ALBA REGIA

A SZENT ISTVÁN KIRÁLY MŰZEUM ÉVKÖNYVE

2001
SZÉKESFEHÉRVÁR
INTRODUCTION

In this paper we would like to publish the stone artefacts of the Fejér-county's Vatyà-earthworks (more exactly, tools made of stone from Aba-Belsőbaránds-Bolondvár, Igar-Vámgusztsa-Gállóta, Kajszó-Várdomb, Lovasedény-Médalfyvár, Pákozd-Vár, and Sárhegyd-Béresabodjvízvár).

This study aims at archaeological and geological investigations, too. Our purpose was to study with interdisciplinary methods this group of the earthworks, which are of the same age, culture and geographical circumstances. These data we would like to insert into a complex Vatyà-culture project, which studies every tool made of stone. In this case the paper deals with the western part of the Vatyà-settlements, which we have accomplished. In this moment we could compare the data of Fejér-county with Százhalmombat and Böleske, lying on the bank of Dunabe (Nagyév-Vatyà culture).

Pictures:
Plate I:
The spread of Vatyà-earthworks in Fejér county, after Novák 1952, 1.
The spread of Vatyà-earthworks and horns after Kovács, 1995, 22.
Plate II:
The geomorphological – lithological map of Vatyà-earthworks in Fejér county.

Aba-Belsőbaránds-Bolondvár

Geographical description

The so-called Bolondvár is situated half kilometre far to the east from Belsőbaránds-Bolondvár, on the beginning of the valley Hármaság, on the NW side of a large plateau. The geographical environs (Middle-Mezőföld) of the earthwork is an alluvial area covered by loess (Marosi 1990). This territory was formed by the tectonical effects during the Pleistocene (Rónai-Szemes, 1972); the uplifted area was covered by loess and loess-like sediments, the depressions became backlands. The morphological picture of the region was determined by the erosion and denasion valleys, which give natural protection to the earthwork. The shape of the earthwork resemble a triangle, on the east side there is a shallow fosse, on the west side the plateau slopes downward to the meadow, the south side borders a deep, vertical-wall ravine, which is used now as a dirt road. The length of the earthwork is 180 m, the greatest width is 100 m. The whole territory is divided into two parts by a 25 m wide, 2 m deep fosse. This fosse on the eastern side gently slopes downward, it was the former way up to the settlement. We can see the traces of the rampart on the NW corner of the second part of the settlement, its height is hardly 200 cm. On the southern and the northern ends of the earthwork an artificial hill is surmounted, tied with the fortification. In the first part of the earthwork we can find a 26 m (diameter) circle, which encloses a 6 m width, half meter deep fosse. It was a bastion in the Bronze Age, and we can say that it is the most characteristic feature among the Earthwork. This feature (the fortified circle bastion) appear on Pákozd and Sárhegyd, too, but they can not be seen so well, like in the case of Aba. This territory of the earthwork is very small, it was not used for residence. The surface of the first part of the settlement was ravaged in the II. World War (military ditches), and in the Medieval Age (remains of a building with stone walls). The surface of the second part is smoother, with some pottery and clab from the Bronze Age. (Novák 1952, 8.)

In the summer of 2003 we made field-survey on the territory and on the South-eastern part we found the exterior settlement of the earthwork (there were many finds in the ploughed land), outside the earthwork.

Excavations on the earthwork:

(1960, excavator: T. Kovács, Tell-study archaeological group)

On the southern part of the earthwork a 4x4 m trench was opened, where between 37 and 50 cm 5 dwelling layers were reported. The 2nd trench dug to SE, 25 m far from
the 1., near the eastern side of the earthwork. On this 33 square metre surface between 97 and 246 cm depth there were 8 layers separated. There were several excavated house-types:

- A pit-house, covered with reed-twig or leather
- B mud-like house, plastered clay floor, covered with reed-twig or leather
- C floor made of clay and twig, ascending walls, made of clay.

The excavator found 6-7 houses, and the 4th House (2nd French) had 5 postholes. The base of the finds the earthwork was built in the 2nd half of the Vaty culture (Middle Bronze Age). (Kovács 1963, [31].)

**List of stone implements:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Size</th>
<th>Material</th>
<th>Colour</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: 2. French. 7, Spade-trench, hemispherical grinding stone, fragment</td>
<td>10x10x10x50 mm, Raw material: Grisette fine-grained conglomerate.</td>
<td>Grisette fine-grained conglomerate</td>
<td>Black</td>
<td>Colourless</td>
</tr>
</tbody>
</table>

**Appreciation:**

The excavated territory was very small (30 square metres), and among the archaeological finds there were only 3 stones. The grinding stone (typical hemispherical, small size) refers to the cereal processing, and we can find some characteristic marks of the paint too on it. The last stones were not tools, just raw materials, among them a coloured lump (maybe it was the base-raw material of the ground paint). The material of the stone implements came from the area of Velence-Mts. (granite, metamorphite) and the edge of Buda-hills (conglomerate).

**Picture:**

- The map of the earthwork after Kovács, 1953. 6.
- The details of the earthwork in 2000

**Igar-Vámpuszta-Galácsyta**

**Geographical description:**

A plateau rises under the SE side of Vámpuszta, in the south corner of this the so-called Galácsyta is situated. The surrounding of the earthwork is a fossa plateau (so-called Káloz-Igar) inside the area of West-Mezőföld, which was divided by meridional valleys (Maecosi, 1990).

After the Pliocene fluviolacustrine sediments there was a glacial accumulation parallel with tectonic events. This effects uplifted the area asymmetriacally. At present the plateau is a good-quality agricultural region because of the soil (black earth). The west side of the earthwork slopes steeply downward to the plain, the southern side finishes in 8-10 m deep abysses in some places. On the northern and eastern sides a 50-60 m wide fossa parts the plateau. This fossa originally was risen on natural way, but its regular shape shows that it was transformed because of the defence. The territory of the earthwork was destroyed recently, and there is not exactly determinable edge of the hill, because the agricultural levels and annihilated it. The isolated situation is the only trace of the former fortification. The length of the settlement in this state - is 194 m, the greatest width is 60m. On the surface we can find many pottery from the Bronze Age. In 1969 and 1973 there were surveys on the territory, and in 1972, 1973 and 1974 there were excavations (Tell-study archaeological group). The fortified Bronze Age-earthwork is the southernmost one in Fője county, in the flood area of Sô, looks at the northern slopes of the Mezseg (it means a closely quarry of local stone). Double earthwork, very much squared, nowadays there are orchard and vineyard in the area. The little earthwork contains only one layer. In the Great Earthwork the archaeological evidences separated 3 layers, the upper from the Koszat-period, and the younger from Vaty-culture. In 1973, the great part excavated was 2nd period and Koszat-phase. In 1974 the excavators found the older Nagyrév-pits after the Vaty-layers.


