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CHIPPED LITHIC ASSEMBLAGE FROM LINEAR POTTERY CULTURE SITE ROVANCI – HNIDAVSKA HIRKA, LUTSK OBLAST (VOLHYNIA, WEST UKRAINE)

ABSTRACT

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This paper describes the analysis of LBK chipped artefacts discovered during rescue excavations carried out on the site of Hnidavska Hirka in the suburbs of Lutsk, western Volhynia. This assemblage consists of 103 artefacts made of Volhynian flint (93 artefacts) and obsidian (10 artefacts). This material constitutes one of the largest LBK chipped assemblages from area of the Volhynia.

Keywords: Volhynia, Neolithic, LBK, chipped artifacts, lithics, Volhynian flint, obsidian.

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1. INTRODUCTION

The multicultural site of Hnidavska Hirka is located near the bank of the Rudka River, the left side tributary of the Styr River, in Rovanci, in the southwestern part of the town of Lutsk. It was discovered in 1935 by Jan Fitzke. Small scale excavations were carried out on this site from 1967-1969, in 1972, 1981, 1988 and from 2002-2007. The last rescue excavations in 2009 were conducted by Oleksiy Zlatogorskiy and Andriy Bardetskiy. On an area

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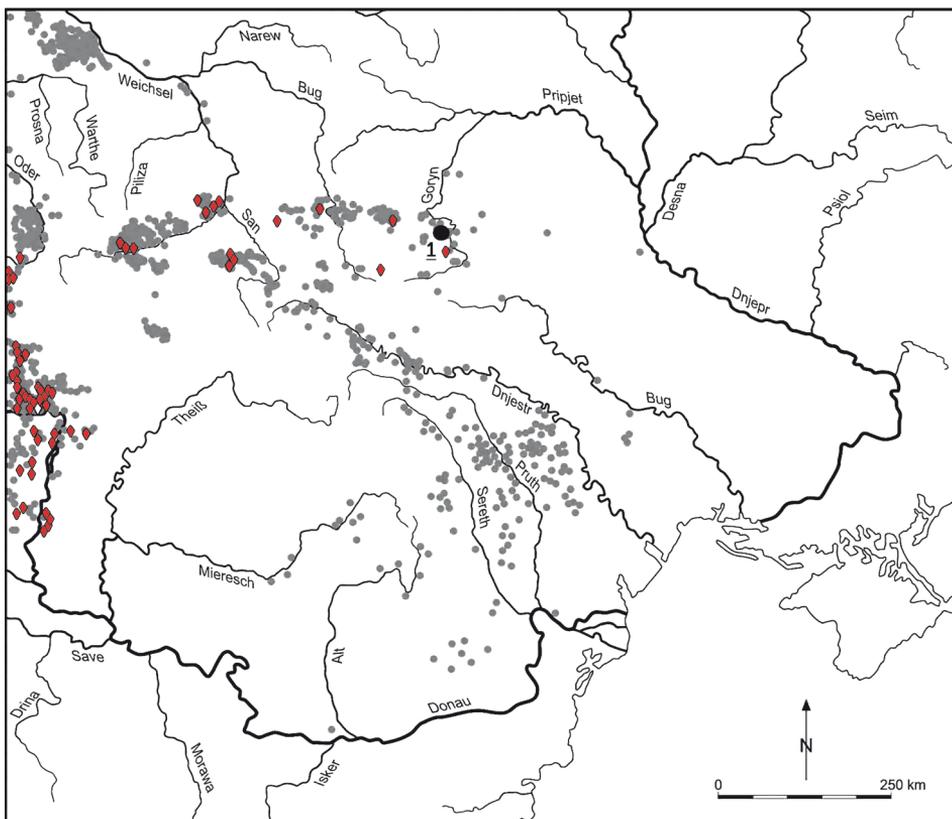


Fig 1. Eastern area of the LBK distribution. Red pots = Early LBK sites, grey pots = younger LBK sites.
1 – Rovanci – Hnidavska Hirka site (after Dębiec and Saile 2015)

of 636.5 m², material dated to various periods from the Early Neolithic to modern times were discovered. The oldest period of occupation of this site corresponds to the Linear Pottery culture. This is confirmed by settlement features and relatively large numbers of various artefacts (Zlatogorskiy and Bardetskiy 2010; Dębiec and Saile 2015; Bardec'kij *et al.* 2016; Bardetskiy *et al.* 2017; Becker *et al.* 2018; Saile *et al.* 2018). There were also flint, stone and obsidian artefacts discovered in the LBK context. This paper details the results of an analysis of chipped lithic artefacts discovered in 2009. In total, the chipped assemblage available for analysis from the LBK site of Hnidavska Hirka consisted of 103 artefacts made of Volhynian flint (93 artefacts) and obsidian (10 artefacts) (Table 1). Unfortunately, only a small portion of the chipped artifacts is currently available for the preparation of illustrations and photographic documentation. As a result, only part of this assemblage can be presented in the figures in this paper. This material constitutes one of the largest LBK chipped assemblages from the area of Volhynia.

