy fill. Thus thickness of the foot of the walls reached 8.2 m here. Masonry of 1.35 m thickness was also added to the north-western wall.

Four towers were placed along the line of the south-eastern defensive wall at intervals of about 31 m, including an opening for a gate. Three of them, practically identical in structure, have been excavated. All of them are rectangular in form with internal rooms and are connected to adjoining domestic complexes. Tower I had a narrow entrance 1.65 m in length and 0.77 m in

<sup>22</sup> *Ibidem*, p. 111.

<sup>23</sup> O. D. D a s h e v s k a j a, *Graffiti na stenakh zdanija v Neapole Skifskom* (Graffiti on the Walls of Building in Neapolis Scythica), "Sovetskaya Archeologija". No. 1, 1962, p. 182.

<sup>20</sup> *Korpus Bosporskih nadpisej* (Corpus of Bosporan Inscriptions), Moskva-Leningrad 1965, No. 966.

<sup>21</sup> V. F. G a j d u k e v i ċ, *Ilurat: raskopki...*, p. 110 ff.



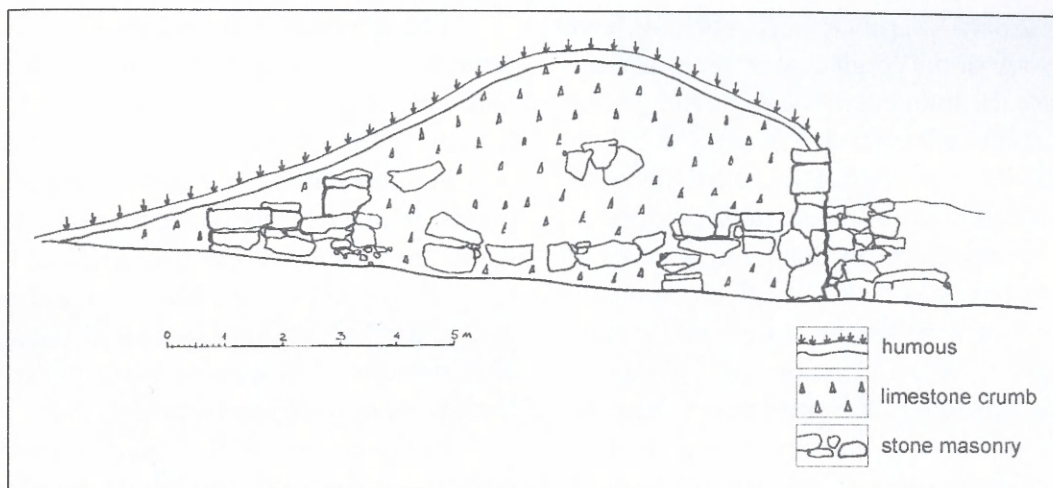


Fig. 6. South-western gate (a section).

width. The internal room measured about 9 m<sup>2</sup> (2.97 x 3.1 m). The tower protruded beyond the curtain wall for a distance of 4m. The length of its south-eastern side is 13.8 m, and that of the northeast side 10.5 m, including the additional external masonry of up to 6 m. Tower II was preserved up to a height of 3.5 m. Its frontage is 14.5 m long. Here too there was a doorway 1-1.2 m wide leading to an internal chamber measuring 2.85 x 3.4 m<sup>24</sup>.

Near Tower II, where a side street opens on the south-eastern wall, masonry 2.1 m in width was attached to it from the inside. The excavated section is 8 m long and reaches 1.4 metres in height. It is probably the remains of a flat ramp used for lifting mechanical stone-throwers onto the wall<sup>25</sup>. Next to the ramp, in house no. 3, a fine spherical limestone missile some 7 cm in diameter and about 450 g in weight was found<sup>26</sup>. It is thought that balls of such calibre had a universal character and were intended for use against human targets.<sup>27</sup>

Absence of any damage to the surface of the ball makes it highly unlikely that it had been shot into the city. Most probably, it had been intended for use in stone-throwing artillery located in one

of the towers of the fortress. Calculation of the calibre of a ballista to which this ball corresponds can be made using the following formula:  $C$  (calibre in inches) =  $1,1 \sqrt[3]{100 M}$  (weight in minas). This means  $C=0.13$  m. According to classical authors, the minimal size of the area necessary for the installation of a ballista was 13.5 calibres in width and 16-21 in depth<sup>28</sup>. Hence, platforms of 1.75 m width and 2-2.73 m depth were necessary for the installation of Iluraton's ballista. Such measurements correspond to the size of the fortress towers.

