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THE COMPLEX INVESTIGATION OF THE STONE ARTEFACTS FROM VATYA-EARTHWORKS OF FEJÉR COUNTY. PART I.
(Archaeological and petrographical investigation)

INTRODUCTION

In this paper we would like to publish the stone artefacts of the Fejér-county's Vatya-earthworks (more exactly, tools made of stone from Aba-Belsőbárand-Bolondvár, Igar-Vámpuszta-Galástya, Kajászó-Várdomb, Lovasberény-Mihályvár, Pákozd-Vár, and Sárbogárd-Cifrabolondvár)[1].

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 Vatya-culture project, which studies every tool made of stone. In this case the paper deals with the western part of the Vatya-settlements, which we have accomplished. In this moment we could compare the data of Fejér-county with Százhalombatta and Bölcske, lying on the bank of Danube (Nagyrév-Vatya culture).

Pictures:

Plate I.:
The spread of Vatya-earthworks in Fejér county, after Nováki 1952. 1. The spread of Vatya-earthworks and hoards after Kovács 1995, 22.

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

Aba-Belsőbárándpuszta-Bolondvár

Geographical description

The so-called Bolondvár is situated half kilometre far to the east from Belsőbárándpuszta, on the beginning of the valley Háromág, 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-Szentes, 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 derasion 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 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 25m wide, 2m 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 NE 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 6m 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 Sárbogárd 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 daub from the Bronze Age. (Nováki 1952, 8.)

In the summer of 2000 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 4×4 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

We would like to thank for the archaeological finds to the former excavators, T. Kovács, and É. F. Petres Special thanks to Éva F. Petres for her helpful assistance.

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 Trench) had 5 postholes. The base of the finds the earthwork was built in the 2nd Half of the Vatya culture (Middle Bronze Age). (Kovács 1963, 131.)

List of stone implements:

1: 2. Trench, 7. Spade-trace. Hemispherical grinding stone, fragment, small size, middle rough grain, the grinding surface is smooth from the use, worn, with red ochre-spots, the tool is fine worked. Size: ?, Raw mat.: Gritstone-fine conglomerate. Inv. No.: 60.115.4.

2 a,b: Two pieces of stone: one of them is an undeterminable fragment with one polished face. Size: 101x94x50 mm, Raw mat.: The other is a piece of raw material, whirling stone with red-yellow limonite, the lower part is black. Coloured matter? Size: 90×75×4, Raw material: Metamorphite. Inv. No.: 60.101.5.

Appreciation:

The excavated territory was very small (50 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).

Pictures:

Plate III.:

The map of the earthwork after Nováki, 1952, 6.

The details of the earthwork in 2000

60.115.4.: grinding stone, red ochre spots on the grinding surface

Igar-Vámpuszta-Galástya

Geographical description:

A plateau rises under the SE side of Vámospuszta, in the south corner of this the so-called Galástya is situated. The surrounding of the earthwork is a loess plateau (so-called Kálóz-Igar) inside the area of West-Mezőföld, which was divided by meridional valleys (Marosi, 1990). After the Pliocene fluvio-lacustrical sedimentation there was a fluvial accumulation parallel with tectonical events. This effects uplifted the area asymmetrically. 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 south side finishes in 8-10 m deep abysses in some places. On the northern and eastern sides a 50-60 m wide fosse parts the plateau. This fosse originally was arisen 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 Fejér county, in the flood area of Sió, looks at the northern slopes of the Mecsek (it means a closely quarry of local stone). Double earthwork, very much stirred, 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 Koszider-period, and the younger from Vatya-culture. In 1973, the great part excavated was 2nd period and Koszider-phase. In 1974 the excavators found the older Nagyrév pits after the Vatya-layers.

The excavators opened 3 sections, in both parts of the earthwork, they could catch 2 large-sized houses with more plastered floor-layers. They experienced that under the Vatya-layers appeared a separated layer between the features of the Vatya and Nagyrév culture.

(Pesty 1864–65, 105., Wosinsky 1896, 280, 510., Nováki 1952, 11., Bándi 1973, 11., Petres-Bándi-Kovács 1974, 9., Cserményi 1993)

List of stone implements:

3: 1972/2/f pit. hemispherical grinding stone, with very high lateral faces, half fragment, middle-grain, the grinding surface is spongy with scratch, the tool is fine-worked. Size: 150×93×153 mm, grind. surf: 145x145. Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

4: 1972/2/a pit: grinding slab, fragment, on the grinding surface there is a fracture across, trough, fine grain, black and brown spots in the lower and the upper corner: separated grinding, remains of the grinding material. The tool is roughly worked, the lateral edges damaged. Size: 250×150×60 mm, Raw mat.: Micaceous medium-grained sandstone.

5: 1972/2/a, 1-2 spade-trace: small sized, flat hemispherical grinding stone, the grinding surface is orange colour, medium size, pebbly grain, spongy from the long use. The tool is roughly worked. The grinding surface is ellipse, with irregular edges. Size: 230×150×30, the grinding surf.: 230×150, Raw mat.: Gritstone with siliceous cementation.

6: 1972/4/b pit: rough grained grinding stone, middle fragment, hemispherical, high lateral faces. The grinding surface is smooth from the use, mildly trough. Size: 125×173×73 mm, Raw mat.: Fine conglomerate with siliceous cementation.

7: 1973/1/c/-70–120: red, porous whirling grain sandstone-piece, one face is smooth, fragment of a grinding polishing stone, and colouring matter too? Size: 80×79×45 mm, Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

8: 1973/1/c/-70–120: end fragment of a grinding stone, hemispherical, medium grain. Size: 122×40×50 mm, Raw mat.: Micaceous medium-grained sandstone.

9: 1973/1/c/-70--120: grinding stone-grinding slab, end fragment, broken in across and along too. Size: 143×100×25 mm, Raw mat.: Micaceous medium-grained sandstone.

10: 1/c/ delta pit: hemispherical, unbroken grinding stone, roughly worked, on the face there is red paint. The grinding surface is strongly trough, towards the lateral faces are white wear-stripes. The grinding surface is ellipse, rough grain. Size: 265×155×70 mm, Raw mat.: Micaceous medium-grained sandstone.

11: 1972/2/i pit: fragment of a grinding slab, rough grain, the grinding surface is smooth from the long use, with black, semicircular stripe (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 trough, the tool roughly worked. Size: 22×170×77 mm, Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

12: 1972/2/i pit: flat, hemispherical grinding stone, middle-fragment, rough grain, the grinding surface is strongly spongy, wear, with black stripe. The tool is fine-worked. Size: 106×140×34, Raw mat.: Gritstone fine conglomerate with siliceous cementation.

13: 1972/2/i pit: flat, hemispherical grinding stone, end-fragment, rough, pebbly grain, the grinding surface is trough, smooth, fine-worked. Size: 200×115×53, Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

14: 1972/2/i pit: Large sized hemisphere, very high lateral faces grinding stone, half fragment, the faces are injured. The grinding surface is spongy, shining, with black circle, and clay in the pores. Middle grain, the tool is rough-worked, on the bottom with red ochre-spot. Size: 180×190×112, grinding surf.: 178×123, Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

15: 1973/1/c/j pit: hemispherical, very thin, flat grinding slab, one corner is missing, the edge is damaged. The grinding surface is very trough, medium grain, with straight, long grinding stripes. The tool is roughly worked. Size: 192×162×25, grinding surf.: 180×162, Raw mat.: Fine conglomerate with siliceous cementation.

16: 1972/1/o pit: 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 alongside. The tool is fine-worked. The grinding surface is mildly trough, ellipse. Size: 225×135×58, grinding surf.: 225×135, Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

17: 1973=1/d/ X. house: hemispherical, flat grinding stone, half fragment. Rough grain, the grinding a surface is smooth, shining, black and brown colour, strongly spongy. On the broken lateral faces are red ochre-traces, the tool is roughly worked. Size: 150×175×55, the grinding surf.: 150×175, Raw mat.: Fine conglomerate with siliceous cementation.

18: 1972/4/4 spade-trace: edge fragment of a grinding stone, fine-grain, in the pores everywhere are orange ochre-traces. The grinding surface is white, worn. Size: 120×10×50, Raw mat.: Gritstone with siliceous cementation.

19: 1/o pit: hemispherical, flat grinding stone, half fragment, the grinding surface is ellipse, trough, shining, wear to brown. Size: 160×120×48, Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

20: 1973/1/c/-70-120: flat, smoky, burned smoothing pebble, with convex-concave faces. Size: 86×62×17 mm, Raw mat.: Gneiss.

21: 1972/2/3 spade-trace: half fragment of a handstone, on the unbroken corner there is strong damage and blow-traces too. Angular hemisphere. Size: 63×65×25mm, Raw mat.: Micaceous middle-grained sandstone.

22: 1973/1/c/delta pit: fragment of a handstone, a flat, polished corner. Size: 64×46×21 mm, Raw mat.: Quartzite.

23: 1/c: oval pebble, both ends are flat, pestle, on the surface there is cortex, the lateral edge is broken. Size: 94×65×98, Raw mat.: Quartzite.

24: 1973/1/c/delta pit: a half handle-hole of a broken perforated axe. Size: 42×39×17, Raw mat.: Amphibolitic andesite.

25: 1972/1/delta pit: trapezium shape hammer, on both ends there are blow-traces, the one is rounded, the other is straight. Both faces are flat, straight grooves and micro-wears on the faces, the lateral edges broken. Size: 73×60×37, Raw mat.: Amphibolitic andesite. (Microphoto)

26: 1972/4/alfa pit: perforated axe, broken on the handle hole, the working edge is unbroken, sharp chisel-edge. Size: 61×39×29, Raw mat.: Amphibolitic andesite.

27: 1/o pit: trapezium shape axe, one faces 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: 122×60×35 mm, Raw mat.: Micaceous fine sandstone.

28: 1973/1/c/delta pit: saw on crescent form flake, on the whole surface there is cortex, the saw edge made with bifacial retouch, with shining use-wear (sickle-shine). Size: 31×21×8, Raw mat.: Buda hornstone.

29: 1973/1/c/-70-120: Colouring matter, red lump, sample. Raw mat.: Clayey sandstone.

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 grinders: 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 scratch, 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 energetic 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-gray gritstone and fine conglomerate with siliceous and limonitic cementation or micaceous sandstone. The material of the hand-stones are quartzite fluvial pebbles.

Axes: there were two perforated axes, one is an undeterminable 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 (?) hammer, made of andesite, the other was trapezoid shape too, 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-hornstone points to the cereal-gathering on the settlement.

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

Pictures:

Plate IV.:

The map of the earthwork after Nováki, 1952, 10.
Flood-basin of Sió, and the northern part of the Meesek in 2000
The detail of the earthwork in 2000
Drawings: saw, perforated axe with chisel edge, fragment

Plate V.: Microphotos of stone implements from the earthwork

Kajászó-Várdomb

Geographical description:

The so-called Várdomb is lying under the NE side of the village Kajászó. The settlement is found on the NE part of the Mezőföld, in the alluvial area of the Váli-water. The morphological picture of the area is the same as that of Lovasberény and Aba: asymmetrically uplifted and varied plateau which is divided by erosional-derasional dykes and covered with loess and blown sand. Fields surround it on every side, the western side is bordered with the gardens. Várdomb is the part of the plateau under the village, and a deep, wide fosse is separating it from the present settlement, which was formed on natural way. The earthwork consists of an almost horizontal plateau, and the mentioned fosse encloses it from 3 sides, and on the SW side gently sloping to the gardens. Once this side was also steep with abysses, and brought down in the end of the last century (19th.) to enlarge the gardens. This part with abysses 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 fosse with 1,5 m downward, and than the steep part follows. The fosse can be seen in the NE part as straight on the whole line, somewhere else not (?). 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 fosse, it is 80 cm deep and 2-3 m wide. The rise of the fosse in the prehistoric time is doubtful. The inner area 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 fosse 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 Vatya culture, Middle Bronze Age, but the life was continued longer, in the Late Bronze Age also. In 1963 G. Bándi and the Tell-study 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. (Pesty 1864–65, 122., Nováki 1952, 11.)

List of stone implements:

30: lower part of the hemispherical grinding stone, unbroken, 2-3 mm grain, spongy, cavernous, pebbly grinding surface, strongly wear for the grinding, the grinding surface is ellipse. The lateral faces are smooth. Size: 265×45×60 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.61.21.

31: end fragment, lower part of the grinding stone, broken on the edge too, hemispherical, 2-3 mm rough, crystalline stone, the grinding surface is ellipse, the edge is smooth. Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.52.13.

32: end fragment of the grinding stone, lower part, fade with rough stripes. 3-5 mm grain, the grinding surface is worn, concreted, pointed, ellipse, the stone is hemispherical, roughly worked. Size: grinding surface 145×105 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.77.5.

33: thinner piece, not belonging together. Fine, 1-3 mm grain, the grinding surface is wear, ellipse. End-fragment, it cut down straight, the lateral faces are finer, the bottom is roughly worked. Hemispherical. Size: grind. surface 140×70 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.77.5.

34: unbroken, small size, flatter, hemispherical lower grinding stone, rounded corner, rectangle grinding surface. Pebbly, 5 mm-1 cm grain, very rough. Fade for the wear in a stripe. The tool is fine-worked. Size: grind. surface: 205×145 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.56.1.

35: not belonging together. Flatter, hemispherical grinding stone, half fragment with ellipse grinding surface. 1,5 cm grain, very rough. The centre is worn. The tool is fine-worked, on the bottom is a great damage. Size: grind. surface: 110×140 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.56.1.

36: grinding stone, large size, rough, hemispherical, end fragment. The stone is spongy, cavernous, rough. The grinding surface is ellipse, with 1cm = d hole on the surface, wear, on the one edge are deeper blow-traces. The end is wear too, with sharpening-traces. The tool is fine-worked. Size: grind. surface: 205×95, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.60.1.

37: not belonging together. Flatter, rounded corner, larger grinding stone, more than half fragment. Rough, pebbly, 2 mm-1 cm grain. The grinding surface is trough, wear in stripes. The tool is fine-worked. Size: grind. surface: 150×140 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.60.1.

38: hemispherical grinding stone, small size, the lateral faces are damaged. Rough, pebbly, the surfaces is red, porous. The grinding surface is ellipse, trough, in the centre strongly damaged, the edges indented, broken. The tool is fine-worked. Size: grind. surface: 150×110 mm, Raw mat.: fine conglomerate with siliceous 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 siliceous 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 trough, with strong grinding stripes across. The tool is roughly worked. Size: grind. surface: 150×155 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.75.1.

41: rectangular shape, large size, rounded, hemispherical grinding stone, half fragment. Fine, pebbly, 1 mm grain. On the grinding surface from one hand are one-way pull-traces, from the other hand are blow-traces. The edge is damaged, the tool is roughly worked. Size: grind. surface: 185×155 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.55.2.

42: elongated, hemispherical grinding stone, ending straight, the edge is indented. The grinding surface is ellipse, tight, long, trough. Rough, pebbly, cavernous stone. On the lower corner there is red paint. The tool is fine-worked. Size: grind. surface: 210×145 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.50.22.