Table 1. Rovanci – Hnidavska Hirka. Typological composition of LBK chipped assemblage

Category of artifacts	Volhynian flint		Obsidian	Total	
	n	%	n	n	%
Single platform blade cores	2	2,15	1	3	2,91
Blades and their fragments	17	18,28	4	21	20,39
Burnt blades	2	2,15	---	2	1,94
Flakes	2	2,15	1	3	2,91
Tools	70	75,27	4	74	71,85
Total	93	100,00	10	103	100,00

2. CHIPPED ARTEFACTS

Feature 6

Within Feature 6 a regular, single platform, conical blade core, with the flaking surface extending onto both sides of the core. The back of the core is a partly natural, prepared striking platform, formed by the detachment of several flakes from the flaking surface. The angle of the edge (platform/flaking surface) is approximately 90°, while the dimensions of the striking platform measure 32 × 37 mm and the height of the flaking surface is 68 mm. On the flaking surface, the negatives of 13 regular blades up to 66 mm in length can be seen. The blades were curved in their distal portions (obsidian; Fig. 2: 1).

Feature 7

Several items were found in Feature 7, including: a fragment of a crushed core (Volhynian flint); 11 fragments of blades from single-platform blade cores (Volhynian flint); 3 fragments of blades from single-platform blade cores (obsidian); 1 crushed fragment of a blade (obsidian); 1 fragment of the crushed medial portion of a blade (Volhynian flint); 1 flake from the preparation of a striking platform of a core, with a length of 52 mm, a width of 31 mm, and a thickness of 8 mm in the bulb portion and in the medial portion (Volhynian flint); 1 flake from the preparation of the striking platform of a blade core with an edge-like butt, a convex bulb, a length of 13 mm, a width of 18 mm, and a thickness of 3 mm in the bulb portion and 2 mm in the medial portion (obsidian); 1 end-scraper on a large blade from a single-platform core, with a front that was semi-steep and rounded, a damaged butt, a flat bulb, a length of 29 mm, a width of 28 mm, and a thickness of 8 mm in the bulb portion as well as in the medial portion (Volhynian flint; Fig. 3: 5); 1 double end-scraper on a cortical blade with semi-steep, slightly rounded fronts, one of them crushed, a length of 30 mm, a width of 27 mm, and a thickness of 8 mm (Volhynian flint); 1 double end-



Fig. 2. Rovanci – Hnidavska Hirka, obsidian artefacts. 1 – feature 6; 2, 3 – feature 24
(photo by A. Bardetskiy)

scraper made from a partly cortical blade with steep fronts, a length of 28 mm, a width of 29 mm, and a thickness of 13 mm (Volhynian flint); 1 end-scraper on a cortical flake with a slightly oblique, semi-steep front, a length of 25 mm, a width of 31 mm, and a thickness of 10 mm (Volhynian flint; Fig. 4: 4); 1 irregular end-scraper on a cortical flake, with a semi-steep, rounded front, a length of 37 mm, a width of 27 mm, and a thickness of 10 mm (Volhynian flint); 1 truncation on a large, regular and partially cortical blade, with a steep front, a slightly rounded and oblique, polyhedral butt, a convex bulb, a length of 29 mm, a width of 19 mm, and a thickness of 6 mm in both the bulb portion and the medial portion (Volhynian flint); 1 truncation made on a regular blade with a significantly oblique front, glossy polishing on both faces of one edge, a length of 48 mm, a width of 17 mm, and a thickness of 4 mm (Volhynian flint; Fig. 3: 1); 1 slender truncation and end-scraper, with a length of 46 mm, a width of 16 mm, and a thickness of 6 mm (Volhynian flint); 1 burin on a blade fragment with a length of 35 mm, a width of 30 mm, and a thickness of 5 mm (Volhynian flint; Fig. 4: 2); 1 small, partly cortical blade, retouched on both edges, with a tip in the form of a perforator, steep retouch on the ventral face of both edges, nearly flat retouch on the dorsal face near the tip, a length of 44 mm, a width of 12 mm, and a thickness of 5 mm (Volhynian flint; Fig. 4: 12); 1 proximal/medial part of a regular blade with slight retouch on one edge on the ventral face, an edge-like butt, and a diffuse bulb, with a length of 42 mm,

