Other finds. The bone industry comprises three awls (Fig. 24:1-2, 6), fragment of a decorated ivory point (Fig. 24:12) and a polished spatula (Fig. 25:2). Chipped mammoth bones were scattered throughout the area, especially in its northern part (Fig. 22). Dentalia shells (21 pieces) and Melanopsis shells, rather non-pierced (8 pieces) than pierced (5 pieces) occurred, accompanied by two carnivore canines with traces of piercing. Among the special finds range an oblong and partly rounded sandstone plate and a longitudinal quartz pebble with traces of use on the edges (Fig. 21:1).

THE LITHIC INDUSTRY: GENERAL CHARACTERISTIC

Distribution. Spatial distribution of lithic industry corresponds roughly to the terrain features: the southern cluster coincides with the 1st and 2nd settlement units, and the northern cluster with the 3rd settlement unit (Fig. 3). Highest density of artifacts occurs within the 1st unit, but it rapidly decreases in direction to the S (behind the back of the skeleton). Neither in the 3rd unit is the coincidence accurate: the artifact cluster lies slightly more to the N, compared to the terrain features. Smaller isolated clusters were detected in squares Aa-B/23 (a solitary depression), G/8-10, X/20-21, etc. Some of the larger stone artifact appear in marginal areas, similary as large bones.

Distribution of the retouched tools reveals the same pattern as distribution of lithic industry in general. Therefore we excluded the graphic presentation from this report.

Raw materials. About 80-90 % of artifacts is made of various silicites from the glacial sediments of North Moravia and Silesia, from outcrops of the Kraków - Częstochowa Jurassic and possibly even from the Volhynia plateau. A detailed study of this group of raw materials, including definition of the various types of flints and determination of their origin, is still under preparation. With the present knowledge we may conclude that most of these materials come from the distance of several hundred km to the NE. The rest of the material form radiolarites, most probably from the White Carpathians. They are rather green than red (on certain pieces the two colours are passing to each other, so that one original outcrop for both sorts may be supposed). Percentages of these materials are rather standard, with the exception of the higher share of green radiolarite in the 2nd settlement unit. Other kinds of raw materials are very scarce.

The production dynamics. From the technological viewpoint, Dolní Věstonice II are to be classified as a secondary workshop site, where raw materials have been imported and thus intensively transformed. The first consequence of this is the low share of preserved pre-cores (6,3 % in assemblage of 111 cores), relatively small pieces, mostly in dimensions of usual exploited cores. Larger pieces have evidently been exhausted. Most of the pre-cores are found inside the settlement units.

Tab. 2. Survey of cores

	1.unit	2.unit	3.unit	free area
Initially worked material	1	0	0	1
Pre-cores	2	1	3	1
Exploited cores (total)	4	6	17	32
Upper Pal. cores	0	4	5	3
Upper Pal. cores with dorsal crest	1	0	2	11
Upper Pal. cores with basal crest	1	0	1	0
prismatic	1	0	2	10
cubical	0	0	1	2
pyramidal	0	1	0	3
fragments	1	1	6	3
change of core orientation	3	1	0	5
core rejuvenation	1	1	0	8
residuals	2	5	5	12
large core (siltstone)	0	0	0	1
Cores (total)	13	14	25	60

The cores under exploitation reach 43 %. Even this percentage is low, compared to the 17,1 % of re-worked cores (with change of orientation or platform rejuvenation) and to the core residuals making the remaining 21,6 %. These numbers illustrate the stress upon maximal use of the material by means of core reworking.

Similar effect of dynamic is reflected in flakes. The fully cortical flakes and blades (1. series), originating from the preparatory stages of production, reach only 2-3,4 %. Non-cortical or partly cortical flakes and blades (2. series), expecially the small blades and microblades, dominate markedly. Flakes of 2nd series are mostly from preparation, but only a small part possess distinctive characters (crest flakes, edge flakes). The rejuvenation flakes, both from flaking platforms and exploitation platforms, reach 3,4 - 5,2 %.

With the exception of the 1st settlement unit, the share of retouched tools is low (11,3 %; 4,4 %; 4,9 %). This observation and further arguments derived from the use wear analysis are discussed by S. Tomášková.

For comparison we may use data on production dynamic at primary workshops near raw material outcrops, gained by the same method (Svoboda 1987c). In Stránská skála exploitation area the share of initially worked material pieces (almost absent at DV II) reaches 3 - 17 % of the core assemblage; pre-cores increase to 17 - 22 %; exploited cores and reworked cores make 54 - 71 %; and the share of core residual decreases to 12 - 21 %. Flakes and blades of the 1 series make 5 - 18 %. The stress upon preparatory stages of production is clearly visible.