The gate in the south-eastern wall has not survived. P. Dubrux noted that "Gate T", located in this place, was 3-4 sazhen<sup>29</sup>, i.e. about 8 m wide. The destruction of the adjacent wall caused the opening to seem wider than it had actually been in ancient times, hence the author's impression of its size. No traces of stone masonry were found during excavation of this site in 1977. The gate, however, could not have been wider than the Main Transverse Street, i.e. 4.5 m.

Where the south-eastern and south-western walls met at a right angle, stood the most powerful corner tower of the fortress (Tower IV). Its external size was 10 x 14 m and the internal room measured 3.3 x 4.5 m. An opening some 1.6 m in height was set in the tower, topped by two massive limestone blocks (Fig. 5: 1). A stretcher with a groove for a joist found in the north-western wall allows us to determine the height of the tow-

<sup>24</sup> V. F. Gajdukevich, *Ilurat. Itogi...*, p. 22 ff.

<sup>25</sup> V. F. Gajdukevich, *Ilurat: raskopki...*, p. 78, Fig. 2.

<sup>26</sup> V. F. Gajdukevich, *Ilurat. Itogi...*, p. 71, Fig. 63.

<sup>27</sup> N. I. Sokol'ski, *Kamennye jadra iz Pantikapeja* (Stone Balls from Panticapeum), "MIA", No. 103, 246; A. M. Akopyan, *Kamennye jadra iz Artashata* (Stone Balls from Artashat), [in:] *Problemy antichnoy kultury* (Problems of Classical Culture), Moskva 1986, p. 233.

<sup>28</sup> *Ellenisticheskaja tekhnika* (Hellenistic Technology), Moskva-Leningrad 1948, p. 291.

<sup>29</sup> V. F. Gajdukevich, *Bosporskiy gorod...*, p. 188.

er floor as 2.6 m. There were probably not fewer than four such floors connected by internal stairs. In such case the total height of the tower, including the merlons whose usual size is 1.5-1.7 metres, would have reached about 12 meters. Defensive walls ending in rectangular merlons are repeatedly represented on Bosphoran coins of the 1<sup>st</sup>-2<sup>nd</sup> centuries A.D.<sup>30</sup> It is difficult to answer the question of whether the towers and curtains of the fortress were roofed or not. Taking into account the character of their masonry, laid on a clay solution, which progressively collapses as a result of the direct influence of rain, such a possibility cannot be completely ruled out.

Tower IV was destroyed by fire. Its internal chamber was filled with a quantity of burnt wood (pine) and the remains of cane or straw, obviously used for the arson<sup>31</sup>. The fire was so strong that it coloured the masonry stones a shade of red and cracked them on the inside. On the outside of the tower the remains of a ditch, dug into the rock to a depth of 1.5 m were found. It had the form of an inverted trapeze in section. It was 6.2 m wide at the top and 3.5 m wide at the bottom. The ditch was dug along the whole length of the external face of the south-western wall with a crossing place left opposite the gate. It could be filled with water only when it rained. Apparently, its purpose was to hinder the forward movement of battering rams.

The south-western curtain has been excavated along its inner face between Tower IV and Tower V at a length of 94 m. Its staircase (Fig. 5: 2), 1.2 m in width, of which seven steps set at an angle of about 45° have survived, allows us to determine the structure's original height<sup>32</sup>. Knowing that the bottom of the staircase lay some 10.95 metres from the wall and that the stairs connected the wall walk with a platform not closer than 1.5 m along the parapet, the wall must have been about 8.5-9 m high. If we include its merlons, the total height must have been not less than 10 m. This corresponds to the standards of classical fortification<sup>33</sup>.