43: not belonging together. Hemispherical, small size grinding stone, unbroken, the lateral face is damaged. The grinding surface is ellipse, mildly trough, with one-way left-right long pulls. On the lateral faces the stone is chipped, the bottom is rough. White, rough stone. Size: grind.

surface: 130×22 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.50.22.

44: flat, unbroken grinding stone, small sized, the lateral faces are indented, damaged. The tool is fine-worked. The grinding surface is ellipse, mildly trough, the edges are smooth. Rough, pebbly stone, strongly cavernous. Size: grind. surface: 170×130 mm, Raw. mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.50.22.

45: high, hemispherical, unbroken grinding stone with little lateral damage, rough, pebbly grain. The grinding surface is ellipse, the edges are smooth, in the centre are 3 stripes, mildly trough. Size: grind. surface: 200×165 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 63.55.22.

46: handstone, angular flat disc. On the concave face are two shining, on the flat face a sinking polishing surface. Size: 75×75×5, Raw mat.: trachyandesite. Inv. No.: 63.49.13. (Microphoto)

47: broken stone fragment, with polished surfaces, fragment of the handstone? Size: 55×40, Raw mat.: Quartzite. Inv. No.: 63.50.17.

48: flat, round smoothing pebble, the one face is black, burned. Raw mat.: Metaconglomerate. Inv. No.: 63.88.15.

49: flat smooth pebble, on the both side we can see beginning drill holes, which is not done. Amulet, not ready? Size: 60×15 mm, Raw mat.: Aleurolite. Inv. No.: 63.61.9.

50: bulky, middle-sized chisel-axe, the working edge is strongly worn, blunt, nicked. The fore-face is concave, the back face is flat, the upper edge is damaged, broken, the other end is shows blow-traces. On the body there are microwear traces. Size: 70×40×20 mm, Raw mat.: Amphibolitic andesite. Inv. No.: 63.63.3.

51: broken across and along too, mica-stone fragment, the unbroken face is polished, it was tool, maybe axe? Size: 60×40×23, Raw mat.: Metamorphite. Inv. No.: 63.63.4. (Microphoto)

52: perforated axe, broken on the handle-hole, and across too. The unbroken face is scratched, damaged. The working edge was chisel edge former, but now it is pointed, blunt hammer-edge, with secondary transforming. In the handle hole there are the grooves of the drill. Size: 30×35 mm, Raw mat.: Metasediment. Inv. No.: 63.60.4.

53: fragment of a rough, bulky hammer. The faces are flat, strongly damaged, with deep microwear-stripes. The working edge is pointed, blunt, thick. Size: 85×45×40 mm, Raw mat.: Metamorphite. Inv. No.: 63.65.10.

54: the backface is flat, the fore face is concave, both ends are round, with blow-traces. Rough, porous stone. Retoucher or pestle? Size: Raw mat.: Micaceous medium-grained sandstone. Inv. No.: 63.52.10.

55: quadrangular, flat stone fragment. On the unbroken end there are wear and blow-traces. Retoucher or pestle? Size: 45×55×30, Raw mat.: metasandstone. Inv. No.: 63.64.3.

56: casting mould, double, with the forms of axe and needles? On the one face: chisel-edge axe, black, burned, the other side: two, parallel rectangles hardly sunk in the surface, in the one two, in the other thin, needle-like dips. Size: 153×90×45, Raw mat.: micaceous middle-grained sandstone. Inv. No.: 63.80.5.

Appreciation:

Grinding stones: There were 15 lower grinding stones, 6 unbroken and 9 fragments. The shapes were several: hemispherical were 12, flat, rectangle or angular 4. The size of grain: 3 medium-grain, 9 rough, 3 fine. The size of the tools: 3 large, 4 small size. Microwear: wear grinding surface: in 11 cases, concreted 1, trough 7, traces of colouring matter 1, separated surface in 2 cases: for sharpening, blowing and grinding, wear in stripes for the grinding 6, mechanical traces 4, dip in the centre 2, the edges are indented: 1. The upper part of the grinding stone is the handstone: 1, but it was used for sharpening too, an other piece is broken, and 2 retoucher-pestle. The tools of grinding are quite numerous, and they were very worn pieces, with damages. The average raw material was fine conglomerate with siliceous and limonitic cementation.

Axes: 2 were not perforated, one is with chisel-edge, very worn, the other is bulky 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 metamorphite.

Among the stone artefacts there was an amulet (the hole is not ready), smoothing pebbles used for the 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 shows 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-axe, fragment, the site is unknown (in: Le bel Age du Bronze in Hongrie 1994, catalogue no: 341.), and another unbroken piece from Pécska (in: Dömötör 1902, 273/, 1-2-3.). Similar moulded bronze-finds are in the hoard of Dunakömlőd (in: A bronzkor kincsei Magyarországon 1995, 62/2.), Jászdózsa-Kápolnahalom (Le bel âge du bronze en Hongrie 1994, catalogue No: 368.)

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

Pictures:

Plate VI.:

The map of the earthwork, after Nováki 1952, 9
The detail of the earthwork in 2000
63.65.10. trapezoid shape axe with chisel edge, drawing
63.63.3. bulky hammer, fragment, drawing
63.63.3. photo, hammer, secondary used for sharpening

Plate VII.:

Pestle, 63.52.10., photo
63.55.2. grinding stone with red paint on the bottom
60.80.5. casting mould, from both side
63.61.21. grinding stone, surface
63.75.1. grinding stone, flat, with pushing-stripes
63.52.13. grinding stone with cementation

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 tectonical 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 Lovasberény. It is surrounded by steep, vertical loess-walls here and there, thus the earthwork was defended by natural way also. Merely 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 load 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, daub, but not typical. The datable pieces belong to the Bronze Age.

Excavations:

On the territory of the Little Earthwork there were 4 excavations, the leader of the excavations was É. Petres (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 plastered 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 centre situated an oval fireplaces. 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 8,5×5,5 m. It was sank in the ground, with 4 postholes. The wall of the pit was vertical, the floor was plain. Inside the house several workshop-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 barrens. The barren-moulds were strongly burnt. In the SE corner there was another oval fireplace. Near it they found a mould of a buckle. Inside the house they dug a casting spoon also. We can say thus that house was a casting-workshop. The Little-Earthwork was not a living place, it was a workplace and farmyard. 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 Vatya Culture. The end of life cannot be red from the finds. (Pesty 1864-65, 144., Nováki 1952, 10., Petres-Bándi 1969, 170-177.)

List of stone implements:

57: whetstone, became strongly thin, worn, 75×5 mm, 19. Pit, Raw mat.: ? Inv. No.: 64.71.8.

58: round stone, polished, not tool, 20. Pit, Raw mat.: ? Inv. No.: 64.72.9.

59: stone fragments, round, flat stone, half fragment, thin, flat polishing stone, 27. Pit, Raw mat.: ? Inv. No.: 64.82.12.

60: on crescent flake: saw, with bifacial retouch, sickle-shining on the saw-edge, 27×25x6, Raw mat.: Buda hornstone

61: chipped stone, base fragment, the bulbe is medium-great, the talon is pointed, 28×20×3, Raw mat.: ?

62: round, angular handstone, one face and the one corner are broken, with 3 polished work-surfaces, 70×70×53 mm. 63. Pit. Raw mat.: Quartzite.

63: Broken, round, angular handstone, damaged from blows several places, in the pores there are red paint remains, the other side is black, burned or smoky, 62×65×55 mm, Raw mat.: Biotitic amphibolitic andesite.

64: broken, angular, round handstone, with 3 polished work-surfaces, 60×65x×65 mm, Raw mat.: Fine conglomerate with siliceous cementation

65: hemispherical, flat grinding stone, half fragment, rough grain, the tool is roughly worked, on the grinding surface we can see white grinder-stripes, on the broken lateral faces in the pores are red paint. 165×135×43 mm, Raw mat.: Grirstone fine conglomerate with siliceous cementation.

66: hemispherical grinding stone, in pieces, high lateral faces, rough grain, the tool is roughly worked, the grinding surface is ellipse, smooth, shining, in the pores there are red paint remains, 240×153×75 mm. Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

67: flat, hemispherical grinding stone, irregular shape, the tool is roughly worked, fine grain, the grinding surface is fine, smooth, strongly trough for the long use, 250×155×27 mm, Raw mat.: Gritstone-fine conglomerate with siliceous cementation.

68: hemispherical, very rough grain, the tool is fine-worked, the grinding surface is worn, with great hollows, mildly trough in the centre, 210×153×42 mm, Raw mat.: gritstone-fine conglomerate with siliceous cementation.

69: hemispherical grinding stone, one end is broken, the tool is roughly worked, the grinding surface is ellipse, in the centre worn in oval shape, on the damaged end, on the upper corner and on the bottom

we can see sharp red paint in the pores, middle grain, 242×187×40, Raw mat.: gritstone-fine conglomerate with siliceous cementation.

70: in the 80th pit, fine grain, layered, flat stone, one face is polished, unbroken, the other three are broken, the bottom is not worked, on the surface we can see white, thin stripes-grooves, which was caused by sharpening objects, these stripes form a fosse (90×5×3 mm), it was a polishing stone for sharpening, and formerly it was a casting mould of a hatted –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 fosse, where the objects were sharpened later, 150x100x22 mm. Raw mat.: Metamorphite.

71: in the fosse, perforated mace-head, two pieces, very nice, green stone with brush-patches in the raw material, fine polished, shining, conical, round, broken on the handle-hole, in the hole we can see the grooves of the drill, 44×67×17 and the other is 58×52×22 mm, they are belonging together. Raw mat.: Serpentinite.

72: shoe-last celts, very worn, deformed, it had chisel-edge, but now it is very blunt, little, on the lateral faces we can see traces of microwear, 75×26×23 mm. Raw mat.: meta-aleurolite?

73: rough stone, quadrangular, the one face was used for 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, 103×88×36 mm. Raw mat.: Gritstone altered by hydrothermal activity.

74: from the 'A' building, perforated axe, 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, 71×40×28 mm, Raw mat.: ?

75: In the casting-house, casting mould, on the one side there are a hatted-head needle with button on the top, a crescent object, and beginning of something, on the other side there are a hatted needle and a buckle, from the casting-workshop, 120x91x26 mm, Raw mat.: micaceous medium grained 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. Mainly 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 mace-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 celt with chisel edge, and a bulky, hardly working hammer, and a perforated, broken chisel-edge axe represented the axes, made of metamorphite. These finds lied 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 antler.

The most important finds are the two casting moulds. The one is from a pit, and it was a mould of a hatted-head needle, but it was worn, and than 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 hatted-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 buckle: The appearance of the earliest finds are in the early Szőreg-Perjámos (I-II.) culture, made of bone (Bóna 1959, VIII/1-4). They came from south (the former finds are from Troy, Schneckenberg). Usually they were excavated from female graves, on the waist (f.e. Dunapentele, grave 88, after Bóna 1959, 1). At the cemetery of Szöreg we know similar finds made of bone and bronze too. Now there are only three casting mould of buckle (Pécska, Tiszafüred and Lovasberény). 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 majestic-sign. (Bóna 1959, 49-59.)

Pictures:

Plate IX.:

The map of the earthwork after Nováki. 1952. 7.
Mace-head, fragment
Antler abutting joint
Grinding stone, XXXIV/7, with red ochre
Casting mould, later polishing stone
Casting mould, needles and buckle

Plate X.:

Drawing: saw on flake
Drawing: fragment of a perforated axe with chisel edge
Casting mould. Pécska. after Bóna 1959, 4.
Casting mould. Tiszafüred–Ásotthalom. after Bóna 1959, 9.
Moulded buckle, Helemba, drawing. after Bóna 1959, 8.
Dunapentele. Grave 88, after Bóna 1959, 1.

Pákozd-Vár

Geographical description:

We can find the earthwork on the highest hill of the Velence Mts., so-called Meleg-hegy (352 m). This granitoid area – formed in the Permian Variscan orogeny – is part of the intrusion-line which can follow in the Northern part of Balaton (Fülöp 1990). 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 amphibolitic andesite with subvolcanic 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 Bodza-valley is defended by bastion-like elevations (like at Aba and Sárbogárd), formed in it a veritable castle gate. In front of it leads a narrow road, and it is followed by a steep valley-coast. Opposite to the gate this coast is widening into a little terrace. From the

bastion-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 fosse also.

Excavations:

Pákozd-Vár is an archaeologically protected area. In 1925, 1926 and 1927 A. Marosi and J. Lichtneckert 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 stirred. The lower was the yellow subsoil, in some places features were sank in it. They cut the rampart of the Great Earthwork, and excavated on the territory of it. The area of the Little Earthwork was very poor in finds, and they left it. They found an urn-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, ovens, pits). On the base of the pottery the settlement experienced the Koszider-period (there was a Rákospalota-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 tuyer, 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 1864-65, 226., Marosi 1930, 59-73., Nováki 1952, 6-8.,) This settlement was the most important and the largest size among the earthworks of the Vatya Culture. We suppose that it was the principal earthwork in the Vatya Culture[2].

List of stone implements:

76: unbroken, middle-sized grinding stone, rough, pebbly stone. The lateral faces are fine worked, the bottom is rough, hemispherical, the grinding surface is ellipse, smooth, shining, transversal wear-lines, mildly trough. S.: 270×145mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 6286 or 6287.

77: handstone, pebble, half fragment, smoky, burned. Angular form, hexagonal. On one face polished with damages. S.: 65×54×50mm, Raw mat.: Quartzite. Inv. No.: 6286 or 6287.

78: a crescent piece from a former angular grinding stone, the grinding surface was rectangle, trough, with damages, it is an end fragment. The inner, convex face is smoky, the damages are missing, because in the secondary use it was the working-edge. S.: 125×70×35 mm, Raw mat.: ? Inv. No.: 6140.

79: pebble, half fragment, the inner face is worn, smooth, polished, handstone. On the opposite face are blow-traces. Angular form. S.: 75×55×57 mm, Raw mat.: Quartzite. Inv. No.: 6153.

80: handstone, pebble, half fragment, the half inner face is uneven worn, angular form. S.: 62×63×52 mm, Raw mat.: Quartzite. Inv. No.: 6154.

81: handstone, volcanic stone, flat, angular disc, smoky. Both flat faces are worn. S.: 76×70×31 mm, Raw mat.: Metamorphite. Inv. No.: 6152.

82: very small sized grinding stone, or polishing stone. The end is broken. The grinding surface is smooth, mildly trough, the stone is fine-worked, the cross section is V-shape. S.: 123×74 mm, Raw mat.: fine conglomerate with siliceous cementation. Inv. No.: 6157.

83: Angular, flat disc, one flat face is damaged, broken, the other is trough. The edges are nicked, maybe it was handstone. S.: 94×85×34 mm, Raw mat.: Serpentinite. Inv. No.: 6151.