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</thead>
<tbody>
<tr>
<td>2. 1972/20/7, hemispherical grinding stone, with very high lateral faces,</td>
<td>15x8x8 cm, raw material: Grisette fine-grained conglomerate with silicious cementation.</td>
<td>Grisette fine-grained conglomerate</td>
<td>Black</td>
<td>Colourless</td>
</tr>
<tr>
<td>2. 1972/20/7, pit; grinding slab, fragment, on the grinding surface there is</td>
<td>250 x150 x60 mm, Raw material: Micaceous medium-grained sandstone</td>
<td>Micaceous medium-grained sandstone</td>
<td>Black</td>
<td>Colourless</td>
</tr>
<tr>
<td>2. 1972/20/7, small slab, the hemispherical grinding stone, the grinding surface is orange colour, medium size pebbly grain, sponge from the long use. The tool is roughly worked. The grinding surface is ellipse, with angular edges. Size: 125x7x6 cm, Raw material: Micaceous medium-grained sandstone.</td>
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</tbody>
</table>

8. 1973/16/70-120 ; red fragment of a grinding stone, hemispherical, medium size. Size: 12x10x8 cm, Raw material: Micaceous medium-grained sandstone.
9. 1972/1a/60-70: grinding stone, grinding slab, end fragment, broken in several along too. Size: 165x140x65 mm. Raw mat.: Micaceous medium-grained sandstone.

10. 16/α δι: hemispherical, unbroken grinding stone, roughly worked, on the face there is red paint. The grinding surface is strongly rough, towards the lateral faces are white wear-strips. The grinding surface is ellipse, rough grain. Size: 255x155x70 mm. Raw mat.: Micaceous medium-grained sandstone.

11. 1972/24/2 fragment of a grinding slab, rough grain, the grinding surface is smooth from the long use, with black, semicircular stripes (the former grinding material), and white wear. On the broken lateral faces and on the bottom there are red ochre-traces. The grinding surface is mildly rough, the tool roughly worked. Size: 220x170x70 mm. Raw mat.: Grisstonic fine conglomerate with silicone cementation.

12. 1972/24/2 flat: hemispherical grinding stone, middle-fragment, rough grain, the grinding surface is strongly spenny, wear, with black stripes. The tool is finely worked. Size: 100x80x50 mm. Raw mat.: Grisstonic fine conglomerate with silicone cementation.

13. 1972/24/2 flat, hemispherical grinding stone, end-fragment, rough, pebbly grain, the grinding surface is tough, smooth, fine-worked. Size: 200x150x85 mm. Raw mat.: Grisstonic fine conglomerate with silicone cementation.

14. 1972/25/2 fragment: large, solid hemispherical, very high lateral faces grinding stone, half fragment, the faces are injured. The grinding surface is spenny, shining, with black circle, and clay in the pores. Middle grain, the tool is roughly worked, on the bottom with red ochre-trace. Size: 180x190x120 mm. Grinding surfaces: 178x120 mm. Raw mat.: Grisstonic fine conglomerate with silicone cementation.

15. 1973/10/1 flat: hemispherical, very thin flat grinding slab, one corner is missing, the edge is damaged. The grinding surface is very tough, medium grain, with straight, long grinding stripes. The tool is roughly worked. Size: 190x165x55 mm. Grinding surface: 180x165 mm. Raw mat.: Fine conglomerate with silicone cementation.

16. 1972/10/1 flat: hemispherical, flat grinding stone, end-fragment, the upper corner is broken. Very rough grain, pebbly grinding surface, smooth, with red ochre stripe and grinding stripes themselves. The tool is fine-worked. The grinding surface is mildly tough, ellipse. Size: 225x135x58 mm. Grinding surface: 225x135 mm. Raw mat.: Grisstonic fine conglomerate with silicone cementation.

17. 1972/11/1 Υ. house: hemispherical, flat grinding stone, half fragment. Rough grain, the grinding surface is smooth, shining, black and brown colour, strongly shiny. On the broken lateral faces are red ochre-traces, the tool is roughly worked. Size: 150x175x35 mm. Grinding surface: 130x175 mm. Raw mat.: Fine conglomerate with silicone cementation.

18. 1972/4/6 flat: long-face edge fragment of a grinding stone, fine-grain, in the pores everywhere are orange ochre-traces. The grinding surface is white, worn. Size: 250x105x50 mm. Raw mat.: Grisstonic fine conglomerate with silicone cementation.

19. 16/π: hemispherical, flat grinding stone, half fragment. The grinding surface is ellipse, rough shining, wear, brown. Size: 160x120x48 mm. Raw mat.: Grisstonic fine conglomerate with silicone cementation.

20. 1973/1/2/70-120: flat, nearly tube sandstone pebble, with convex-concave faces. Size: 85x62x17 mm. Raw mat.: Quartz.}

21. 1972/2/3/2 flat: half fragment of a handstone, on the broken corner there is strong damage and blisters too. Angular hemispheres. Size: 65x50x20 mm. Raw mat.: Micaceous middle-grained sandstone.

22. 1973/1/6/α fragment of a handstone, a flat, polished corner. Size: 64x48x21 mm. Raw mat.: Quartzite.

23. 1/2: U-shaped pebble, both ends are flat, pointed, on the surface there is corner, the lateral edges is broken. Size: 94x60x48 mm. Raw mat.: Quartzite.


25. 21/1/6/α/β flat: trapeze shape hammer, on both ends these are blisters, the one is rounded, the other is straight. Both faces are flat, straight grooves and micro-wear on the faces, the lateral edges broken. Size: 73x60x37 mm. Raw mat.: Amphiathionic anodes. (Microphoto)

26. 1972/4/6 flat: performed axe, broken on the handle hole, the working edge is unbroken, sharp chisel-edge. Size: 61x58x28 mm. Raw mat.: Amphiathionic anodes.

27. 1/0: untypical shape axe, one face is convex, the other is flat, but strongly damaged. This axe has not any working edge, maybe half-done, or worn, or before transformed position. Size: 122x60x25 mm. Raw mat.: Micaceous fine sandstone.

28. 1973/1/6/α flat: saw on excellent form blade, on the whole surface there is cortex, the raw edge made with bifacial retouch, with shining use-wear (Microphoto). Size: 31x21x8 mm. Raw mat.: Filaceous flintstone.


**Appreciation:**

The excavations altogether yielded 27 stone-tools. The grinding tools are: The lower part of the grinding stone: 12 are hemispherical (2 unbroken and 10 broken ones), 2 are large, 1 small size, and 2 with very high lateral faces. The grain-size of the gritters: 7 were rough, 5 medium and 2 fine-grained. Flat, rectangular shape grinding slab were 4, 3 were broken. On the grinding surface in one case there was a scraper, 8 were trough from the long using, and in 5 cases we can see the former ground material in the pores of the stones. On the grinding surfaces, on the lateral faces and the bottoms in 6 cases red-shade colouring matter was observed. Most of the tools were roughly-worked (7), 3 were fine-worked. The upper part of the grinding stones are the 2 handstones (typical angular-hemispherical shape, broken) and a pestle. The grinding tools were excavated from pits and filling soil. In one case a lower grinding stone was in the house (we can say, that the grinding activity happened inside the house too). In the settlement enigmatic grinding activity took place. Some cases we can see on the grinding stones paint (6). The grinding stones are broken, worn and trough from the long and powerful mechanical effects. The former material was settled in the pores of the grinding surface. Generally the grinding tools were made of middle-grey gritstone and fine conglomerate with silicious and limonitic cementation or micaceous sandstone. The material of the hand-stones are quartzitic fluvial pebbles.