The approach to the outside of the wall at the south-western gate was of more simple construction. The structure here was not attached to the defensive wall as was customary. Most probably, there was an interval of 1.3-1.7 metres between the two points. It was densely packed with earth with an admixture of rough stones to a height of 1.1m. The ramp, rising gently to the gate in the wall, was 18m in total length<sup>34</sup>. It probably looked like an earthen embankment set an angle of about 30°, with several stone steps added at the bottom part.

In the centre of the south-western line of defences, some 43 m from the corner tower, lies the only remaining gate of the fortress. The main street, running from it forms the planning axis of the city. From here a worked surface of rock 0.88m long goes down in the direction of the city centre (Fig. 6). The entrance to the gate is in the form of an extended gate chamber 10.2 m in length and 3.75 m in width. An important detail of its construction is a rectangular incision (0,32 x 0,28 m) 5.3 m in depth for a wooden beam locking the inside gate. It was found at a height of 1.4 m. When the gates were closed, the beam was moved forward from the incision and, obviously, inserted into another one in the opposite wall, which has not survived<sup>35</sup>. Undoubtedly, there was also an external gate system, flanked not by towers as was the usual practice, but by pylons, extending beyond the line of the wall by 2 m. Probably, they were once linked by an arch and defended by an arch over the tower. It is possible that the gate defence system originally also featured a portcullis<sup>36</sup>. Thus, the usually extremely complex structures defending the gate had been reduced to a minimum. On the one hand, these constructions limited the range of shooting from the adjoining curtains, but on the other, the arcs overlapping in the gate area at the line of the ditch created additional difficulties for the attacking enemy. Similar gate structures are to be found at Neapolis Scythica<sup>37</sup>

<sup>30</sup> A. N. Z o g r a f, *Antichnye monety* (Classical Coins), „MIA”, No. 16., 1951, p. 201. Tabl. XLVII, 3. 18; V. A. A n o k h i n, *Monetnoe delo Bospora* (Monetary System of the Bosphorus), Kiev 1986, p. 101. Tabl. 14, 381; 16, 416; 18, 461.

<sup>31</sup> V. F. G a j d u k e v i č, *Ilurat: raskopki...*, p. 111.

<sup>32</sup> *Ibidem*, p. 129.

<sup>33</sup> Philon. Byz. III. 2.

<sup>35</sup> *Ibidem*, p. 113.

<sup>36</sup> V. P. T o l s t i k o v, *Neizvestnye stranitsy istorii Bosporskogo tsarstva* (The Unknown Pages from the History of the Bosphoran Kingdom). “Soobszczenija Gosudarstvennogo Muzeja Izobrazitel'nykh Iskusstv” 1992, p. 44-45.

<sup>37</sup> T. N. V y s o t s k a j a, *Neapol' skifski – stolitsa pozdnih skifov* (Neapolis Scythian – The Capital of Late Scythians), Kiev 1979, p. 44-45.



Fig. 7. 1 – view of the courtyard of a house near Tower V; 2 – house on the north-western terrace.

and in the Roman fortress of Augusta Traiana in Thrace, dating to the 2<sup>nd</sup>-3<sup>rd</sup> centuries A.D.<sup>38</sup> Ancient designers may have designed these elongated internal gate structures instead of reinforcing the external structures of the gates.

Tower V was situated where the south-western and the north-western defensive walls met. The entrance was from the courtyard of a house (Fig. 7: 1), from which it was possible to climb up to a walkway on the curtain by a staircase. The structure of this tower differed from the one described above, as its ground floor was completely filled with rough stones, and a course of limestone blocks, carefully trimmed and fitted to each other, was built facing the yard. Next to it, was a stone box with a clinker inside, set into the pavement of the yard. Taking into account the fact that such boxes were usually placed under the stairs<sup>39</sup>, it is more than likely that the stack was used to support a wooden staircase which once led to the walkway.

The north-western defensive wall follows the contours along its 240 m length. As has already been noted, the curtain was rather thin, 3.15 m even after its reinforcement with additional masonry. It seems likely that the initial line of fortification

had been hastily erected and demanded repeated repair. The remaining structures suggest the presence of a retaining wall about 10 m in length on its northeast section and a similar construction under the northern corner Tower IX.