84: angular handstone, one face is strongly broken, it was the using-face. S.: 50×50×45 mm, Raw mat.: Quartzite. Inv. No.: 6156.

85: elongated, rectangular handstone, with convex using faces. Polishing stone. S.: 78×50×35 mm, Raw mat.: Quartzite. Inv. No.: 6155.

86: angular handstone, quartzite pebble, the one face is strongly broken, three faces are worn, S.: 75×70×80 mm, Raw mat.: Quartzite. Inv. No.: 6106.

87: angular, broken handstone, limnoquartzite? Five faces polished, both flat disc-faces were used. S.: 80×73×58 mm, Raw mat.: Quartzite. Inv. No.: 6107.

88: pebble, on the edge it is ditch-like, thick dip, natural or used for sharpening? S.: 78×4420 mm, Raw mat.: Quartzite. Inv. No.: 6139.

89: broken polishing pebble. S.: 58x18x11 mm. Raw mat.: Radiolarite. Inv. No.: 6142.

90: amulet? Polishing pebble, rough surface, one face is flat, the other is concave, on both faces are hole, but the perforate is not ready. S.: 63×1987mm, Raw mat.: Siliceous limestone. Inv. No.: 6146.

91: polishing pebble. S.: 57×15×12 mm, Raw mat.: Quartzite. Inv. No.: 6144.

92: polishing pebble. S.: 52×17×8 mm, Raw mat.: Quartzite. Inv. No.: 6145.

93: polishing pebble, S.: 66×20×6 mm. Raw mat.: Marble? Marl? Inv. No.: 6143.

94: polishing pebble, with rough surface, S.: 62×36×5 mm, Raw mat.: metasandstone. Inv. No.: 6846.

95: strange, soft, great, angular pebble, S.: 73×30×18 mm, Raw mat.: Quartzite. Inv. No.: 6847.

96: polishing slab, rough, small, with ditch-like, wide trough in the centre. S.: 94×90×18 mm, Raw mat.: micaceous medium-grained sandstone. Inv. No.: 7264.

97: angular, round handstone with one flat, polished face, the opposite face is broken. S. 60×60×42 mm. Raw mat.: quartzite. Inv. No.: 6845.

98: stone piece? Strange, greasy-shine in some places. S.: 75×80×42 mm, Raw mat.: hornstone-firestone. Inv. No.: 6844.

99: symmetrical, flat faces, the ends are flat too, blunt, broken across, on the ends are blow-traces. Retoucher? S.: 160×48×20 mm, Raw mat.: metamorphite. Inv. No.: 6130.

100: soft pebble, S.: 83×55×40 mm, Raw mat.: quartzite. Inv. No.: 6843.

101: angular, round handstone, every face is polished, shining, flat, on the one is deep, smooth channel, the trace is of sharpening. S.: 51×55×50 mm, Raw mat.: granodiorite. Inv. No.: 6842. (Microphoto)

102: polishing pebble, S.: 65×15×18 mm, Raw mat.: metasandstone. Inv. No.: 7261.

103: polishing pebble, S.: 65×22×7 mm, Raw mat.: Marble? Marl?.

104: hatchet with fan-like, widening, curved, sharp chisel edge. The edge is formed by chipped, rather blunt. The other end is broken, secondarily worked, polished. It is a copy of the shape of metal-tools. S.: 80×64×3 mm, Raw mat.: metasediment. Inv. No.: 7262.

105: trapezoid shape, bulky body, small chisel-axe, the faces are flat, the working edge is blunt with microwear. S.: 56×38×15 mm, Raw mat.: diabase. Inv. No.: 6860.

[2] This is the opinion of É. F. Petres, J. Antoni and J. Makkay too.

106: trapezoid chisel-axe, on the one face is hole-imitative, on the other face is just the blow-place of it. The working edge is blunt, the faces are concave-flat with microwear. The other end was formerly a chisel-edge too, but it is absolutely worn. It was an amulet or whetstone secondarily? S.: 58×3×10 mm, Raw mat.: piroxenite-amphibolitic andesite. Inv. No.: 6859.

107: trapezoid small chisel-axe, very bad condition, worn raw material, on the surface there are faults, rising between using. The working edge is mildly curved, very blunt. S.: 65×29×20 mm, Raw mat.: amphibolitic andesite. Inv. No.: 6861.

108: perforated chisel-axe, fragment, broken on the handle-hole, the faces are flat, with strong microwear. The lateral faces are medium sized. The working edge is very blunt. S.: 70×50×33, d=21, Raw mat.: metamorphite. Inv. No.: 6137.

109: perforated, chisel-axe, fragment, broken on the handle-hole. The faces are flat, the lateral faces are medium high. The working edge is blunt, it was not re-polished, thus it was used as hammer. S.: 68×47×38 mm, d=16 mm, Raw mat.: microdiorite. Inv. No.: 6138.

110: broken stone, the remained faces are nicely polished, it was whetstone or axe. Rectangular, easy body. S.: 72×23×13 mm, Raw mat.: ? Inv. No.: 6141.

111: The working edge is regular, round, concave, pointed hammer end, long, bill-like, the corp is straight, broken on the handle-hole. S.: 78×37×29, d= 11-12 mm, Raw mat.: amphibolitic andesite. Inv. No.: 6841.

112: bulky, round axe, the working edge is chisel, strongly blunt. The faces are smooth, the lateral faces are widening, damaged. The other end is round. The raw material is very rough, grained. S.: 106×44×48 mm, Raw mat.: amphibolitic andesite Inv. No.: 7263.

113: broken, trapezoid shape axe, the edge is blunt, it was former chisel? The faces are mildly concave, with microwear. S.: 49×56×17 mm, Raw mat.: metamorphite. Inv. No.: 6132. (Microphoto)

114: trapezoid axe with rounded corners. both ends are blunt, broken, with microwear. The faces are concave. It is an absolutely nicked, changed-edge chisel-axe, secondary used as whetstone or amulet. S.: 79×34×19 mm, Raw mat.: metaaleurolite. Inv. No.: 6133.

115: mace-head, fragment, broken on the handle-hole, round, in the centre widening, nicely polished, it was dignity-sign. S.: 72×50, d=18-19 mm, Raw mat.: metamorphite. Inv. No.: 6135.

116: mace-head, fragment, nice polished, broken on the handle-hole. S.: 55×75 mm,d=13-20mm, Raw mat.: metamorphite. Inv. No.: 6136.

117: mace-head, fragment. with part of the handle-hole. S.: 78x58, d=21 mm, Raw mat.: serpentinite. Inv. No.: 6134. (Microphoto)

118: trapezoid shape chisel-axe, the fore-face is concave, the other end is broken, the back-face is flat, the working edge is sharp. Microwear on the body, middle sized. S.: 61×41×16mm, Raw mat.: metasediment. Inv. No.: 6837.

119: broken pebble, it was a chisel-edged axe? S.: 130×45×40 mm, Raw mat.: quartzite. Inv. No.: 6836

120: large, half fragment of an axe, the working edge is blunt, faults, the fore-face is concave, the back face is flatter, damaged. S.: 122×65×26 mm, Raw mat.: metamorphite. Inv. No.: 6831.

121: elongated, narrow shoe-last celt, the working edge is chisel, nicked, the fore-face is concave, narrow, the back face is flat, the lateral faces are high, damaged. Microwear on the back face. S.: 113×32×25 mm, Raw mat.: ? Inv. No.: 6033.

122: perforated, broken on the handle-hole, chisel-axe, the faces are flat, narrow, the lateral faces are high, the one is strongly damaged, the working edge is blunt. S.: 88×47×43 mm, Raw mat.: metaaleurolite. Inv. No.: 6839.

123: perforated axe, broken on the handle-hole, the faces are flat, with microwear, the lateral faces are high, damaged. the working edge was former into chisel-edge, but absolutely worn, secondarily used as hammer. S.: 85×48×45 mm, Raw mat.: amphibolitic andesite. Inv. No.: 6840. (Microphoto)

124: saw on crescent flake, sickle shine, bifacial retouch, S.: 21×20×4 mm, Raw mat.: jaspilite. Inv. No.: 6150.

125: blade-like flake, not worked. S.: 27×19×5 mm, Raw mat.: jaspilite. Inv. No.: 6150.

126: atypical gimlet on flake. S.: 25×16×8 mm, Raw mat.: flintstone. Inv. No.: 6149.

127: middle fragment of a blade, on the fore face are 2 spines. S.: 39×32×9 mm, Raw mat.: jaspilite. Inv. No.: 6150.

128: flake, the bulbe is large, the talon is broken S.: 29×27×9 mm, Raw mat.: jaspilite. Inv.: No.: 6150.

129: not worked stone-piece. S.: 45×22×5 mm, Raw mat.: limnoquartzite. Inv. No.: 6150.

130: saw on crescent flake, bifacial retouch. S.: 27×17×3 mm, Raw mat.: Buda hornstone. Inv. No.: 6148.

131: flake. S.: 33×32×12 mm, Raw mat.: hornstone. Inv. No.: 6150

132: conical flake. S.: 26×30×22 mm, Raw mat.: hornstone. Inv. No.: 6850.

133: flake. S.: 29×18×4 mm, Raw mat.: jaspilite. Inv. No.: 6850.

134: crescent flake, atypical gimlet. S24×14×6 mm, Raw mat.: Buda hornstone. Inv. No.: 6850.

135: saw on crescent flake, bifacial retouch, sickle-shining, the talon is smooth, the bulbe is large, S.: 24×26×6 mm, Raw mat.: hornstone. Inv. No.: 6848.

136: atypical gimlet on crescent flake. S.: 22×23×3 mm, Raw mat.: jaspilite. Inv. No.: 6850.

137: blade-like, not worked stone piece. S.: 52×25×6 mm, Raw mat.: hornstone. Inv. No.: 6850.

138: saw on crescent flake, bifacial retouch, sickle-shining. S.: 32×23×6 mm, Raw mat.: Buda hornstone. Inv. No.: 6849.

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 ditch of sharpening, 7 polishing pebbles, and a retoucher. The stone material was fine conglomerate, quartzite and metamorphitic rocks or same case silieeous 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 gimlet, and a blade. The tools are worked on flake. The raw material were Buda hornstone (4), radiolarite (4), limnoquartzite (1).

The axes are perforated (5) and not perforated (11). Among the not perforated axes we find a hatchet (secondarily worked), 10 trapezoid-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 axes many cases:

· On the hatchet 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 trapezoid shape, chisel-axe) secondarily which were tried to be perforated, but not finished. They are whetstones or amulets?

– One perforated, chisel-edge's axe was worn, too, than used as hammer

There is a former chisel-axe, on both ends, trapezoid shape. It was secondarily transformed into whetstone or amulet (hole-imitative).

The raw material was different type of metamorphite, andesite, ultrabasite and quartzite.

We can find 3 mace-heads (all are broken), these were signs of prestige, made of very nice raw materials (metamorphite and serpentinite) 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 finds saws, which were the tools of the harvesting. The great frequency of the secondarily transformed polished axes show the high value of them. On the settlement there was no axe-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 Nováki 1952, 4.
Grinding stone, 6287.
Photo, 7261.
Photo, 6840. hammer, fragment
Plate XII.:
Photo, 6841. hammer, fragment
Photo, 6146. amulet, half perforated
Photo, 6131. hammer, fragment
Photo, 6134. macehead, fragment
Photo, 6130. retoucher, hammer
Photo, 6859. worn chisel-edge axe, now amulet, half perforated
Plate XIII.:
Drawing: saws: 6148., 6848., 6147.
Drawing: atypical gimlet: 6850., middle fragment of a blade: 6150.
Drawing: 6137. axe
Drawing: 7263. axe
Plate XIV.:
Drawing: 6840. axe
Drawing: 6838. axe
Drawing: 6837. axe
Plate XV.: Microphotos of stone implements from the earthwork
Plate XVI.: Microphotos of stone implements from the earthwork

Sárbogárd-Cifrabolondvár

Geographical description:

The so-called Cifrabolondvár is situated in the NE direction from Sárbogárd, towards Kislókpuszta, 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 Sárbogárd. In southern direction it is separated by a deep artificial fosse from the ridge of a hill, from the other sides enclosed by the deeper plain, the Eastern side of this is damp. 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. This 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. Ramparts 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 lean 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 terrace 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-photos 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. Bándi (and the Tell-study Archaeological Group) excavated in the larger, fortified northern part of the earthwork. He opened a 5×5 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-phases. The floor was plastered many times, there was no fireplace inside, and pieces of daub were few, the postholes are missing. He supposed that the wall of the house was made of light vegetal matters, with thin plaster. In the 6th level a pit-house was excavated: triangle-shaped, it consists of 3 beehive shape pits, with passage bench among them. The entrance is stair-like. In one passage they found a lot of pottery sank 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 Vatya Culture. (Pesty 1864–65, 101–161., Bándi 1960, 149–150.)

List of stone implements:

139: hemispherical grinding stone, end-fragment, rough grain, pebbly stone. The grinding surface is smooth with paint in the pores pink on the corner and yellow on the upper part of the stone. The tool is fine worked. Size: 173×142×51 mm. Raw mat.: gritstone fine conglomerate with siliceous cementation. Inv. No.: 61.50.3.

140: "I" house, unbroken, hemispherical grinding stone, small-sized, the grinding surface is trough, ellipse, with wear stripes. The tool is roughly worked, on the bottom we can see paint (limonite?) built in the raw material, the edge is indented, broken, medium-grain. Size: 208×128×42 mm, raw mat.: gritstone-fine conglomerate with siliceous cementation. Inv. No.: 61.57.2.

141: 'E' pit, grinding slab, corner fragment, it was rectangle shape, roughly worked, on the bottom we can see the rough, pebbly raw material, the grinding surface is absolutely worn, smooth, shining, trough, fine-middle grain. Size: 108×83×54 mm, Raw mat.: gritstone-fine conglomerate with siliceous cementation. Inv. No.: 59.162.8.

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: 170×150×60 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 Nováki 1952, 5.
The detail of the earthwork in 2000
Grinding stone, 61.50.3. 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 Vatya Culture.

We suppose that on this territory was the „larder" of the Vatya 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 loess-plateau rising above the plan, 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, paint-grinding, metal-work, stone-usage existed at the settlements, but this is the only one thing that we could allege 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, cut of the ramparts, with the help of the archaeometrical sciences. Up to that time it's anybody guess.