**Axes:** there were two perforated axes, one is an undeterminate fragment, the other is a chisel-edge's piece. There were two not perforated pieces: one was-trapeze shape, and both side were used as (2) hammer, made of andesite, the other was trapeze shape tool, but there was not any working edge on it. The material of this tool is sandstone.

**Chipped stone: a typical saw on flake, made of Buda-homestone points to the cereal-gathering on the settlement.**

Unfortunately the dates and the finds of the excavation are unpublished.

**Pictures:**

 пути IV.

The map of the earthwork after Novak, 1952, 18.

Wood-burn of Sőlőt and the northern part of the Meszlo in 2000

The detail of the earthwork in 2000

Drawings: raw, perforated use with chisel edge, fragment.

**Plate V:** Micaceous of stone implement from the earthwork
Kayaselvárdomb

Geographical description:

The so-called Várdomb is lying under the NE side of the village Kayasel. The settlement is found on the NE part of the Mezíťád, in the alluvial area of the Valka-water. The morphological picture of the area is the same as that of Lovasheřané and Aba; asymmetrically uplifted and varied plateau which is divided by erosional-derational dykes and covered with losses and blown sand. Fields surround it on every side, the western side is bordered with the gardens. Várdomb is a portion of the plateau under the village, and a deep, wide fossa is separating it from the present settlement, which was formed on natural way. The earthwork consists of an almost horizontal plateau, and the mentioned fossa encloses it from 3 sides, and on the SW side gently sloping to the gardens. Once this side was also covered with grass, and brought down in the end of the last century (19th) to enlarge the gardens. This part with grass can be seen yet for some metres now. The shape of the fortified settlement is approximately quadrangular, the greatest diameter is 160 m. On the NW side we can find strong recess, it may have been the way up. The fortification have remained on the NE side. Here the inner face of the rampart is half metre high, the external face form fossa with 1.5 m downward, and then the steep part follows. The fossa can be seen in the NE part as straight on the whole line, somewhere else not (7). Another place, where the traces of the fortification can be seen is the SW side. Here the earthwork is protected against the gently sloping side with grass, it is 80 cm deep and 2-3 m wide. The inner part of the earthwork is smooth, used for pasture. In 1910 village people wanted to use the place for a cemetery, but the soil was too light. It means that the territory was rotated thoroughly formerly, evidently houses were built on it. On the surface we can find some daub too. In the II. World War a military fossa was dug on the NW side, and they found 15 m long wall. On the base of the descriptions it was cast wall, made of stone. On the surface there was some pottery from the second half of the Bronze Age. The earthwork is archaeologically protected area, covered by forest now. The finds rank among the 2. Period of the Vátya culture, Middle Bronze Age, but the life was continued longer, in the Late Bronze Age also. In 1963 G. Bándi and the Tell-sandy archaeological Group excavated here. The excavator opened 3 sections. There is not any publication about the archaeological investigations. The finds are in the King St. Stephen Museum, Székesfehérvár. In the databank of the museum there were only drawings, and we did not find any descriptions about the sections. (Perény 1864-65, 122., Novák 1952, 11.)

List of stone implements:

30. lower part of the hemispherical grinding stone, annulate, 3.5 mm grain, sparsy, cavernous, pebbly grinding surface, strongly worn for the grinding, the grinding surface is ellipse. The lateral faces are smooth. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.61.21.

31. end fragment, lower part of the grinding stone, broken on the edge too, hemispherical, 3-5 mm rough, crystalline stone, the grinding surface is ellipse, the edge is smooth. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.92.13.

32. end fragment of the grinding stone, lower part, fine with rough stripes. 3-5 mm grain, the grinding surface is worn, concave, pointed, ellipse, the stone is hemispherical, roughly worked. Size: grinding surface 45x165 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.77.5.

33. biface piece, not belonging together. Fine, 1-3 mm grain, the grinding surface is worn, ellipse. End fragment, it cut down straight, the lateral faces are thin, the bottom is roughly worked. Hemispherical. Size: grinding surface 140x80 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.77.5.

34. end fragment, small size, laterally hemispherical lower grinding stone, rounded corner, rectangle grinding surface. Pebbly, 5 mm - 1 cm grain, very rough. Piece for the wear in a stripe. The tool is fine-worked. Size: grinding surface 200x165 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.56.1.

35. not belonging together, flat, hemispherical grinding stone, half fragment with elliptic grinding surface, 1.5 cm grain, very rough. The centre is worn. The tool is fine-worked, on the bottom is a grain damage. Size: grinding surface 110x140 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.56.1.

36. grinding stone, large size, rough, hemispherical, end fragment. The stone is strong, cavernous, rough. The grinding surface is ellipse, with 1 cm - 2 cm hole on the surface, wear on the edge is deeper blow-traces. The end is worn too, with sharpening-traces. The tool is fine-worked. Size: grinding surface 260x300 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.57.1.

37. not belonging together, flatter, rounded corner, larger grinding stone, more than half fragment. Rough, pebbly, 2.5 mm - 1 cm grain. The grinding surface is rough, wear in stripes. The tool is fine-worked. Size: grinding surface 150x130 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.56.1.

38. hemispherical grinding stone, small size, the lateral faces are damaged. Rough, pebbly, the surfaces is red, porous. The grinding surface is ellipse, rough, in the centre strongly damaged, the edge indurated, broken. The tool is fine-worked. Size: grinding surface 150x110 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.57.1.

39. not belonging together. Fragment of the hemispherical grinding stone, fine grain, pebbly, the grinding surface is missing. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.57.1.

40. hemispherical, flat grinding stone, end fragment, rough, pebbly, cavernous stone. The grinding surface is quadrangular, the edge is damaged, mildly rough; with strong grinding stripes across. The tool is roughly worked. Size: grinding surface 150x155 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.56.1.

41. rectangular shape, large size, annulated, hemispherical grinding stone, half fragment. Fine, pebbly 1 cm grain. On the grinding surface from one hand are one way pull-traces, from the other hand and blow-traces. The edge is damaged, the tool is roughly worked. Size: grinding surface 183x155 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.55.2.

42. elongated, hemispherical grinding stone, ending straight, the edge is indented. The grinding surface is ellipse, fine, long, rough. Rough, pebbly, cavernous stone. On the lower corner there is a round pit. The tool is fine-worked. Size: grinding surface 210x145 mm. Raw mat: fine conglomerate with silicious cementation. Inv. No. 63.55.2.

43. not belonging together. Hemispherical, small size grinding stone, unbroken, the lateral face is damaged. The grinding surface is ellipse, mildly rough, with one-way left-right long pull. On the lateral faces the stone is chipped, the bottom is rough. White, rough stone. Size: grain:
fine conglomorate with siliceous and limonitic cementation.

Axos: 2 were not perforated, one is with chisel-edge, very worn, the other is bully hammer. There was one perforated axe, which was originally chisel edge-axe, but secondarily transformed to hammer, now absolutely broken. These implements were made of andesite (pyroxenite/amphibole) and metamorphic.

Among the stone artefacts there was an anulet (the hole is not ready), smoothing pebbles used for polishing the ceramics, and a casting mould. The last is very important, with two casting faces: one was axe, and the other is very strange, maybe for needles? These finds show the metal-working and the pottery-working in the settlement. The grinding stones pointed at the importance of the cereal-processing.