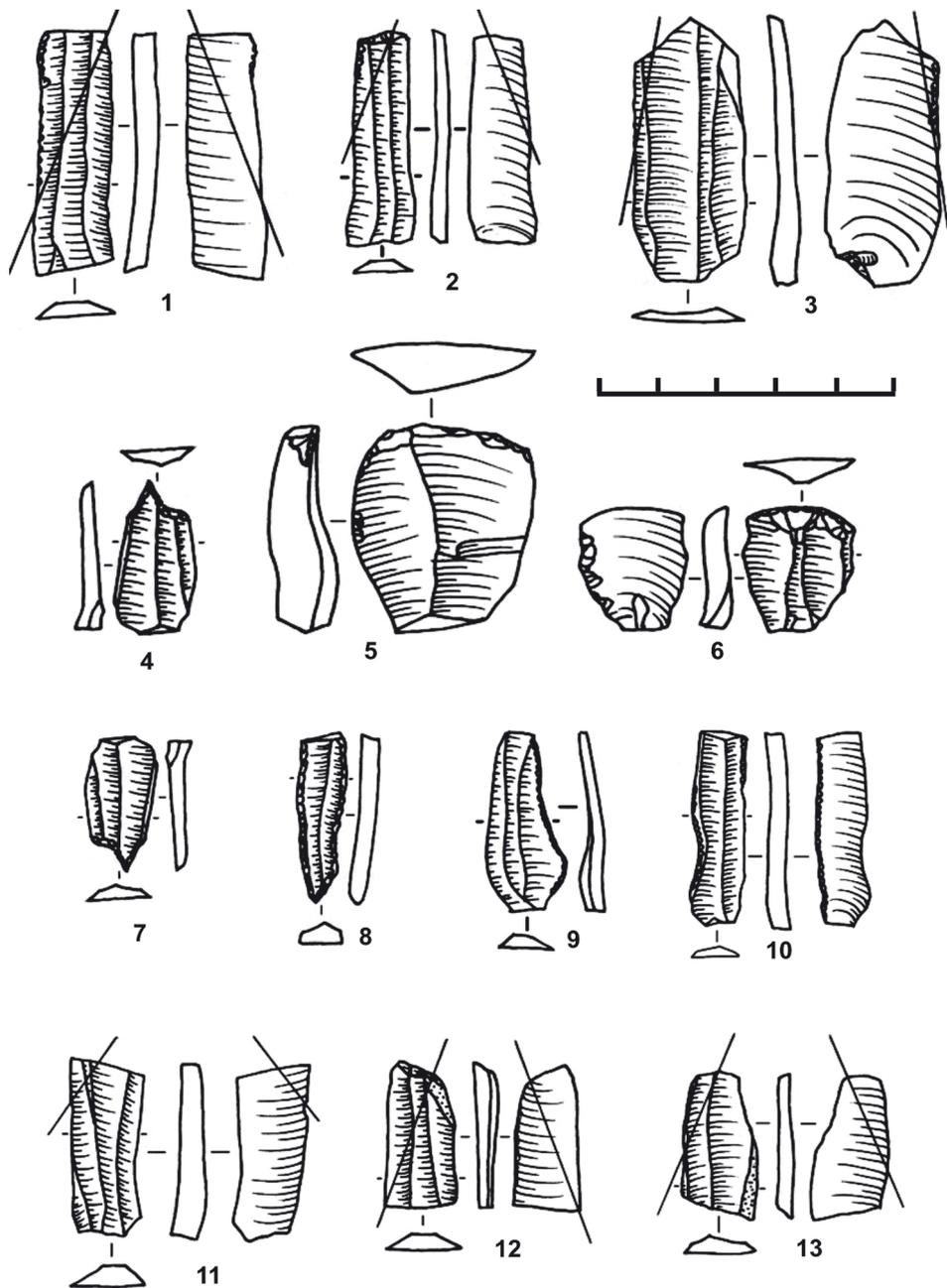


Fig 3. Rovanci – Hnidavska Hirka, artefacts made of Volhynian flint.
 1, 3 – 5, 13 – feature 7; 2, 6 – feature 19; 8 – 12 – feature 41; 7 – feature 46
 (illustrations by A. Bardetskiy; after Zlatogorskiy and Bardetskiy 2010)