Aba-Belsőbáránd-Bolondvár:

Stone finds total:	Artefacts
4	Grinding stone: 1

Igar-Vámpuszta-Galástya:

Stone finds total	Artefacts
27	Grinding stone: lower 12 upper 3
	Hammers-axes: 4
	Chipped stones: 1
	Polisher pebbles: 1

Kajászó-Várdomb:

Stone finds total	Artefacts
26	Grinding stone: 15 lower, 4 upper
	Hammers-axes: 2
	Amulet: 1
	Casting mould: 1
	Polisher pebble: 1

Lovasberény-Mihályvár:

Stone finds total	Artefacts
18	Axe: 2
	Grinding stone: 5 lower 3 upper
	Macehead: 1
	Whetstone: 1
	Casting mould: 2
	Chipped stone: 2

Pákozd-Vár:

Stone finds total	Artefacts
75	Grinding stone: 4 lower 10 upper
Now: 62	Axes, hammers, retouchers: 17
	Macehead: 3
	Whetstone: 4
	Amulet: 1
	Chipped stone: 16
	Polishing stone: 2
	Polisher pebble: 5

Sárbogárd-Cifrabolondvár:

Stone finds total	Artefacts
4	Grinding stone: 4 lower

The archaeological summary of the stone implements from the Vatya-earthworks in Fejér county

Matterial	Grinding stone	Polishing stone, smoothing pebble, whetstone	Grinding slab	Hand stone	Pestle	Mace-head	Axe., hammer	Casting mould	Chipped stone	Other	Σ	Supposed original area
Granodiorite				1							1	?
Microdiorite							1				1	?
Granite										1	1	Velence-Mts., Mórágy
Andesute				2			9				11	Visegrád Mts, Velence Mts.
Sandstone-fine conglomerate	38		2				1				41	Buda-hills, area of Érd-Diósd
Micaceous sandstoner	1	2	2	1	1		1	2			10	Foreground of Trans-danubian Mts.
Mudstone										1	1	Local matterial
marl		2									2	From debris
Aleurolite		1									1	From debris
Flintstone, hornstone, jaspilite									17	1	18	Buda-hills, Vértes, Gerecse Mts.
Metasediment		3		1	1	2	7			2	16	From debris
flintshist		2									2	From debris
Quartzite		2		12	1		1			3	19	Fluvial pebbles
Gneis		1									1	?
Serpentinecased ofiolite, greenshist				1		2	1				4	Rohonci Mts.
Other metamorphite		1					4				5	?
Other unknown	1	2					3		1	1	8	--
Σ	40	16	4	18	3	4	28	2	18	9	142	-

The petrographical summary of the stone implements from the Vatya-earthworks in Fejér county
(Aba-Belsőbáránd, Igar-Vámpuszta, Kajászó, Lovasberény, Pákozd)

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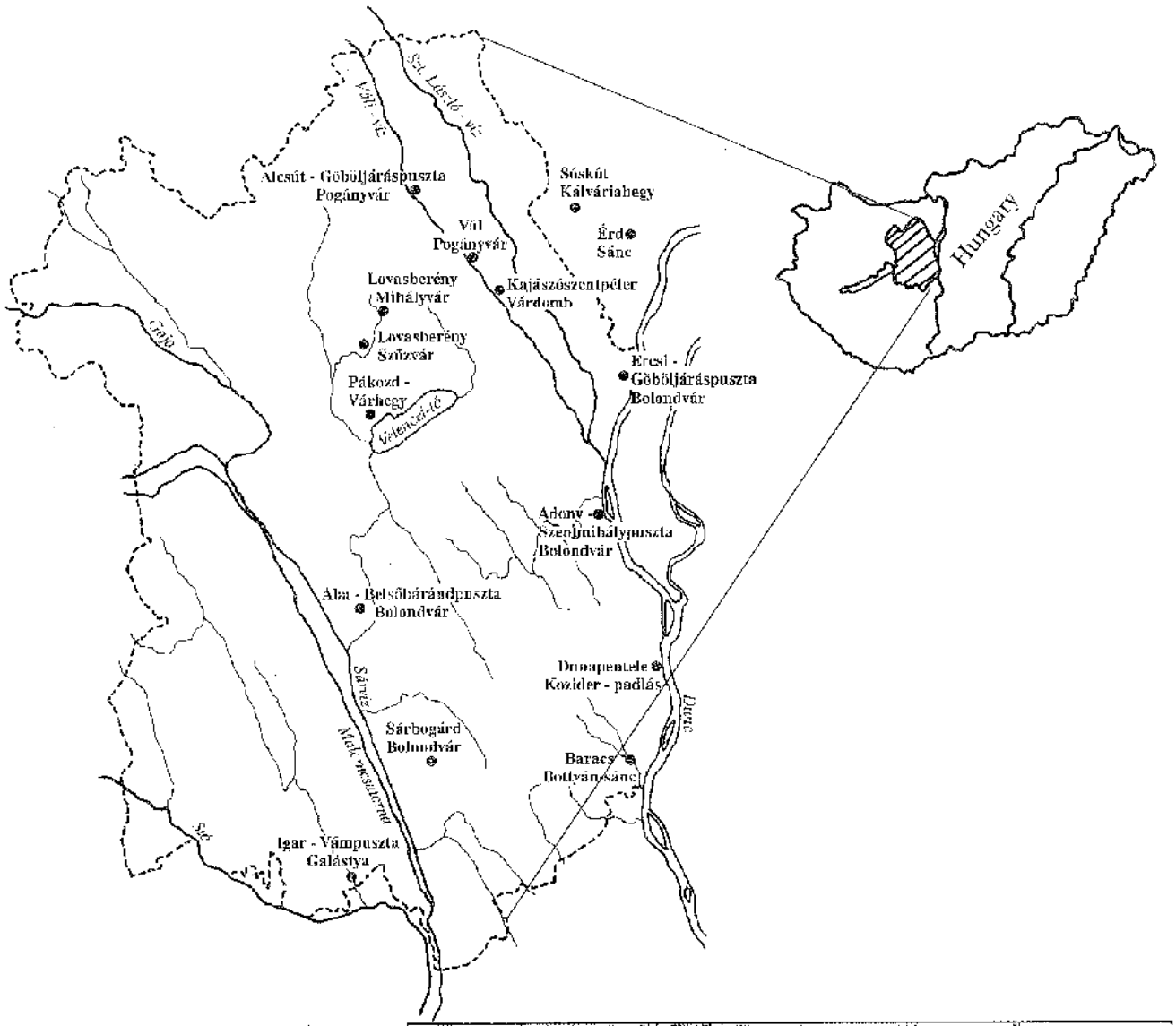
The spead of Vatya-earthworks in Fejér county



The spead of Vatya-earthworks and hoards Fejér county

1. Gáta-Wieselburg culture
2. Encrusted Pottery culture
3. Vatya culture
4. Maros culture
5. Tokod group
6. Hatvan culture
7. Füzesabony culture
8. Otomani/Ottomány culture
9. Frontier territory between the Otomani/Ottományi and the Wietenberg culture

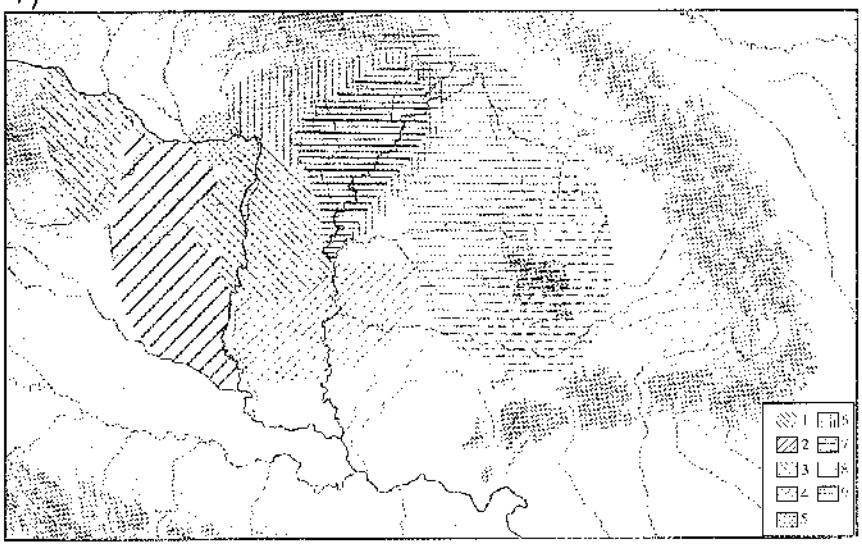
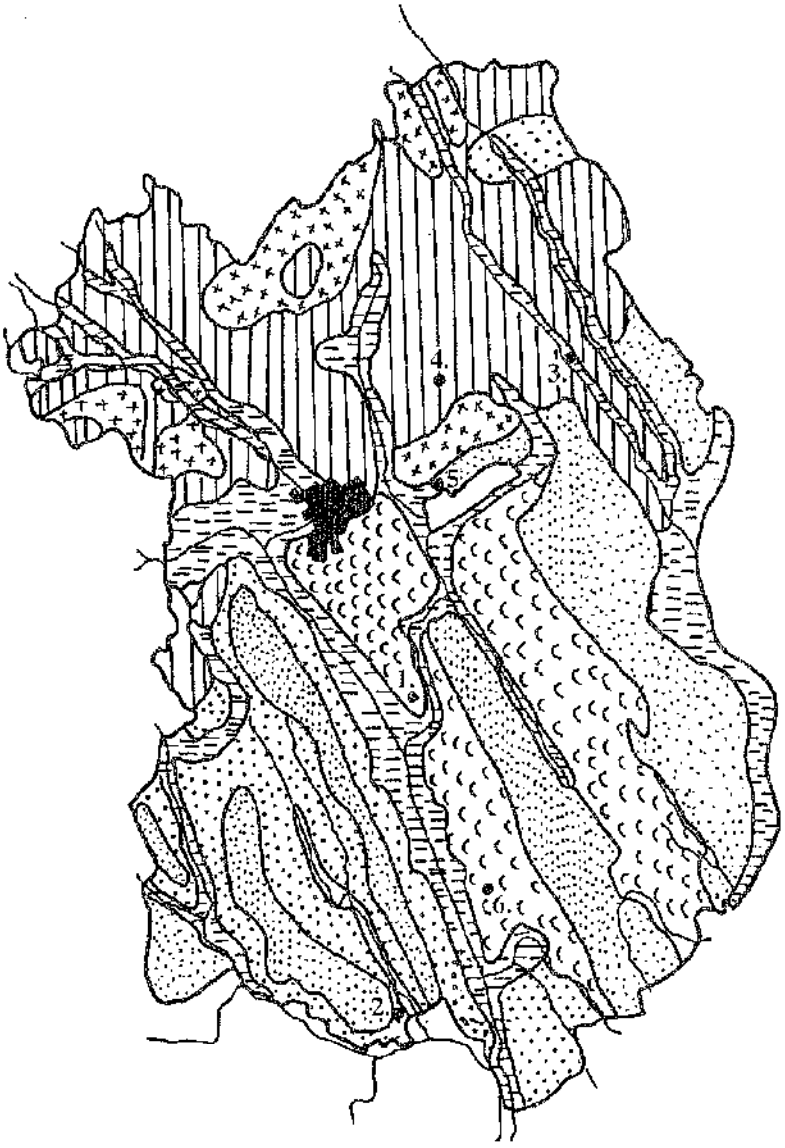


Plate I.

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



Legend:

1. Aba-Belsőbáránd-Bolondvár
2. Igar-Vámpuszta-Galástya
3. Kajászó-Várdomb
4. Lovasberény-Mihályvár
5. Pákozd-vár
6. Sárbogárd-Cifrabolondvár

Erosional-derasional ranges covered with Pleistocene loess

Hills area covered Pleistocene loesslike sediments

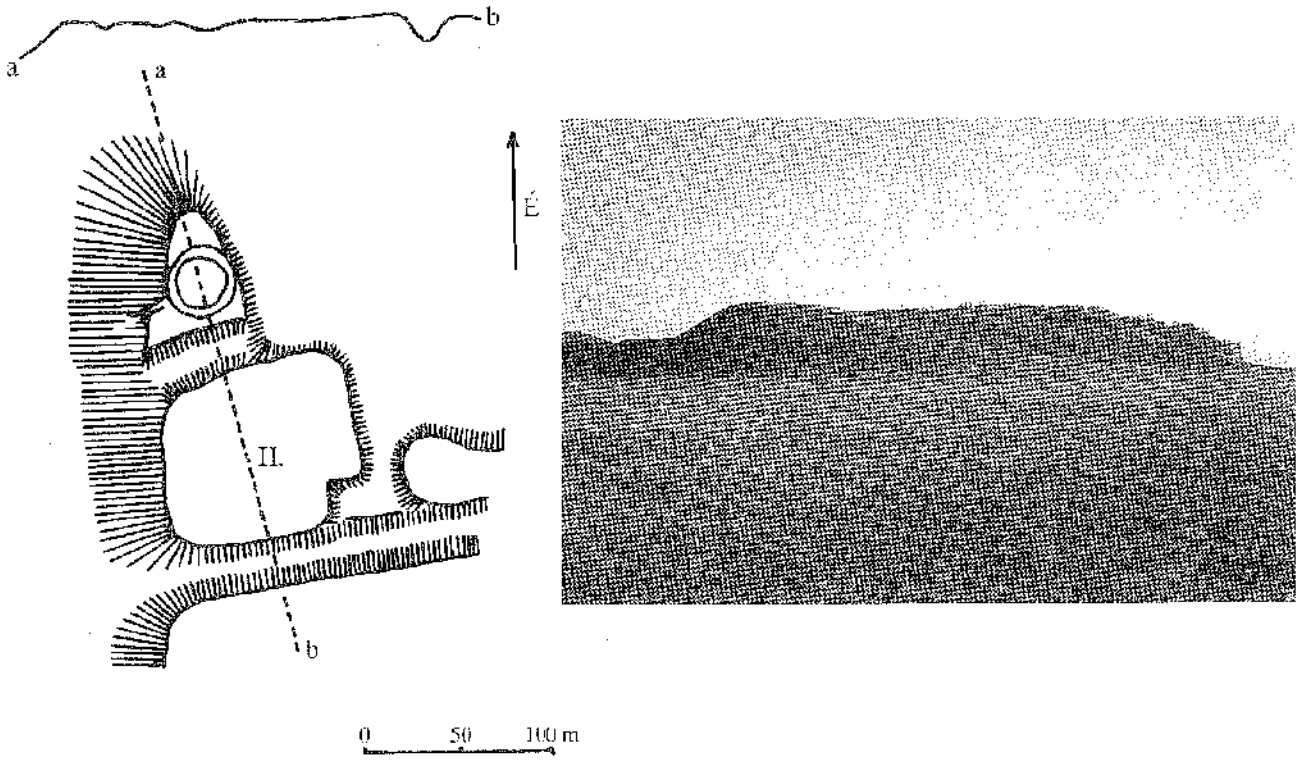
Palaeozoic-Mesozoic basement

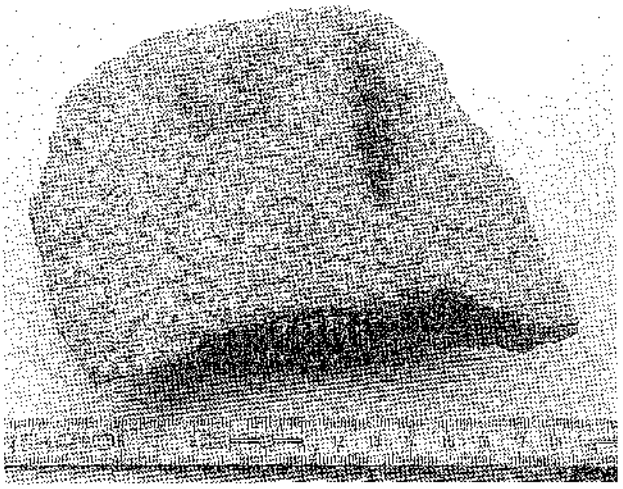
Alluvial area covered with Holocene sediments