The parallel finds of the chisel-axe (casting mould): we know a similar casting mould of a simple chisel-edge fragment, the site is unknown (in Le bel Âge du Bronze in Hongrie 1994, catalogue no: 341), and another unbroken piece from Pénzka (in Dömöcs 1902, 274, 1–2). Similar moulded bronze finds are in the hoard of Dunaobelkő (in A bronz kor kincsei Magyarországon 1995, 622), Jássadáp-Kápolnahalom (Le bel Âge du bronze en Hongrie 1994, catalogue No: 368).

On the base of the stone artefacts Kajsző was a very important settlement, and we presume well-developed clay-processing industry on the base of the geomorphological situation of the settlement (Turcsas, clay-formation near Kajsző).

Pictures:

Plate VI:
The map of the earthwork after Novák 1952, 9
The detail of the earthen mound in 2000
63.05.10, trapped strip axe with chisel edge, drawing
63.05.13, bully hammer, fragment, drawing
63.01.3, photo, incense, secondary use for sharpening

Plate VII:
Pezas, 63.01.10, photo
63.35.2, grinding stone with red paint on the bottom
60.09.5, casting mould, from both sides
63.01.21, grinding stone, surface
63.75.1, grinding stone, flat, with pushing-suppress
63.01.3, grinding stone with decoration

Plate VIII:
Microphotos of stone implements from the earthwork

Lovasberény-Mihályvár

Geographical description:
There is a long and wide vineyard to the east from Lovasberény between the Vértes and Velence Mts. During the Pleistocene there was an eolian (loess) and fluvial accumulation and tectonic movement which determined the present surface (Róna-Szentes 1972).

The whole area is clean loess, and many ravines separate it into several parts. Mihályvár is a similar part too, enclosed with ravines, which surmounts on the
foremost of the hill, above the last houses of the village Lovascheréy. It is surrounded by steep, vertical loess-walls here and there, thus the earthwork was defended by natural way also. Mostly on the west side, where there is a deep recess, it was exposed to attacks. Here should have been the former way up. On the SE side we find a recent drive-way, cut into the steep side. The traces of the fortification we can see only on the western side, where a long, downward rampart is running, which is 1-1.5 m high. It is missing on the other sides. The greatest length of the earthwork is 230 m, the width is 90 m. It is divided by a gap into two parts on the western side, which was the former way. Here should have been a greater fosse, but it is filled up, and could not have used for way up either, thus on the SW side had to cut the way to the steep side. The two parts of the earthwork are belonging together on the NE side without breaking, here lead up the former way. The second part is almost plain, but towards the former way up, in NW direction slope strongly, and at the end there is an abrupt steep part, defends from the way up. The side of the first part towards the way up compose a gable, which rises above the former way up to 4-6 m. Then in NW direction it slopes down to the edge of the steep part. The second part is being cultivated, on the surface there are many pieces of pottery, antlers, duh, but not typical. The double pieces belong to the Bronze Age.

Excavations:

On the territory of the Little Earthwork there were 4 excavations, the leader of the excavations was E. Pétries (Tell-study Archaeological Group). On the territory of the Great Earthwork there is vineyard, thus they could not have excavated significant part. The excavated territory is approximately 3000 square metres. On the highest part of the Little Earthwork the settlement was one-layered. On the lower parts, where the rampart was, they found several layers.

Features: On the upper plateau, in the SE part of the Little Earthwork they found only pits. On the lower terrace they dug the fosse 30 m away. It was made in the oldest time of the settlement, and some pits too. On the inner side of the edge fosse was a double posthole-line. After the filled-up the settlement expanded to the edge of the hill. On the new walking-level platelaid fireplaces were built. There was a central room between the pits of the upper plateau and near the fosse. Living building was not found in the territory of the Little Earthwork. The 1st House was at the northern part of the plateau: quadrangular shape, 6 square metre, with 3 rounded corner - it was a pit-house. In the center situated an oval fireplace. Inside a narrow inglenook (?) encircled the pit, and the inner area was plastered. In the corners stood the posts. The 2nd House lied in the South corner of the Little Earthwork, on the inner side of the fosse. The shape of the house was regular rectangle, the size was 8,5x6,5 m. It was sunk in the ground, with 4 postholes. The wall of the pit was vertical, the floor was plain. Inside the house several workshopped-areas were excavated: in the northern corner there was in a deep, flat pit an oval, plastered fireplace. It was enclosed with 4 little postholes, near it was another fireplace plastered to the floor. On the Western side there were two trough pit belonging to this (?). Near the pits run a thick inglenook, in it more, several form depressions were excavated. It served for the casting of the bronze furnaces. The barrow-moulds were strongly burnt. In the SE corner there was another oval fireplace. Near it they found a mound of a buckle. Inside the house they dug a casting ammun also. We can say thus that house was a casing-workshop. The Little-Earthwork was not a living place, it was a workplace and faraard. The Great-Earthwork was the place for the living houses. The excavator opened on the SW side a 4x4 m section. In the section they caught the closing fosse with many fireplaces and plastered pits. On the base of the finds it seems that the settlement was established in the earliest period of the Votva Culture. The end of life cannot be read from the finds. (Pesty 1864-65, 144., Novák 1952, 10., Pelér-Béri 1969, 170-177.)

List of stone implements:

57: whitestone, become strongly thin, worn, 29x8 mm, Raw mat 17 Inv. No.: 64.718.4
58: round stone, polished, not tool, 20, Raw mat: 13 Inv. No.: 64.729.0
59: stone fragment, round, flat stone, half fragment, thin. Not polishing stone, 27, Raw mat: 2 Inv. No.: 64.622.12
60: on cement flint. saw, with bifacial trench, sickle-shaping on the saw-edge, 27x25x10, Raw mat: Buda limestone
61: chipped stone, base fragment, the halve is medium-blue, the talon is pointed, 28x20x8, Raw mat: 7
62: round, angular hardstone, one face and the one corner are broken, with 3 polished work-surfaces, 70x30x53 mm, 63, Raw mat: Quartzite
64: Broken, round, angular hardstone, 3 polished work-surfaces, 80x65x65 mm, Raw mat: Fine conglomerate with silicious cementation
66: broken, angular, round hardstone, with 3 polished work-surfaces, 80x65x65 mm, Raw mat: Fine conglomerate with silicious cementation
69: horizontal, flat grinding stone, half fragment, rough grain, the tool is roughly worked. On the grinding surface we can see white grinders-strips, on the broken lateral faces in the pores are red paint. 180x135x53 mm, Raw mat: Christian fine conglomerate with silicious cementation
69: horizontal, flat grinding stone, in pieces, high lateral faces, rough grain, the tool is roughly worked. The grinding surface is fine, smooth, strongly rough for the long edge. 230x155x27 mm, Raw mat: Christian fine conglomerate with silicious cementation
70: horizontal, very rough grain, the tool is fine-worked. The grinding surface is worn, with great hollows, mildly rough in the centre. 210x135x40 mm, Raw mat: girsonene-fine conglomerate with silicious cementation
71: horizontal, very rough grain, the tool is fine-worked. The grinding surface is worn, with great hollows, mildly rough in the centre. 210x135x40 mm, Raw mat: girsonene-fine conglomerate with silicious cementation.
we can see sharp red paint in the pores, middle grain, 212x187-220. Raw mat: gritstone lime conglomerate with alluvium concretion.