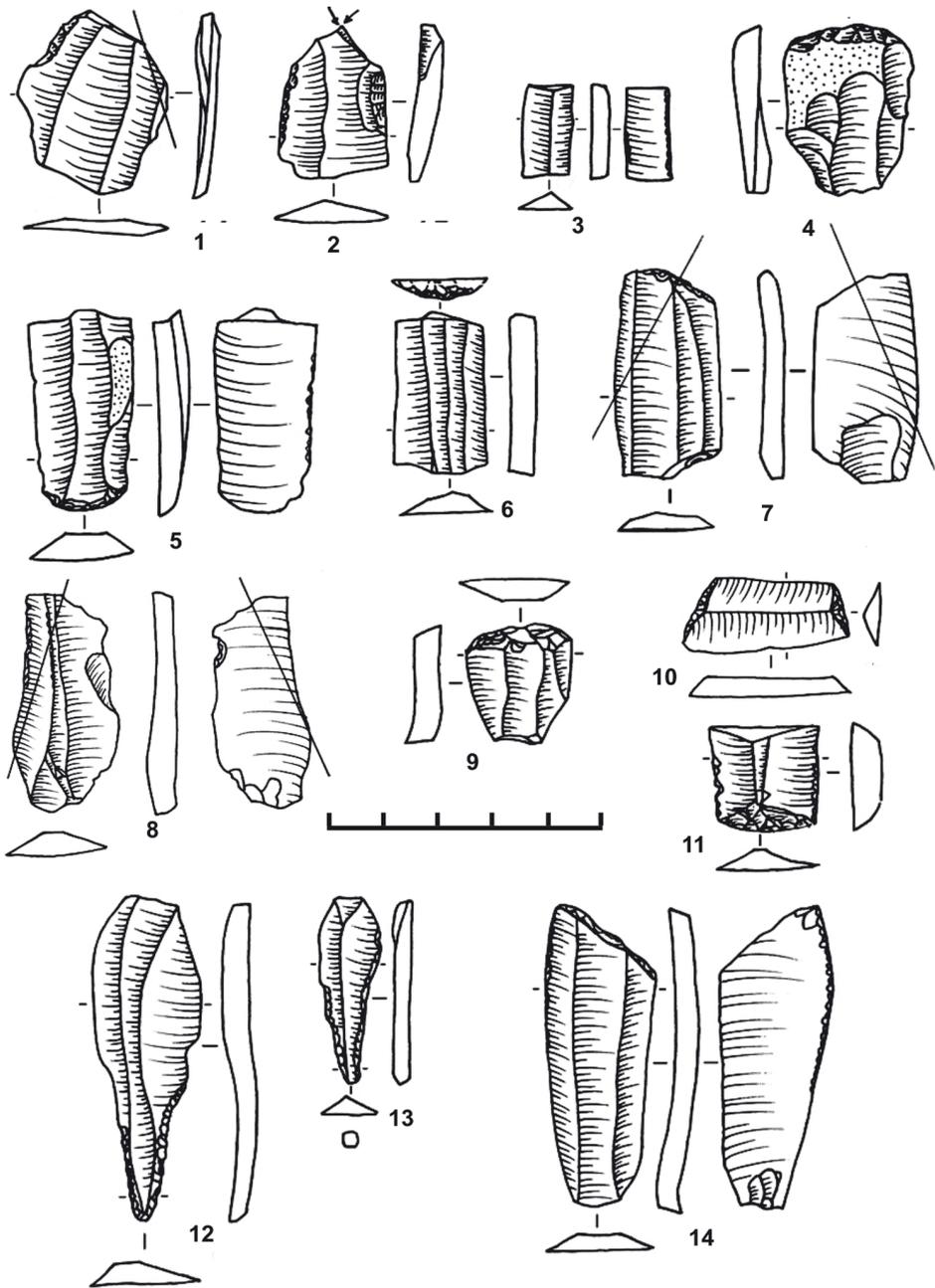


Fig. 4. Rovanci – Hnidavska Hirka, artefacts made of Volhynian flint.
 1, 2, 4, 12, 14 – feature 7; 7, 9, 10 – feature 19; 6, 11 – feature 41; 3, 5, 8, 13 – feature 46
 (illustrations by A. Bardetskiy; after Zlatogorskiy and Bardetskiy 2010)

a width of 21 mm, and a thickness of 4 mm in both the bulb portion and the medial portion (Volhynian flint); 1 flake with flat retouch on the dorsal face, and with a length of 35 mm, a width of 41 mm, and a thickness of 10 mm (Volhynian flint); 1 irregular blade with use retouch on the edges and distinct glossy polishing on one edge, a polyhedral butt, a flat bulb, and a length of 45 mm, a width of 18 mm, and a thickness of 3 mm in both the bulb portion and the medial portion (Volhynian flint; Fig. 3: 3); 1 fragment of a crushed blade with use retouch on the edge (Volhynian flint; Fig. 3: 4); 1 irregular blade with use retouch one both edges, a cortical butt, a crushed bulb, and a length of 56 mm, a width of 27 mm, and a thickness of 18 mm (Volhynian flint; Fig. 4: 14); 1 distal and mid portion of a blade made of a single-platform core with glossy polishing on one edge, a length of 32 mm, a width of 16 mm, and a thickness of 5 mm (Volhynian flint); 1 distal part of a large, regular blade, with glossy polishing on one edge, and a length of 30 mm, a width of 25 mm, and a thickness of 3 mm (Volhynian flint; Fig. 4: 1).

Feature 19

Feature 19 included: a blade end-scraper with a slightly oblique, steep front, a polyhedral butt, a convex bulb, and a length of 32 mm, a width of 18 mm, and a thickness of 5 mm in both the bulb portion and the medial portion (Volhynian flint; Fig. 3: 6); 1 blade end-scraper with a slightly oblique front, a length of 22 mm, a width of 18 mm, and a thickness of 5 mm in both the bulb portion and the medial portion (Volhynian flint; Fig. 4: 9); 1 truncation made of a regular, partly cortical blade with a slightly rounded front, one edge with distinct glossy polishing on both faces, and a length of 41 mm, a width of 21 mm, and a thickness of 3.5 mm (Volhynian flint); 1 crushed truncation with glossy polishing on both faces of one edge, a length of 51 mm, a width of 22 mm, and a thickness of 6 mm in the bulb portion and 5 mm in the medial portion (Volhynian flint); 1 fragment of a truncation (Volhynian flint); 1 trapeze (Volhynian flint; Fig. 4: 10); 1 fragment of a (probably) retouched blade (obsidian, but of another kind, similar to the raw material used to prepare the core discovered in feature 6; a white mass without grey dregs); 1 proximal/medial portion of a regular blade with use retouch on the edges, a polyhedral butt, a convex bulb, and a length of 45 mm, a width of 19 mm, and a thickness of 5 mm in the bulb portion and 4 mm in the medial portion (Volhynian flint; Fig. 3: 2); 1 proximal/medial portion of a blade with use retouch on the edges, a polyhedral butt, a convex bulb, a length of 38 mm, a width of 17 mm, and a thickness of 3 mm in both the bulb portion and in the medial portion (Volhynian flint); 1 blade with use retouch on the edges, a flat butt, a convex bulb, a length of 56 mm, a width of 18 mm, and a thickness of 3 mm in both the bulb portion and the medial portion (Volhynian flint); 5 regular, small blades, curved in their distal portions, with use retouch on the edges, edge-like butts, convex bulbs, lengths of 58 mm, widths of 13 mm, and thickness of 3 mm in both the bulb portions and in the medial portions (Volhynian flint).

Feature 24

The following two objects were found in Feature 24: The medial portion of a large blade, with the tip broken off obliquely to the percussion axis (the oblique edge of the fracture makes this blade similar to a truncation), and with use retouch on one edge, a length of 38 mm, a width of 18 mm, and a thickness of 4 mm (obsidian; Fig. 2: 2); 1 distal portion of a blade with use retouch, and a length of 30 mm, a width of 30 mm, and a thickness of 2 mm (obsidian; Fig. 2: 3).