Alluvial area formed on Pleistocene fluvial sands

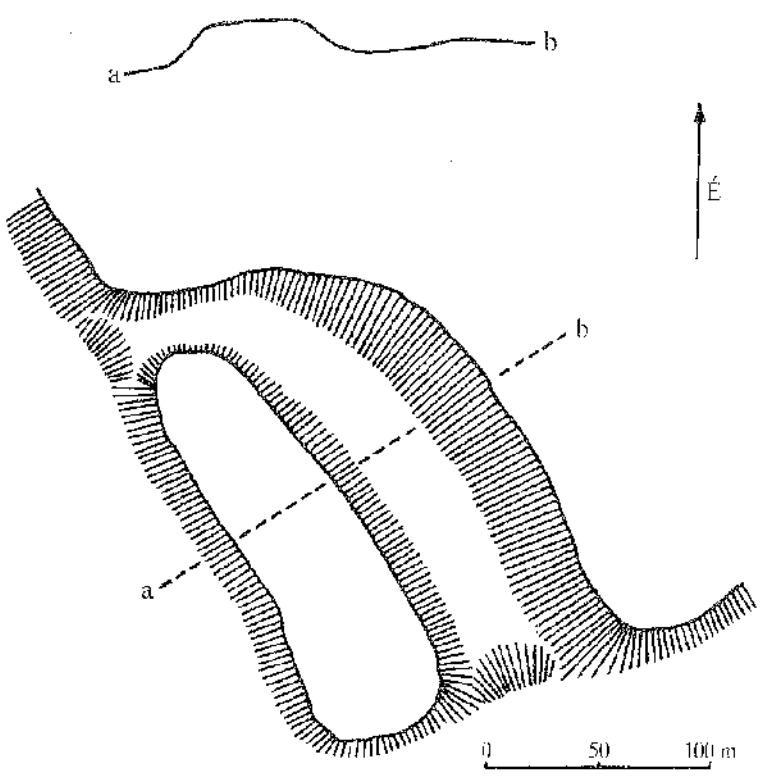
Erosional-derasional ranges covered with Pleistocene quicksand

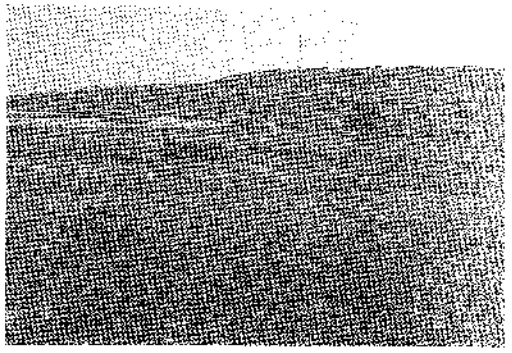
Plate II.

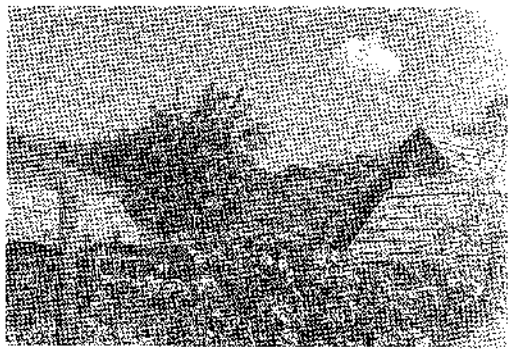




60.115.4.







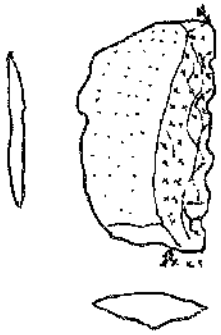
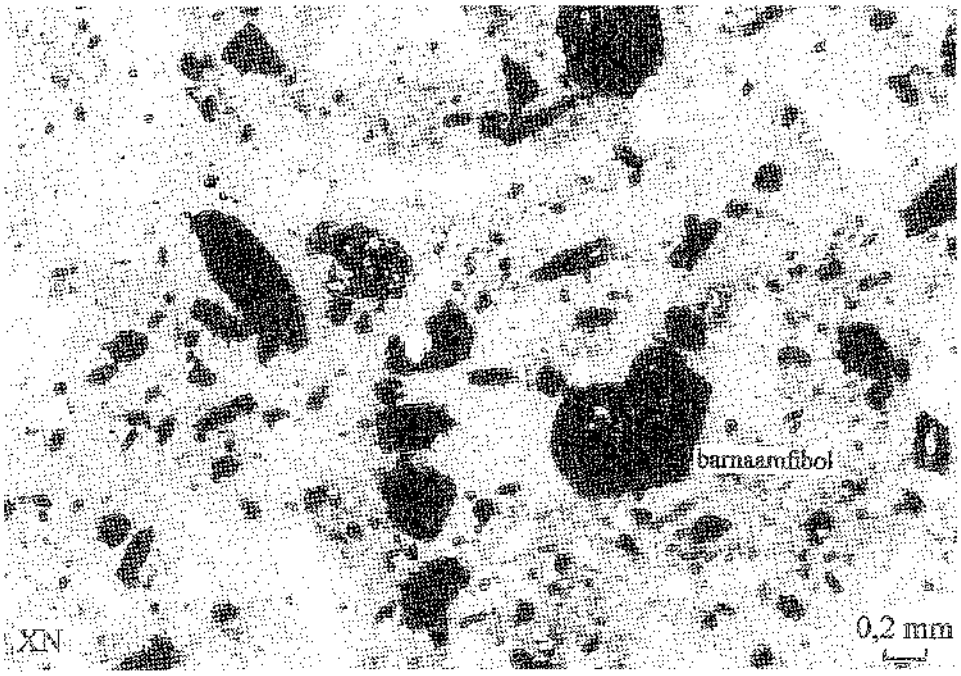
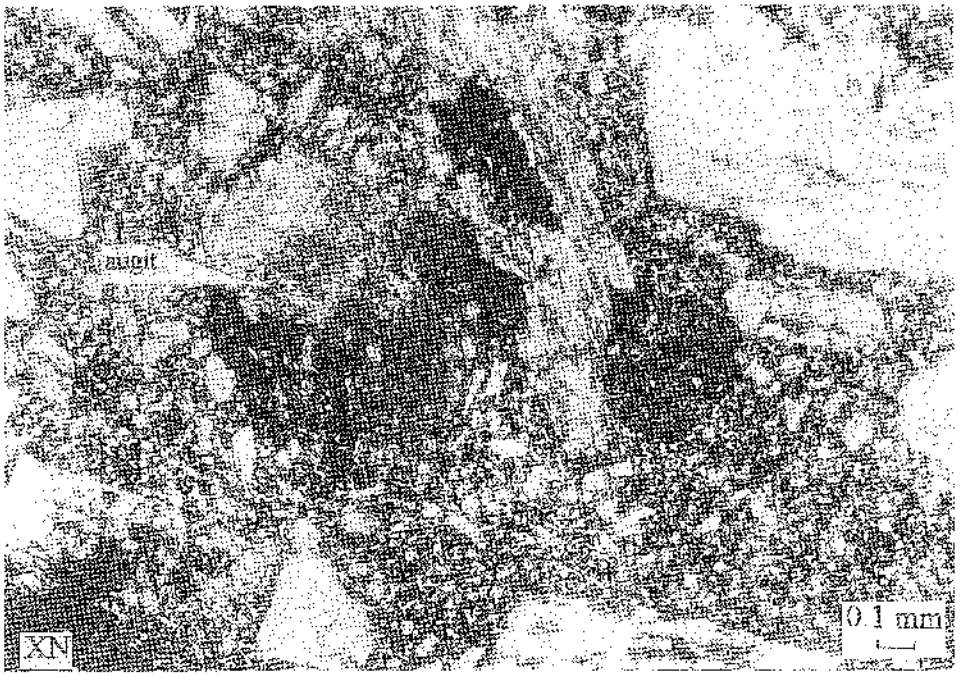


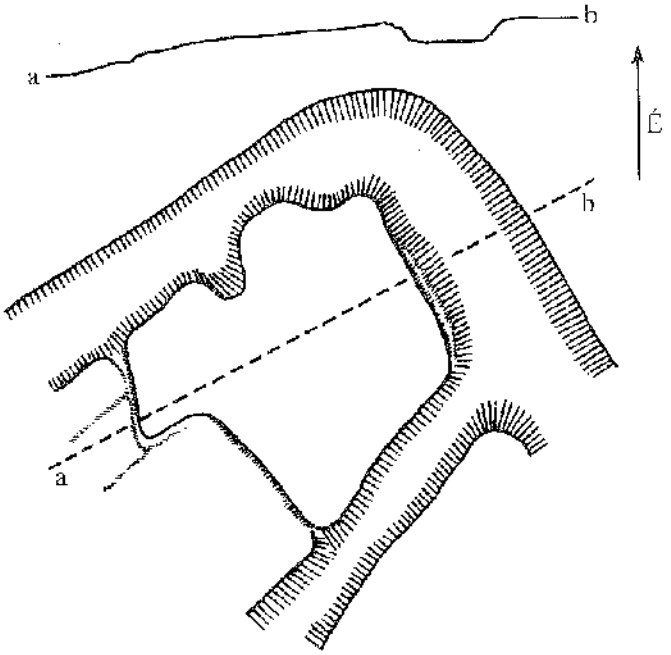
Plate IV.



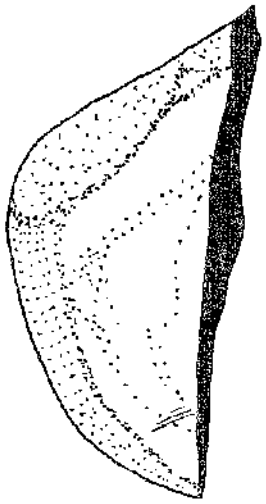
The texture of a trapezoid-prismatic axe (segment I., pit Δ, 1972)
made from amphibole andesite (Dunazug Mts.)

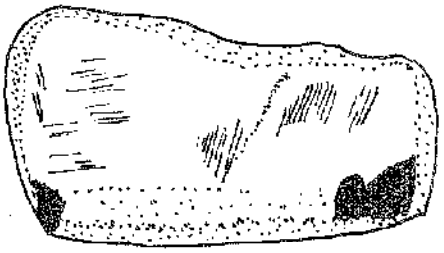


The texture of a hammer (segment IV., pit α, 1972)
made from augitic hypersthene andesite (Dunazug Mts.)



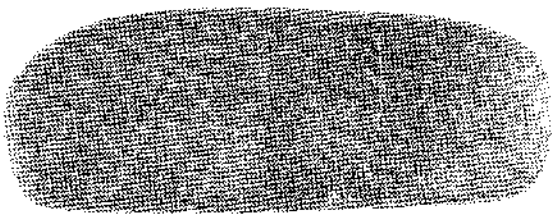
0 50 100 m





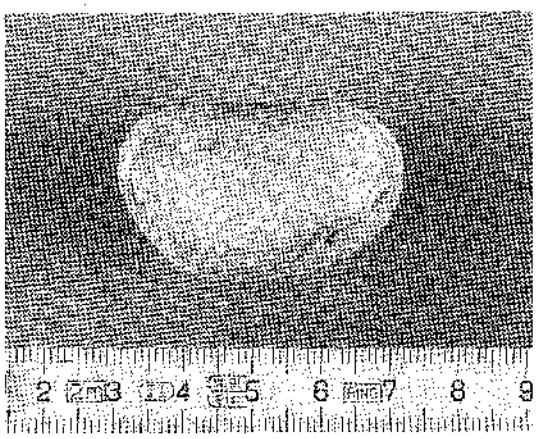
63.63.3.

63.65.10.

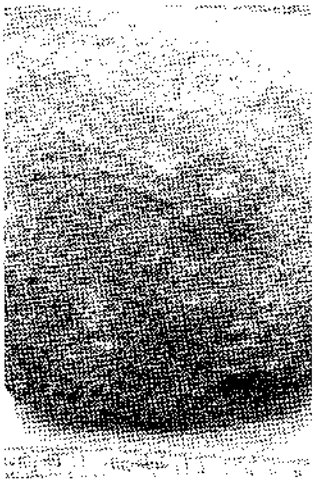


63.63.3.

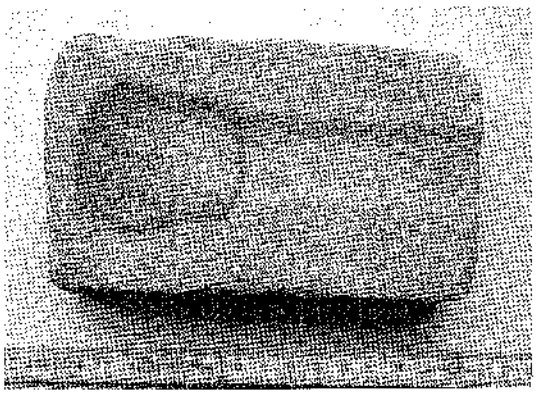
Plate VI.



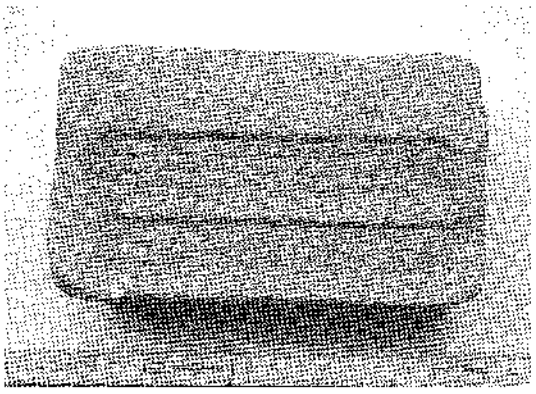
63.52.10.



63.55.2.



60.80.5.