76: in the top pit, fine grain, layered, flat stone, one face is polished, unbroken, the other three are broken, the surface is not worked, the upper surface we can see, white, thin stripe-grooves, what caused by sharpening objects, thin stripes (form a coarse 50x19-3 mm), it was a polishing stone for sharpening, and formally it was a casting-mould of a butted-head needle, but it was worn, and after used as sharpening stone. The head of the needle hardly visible, the body is better seen, because it is the fabric, where the objects were sharpened later, 130x100x22 mm. Raw mat: gritstone lime conglomerate.

71: in the fosse, perforated nose-head, two pieces, very nice, green stone with brown patches in the raw material, fine polished, shining, central, round, broken on the handle-side, in the hole we can see the grooves of the drill, 44x37x17 and the other is 38x52x22 mm, they are belonging together. Raw mat: Serpentinite.

72: shoe-last cores, very worn, deformed, it had chisel-edge, but now it is very blunt, little, on the lateral faces we can see traces of microwear, 75x30x23 mm. Raw mat: stone-alabaster.

73: rough stone, quadrangular at the base face was used to blow, bulky hammer, on the middle part of the body it is convex, caused by the handle, on the lateral faces we can see microwear, 100x88x36 mm. Raw mat: dolomite alabaster by hydrothermal activity.

74: from the A building, performed rate, fragment from the working edge, the edge is chisel edge, it is broken across and along too, in the hole we can see the drill-grooves, 71x40x28 mm. Raw mat: 7.

75: In the casting-house, casting mould, on the one side there are a butted-head needle with button on the top, a crescent object, and beginning of something, on the other side there is a button head and a buckle. From the casting-workshop, 120x61x28 mm. Raw mat: micaceous medium grain sandstone.

Appreciation.
The artefacts of grinding were: 3 handstones, the upper part of the grinding stone, one with paint-traces, made of quartzite and andesite, 5 grinding stones, lower part, 3 are broken among them. In these cases the material was conglomerate and sandstone. Mostly found rough-grained stones, but there are some fine and medium grained ones, too. The tools are roughly worked. We can see on the stone trough grinding surface in two cases, and traces of paint-grinding in 3 cases. Among the finds there were two polishing stones, for the sharpening of metal, bone, or stone tools. There is a typical saw on crescent flake, it was the tool of harvesting. Among the polished artefacts we can find a nose-head (in two parts, broken, made of very nice raw material, it may have been a sign of prestige (it was in the fosse). One shoe-last core with chisel edge, and a bulky, hardly working hammer, and a perforated, broken chisel-edge axe represented the axes, made of metamorphite. These finds lie in pits or filling ground. Among the finds we find an abutting joint (it was the part of the handle of the stone axe), made of mustard.

The most important finds are the two casting moulds. The one is from a pit, and it was a mould of a butted-head needle, but it was worn, and only secondarily used for sharpening (a nice example for the transformation of the function). The other came from the mentioned casting-house. It is a double mould of a butted-head needle, a buckle and a crescent-shape object. These metal-finds are typical in the second half of the Middle Bronze Age. The casting moulds are the evidences of the metal-working in the settlement, but it happened in the working area, inside the living-settlement.

The parallel finds of the bucket: The appearance of the earliest finds are in the early Szécsény-Péregő (141) culture, made of bone (Böna 1959, VIII/1-4). They came from south (the former finds are from Troy, Scheuchzerburg). Usually they were excavated from female graves, on the waist (i.e. Dunapentele, grave 88, after Böna 1959, 1). At the cemetery of Szécsény we know similar finds made of bone and bronze too. Now there are only three casting mould of buckle (Pécska, Tiszafüred and Lovasbanya). We can say that every find is different from each other (the moulded finds and the casting moulds too). The finds made of bronze don’t show the same shape of these known casting moulds either. The conclusion is that the cast buckle was a very rare jewel, part of the female’s costume, maybe it was worn by the members of aristocracy, as a majestical-sign. (Böna 1959, 49-59.).

Pictures:

Plate IX:.
The map of the earthwork after Novák, 1932, 7.

Plate X:.
Drawing: saw on flake.
Drawing: fragment of a perforated axe with chisel edge.
Casting mould, Pécska, after Böna 1959, 4.
Casting mould, Tiszafüred–Asotthalom, after Böna 1959, 9.
Moldavian culture, Holuba, drawing after Böna 1959, 8.
Dunapentele, Grave 88, after Böna 1959, 1.

Pákozd-Vár

Geographical Details:

We can find the earthwork on the highest hill of the Velence Mts., so-called Melegegy (352 m). This granitoid area – formed in the Permian Variscan orography – is part of the intrusion-line which can follow in the Northern part of Balaton (Püles 1939). After the Permian age the area was denudation surface till the end of the Tertiary which determined the micromorphology of the area (denudation steps, dome, balanced rocks). There was an Eocene volcanism in the NE part of the mountain which gave mainly amphibolite andesite with volcanic texture. The pediment of the Velence hills was covered by loess and loess-like sediments.

Pákozd-Vár is not only a natural fortification, but it has got artificial fortifications, too. The upper opening of the way up from Balaton-valley is defended by bastion-like elevations (like at Abu and Sáringol), formed in it a veritable castle gate. In front of it leads a narrow road, and it is followed by a steep valley-crat. Opposite to the gate this crane is widening into a little terrace. From the
hasten-like elevations ramparts were set out. In the Great Earthwork the rampart escort only the line of Bodza-valley, where the valley was too low, and it was necessary to build fortification. Elsewhere the depth of the valley made sure the defence of the Great Earthwork. The Little Earthwork demanded larger fortification. Between the plateau behind it and the Little Earthwork it had no natural obstacles, thus here the earthwork was protected with double rampart. The inner rampart started from the bastion near the gate, and encircled the territory of the Little Earthwork, the exterior started from the inner rampart, and enclosed the earthwork, or rather divided it from the plateau behind it. Near this external rampart we have got the fossa also.

Excavations:

Palkőz-Vár is an archaeologically protected area. In 1925, 1926 and 1927 A. Marosi and J. Lichtenmarter lead excavations here. Unfortunately we don’t know the exact size of the excavated area, but it was not too large. The finds got to the King St. Stephen Museum, Székesfehérvár. They were found in the 2-3 m thick soil in 2 layers. The upper one was grey and stained. The layer was the yellow subsoil, in some places features were sunk in it. They cut the rampart of the Great Earthwork, and excavated on the territory of the Little Earthwork was very poor in finds, and there left it. They found an iron-cemetery, but they dug just some graves, because of an oak-forest which covered the whole territory. On the Great Earthwork they managed to excavate some houses (the evidences are the fireplaces, clay plasters, floors, oven, pits). On the base of the pottery the settlement experienced the Kruszwicker-period (there was a Rukovshynia-type vessel), but the life continued in the Late Bronze Age and the Iron Age. On the settlement the traces of the metal-work were a layer, the bronze objects, and two casting moulds, made of clay. One showed the end of a needle, the other the head of a needle (both are missing now). (Pesty 1854-65, 226, Marosi 1930, 59-73, Novák 1952, 6-8.) This settlement was the most important and the largest size among the earthworks of the Vajta Culture. We suppose that it was the principal earthwork in the Vajta Culture.8

List of stone implementations:

17: the broken, middle sized grinding stone, rough, pebble stone. The lateral faces are fine worked, the bottom is rough, hemispherical, the grinding surface is olive, smooth, shining, utricular wear-like, mildly rough. S: 270x15x15mm, Raw mat.: fine concholitic with siliceous concretiation. Inv. No. 6286 or 6287.
77: hardstone, pebble, half fragmnent, smoky, burned. Angular form hexagonal. On one face polished with damages. S: 65x54x90mm, Raw mat.: Quartzite. Inv. No. 6286 or 6287.
78: a crooked piece from a former angular grinding stone, the grinding surface was rectangulate, rough, with damages, it is an end fragment. The inner, convex face is smoky, the damages are missing.