Feature 41

The following were recorded in Feature 41: A fragment of a crushed blade (Volhynian flint); 2 fragments of burnt blades; 1 fragment of a blade with use retouch on the edges (Volhynian flint; Fig. 4: 6); 1 end-scraper made of a regular, cortical blade, with use retouch on one edge, a length of 26 mm, a width of 26 mm, and a thickness of 5 mm (Volhynian flint); 1 end-scraper on a large blade, with use retouch on the edges, and with a length of 22 mm, a width of 27 mm, and a thickness of 5 mm (Volhynian flint; Fig. 4: 11); 1 end-scraper made of a cortical blade, with a length of 44 mm, a width of 22 mm, and a thickness of 8 mm (Volhynian flint); 1 fragment of a double end-scraper (Volhynian flint); 1 fragment of a flake end-scraper (Volhynian flint); 1 truncation (sickle blade) on a partly cortical blade, with glossy polishing on one edge, a length of 29 mm, a width of 13 mm, and a thickness of 3 mm (Volhynian flint); 1 medial portion of a retouched blade, with a length of 35 mm, a width of 23 mm, and a thickness of 6 mm (Volhynian flint; Fig. 3: 12); 1 blade with edges irregularly retouched on the ventral face of the distal portion, curved on the ventral side, with a polyhedral butt, a convex bulb, a length of 60 mm, a width of 28 mm, and a thickness of 7 mm in the bulb portion and 6 mm in the medial portion (Volhynian flint); 1 distal part of a regular, curved blade with use retouch on the edges, a length of 39 mm, a width of 21 mm, and a thickness of 5 mm (Volhynian flint; Fig. 3: 9); 1 fragment of a blade with use retouch on the edges (Volhynian flint; Fig. 3: 8); 1 medial portion of a blade with use retouch on the edges, a length of 34 mm, a width of 14 mm, and a thickness of 4 mm (Volhynian flint; Fig. 3: 10); 1 proximal and mid portion of a curved blade with use retouch on the edges, a flat butt, a convex bulb, a length of 42 mm, a width of 13 mm, and a thickness of 3 mm (Volhynian flint); 1 fragment of a regular blade with use retouch on the edges, a length of 9 mm, a width of 17 mm, and a thickness of 3 mm (Volhynian flint); 1 distal part of a blade with glossy polishing of the edges, a flat butt, a convex bulb, a length of 40 mm, a width of 11 mm, and a thickness of 3 mm in the bulb portion and 2 mm in the medial portion (Volhynian flint); 1 fragment of a blade with glossy polishing on one edge, a length of 29 mm, a width of 14 mm, and a thickness of 3 mm (Volhynian flint; Fig. 3: 11); 1 fragment of a sickle-blade made of a partly cortical blade, with glossy polishing on both the dorsal and ventral faces of one edge, a length of 33 mm, a width of

13 mm, and a thickness of 4 mm (Volhynian flint); 5 flint hammers made from rounded flint nodules, one of which was on a single-platform blade core – the largest diameters of the hammers were 51, 48, 54, 39 and 48 mm (Volhynian flint).

Feature 45

Feature 45 included: 5 fragments of blades from single-platform blade cores (Volhynian flint); 1 fragment of a partially cortical flake with dimensions of 80 × 43 × 18 mm (Volhynian flint); 1 truncation on an irregular, partially cortical blade with a flat butt, a convex bulb, and a length of 34 mm, a width of 16 mm, a thickness of 6 mm in the bulb portion, and a thickness of 4 mm in the medial portion (Volhynian flint); 1 flint hammer, with one edge as well as opposite faces crushed, and dimensions of 48 × 36 × 24 mm (Volhynian flint).

Feature 46

The following were documented in Feature 46: 1 blade end-scraper with a semi-steep front, use retouch on the edges of the blade, a polyhedral butt, a convex bulb, and a length of 22 mm, a width of 18 mm, and a thickness of 4 mm in both the bulb and the medial portions (Volhynian flint); 1 blade end-scraper with use retouch on the edges of the blade, a length of 28 mm, a width of 19 mm, and a thickness of 7 mm (Volhynian flint); 1 blade end-scraper with a slightly oblique front, flat butt of the blade, a diffuse bulb, a length of 52 mm, a width of 24 mm, and a thickness of 6 mm (Volhynian flint; Fig. 4: 5); 1 blade end-scraper with a length of 35 mm, a width of 14 mm, and a thickness of 3 mm (Volhynian flint); 1 destroyed blade end-scraper made of partly cortical blade (Volhynian flint); 1 fragment of a truncation with glossy polishing on both the ventral and dorsal sides of one edge, and with a length of 41 mm, a width of 12 mm, and a thickness of 2 mm (Volhynian flint); 1 proximal and mid portion of a blade with flat retouch on the ventral face of one edge, use retouch on the second edge, a polyhedral butt, a diffuse bulb, a length of 28 mm, a width of 18 mm, and a thickness of 7 mm in the bulb portion and 5 mm in the medial portion (Volhynian flint); 1 partly cortical blade or perforator with retouch on the ventral face of both edges, the perforator-shaped tip, a length of 34 mm, a width of 11 mm, and a thickness of 3 mm (Volhynian flint; Fig. 4: 13); 1 crushed blade with retouched and crushed edges, curved in the distal portion, with a flat butt, a convex bulb, a length of 60 mm, a width of 28 mm, and a thickness of 9 mm in the bulb portion and 8 mm in the medial portion (Volhynian flint); 1 retouched blade or perforator with a sharp fang, a polyhedral butt, a convex bulb, a length of 28 mm, a width of 13 mm, and a thickness of 4 mm in the bulb portion and 3 mm in the medial portion (Volhynian flint; Fig. 3: 7); 1 proximal/medial portion of partly cortical blade with use retouch on one edge, a flat butt, a convex bulb, a length of 35 mm, a width of 15 mm, and a thickness of 4 mm in a bulb portion and 3 mm in the