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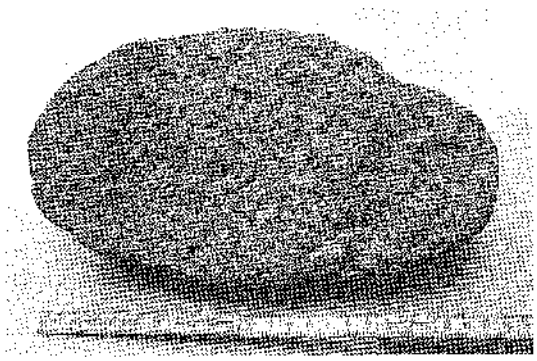
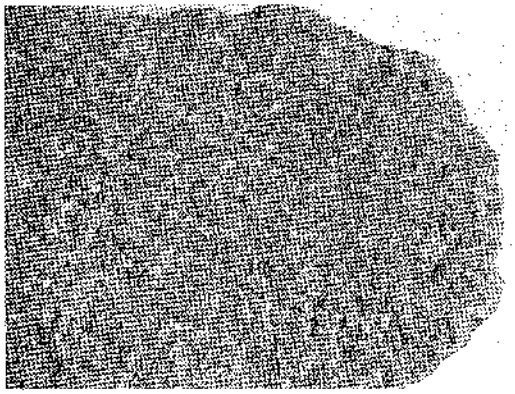
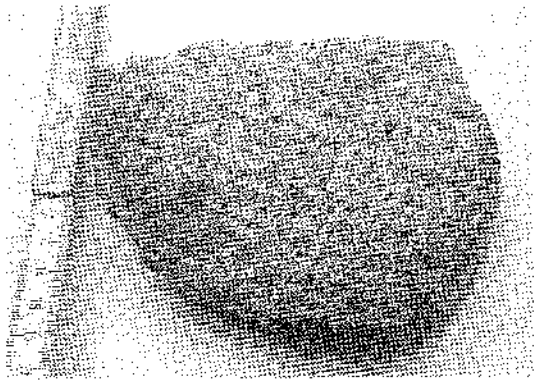


63.61.21.

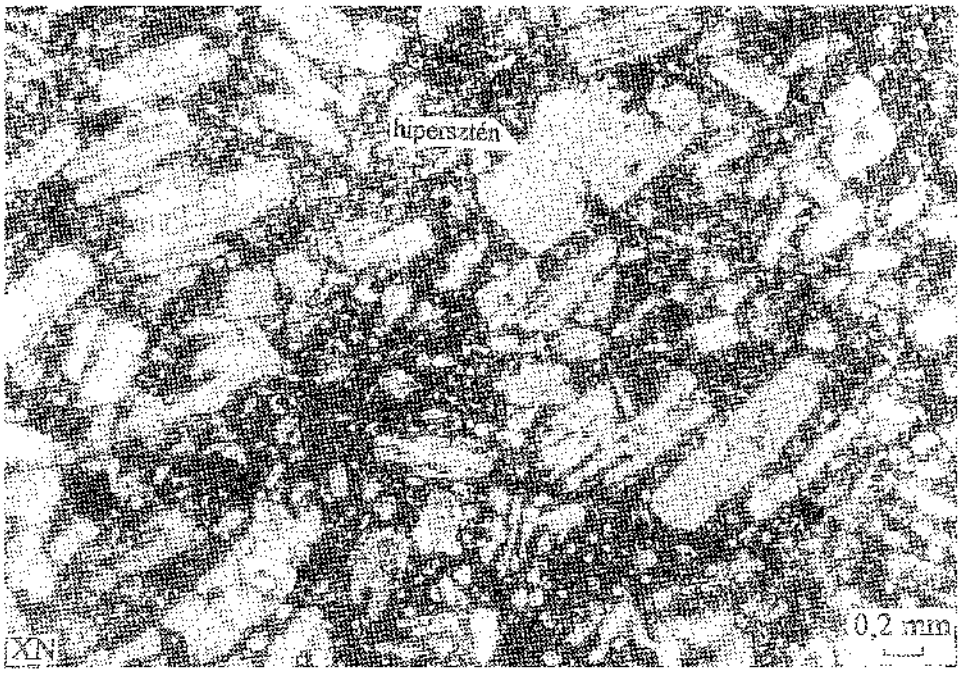


63.75.1.

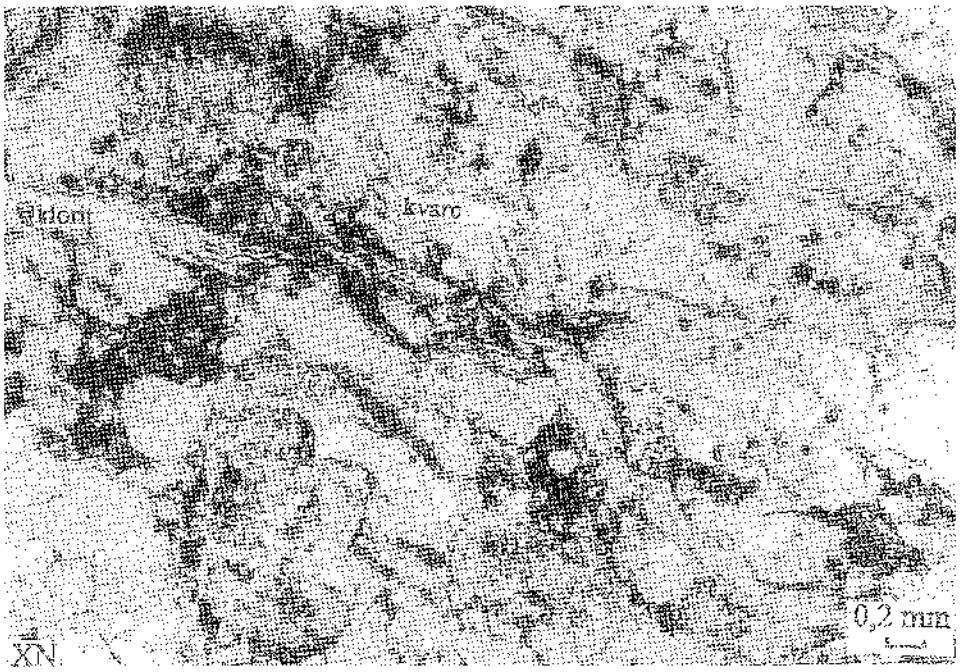


63.52.13.

Plate VII.

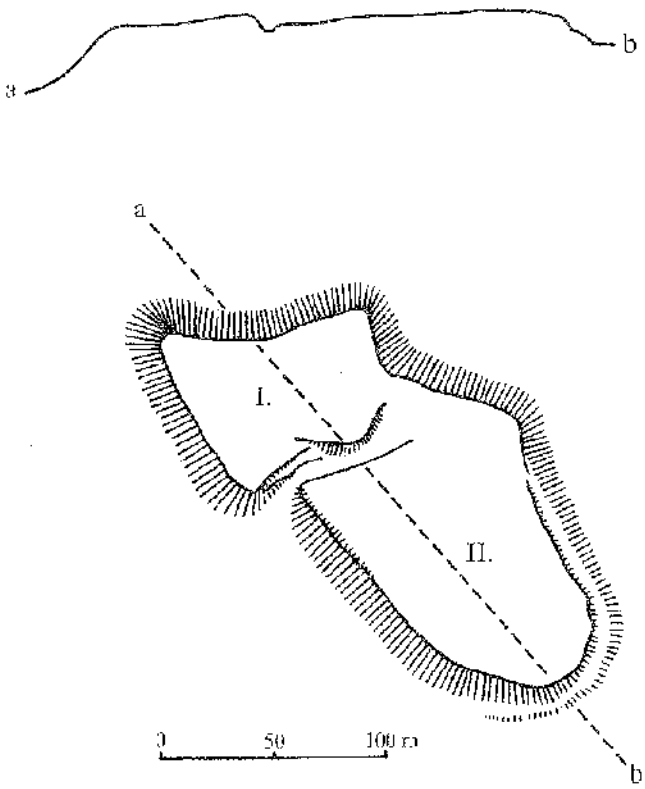


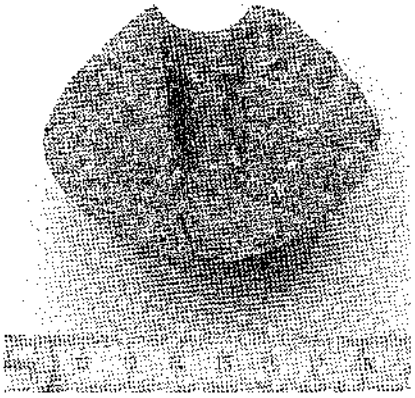
The texture of a handstone (63.49.13., segment IV., spit 1.) with the main rock-forming mineral (hypersthene) made from pyroxene andesite (Dunazug Mts.)

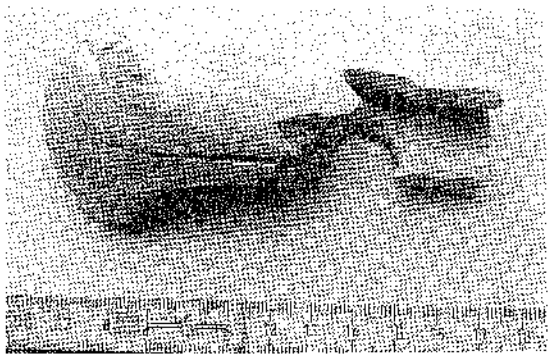


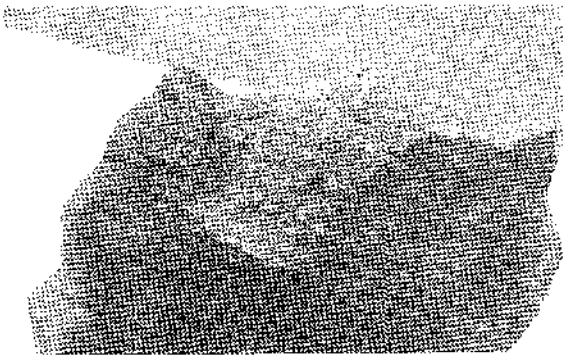
The texture of an axe (63.63.4. segment I–III., spit 10.) with crystals of quartz and mica (clorite) made from paragneis (Velence Mts.)

Plate VIII.

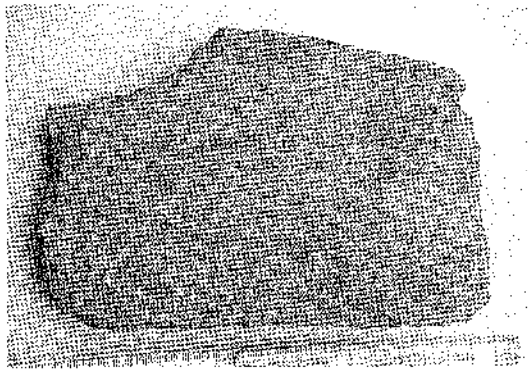


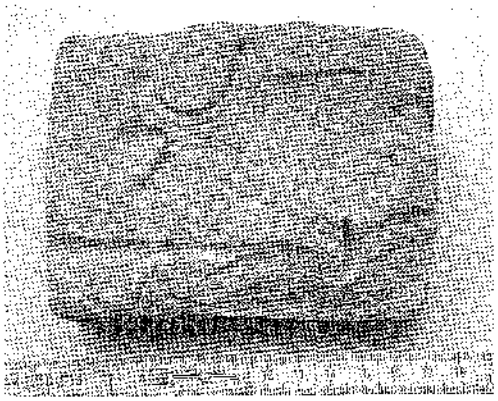






XXXIV/7.





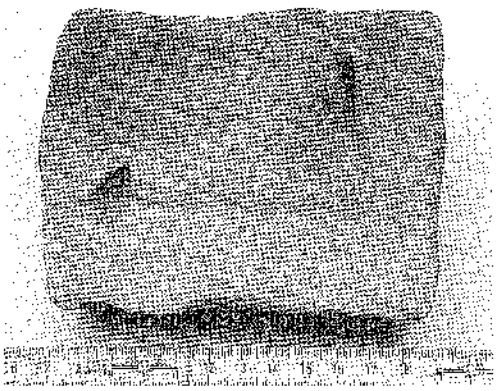
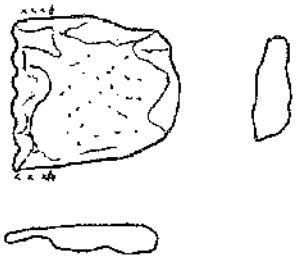
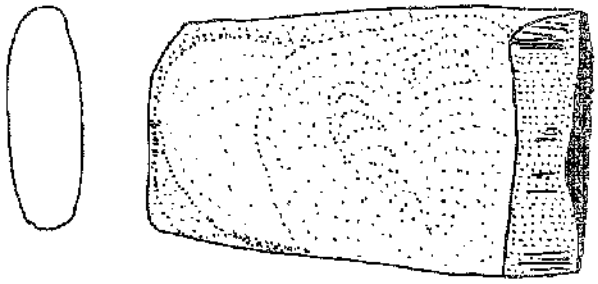


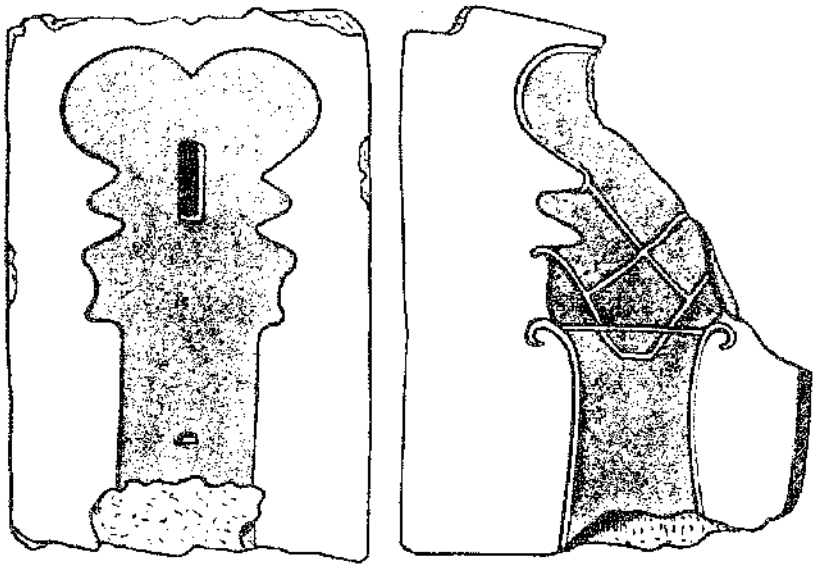
Plate IX.



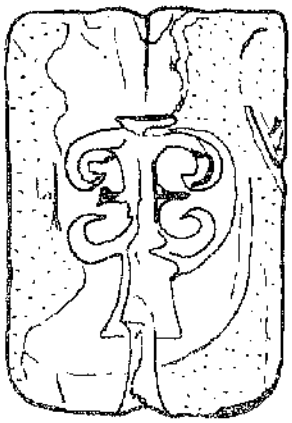
House B, pit 63



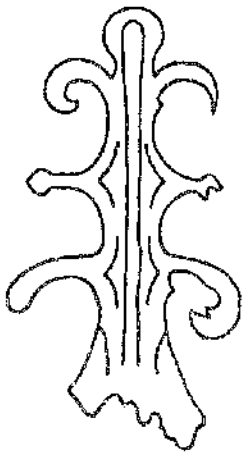
House A



Pécska

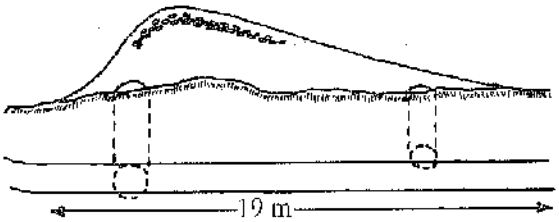


Tiszafüred–Ásotthalom

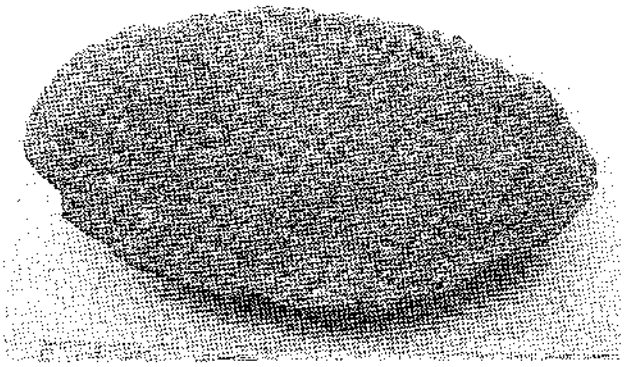


Helemba

Dunapentele, Grave 88.