8 This is the opinion of E. F. Petres, J. Antoci and J. Mavrody too.

because in the secondary use it was the working-edge. S: 125x50x35mm, Raw mat.: Quartzite. Inv. No. 6140.
99: pebble, half fragment, the inner face is worn, smooth, polished. Flatbase. On the upper edge the face are swell-traces. Angular form. S: 73x55x35mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6153.
99: hardstone, pebble, half fragment, the half inner face is uneven worn. Angular form. S: 62x63x52mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6154.
99: hardstone, volcanic stone, flat, angular diskeeper. Both (the faces are worn. S: 76x70x31mm, Raw mat.: Meta-silurite. Inv. No. 6152.
99: very small sized grinding stone, or polishing stone. The end is broken. The grinding surface is smooth, mildly rough, the stone is fine-worked, the cross section is V-shaped. S: 125x74mm, Raw mat.: fine concholitic with siliceous concretiation. Inv. No. 6157.
89: angular, flat disc, one side face is damaged, broken, the other is rough. The edges are incised, maybe it was hardstone. S: 95x65x34mm, Raw mat.: Serpentine. Inv. No. 6151.
84: angular hardstone, one face is strongly broken, it was the working-face. S: 59x25x45mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6156.
85: elongated, rectangular hardstone, with conves using faces. Polishing stone, S: 75x52x65mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6158.
89: angular hardstone, quialtible pebble, the one face is strongly broken, three faces are worn. S: 75x70x29mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6159.
87: angular, broken hardstone, homoconcrete? Two faces polished, both the faces were used. S: 90x75x39mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6160.
89: pebble, on the edge it is thick-like, thick, up, natural or new for sharpening? S: 75x64x32mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6160.
89: angular? Polishing pebble, rough surface, one face is flat, the other is convex, on both faces are holes, but the concavity is not very. S: 65x94x77mm, Raw mat.: Siliocous limestone. Inv. No. 6164.
99: polishing pebble, S: 57x5x31mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6144.
99: polishing pebble, S: 52x7x38mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6145.
99: polishing pebble, S: 60x28x6mm, Raw mat.: Marble? Marb? Inv. No. 6143.
99: polishing pebble, with rough surface, S: 62x66x5mm, Raw mat.: metamorphic. Inv. No. 6146.
99: angular, soft, great, angular pebbles, S: 73x60x18mm, Raw mat.: Raw mat.: Quartzite. Inv. No. 6147.
99: polishing pebble, rough, small, with dike-like, wide rough in the centre. S: 90x90x18mm, Raw mat.: Immaculate medium-grained sandstone. Inv. No. 7268.
99: angular, round hardstone with one flat, polished face, the opposite face is broken. S: 60x60x24mm, Raw mat.: Quartzite. Inv. No. 6243.
99: stone plate? Strange, grey-white in some place. S: 75x80x42mm, Raw mat.: hornsteine-limestone. Inv. No. 6484.
99: symmetrical, flat face, the ends are flat too, blunt, broken across, on the ends are swell-traces. Quartzite? S: 150x60x20mm, Raw mat.: metamorphic. Inv. No. 6131.
99: flat pebble, S: 83x35x40mm, Raw mat.: Quartzite. Inv. No. 6443.
99: angular, round hardstone, every face is polished, shining, flat, on the ones is deep smooth channel, the trace is of sharpening. S: 57x55x90mm, Raw mat.: metamorphic. Inv. No. 6442. (Microphotograph)
99: rounded with fan-like, waving, curved, sharp chisel edge. The edge is formed by chipped, nider butt. The other end is broken. Secondary worked, polished. It is a copy of the above. Quartzite S: 80x63x3mm, Raw mat.: metamorphic. Inv. No. 7261.
99: trapezoid shape, bulky body, small chisel-end, the faces are flat, the working edge is blunt with ckevron. S: 56x40x15mm, Raw mat.: Raw mat.: siliceous. Inv. No. 6440.
106. Imposed chisel-axe, on the raw face is hole-initiated, on the other face is just the blow-piece of it. The working edge is blunt, the faces are concave-flat with microscars. The other end was formerly a chisel-edge too, but it is absolutely worn. It was an azonal or zonalocentric secondary? S: 58x50x10 mm. Raw mat: pseudomorph-aragonitic anastase. Inv. No: 6859.

107. Usage small chisel-axe, very bad condition, worn raw material, on the surface there are facets, rising between these. The working edge is totally curved, very blunt. S: 65x29x60 mm. Raw mat: pseudomorph-aragonitic anastase. Inv. No: 6861.

108. Perfecetox chisel-axe, fragment, broken on the handle-bowl, the faces are flat, with strong microscars. The lateral faces are medium sized. The working edge is very blunt. S: 70x50x35 mm. d=21. Raw mat: metamorphite. Inv. No: 6197.

109. Perfected, chisel-axe, fragment, broken on the handle-bowl. The faces are flat, the lateral faces are medium high. The working edge is blunt, it was not repolished, thus it was used as hammer. S: 68x47x38 mm. d=16 mm. Raw mat: metamorphite. Inv. No: 6138.

110. Broken stone, the remaining stone is nicely polished, it was whatmanite or ore. Rectangular, oval body. S: 72x23x16 mm. Raw mat: 2. Raw mat: 6411.

111. The working edge is regular, round, concave, pointed hammer end, long, bill-like, the cup is straight, broken on the handle-bowl. S: 78x37x29 mm. d=11-12 mm. Raw mat: metamorphite. Inv. No: 6811.

112. Bulky, round axe, the working edge is chiseled, strongly blunt. The faces are smooth, the lateral faces are widening, damaged. The other end is round. The raw material is very rough, gritted. S: 70x44x8 mm. Raw mat: metamorphite. Inv. No: 7263.

113. Broken, imposen shape axe, the edge is blunt, it was formerly chiseled? The faces are mildly concave, with microscars. S: 49x50x17 mm. Raw mat: metamorphite. Inv. No: 6133. (Microscope)

114. Trapedox with crowned corners, both ends are blunt, broken, with microscars. The face are concave. It is an absolutely nicked, chiseled-edge chisel-axe, secondary used as hammers or anvils. S: 70x60x15 mm. Raw mat: metamorphite. Inv. No: 6133. (Microscope)

115. Horse-head, fragment, broken on the handle-bowl, round, in the centre widening, nicely polished, it was dumpy-like. S: 72x30. d=18-19 mm. Raw mat: metamorphite. Inv. No: 6135.