Technological characteristic. Technology is aimed to produce blades from specialized cores of the Upper Paleolithic type. These cores are narrow and long and may possess crests along the dorsal and basal edges. Other core shapes are prismatic, cubical and pyramidal: some of these, however, may not represent specific procedures, but advanced stages of exploitation of the Upper Paleolithic cores. Further core forms are due to rejuvenation or change of orientation. The flat cores, typical for some Early Upper Paleolithic industries, disappear completely.

The proportion of blades (Ilam), compared to the flakes, reaches 74,2 % in the 1st settlement unit, 67,4 % in the 2nd settlement unit and 67 % in the 3rd settlement unit. For comparison, Ilam in the unit LP/1-4 was 64 %. These values are relatively constant, and roughly double compared to Early Upper Paleolithic industries from the Stránská skála area. Another typical phenomenon is intensive production of microblades. They reach 25,3 % of the blade assemblage in the 1st unit, 17,6 % in the second unit and 19 % in the 3rd unit (in the unit LP/1-4 their proportion was very low).

No hammerstones were found within the studied area. The

large pebble with traces of use (Fig. 21:1) differs from usual hammerstones by dimensions and weight; another fragment of a pebble (Fig. 21:4) served, after the visible traces, for grinding ochre. We expect that for the lithic production, soft hammers of organic material have been prefered.

Typology. The Pavlovian tool assemblages may be divided in five typological groups: endsrapers, burins, backed implements, microlithic (not backed) and various. The combined tools are added to these groups after the first tool-type in the typological sequence. The aim was especially to express the proportion of endscrapers, including their combinations with burins. The total proportion of combined tools in this assemblage is low, so that the difference is not significative. The various Pavlovian assemblages differ in percentages of the main groups, or in presence/absence of single significative types.

One of the main characters of Pavlovian industries is the dominance of burins over endscrapers, double or even higher. Culturally, the determining implements are backed blades, frequent especially in South Moravian sites and reaching here microlithic dimensions. Simple microblades, microsaws and small backed points ("microgravettes") prevail over the normal-sized backed blades or La Gravette points. Further small artifacts are blades with basal or terminal notches and solitary shouldered points (comparable in shape to the Kostienki points). B. Klíma (1967) stressed the role of specific splittered pieces (Kostienki knives) for determination of the Pavlovian; at DV II, however, appearence of this type is scarce. The role of sidescrapers, denticulates or borers in Pavlovian generally, including DV II, is less important.

Comparison of the three settlement units and the sorrounding area from the above defined viewpoints shows general coincidence but also slight differences. The share of burins compared to endscrapers remains in all cases roughly triple. The 1st settlement unit is distinguished by high percentage of backed implements, making more than one half of the tools. This can only partly be explained by floating (in the floated material prevailed small chips and fragments). Furthermore, floating had no influence on presence of other types of microliths. In the 2nd unit the proportion of backed implements decreased to one third. In consequence we observe the increase of burins (about one third), endscrapers (roughly one tenth) and other tools (about one tenth). The proportion of non-backed microliths reaches its maximum (about one tenth as well). In the 3rd unit the same values of burins and endscrapers remain, while a further dicrease of backed implements and other microliths and a slight increase of retouched, truncated and notched blades is observed. Typological structure of the free area is comparable to the 3rd settlement unit.

Comparison of this typological structure with other Pavlovian assemblages shows that the closest parallels are the various industries from DV I and DV II (Klíma 1963; 1981; 1987e; Otte 1981, Fig. 28; Svoboda 1990). The proportion of endscrapers on the western slope, however, is lower (even if

Tab. 3. Flakes, blades and fragments

	1.unit	2.unit	3.unit
Flakes (total)	126	271	369
flakes of 1. series	8	16	31
flakes of 2. series	69	127	211
- with rest of cortex	15	70	65
- crest flakes	2	6	10
- edge flakes	6	9	12
flakes of 3. series (rejuvenation)	3	5	3
- from flaking platform	15	24	19
- from exploitation platform	5	10	9
partially ret. flakes	3	4	9
Blades (total)	363	561	749
blades of 1. series	2	5	7
blades of 2. series	188	324	400
- with rest of cortex	34	41	58
- microblades	92	99	142
- pointed blades	19	31	27
- crest blades	20	47	94
- rejuvenation blades	5	9	10
partially ret. blades	3	5	11
Fragments (total)	1534	1301	1663
silicite fragments	23	36	68
other materials	14	7	7
small fragments and chips	1481	1251	1572
burin waste	15	7	10
pebbles and their fragments	1	0	6