Pákozd–Várhegy after I. Fhilipp



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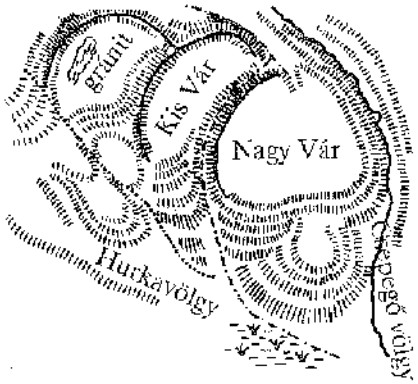

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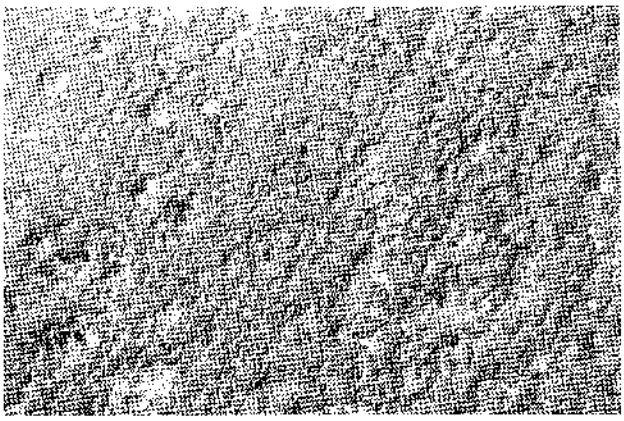

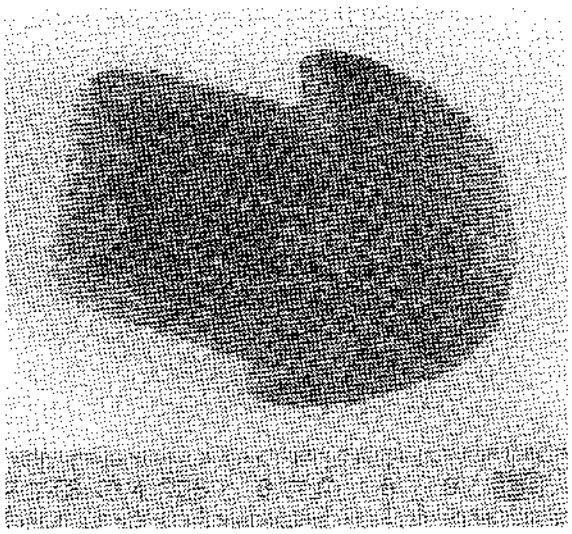

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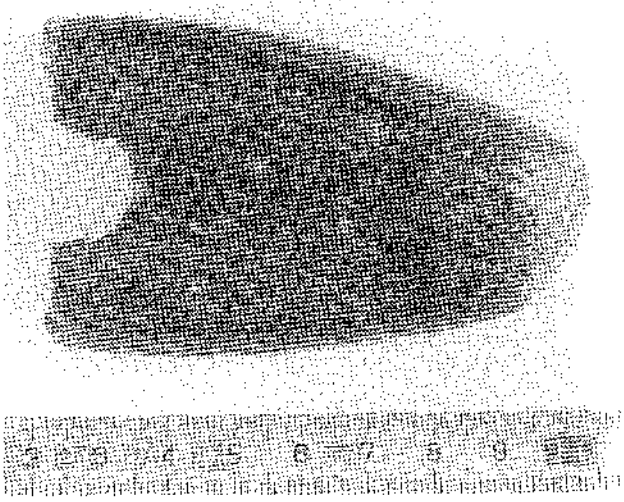

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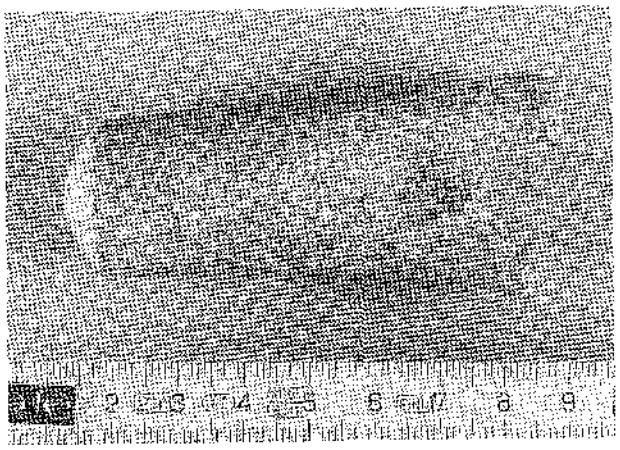

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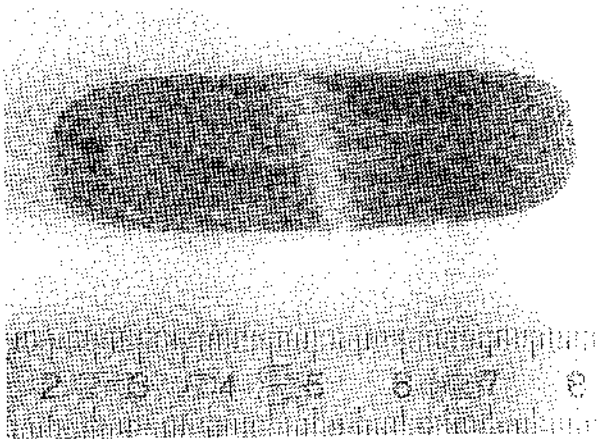

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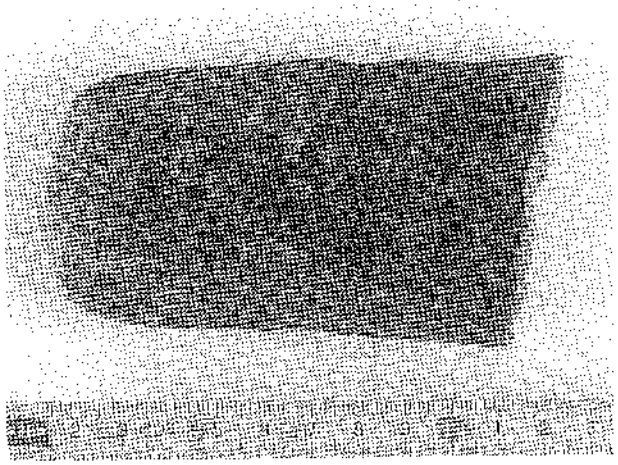

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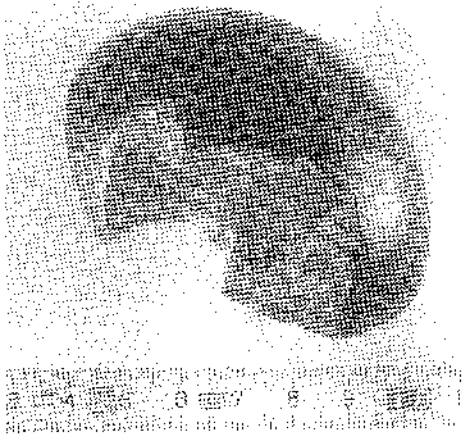

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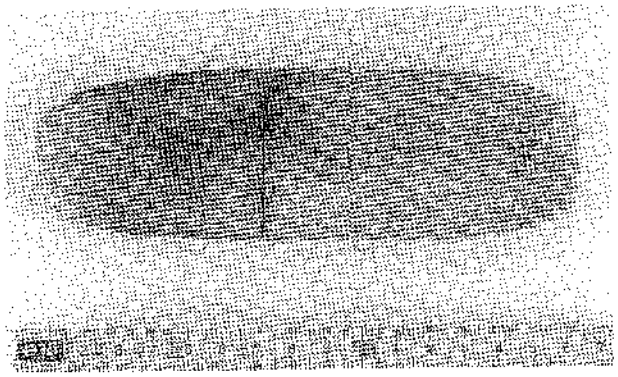

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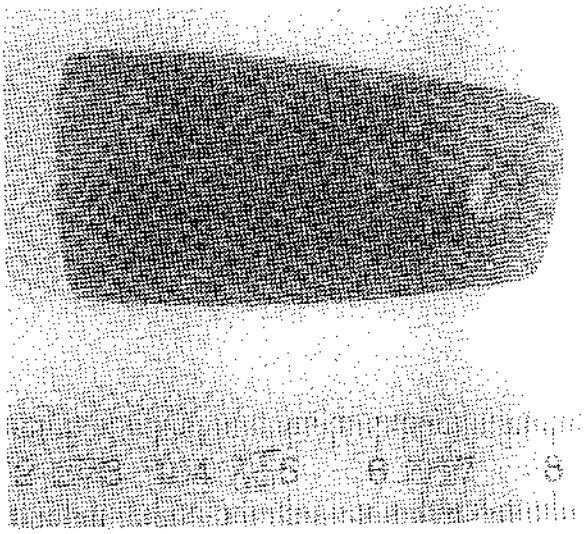
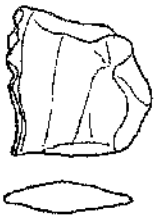


6859.

Plate XII.

6148.



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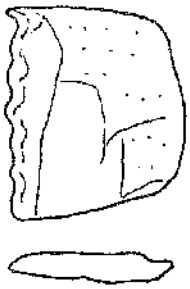

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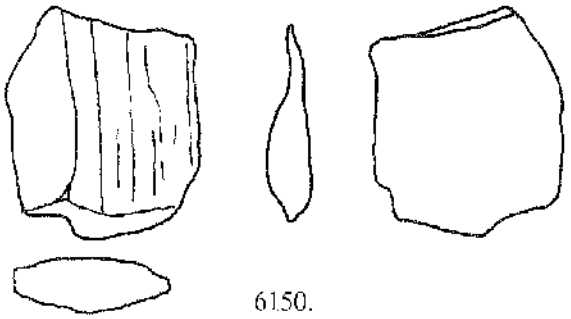
6850.



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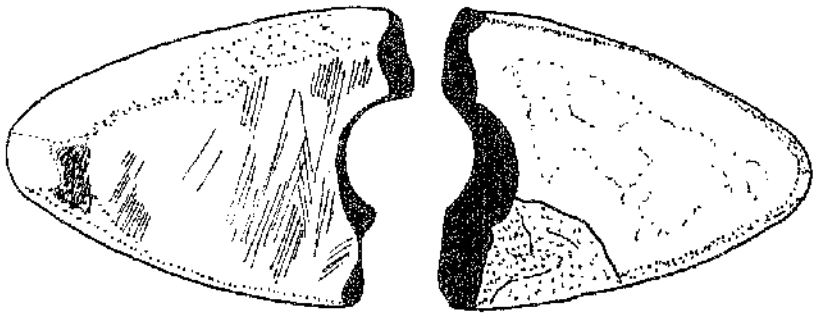

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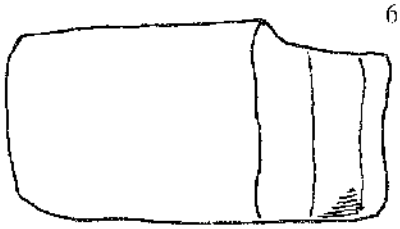

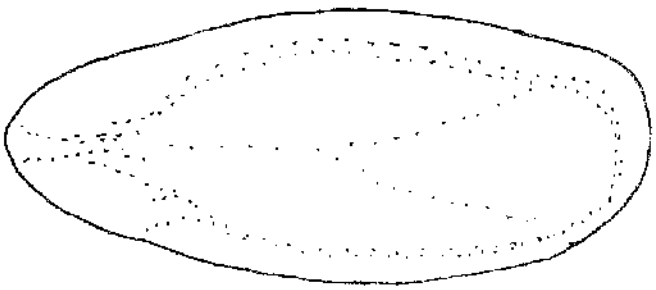

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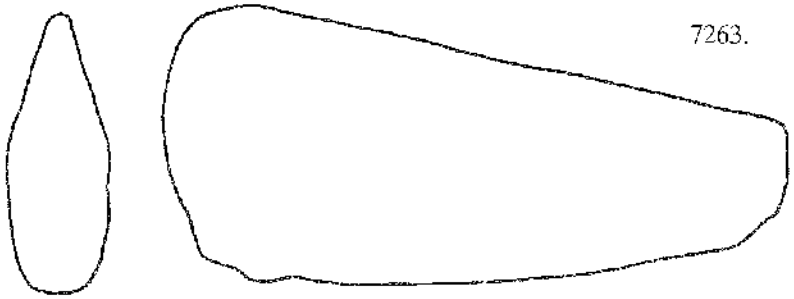
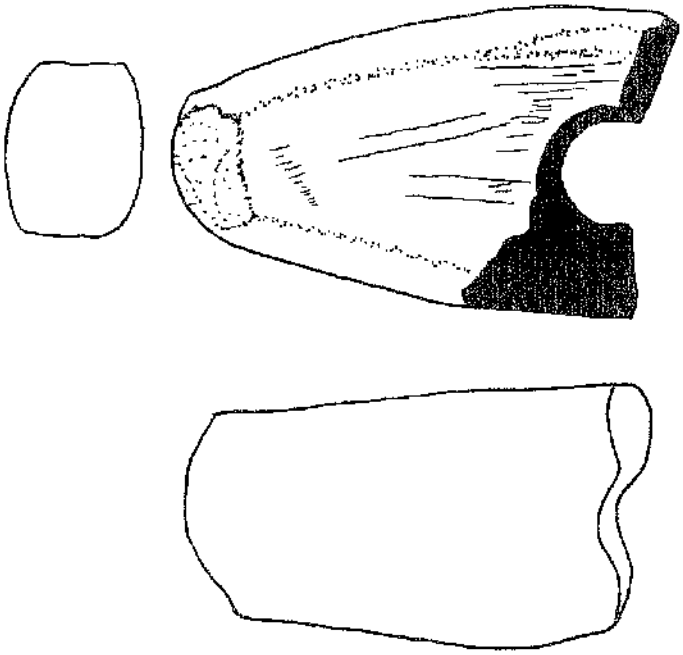


Plate XIII.