117. Horse-head, fragment, with part of the handle-bowl. S: 78x28. d=21 mm. Raw mat: metamorphite. Inv. No: 6134. (Microscope)

118. Trapedox shaped chisel-axe, the face is concave, the other end is broken, the back-face is flat, the working edge is sharp. Metamorphite on the body, middle size. S: 61x60x60 mm. Raw mat: metamorphite. Inv. No: 6987.

119. Broken pebble, it was a chiseled-edge axe? S: 120x85x60 mm. Raw mat: metamorphite. Inv. No: 6858.

120. Large, bulki fragment of an axe, the working edge is blunt, the edge, is concave, the back face is flat, the lateral faces are high, damaged. Metamorphite on the back-face. S: 113x52x25 mm. Inv. No: 7263. Raw mat: 6133.

121. Perfected, broken on the handle-bowl, chisel-axe, the faces are flat, narrow, the lateral faces are high, the one is strongly damaged, the working edge is blunt. S: 88x47x53 mm. Raw mat: metamorphite. Inv. No: 6831.

122. Elongated, narrow, short-loch-elt, the working edge is chiseled, the back-face is concave, narrow, the back-face is flat, the lateral faces are high, damaged. Metamorphite on the back-face. S: 113x52x25 mm. Inv. No: 7263. Raw mat: 6133.

123. Perfected, broken on the handle-bowl, the face is flat, with microscars, the lateral faces are high, damaged, the working edge was former into chisel-edge, but absolutely worn. Secondary used as hammer. S: 85x46x45 mm. Raw mat: metamorphite. Inv. No: 6830. (Microscope)


127. Middle fragment of a blade, on the raw face are 2 spines. S: 39x22x60 mm. Raw mat: metamorphite. Inv. No: 6150.

128. Flake, the blade is sharp, the talon is broken. S: 78x25x8 mm. Raw mat: metamorphite. Inv. No: 6150.


130. Saw on crescent flake, bifacial notches. S: 72x40x3 mm. Raw mat: Buda hornstone. Inv. No: 6148.


135. Saw on crescent flake, bifacial notch, sickle-shining, the talon is smooth, the talon is large. S: 24x10x6 mm. Raw mat: hornstone. Inv. No: 6848.


Appreciation:

There were originally transported to the museum 11 grinding and polishing stones and a stone-mortar. Now we could investigate 4 pieces: 1 grinding stone (it was worn, rough grain), two small-sized polishing stones, fine-grained for sharpening, and a crescent fragment from a grinding stone, which was used secondarily as scraper. There were 10 handstones (8 broken), 2 showed dich of sharpening, 7 polishing pebbles, and a retoucher. The stone material was fine conglomerate, marble, and metamorphic rocks or same case siliceous limestone (radiolarite) and Marble? Marl?.. The chipped stones were originally 20, and there was an arrow-head among them (now is missing). Now we count 15 pieces, 5 saw, 3 atypical geminit, and a blade. The tools are worked on flake. The raw material were Buda hornstone (4), radiolarite (4), metamorphite (1).

The axes are perforated (3) and not perforated (11). Among the not perforated axes we find a huchet (secondarily worked), 10 trapedox-shape axes with chisel-edge. Among the perforated axes there are 4 chisel-edge, 2 hammer-edge tools. The secondary transformation can be seen on the elongates many cases:

- On the huchet imitating metal-form. The other end is secondarily transformed, what was it formerly?
- There are 2 stones (one was a polishing pebble the other was a trapedox shape, chisel-edge) secondarily which were tried to be perforated, but not finished. They are wheatsomes or unformed?
- One perforated, chisel-edge's axe was worn, too, than used as hammer.

There is a former chisel-face, on both ends, trapedox shape. It was secondarily transformed into wheatsone or anulet (hole-initiative).

The raw material was different type of metamorphite, andesite, ultrabasic andmetesite.
We can find 3 mace-heads (all are broken), these were signs of prestige, made of very nice raw materials (metamorphite and serpentine) with fine working, polishing.

Important activities at the settlement included grinding and the casting of the bronze. Chipped stone tools are very frequent. Among the chipped stones we find axes, which were the tools of the harvesting. The great frequency of the secondary transformed polished axes show the high value of them. On the settlement there was no ax-axle workshop, they got them from far away, on commercial ways. The inhabitants could have transformed, re-polished the stone artefacts. Unfortunately, the excavations happened too early, and we can not reconstruct it many times. Have not got exact dates, and many important finds are disappeared.

Pictures:
Plate XI:
The map of the earthwork, after Novák 1952, 4.
Grinding stone, 6287.
Photo, 72k1.
Photo, 6841, hammer, fragment
Plate XII:
Photo, 6841, hammer, fragment
Photo, 6130, axelet, half perforated
Photo, 6131, hammer, fragment
Photo, 6130, macehead, fragment
Photo, 6131, macehead, hammer
Photo, 6859, worn chisel-edge axe, raw mace, half perforated
Plate XIII:
Drawing, axe, 6698, 6698, 6647.
Drawing, axial gouge, 6860, middle fragment of a blade, 6150.
Drawing, 6157, axe.
Drawing, 7263, axe
Plate XIV:
Drawing, 6840, axe.
Drawing, 6638, axe.
Drawing, 6837, axe.
Plate XV: Microphotographs of stone implements from the earthwork
Plate XVI: Microphotographs of stone implements from the earthwork

Sárthogárd-Citrabolondvár

Geographical description:
The so-called Citrabolondvár is situated in the NE direction from Sárthogárd, towards Kisókőpüspöki, at the right angles to it, on the NE end of a hill. This is the northern end of a NW-SE direction flat range of hills, 3 km far from Sárthogárd. In southern direction it is separated by a deep artificial fosse from the edge of a hill, from the other sides enclosed by the deeper plain, the Eastern side of this is dump. The shape of the earthwork is similar to an isosceles triangle. The length is 160 m, the greatest width is 105 m. The traces of the fortification are well visible on every side, and quite varied. Firstly we have to mention that deep fosse, which enclose the first part of the foot of the hill. It seems needless, because the plain encircle the earthwork in every direction, and it was well defended by the steep side also. We can think, that it was full of water. They could have solved easily, because of the damp field and the bottom of the fosse are on the same level. On this earthwork, not the rampart, but the terraces give the character of the fortification. The rampart can be seen just on the southern side of the second part, hardly 30-40 cm height, spreading widely. The other rampart is in the western side of the first part. Here is a separated circular rampart, which is deeper with 10 m than the upper plateau of the earthwork, the diameter is hardly 10 m, and farm on the steep western side, while the other sides encircle the mentioned water-full fosse. This little, advanced bastion was not so important in the defence, rather it arose in natural bases. The rampart is almost round on the whole earthwork, except the southern side of the first part. On the second part it can be seen on the eastern side, and merge with the south-direction fosse. The aerial photo is showing a discoloured area on the SE corner, and here start a terrace in SE direction, which disappears after 50 m. This faded area was fortification, which is worn by now. It was a rampart-fosse, enclosed bigger territory like the known earthwork now. We can see the eastern and southern borderline of it, but the western side is confused. On the base of the aerial照片es we can see the same situation. The inner area is almost plain, and used as pasture now. Pottery is not found on the territory. The southern, destroyed area with the rampart is being cultivated.