In total there are five towers<sup>40</sup> on the north-west wall, including the corner towers. Only two of them – Towers VIII and IX – have been excavated. They protected the northern corner of the fortress and were sited immediately alongside one another. The distance between the other towers varies from 26 to 93 m depending on the demands on the defensive system made by the natural conditions. The only opening in the defences here is a postern some 1.2 m in width. It is flanked on the southwest by Tower VII, the remains of which were noticed by P. Dubrux<sup>41</sup>. Nearby was a guardroom with two exits. One of them led into a courtyard and then into a lane, which allowed constant observation of the postern<sup>42</sup>. On the other side of the lane, there was a building (house no. 1), from which it was possible to ascend to the wall. Between it and Room 4, the remains of another staircase were found. The top step of the

<sup>38</sup> T. Ivanov, *Abritus*, p. 204. Fig. 226.

<sup>39</sup> V. F. Gajdukevič, *Ilurat...*, p. 49. Fig. 35-37.

<sup>40</sup> Tower VI is marked on the plan by P. Dubrux, but it has not yet been located.

<sup>41</sup> V. F. Gajdukevič, *Ilurat...*, p. 27. Fig. 11.

<sup>42</sup> *Ibidem*, p. 29.

staircase rested on a stone platform 6.4 x 1.8 m in size. A staircase with five steps, 0.65 m in size, was once built against it at a right angle<sup>43</sup>. Thus, we have sufficient data to allow us to attempt an initial estimate of the height of the wall in this section of the defences. The steps of the bottom flight of steps rose at an angle of 60° to an intermediate platform at a height of 2.2 m. Most probably, neither this structure nor the platform connecting it to the wall exceeded 1.5 m in length. Therefore if we assume that the top flight was built at the same angle, the north-western wall may have been about 7 m in height (~8.5 m with the merlons). Hence, it was at least 2 m lower than the walls on the lower side of the fortress, which corresponds to its location and strength.

Tower VIII, marked on the plan by P. Dubrux, is located 62 m from the postern. Its external dimensions are 7.6 x 5.5 m. The tower is not well preserved, but even its remains create the impression of extreme negligence of construction. Probably, it was built during the rebuilding of at least the northern corner of the fortress during the 3<sup>rd</sup> century A.D. The necessity of repeated repair of the walls and towers in this section of the fortifications was caused by the fact that they were partly built over a layer of ash refuse, which caused the defensive works to slide. The masonry of the walls near the northern tower also changed as a result of the reconstruction, and two phases can be distinguished here. The defensive line is only 1.4 m thick between Tower VIII and the top of a retaining wall lying to the southwest. An extensive domestic complex was located next to it at a acute angle and the interval was packed with densely stamped earth mixed with small rough stones. Thus it formed part of the internal masonry, increasing the overall thickness of the defensive wall to 2.7 m.

To the north-east of Tower VIII, the defensive wall is 1.8 m thick and strengthened on its external side at the base by rough stone masonry up to 2 m in width, carelessly built on clay. Between the wall and northern Tower IX ran a corridor 1.2 m in width. On one side, it was connected to the domestic complex mentioned above, while on the other side it led directly to a small

gate at the base of the tower. The corner tower, of which only the base remains, with external dimensions of only 9 x 7.5 m, is built on the rocky ground table, levelled by large limestone slabs. A gateway 1.4 m in width leads from its ground floor to an adjacent house.

The last stage in the development of Iluraton's defensive system was the construction of a built-up area outside the north-western defensive wall at the beginning of the 3<sup>rd</sup> century A.D. This probably represented an attempt to solve the problem of lack of space inside the fortress. It also ruled out the possibility that the enemy would concentrate his forces on the terrace located there and storm this relatively weak section of the defences. It is worth noting that the construction work in this area did not begin until the reign of King Ininthimaios (234/5-239/40), whose coins were found among the ash and household waste dumped in this area at the beginning of the 3<sup>rd</sup> century A.D. During this period, major fortification works were undertaken throughout the Bosporan Kingdom: new fortifications were constructed and the existing ones were repaired. Undoubtedly, they were undertaken in order to repel new Barbarian attacks.