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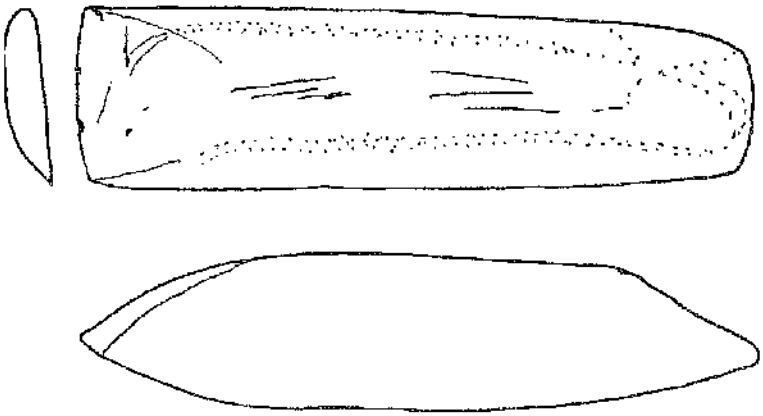

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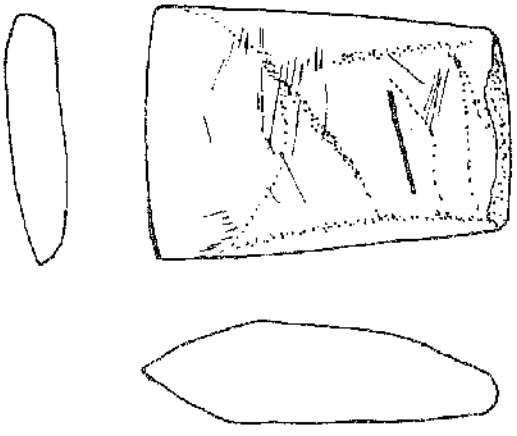
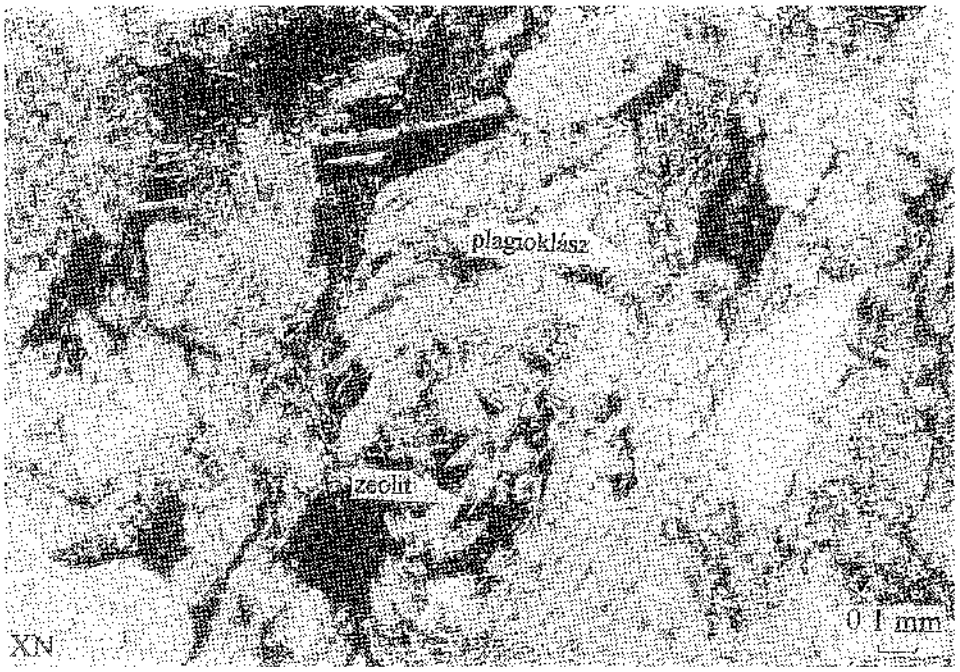
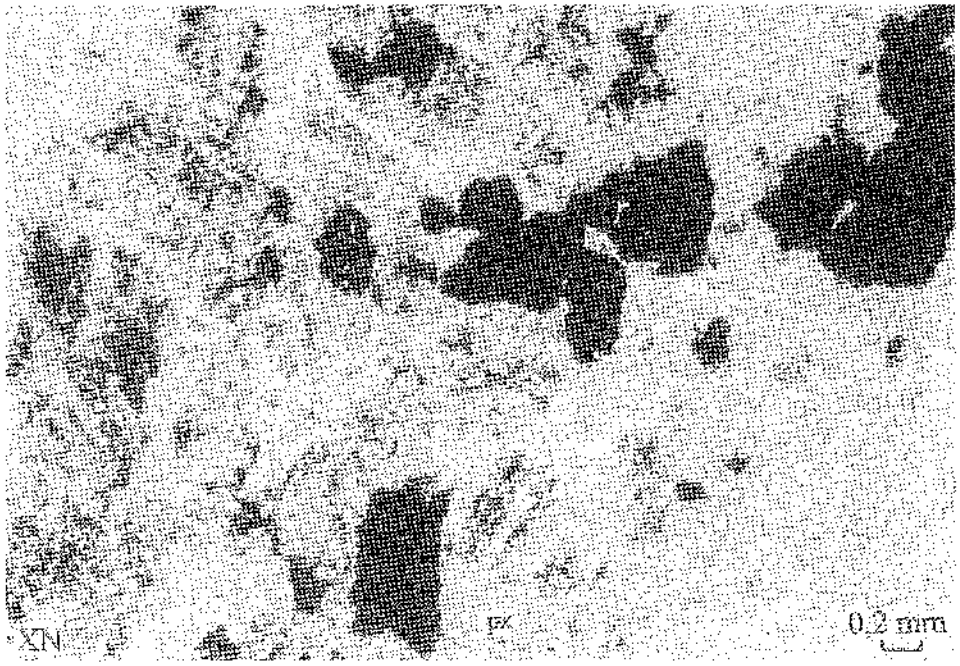


6837.

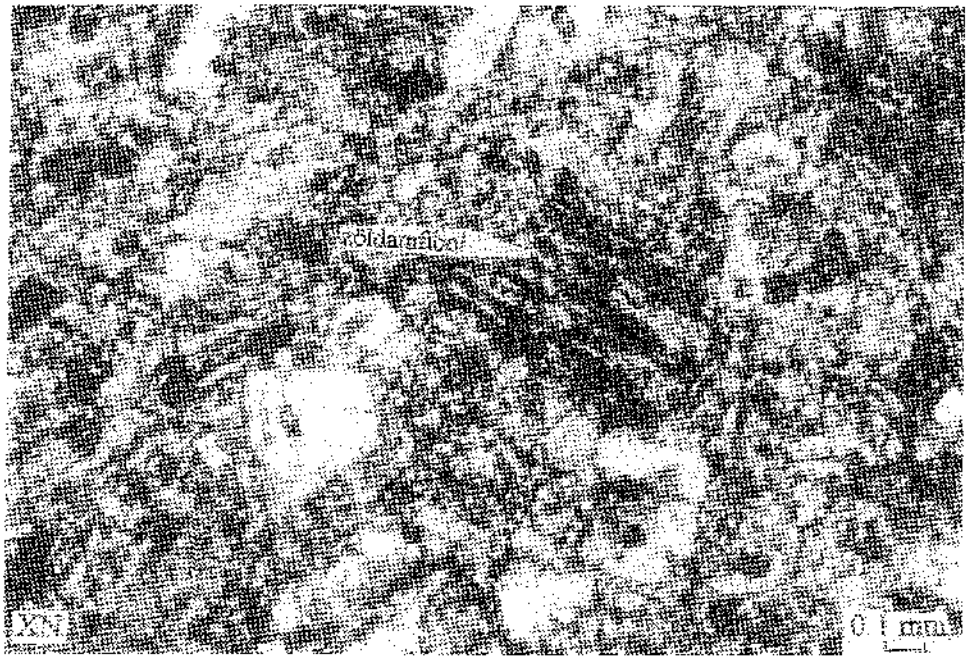
Plate XIV.



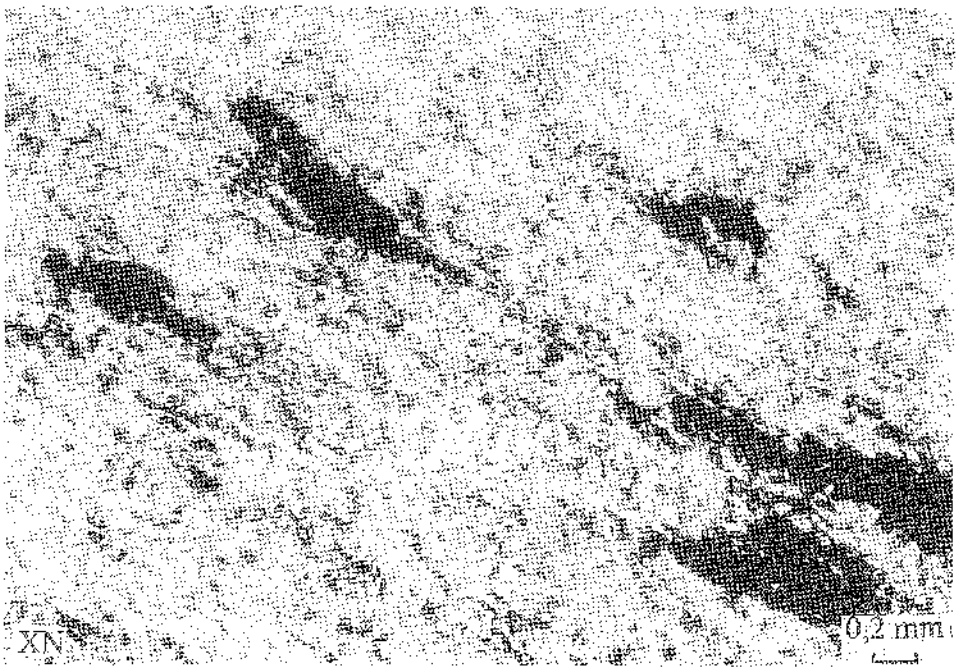
The texture of a handstone (6842) with strong decomposed pagioclases made from granodiorite (Velence Mts.)



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

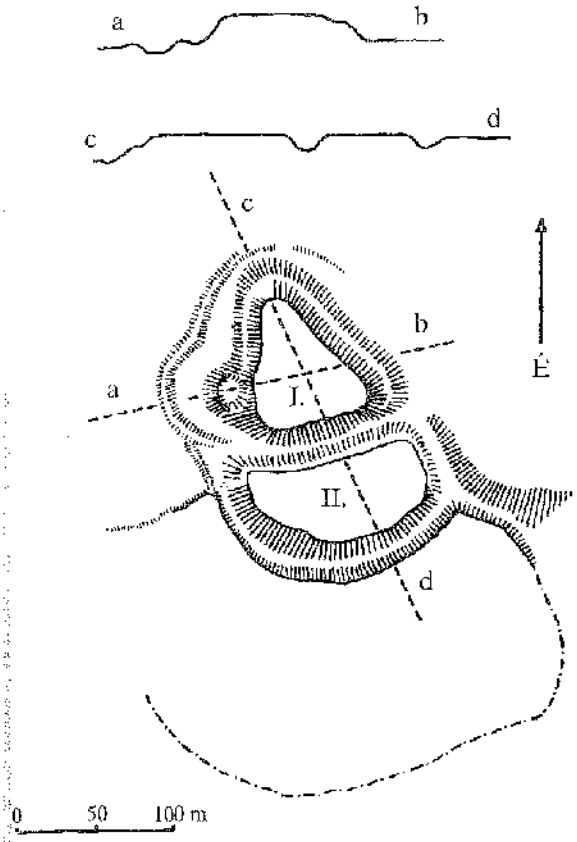


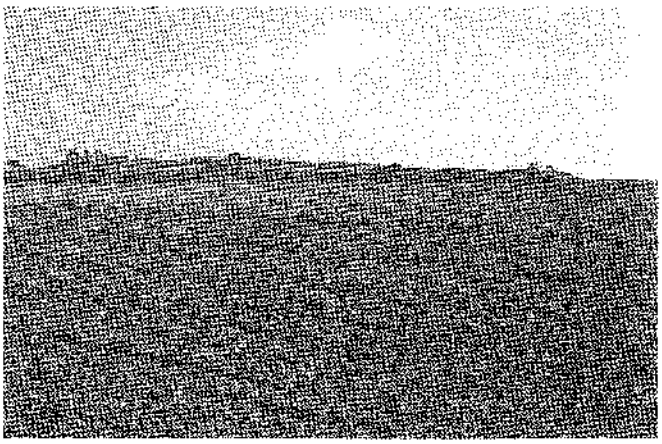
The texture of an axe (6840) made from amphibole andesite (Dunazug Mts.):
microholocrystalline base material with green-ampibole

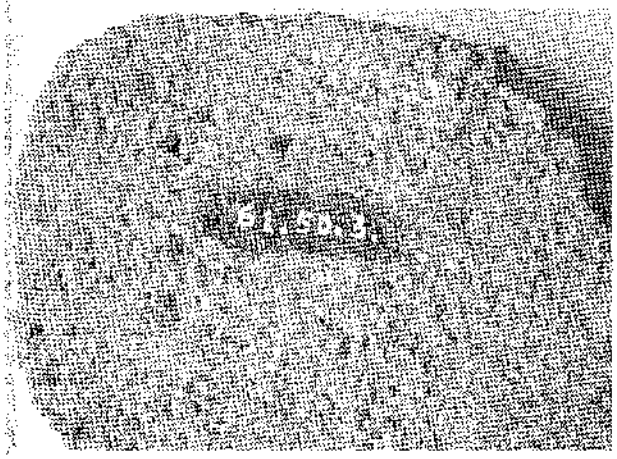


A very strong foliated texture with augit gavels of a trapezoid axe (6132)
made from serpentinisationed ultrabasic rock (Rohone Mts., Austria)

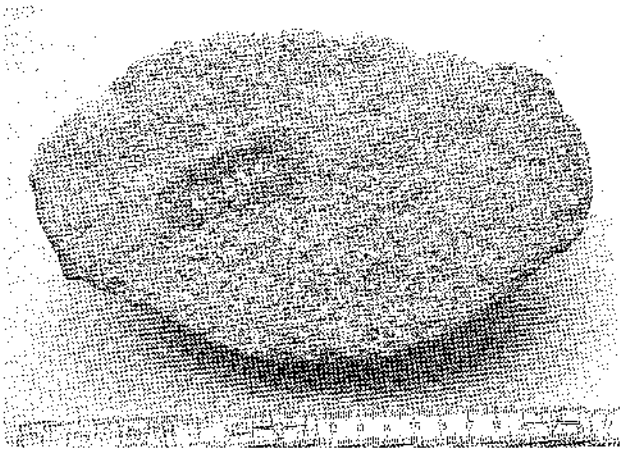
Plate XVI.







61.50.3.



61.57.2.