Excavations:
In 1959 G. Bandi (and the Tell-study Archaeological Group) excavated in the larger, fortified northern part of the earthwork. He opened a 2x5 section, and he found 6 layers, from 50-60 cm to 3 m. He found 3 houses. In the case of the 1st house we can follow the rebuild-plans. The floor was plastered many times, there was no fireplace inside, and pieces of slab were few, the post holes are missing. He supposed that the wall of the house was made of light vegetal matters, with thin plaster. In the 5th level a pit-house was excavated: trangular-shaped, it consists of 3 beehive shape pits, with passage beech among them. The entrance is stair-like. In one passage they found a lot of pottery sunk into together – maybe it was a store-room. It is not sure, that it was a living house. The opinion of the excavator is that the earthwork was built in the 2nd period of the Vaygja Culture. (Petty 1864-85, 101-102., Bandi 1966, 149-150.)

List of stone implements:
- 154: hemerobiall grinding stone, oval fragment, rough, poorly shaped. The grinding surface is smooth with point to the pot-pit on the corner and yellow on the upper part of the stone. The tool is fine worked. Size: 170x42x25 mm. Raw mat. granite. For complementation with similar artifacts, see No. 61.53.
- 147: "C" house, reduction, hemerobiall grinding stone, small sized, the grinding surface is rough, elliptic, with near shapes. The tool is roughly worked, on the hammer we can see point (sımıán) built in the raw material, the edge is undulated, broken, medium-grain. Size: 200x128x42 mm, raw mat: granite-like complementation with similar artifacts, see No. 61.57.2.
141. 'E' pit, grinding slab, corner fragment. It was rectangle shaped, roughly worked; on the bottom we can see the rough, pebbly raw material, the grinding surface is absolutely worn, smooth, shining, tough, fine-middling grain. Size: 138x49x54 mm. Raw mat.: gritstone-fine conglomerate, with siliceous cementation. Inv. No.: 59.155.3.

142. Above the 1st floor, hemispherical grinding stone, middle fragment, rough pebbly grain, the grinding surface is worn, smooth, clay pieces in the pores, the tool is roughly worked. Size: 176x153x66 mm. Raw mat.: gritstone-fine conglomerate with siliceous cementation. Inv. No.: 59.156.9.

Appreciation:

The 25 square metres excavated area gave 4 grinding stones (3 were broken). They were found inside the house, and in a pit. The grinding stones are mainly hemispherical, in one case a plain grinding slab. The stones are pebbly, rough-grain, very worn tools from the long use, made of gritstone - fine conglomerate with siliceous cementation. There was one stone, which showed paint-traces besides the cereal-grinding.

Pictures:
Plate XVII:
- The map of the earthwork, after Novák 1953, 5.
- The detail of the earthwork in 2000.
- Grinding stone, 61.50.1, with paint.
- Grinding stone, 61.57.2.

SUMMARY

The common peculiarity of the investigated earthworks are the missing of the early Bronze Age's base in Fejér county, quite far away from the Danube, at the centre of the so-called Mezőföld. They were established in the Middle Bronze Age by the Vaty Culture.

We suppose that on this territory was the 'burden' of the Vaty Culture. This area has got the best ground for agriculture in Hungary.

Further features are their geographical situation: they were built on the corners of the long, narrow loose plateau rising above the plain, used the natural ways for the fortification. These places were rich in water in the prehistoric time, and generally have no local raw material (stone) in the vicinity. Each earthwork is a very enormous, fascinating earth-building, which was built with great work. In most cases they consist of more parts (2 or 3, perhaps 4). The excavations clarified the chronology and the stratigraphy of the earthworks - it was a great achievement in the 60's, but nowadays we should need more and more exact figures about the structure of the settlements, the way of life, the constructions of the ramparts, etc. These questions cannot be answered by little-sized trenches. These few finds which are published just can refer to these questions. Yes, we can say, that cereal processing, plant-grinding, metal-work, stone-usage existed at the settlements, but this is the only thing that we could assert surely. We can not estimate their real importance, real value from not exact, not published data and finds. There is the time to continue and re-begin the archaeological researches of these monumental fortified settlements, which means the Troy and Mycene of the Prehistoric time in the territory of Hungary. We need further, advanced, complex investigations, including the total survey-fields, excavations on larger area, and each part of the earthworks, out of the ramparts, with the help of the archaeometrical sciences. Up to that time it's anybody guess.
The archaeological summary of the stone implements from the Varos-earthworks in Fejér county.
<table>
<thead>
<tr>
<th>Material</th>
<th>Grinding stone</th>
<th>Polishing stone, smoothing pebble, whetstone</th>
<th>Grinding slab</th>
<th>Hand stone</th>
<th>Pestle</th>
<th>Macehead</th>
<th>Axe, hammer</th>
<th>Casting mould</th>
<th>Chipped stone</th>
<th>Other</th>
<th>Σ</th>
<th>Supposed original area</th>
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The petrographical summary of the stone implements from the Vajn-erdőváros in Föld county
(Aba-Belsőerdő, Ignar-Vízmocska, Kajószó, Lovasberény, Pakóda)
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The spread of Vatya-earthworks and bounds Fejér county

1. Göte-Wiesenburg culture
2. Encruste Pottery culture
3. Vatya culture
4. Macea culture
5. Takari group
6. Hatvan culture
7. Fehérváry culture
8. Ottoman/Ottoman culture
9. Frontier territory between the Ottoman/Ghományi and the Westernberg culture

Plate I.
The geomorphological – lithological map of Vatya-earthworks in Fejér county

Legend:
1. Aba-Belsőháradi-Tolhomvár
2. Ikar-Vámpuzta-Galátta
3. Kajszó-Virádmoll
4. Lóvasberény-Mihályvár
5. Pákozd-vár
6. Szabógerdő-Kincsberkerdő

- Eroded-disturbed ranges covered with Pleistocene loess
- Hills area covered Pleistocene loess-like sediments
- Palaeozoic-Mesozoic basement
- Alluvial area covered with Holocene sediments
- Alluvial area formed on Pleistocene fluvial sands
- Eroded-disturbed ranges covered with Pleistocene gravel sands

Plate II.
Microphotos of stone implements from the earthwork

The texture of a trapezoid prismatic axe (segment 1, pit A, 1972)
made from amphibole anidesite (Dunhuang Mts.)

The texture of a hammer (segment IV, pit c, 1972)
made from augite leucophile anidesite (Dunhuang Mts.)

Plate V.
The texture of a handstone (63.912, segment IV, spit 3) with the main rock-forming mineral (hyperstene) made from pyroxene and olivine (Dunhuang Mt.).

The texture of an axe (63.63.4, segment I-III, spit 10) with crystals of quartz and mica (clastic) made from granite (Gulunke Mt.).

Plate VIII.
Plate X.
Plate XI.

Pákozd-Várhegy after I. Philipp

6287.

7261.

6849.
Plate XIX.
Microphotos of stone implements from the earthwork

The texture of a handstone (6342) with strong decomposed pegmatites made from granodiorite (Velence Mts.)

The texture of a mace-head (6134) made from serpentinitized ultrabasic rock (Kolomn Mts., Austria)

Plate XV
The texture of an axe (6840) made from amphibole andalusite (Dunajec Mts.); microfoliated crystalline base material with green-amphibole.

A very strong foliated texture with augite grains of a trapezoidal axe (6132) made from serpentinnataed ultrabasic rock (Rohne Mts., Austria).

Plate XVI.
Plate XVII.