medial portion (Volhynian flint); 1 proximal/medial portion of a blade with use retouch on the edges, a flat butt, a convex bulb, a length of 40 mm, a width of 18 mm, and a thickness of 4 mm in both the bulb and medial portions (Volhynian flint); 1 medial portion of a blade with use retouch on the edges, a length of 48 mm, a width of 16 mm, and a thickness of 3 mm (Volhynian flint; Fig. 4: 8); 1 fragment of a blade with use retouch on the edges (Volhynian flint); 1 fragment of a blade with use retouch on the edges, a length of 28 mm, a width of 11 mm, and a thickness of 2 mm (Volhynian flint; Fig. 4: 3); 1 fragment of a partially cortical blade with use retouch on one edge, a polyhedral butt, a convex bulb, a length of 38 mm, a width of 16 mm, and a thickness of 4 mm in the bulb portion and 3 mm in the medial portion (Volhynian flint); 1 fragment of a blade with use retouch on one edge, a flat butt, a flat bulb, a length of 23 mm, a width of 23 mm, and a thickness of 7 mm in the bulb portion and 5 mm in the medial portion (Volhynian flint); 1 medial part of a blade with strong glossy polishing on both the ventral and dorsal faces of one edge, and with a length of 22 mm, a width of 17 mm, and a thickness of 3 mm (Volhynian flint); 1 blade with glossy polishing of one edge, a polyhedral butt, a convex bulb, a length of 52 mm, a width of 22 mm, and a thickness of 4 mm in the bulb portion and 3mm in the medial portion (Volhynian flint).

Feature 50

Feature 50 included two specimens: 1 conical, single-platform blade core with the flaking surface extending onto the sides, almost around the core, an edge angle (platform/flaking surface) of about 90°, a prepared striking platform, and negatives of 15 blades (which were curved on their distal portions) on the flaking surface – the dimensions of the striking platform were 48 × 35 mm, and the height of the flaking surface was 66 mm (Volhynian flint); 1 S-shaped blade with retouch on the surface of the ventral face.

3. ANALYSIS

The Hnidavska Hirka site yielded one of the largest collections of chipped LBK artifacts from Volhynia. This material was analyzed within 5 general classes (Table 1), including the class of tools containing 12 categories of artefacts (Table 2).

Three single-platform blade cores were discovered in an LBC context (2.91% of all chipped artifacts). Two cores were made of Volhynian flint (2.15% of artifacts of this raw material), and one was made of obsidian. One conical core of Volhynian flint has a flaking surface extending onto the sides and back of the core and a platform/flaking surface angle of about 90°. The flaking surface is 66 mm high, and there are 15 negatives of detached blades visible on it. The second blade core made of Volhynian flint is crushed and preserved as small fragment.

Table 2. Rovanci – Hnidavska Hirka. Typological composition of LBK chipped tools

Category of artifacts	Volhynian flint		Obsidian	Total	
	n	%	n	n	%
Blade end-scrapers	12	17,13		12	16,23
Double blade end-scrapers	3	4,29		3	4,05
Flake end-scrapers	2	2,86		2	2,70
Truncations	8	11,43		8	10,81
Truncation+end-scrapers	1	1,43		1	1,35
Burin	1	1,43		1	1,35
Trapezium	1	1,43		1	1,35
Retouched blades (including 3 perforator-like items)	13	18,57	2	15	20,27
Blades with use retouch	15	21,43	2	17	22,97
Retouched flake	1	1,43		1	1,35
Blades with glossy polishing edge	7	10,00		7	9,46
Hammers	6	8,57		6	8,11
Total	70	100,00	4	74	100,00

The regular, conical core made of obsidian has a flaking surface extending onto both sides of the core, a partially natural back, and a striking platform formed by the detachment of several flakes from the edge of the flaking surface. The platform/flaking surface angle is ca. 90°, 13 negatives of regular blades are on the flaking surface, and the longest one is about 66 mm.

Blades and their fragments constitute one of the largest groups of artifacts (23 items – 22.33% of all chipped artefacts). This group consists of 19 specimens made of Volhynian flint (20.43% of artifacts of this raw material) and 4 made of obsidian. Blades of Volhynian flint are mostly preserved in fragments: proximal and medial – 5 specimens, medial – 2 specimens, and media and distal – 6 specimens (Table 3). One medial blade fragment is crushed. Three completely preserved items are 58, 58 and 59 mm long. Blades (and their fragments) are from 27 to 59 mm long (average 40.3 mm), from 9 to 28 mm wide (average 15.4 mm), from 2 to 5 mm thick in the bulb portion (average 3.6 mm), and from 2 to 7 mm thick in the mid portion (average 3.3 mm). Their bulbs are convex (7 items) or flat (6), and they have polyhedral (6), edge-like (1) or flat butts. The blades are curved in their distal (7) or mid portions.

There are also 4 fragments of rectangular blades made of obsidian: 1 small and crushed fragment, 1 proximal and medial portion, 1 mid portion, and 1 mid and distal portion. They are from 17 to 22 mm in length (average 19 mm), 10 to 12 mm wide, and 2 to 3 mm thick.