The external face of the multi-level inhabited complexes found out on the slope runs approximately 30 m from the defensive wall. In case of an attack, the narrow entrance corridors and the alleys between the houses could be blocked, thus creating an additional obstacle in the way of the enemy and forming a kind of *proteichisma*, as is marked on the plan by P. Dubrux<sup>44</sup>. The front of the alleyway in one of the houses, 1.3 m wide, was blocked by several carefully assembled large limestone slabs (Fig. 7: 2) apparently in the face of an attack. It was easy to block the entrance to the building, which was located nearby. Its excavated section was 19 m long. It was 2.5 m in width at one end and 0.87 m in width at the other and it must have been reached through the postern. This part of the corridor was constructed as a nine-stepped descending staircase. In case of a serious threat, the defenders could withdraw into the internal part of the fortress through a postern in the north-western wall.

<sup>43</sup> *Ibidem*, p.29.

<sup>44</sup> *Ibidem*, p. 13. Fig. 37.

As far as its defensive capabilities are concerned, Iluraton remained one of the most strongly fortified settlements on the Bosphorus for more than two centuries. It is enough to compare the thickness of its walls, sometimes exceeding 8 m, to that of other Bosporan city walls: Panticapaeum – 4.5 m, Tiritaka – 3.4 m, Myrmekion – 2.5 m<sup>45</sup>. Only the walls of Neapolis Scythica stand comparison, as their thickness varies from 5.4 m to 7.35 m<sup>46</sup>. Thus, evidently showing their evolution during this period, the fortifications of Iluraton can be studied as a benchmark for Roman structures on the Bosphorus as well as for all other kinds of structures characteristic of this period.

Careful allows us to conclude that the overwhelming majority of the inhabitants of Iluraton were barbarians, who arrived there as military settlers. It is possible to try and estimate the population of the fortress at the final stage of its existence thanks to a technique developed by S. D. Kryzhitski<sup>47</sup>. Taking into account the maximal use of space inside the fortifications and on the north-western terrace (about 2.6 hectares) as well as the total area of the streets and lanes (about 0.4 hectares), the percentage of the city area allocated for housing was about 73% – no less than 2.2 hectares. Since on average area an Iluraton house covered an area of about 180 m<sup>2</sup>, there should have been about 120 houses in total. If a family was comprised of 8-10 people, including servants or slaves, the population of Iluraton was about 900-1200 people. The garrison of the fortress must

have been no less than 150 strong. The warriors seem to have been military settlers and they served the king in return for land. Some of them came from a Greek cultural background. The rest of the population were mainly of barbarian origin and they retained many features of their original culture. The richest of the citizens served as heavy cavalrymen or “cataphracts”. A graffito of a horseman of this type has survived on a fragment of plaster (Fig. 5, 4). The warrior is wearing long armour made from small metal plates and holding in his hands a heavy spear in a tilted position<sup>48</sup>.

Iluraton ceased to exist during the Gothic campaigns. The decisive attack on the fortress probably happened quite suddenly. Fires broke out in a number of housing blocks. Owners of some of the houses were not able to lead out their animals, which were all lost in the fire<sup>49</sup>. In the corner room of a house near the crossroads of the main streets a hoard of 66 staters dating to the reign of King Rheskaporis V (A.D. 242-267) was found<sup>50</sup>. As no coins were minted on the Bosphorus between 267 and 275, the destruction of the fortress, left by its garrison without a fight, may have fallen around this time. The results of the recent excavations in north-eastern section of the settlement support this assumption a certain extent. It was there that House no. 8 was excavated. It had been so thoroughly destroyed as a result of an earthquake about the middle of the 3<sup>rd</sup> century A.D. that the stone tumble up to 1.2 m in height was never removed. Directly on the leveled surface, the old walls were strengthened or new walls were erected. Not too many years had passed between the earthquake and the day when the house

<sup>45</sup> V. F. G a j d u k e v i č, *Raskopki Tiritaki v 1935-1940 gg.* (Excavations of Tiritaka in 1935-1940), “MIA” No. 25, 1952, p. 17; idem, *Raskopki Mirmekija v 1935-1938 gg.* (Excavations of Myrmekion in 1935-1938), “MIA”, No. 25, 1952a, p. 136; V. P. T o l s t i k o v, *K voprosu ob oboronitel'nyh sooruzhenijah akropolja Pantikapeja v IV-I vv. do n.e.* (On the Question of the Defensive Constructions of the Acropolis of Panticapaeum in the 4<sup>th</sup>-1<sup>st</sup> Centuries BC), “Vestnik Drevnej Istorii”, No. 3, 1977, p. 158.