There were only 3 small flakes found in an LBK context on the Rovanci Hnidavska Hirka site: 2 of them of Volhynian flint, with dimensions of 52 mm in length, 31 mm in

Table 3. Rovanci – Hnídavská Hírka LBK site. Characteristics of the blades

Feature No.	Raw material	whole	proximal portion	mid portion	distal portion	length	width	thickness in bulb portion	thickness in mid part	straight	curved in mid part	curved in distal portion	convex bulb	flat bulb	plane butt	edge-like butt	point-like butt	conical butt	polyhedral butt	
7	obsidian		1	1	1	18	12	2,5	2				1			1				
7	obsidian			1		17	10		2											
7	obsidian			1	1	22	12		3											
7	Volhynian flint		1	1		40	18	5	4		1		1						1	
7	Volhynian flint	1				58	17	3,5	3,5			1	1						1	
7	Volhynian flint			1	1	41	14		3			1								
7	Volhynian flint			1		36	21		7											
7	Volhynian flint		1	1		31	13	2	2			1	1							1
7	Volhynian flint		1	1		31	13	3	3			1	1							1
7	Volhynian flint			1	1	43	15		3			1								
7	Volhynian flint			1	1	28	12		3			1								
7	Volhynian flint			1	1	27	10		3			1								
7	Volhynian flint		1	1		35	14	3	2			1	1							1
7	Volhynian flint			1	1	33	9		2			1								
45	Volhynian flint	1				59	28	5	6			1		1		1				
45	Volhynian flint			1	1	42	15		3			1								
45	Volhynian flint	1				58	16	3,5	3,5			1	1							1
45	Volhynian flint			1		31	13		3,5											
45	Volhynian flint		1	1		52	19	4	2			1	1		1					

width, and with a thickness of 8 mm in both the bulb and medial portions; one of obsidian (dimensions: length 13 mm, width 18 mm, thickness 3 mm in the bulb portion and 2 mm in the medial portion).

Tools constitute the most numerous group of chipped artifacts (74 items – 71.85% of the chipped assemblage). This group contains 70 tools made of Volhynian flint (75.27% of items made of this raw material) and 4 made of obsidian.

End-scrapers on blades of Volhynian flint constitute the third most frequent group of LBK tools found on this site (12 items – 16.23% of the tools). With the exception of two specimens, they were made from regular blades (two of them of partially cortical blades). Blade end-scrapers with preserved proximal portions of the blades have flat or polyhedral butts, and convex, diffuse bulbs. They have steep or, in three cases, semi-steep, slightly oblique, rounded fronts, as well as use retouch on the edges (4 specimens). Their lengths vary from 22 to 52 mm (average 32.2 mm), while their widths are between 14 and 28 mm (average 21.4 mm), and their thickness is from 3 to 8 mm; however, one specimen is significantly thicker, reaching 14 mm (average 6.6 mm).

There are only two flake end-scrapers in this assemblage, both made of Volhynian flint (4.29% of artifacts of Volhynian flint and 4.05% of all chipped artifacts). The first one, on a cortical flake, has a slightly oblique, semi-steep front; its length is 25 mm, its width is 1 mm, and its thickness is 10 mm. The second irregular specimen was also made on a cortical flake. It has a semi-steep, rounded front, with a length of 37 mm, a width of 27 mm, and a thickness of 10 mm.

Three double, blade end-scrapers made of Volhynian flint were discovered at this site. One of them is preserved as a small fragment; one is made on cortical blade and has semi-steep, slightly rounded fronts – its length is 30 mm, its width is 27 mm, and its thickness is 8 mm; the third specimen is made of a partly cortical flake with steep fronts (length – 28 mm, width – 29 mm, thickness – 13 mm).

Truncations are relatively frequent in the overall assemblage. There are 8 specimens made of Volhynian flint (11.43% of artifacts made of this raw material and 10.81% of the LBK chipped assemblage from this site). They were made on regular blades – in four cases, partially cortical. They have steep, oblique fronts (in four cases, the fronts were slightly rounded) and glossy polishing on both sides of one edge. Their length ranges from 29 to 48 mm (average – 41 mm), while their width varies between 12 and 21 mm (average – 17.14 mm) and their thickness from 2 to 6 mm (average – 4.26 mm).

There is one combined tool in the assemblage: a truncation/end-scrapers of Volhynian flint. Its length is 46 mm, its width is 16 mm, and its thickness is 6 mm.

The only example of a burin made from a blade fragment of Volhynian flint has a length of 35 mm, a width of 30 mm, and a thickness of 5 mm.

One fragment of a trapeze, made from a regular blade of Volhynian flint, was found at this site.

Retouched blades make up the second-largest group of tools. This group contains 15 specimens (20.27% of the assemblage): 13 made of Volhynian flint (most of them in fragments; 18.57% of tools made of this raw material), and 2 small fragments made of obsidian. Specimens made of Volhynian flint are regular and have one edge partially retouched on the dorsal face. They range in length from 35 to 60 mm (average 45 mm), with a width fluctuating between 18 and 28 mm (average 23.6 mm), and thickness from 4 to 8 mm (average 6.4 mm).

Three retouched blades made of Volhynian flint have perforator-shaped distal portions. One of these is a small and regular, partially cortical blade, with retouch on the ventral face of both edges and a tip formed by flat retouch on the dorsal face (length – 44 mm, width – 12 mm, thickness – 5 mm). Another specimen, made on a cortical blade, has retouch on the ventral face of both edges and a perforator-shaped tip (length – 34 mm, width – 11 mm, thickness – 3 mm). The third, quasi-perforator, has a sharp fang and is made of a blade with a polyhedral butt and a convex bulb, with a length of 28 mm, a width of 13 mm, and a thickness of 4 mm.