<sup>46</sup> T. N. V y s o t s k a j a, *Neapol' skifski...*, p. 44. Fig. 8, 9.

<sup>47</sup> S. D. K r y z h i t s k i, *K voprosu ob opredelenii kolichestva naselenija v grecheskom ellinisticheskom gorode* (On the Question of the Definition of Quantity in the Hellenistic City), [in:] *Prichernomorje v epokhu ellinizma. Materialy III Vsesojuznogo simpoziuma po drevnej istorii Prichernomorja* (The Black Sea Coast in the Hellenistic Epoch. Material of the 3<sup>rd</sup> All-Union Symposium on the Antique History of the Black Sea Coast), Tbilisi 1985, p. 94-103.

<sup>48</sup> I. G. Š u r g a j a, *Izobrazhenija vsadnika i konja iz Ilurata* (Images of the Horseman and the Horse from Iluraton), “Kratkie soobshhchenija Instituta Archeologii AN SSSR” No. 174, 1983, p. 98-99, Fig. 4; V. A. G o r o n c h a r o v s k i, V. P. N i k o n o r o v, *Iluratskij katafraktarij* (Iluraton's Cataphract), “Vestnik drevnej istorii”, No. 1, 1987, p. 201-212, Fig. 2; M. M i e l c z a r e k, *Cataphracti and clibanarii. (Studies on the heavy armoured cavalry of the Ancient World)*, Lodz 1993, p. 137, Fig. 19.

<sup>49</sup> I. G. Š u r g a j a, *Raskopki v jugo-zapadnom rajone Ilurata v 1966-1968 gg.* (Excavations in the South-Western Part of Iluraton in 1966-1968), “Kratkie soobshhchenija Instituta archeologii AN SSSR” No. 124, 1970, p. 63.

<sup>50</sup> N. A. F r o l o v a, I. G. Š u r g a j a, *Iluratskij klad monet Riskuporida V* (Iluraton's Hoard of Coins of Rheskaporis V), “Vestnik Drevnej Istorii”, No. 1, 1982, p. 91-96.

was abandoned, since there was no time to re-pave the courtyard. Traces of damage caused by a serious seismic wave coming from the north-east can be observed in a number of monuments of the European Bosphorus standing on its terraced slopes in the same period<sup>51</sup>. Even if the walls and towers of Iluraton had been partially damaged as a result of these tremors, it would have been hardly possible to restore them in the circumstances of state instability and lack of funds in the state treasury.

This explains why the normal life of the fortress continued only to the middle of the 3<sup>rd</sup> century A.D., which has already been observed by

V. F. Gajdukevič. At the beginning of the second half of the third century A.D., Iluraton ceased to be an important structure in the Bosphorus' defensive system. The garrison's Command left the city. Their large houses in the city centre began to be used by the inhabitants who remained there at their own risk during the restless period of the Gothic campaigns<sup>52</sup>. After A.D. 267, when Barbarian pressure suddenly grew on the borders of the Bosporan state, the last inhabitants of Iluraton did not fight for their city but abandoned it hastily.

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<sup>51</sup> N. I. Vinokurov, A. A. Nikonov, *O sledah zemletrjaseniy antichnogo vremeni na zapade Evropejskogo Bospora* (On Traces of Earthquakes in Classical Times in the West of the European Bosphorus), „Rosijska Archeologia”, No. 4, 1998, p. 101-103; iidem, *Total'nye razrushenija vtoroj poloviny III v. n.e. na Bospore kak khronologicheskij reper*

(The Total destruction of the Second Half of the 3<sup>rd</sup> Century A.D.), [in:] *Bosporskiy fenomen: problemy khronologii i datirovki pamjatnikov. Materialy mezhdunarodnoy nauchnoy konferentsii*, 1, Sankt-Petersburg 2004, p. 95-103.

<sup>52</sup> V. F. Gajdukevič, *Ilurat. Itogi...*, p. 73.