Blades with use retouch constitute, by far, the largest group of the tools (17 specimens; 22.97% of the tools). This group contains 15 items made of Volhynian flint (21.43% of the tools made of this raw material). Most of them are preserved in fragments. The lengths of the discovered items varies from 23 to 58 mm (average 42.79 mm), while the width is from 13 to 27 mm (average 17.36 mm) and the thickness is from 3 to 7 mm, with the exception of one specimen, which is 18 mm thick (average 4.86 mm). They are regular in shape. The preserved butts are polyhedral (5 specimens), edge-like (1 specimen), or flat (5 specimens). Their bulbs are flat (2 specimens) or convex (9 specimens). There were also two specimens made of obsidian: 1 mid portion of blade with an oblique fracture edge (which makes it similar to a truncation) has a length of 38 mm, a width of 18 mm, and a thickness of 4 mm; and 1 distal part of a blade with use retouch has a length of 30 mm, a width of 30 mm, and a thickness of 2 mm.

The only example of a retouched flake has flat retouch on its dorsal face; its length is 35 mm, its width is 41 mm, and its thickness is 10 mm.

The group of blades with glossy polishing on their edges consists of 7 specimens made of Volhynian flint. All of them are preserved as fragments. They are from 22 to 52 mm long (average 33.25 mm), from 11 to 25 mm wide (average 16.13 mm), and from 2 to 5 mm thick (average 3.38 mm). These blades are regular in shape. Their bulbs are convex and their preserved butts are polyhedral (1 specimen), flat (1 specimen), or conical (1 specimen).

The group of flint hammers includes 6 specimens made of Volhynian flint: 5 of them were made from nearly spherical natural nodules with a diameter from 48 to 54 mm; one of them was probably made from a single-platform blade core (diameter – 48 mm).

4. FINAL REMARKS

The analyzed chipped material from the site at Hnidavska Hirka contains artefacts typical for the LBK in other parts of Europe settled by these communities. Similarities are clear in the typological composition of the tool groups, the characteristics of the tools themselves (blade end-scrapers, truncations, unretouched sickle-blades), the shape and size of the blade cores, as well as in the use of regular blades whose length was usually up to 10 cm. All the recognized classes of artefacts and categories of tools have analogies at other LBK sites all over Europe (Bacskey and Siman 1987; Biró 1987; Engelhardt 1991; Gronenborn 1990; 1997; Kaczanowska 1987; 2001; Lech 1985; 2008 Kadrow 1990; Zimmermann 1995; Popelka 1999; Kukułka 2001; Mateiciucová 2002; 2008; Czopek *et al.* 2014; Dębiec *et al.* 2014; 2015; Osipowicz *et al.* 2015; Furmanek and Masojć 2016; Kalita *et al.* 2016).

Local Volhynian flint played a leading role in the everyday life of the LBK community from this site. However, several artifacts made of obsidian were also discovered there. This relatively large component of the chipped assemblage from Hnidavska Hirka contains: a single platform blade core, 4 fragments of blades, 1 flake, and 4 tools (2 retouched blades and 2 blades with use retouch). These specimens constitute a relatively significant group of chipped artefacts discovered there. Moreover, the typological composition of the group of obsidian artefacts shows that the cores “came” to this site, as well as the blades and tools. It is also possible that the obsidian cores were exploited on-site, and the blades and blade tools were made of these cores.

The presence of obsidian artefacts at the Hnidavska Hirka LBK site seems surprising. This site is located in the vicinity of the primary sources of Volhynian flint, and Volhynian flint was available at many localities in the region. In this respect, tools made of obsidian were not necessary in everyday life on this site. Thus, obsidian itself, as well as blades and tools made of obsidian, must have played an important, but not an economic (or not solely economic) role in this community. Because of the specific physical features of obsidian (hardness, good transparency, opalescent lustre, color, sharpness of the edges) and the large distance to the sources of this raw material (more than 300 km in a straight line), obsidian must have been perceived by the LBK people in Volhynia as something exotic and a rarity in this area. Additionally, it cannot be excluded that due to their extremely sharp edges, blades and tools made of obsidian were used in specific ways and for specific purposes. Blades or blade tools made of obsidian might have been used, for example, in medical treatments or in rituals. However, the medical and/or ritual role of obsidian and items made of obsidian in an area so far away from sources of obsidian (and, additionally, in a region with access to such good-quality Volhynian flint) is only one possible hypothesis, put forth as an open question.

In conclusion, the site of Hnidavska Hirka yielded a relatively large collection of LBK chipped artifacts from the area of Volhynia. It should also be emphasized that, unfortu-

nately, only a handful of Ukrainian LBK sites have been excavated. The material from these sites has only partially been published, if at all (Konopla 1999; 2008; 2010; Kozłowski 1985; Dębiec 2012).

For this reason, it is not possible to compare the LBK assemblage from Hnidavska Hirka to the other assemblages of LBK chipped material from Ukraine. Important questions regarding the production of “Ukrainian” chipped material, the possible differentiation of LBK chipped assemblages from different parts of Ukraine (Kozłowski 1985), as well as the similarities and differences between chipped material from Ukraine and other parts of the LBK distribution remain open. On the other hand, it should be noted that the most recent excavations in Ukraine resulted in discoveries of large LBK lithic inventories containing remarkable series of artefacts. These comprise a potentially valuable foundation for future studies of various aspects of chipped production in this area.

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