Tab. 4. Typology

	1.unit	2.unit	3.unit	free area
Endscrapers (total)	4	4	7	17
blade endscraper	2	2	3	8
blade endscraper - atyp.	1	1	0	4
unguiform	0	0	1	0
microendscraper	0	0	0	1
double endscraper	0	1	0	0
combined	1	0	3	4
Burins (total)	14	13	20	55
burin on broken blade	3	3	6	26
convexe truncation	0	0	1	3
concave truncation	4	3	1	4
straight truncation	0	0	1	2
truncated double	0	1	2	2
dihedral symetrical	1	0	2	6
dihedral asymetrical	1	1	3	2
dihedral double	0	1	1	1
transverse	0	2	0	3
flat burin	0	0	0	1
core burin	0	0	2	0
combined	5	2	1	5
Backed implements (total)	39	14	14	45
La Gravette point	0	0	1	1
backed blade	0	0	1	1
backed microblade	28	11	9	27
backed microblade pointed	5	0	3	9
pointed microblade "à gibbosité"	0	0	1	2

microsaw (denticulate)	6	3	0	3
Microliths total	5	4	3	8
shouldered point (microl.)	1	0	0	1
microblade with basal notch	1	1	1	1
microblade with term. notch	3	1	1	5
microblade with oblique truncation	0	2	1	1
Other tools	4	4	15	40
ret. blade unilateral	0	0	2	10
ret. blade bilateral	0	0	1	2
pointed ret. blade	0	1	0	3
blade with straight truncation	0	0	0	2
blade with conc. truncation	0	0	1	3
blade with conv. truncation	0	0	1	0
blade with oblique truncation	0	0	2	3
notch	0	2	6	8
denticulate	0	0	0	1
bec	0	0	1	1
borer	3	0	0	0
splittered piece	1	1	1	4
"raclette"	0	0	0	3
Tools (total)	66	39	59	165

	1.unit	2.unit	3.unit	free area
Endscrapers	6	10	12	10
Burins	21	33	34	33
Backed implements	59	36	24	27
Other microliths	8	10	5	5
Other tools	6	10	25	24
%	100	99	100	99

Tab. 5. Indices (in %) of the main typological groups

the endscraper combinations were added). The Předmostí, Petřkovice or Mladeč (Plavatisko) sites differ by very low number of small backed implements compared to burins and endscrapers. It is difficult to judge today how far this is due to excavation methods. It is evident, however, that the number of microblades is minimal at sites investigated non-systematically or by surface surveys only (Předmostí, Petřkovice-Moravian Museum collection, Mladeč; cf. Valoch 1981, Tab. on p. 280).

Culturally sensitive point-types seldom appear in the western slope collection. Typical La Gravette points are solitary (Fig. 16:1; Fig. 20:4), more numerous is only their microlithic variety ("microgravette" - 17 pieces). In few cases (3 pieces) the back projects to a gibbosity (Fig. 16:8; Fig. 20:24). Already K. Absolon (1938b, 47) noted these types as common in South Moravian sites.

Shouldered points (the Kostienki-type) are rare and appear as a microlithic derivation only (Fig. 9:17; Svoboda et al. 1991, Fig. 53:1-2), tied to technology of segmented backed blades production. More typical shouldered points occure in the Upper Gravettian of West Slovakia (Nitra - Čermáyn, Moravany n. Váhom), some appear at Willdendorf II (layer 9) or Kraków-Spadzista as well, and they concentrate as far as the Volga Basin (Kostienki, Avdeevo). These occurences demarcate a sort of cultural unit, slightly more recent compared to the Pavlovian, called the "Kostienkian" by J.K. Kozlowski. Nevertheless, few points of the same type appear at Moravian sites of Předmostí and Petřkovice, believed to be earlier.

No use-wear analysis of the shouldered points of Moravia has been presented. H. Plisson and J.M. Geneste (1989) who analysed comparable shapes (pointe à cran) in French Solutrean context (sites of Combe-Sannière, Placard, Furneau-du-Diable, Pech de la Boissière) concluded that they served as projectiles. Such assumption may be acceptable even for some small points from DV II.

Certain Pavlovian assemblages are accompanied by tool

types which, even if of "archaic" or "extraneous" appearence, should not necessarilly mean mechanical admixtures. In the large collections we sometimes observe an Aurignacoid end-scraper or even an Aurignacoid burin, but percentage of these tools may slightly increase only at sites believed to be earlier (lower areas at DV I and DV II) or contamined by foreign admixture (Předmostí).

The leaf-points appear at several sites as well (Předmostí, Petřkovice, Milovice), including surface sites (Mladeč, Borši-ce, Kyjov). Meaning of this originally Szeletian type, however, is not only "archaic": excavations in the Váh and Dniestr Basins prove a new wave of leaf-point production during rela-tively young Gravettian. The Font Yves points and points with ventroterminal retouche are typical for Pavlov I and Předmostí sites mainly. The Font Robert-points (in Moravia at Předmostí and Násedlovice), on the other hand, point to the Périgordian of West Europe; the nearest finds in Central Europe are from Bilzingsleben and Salching in Germany. All these significative point-types were absent at the western slope of site DV II.

THE BONE INDUSTRY

Another determining character of the Pavlovian culture compose industries of ivory, bone and antler: spear-points, simple awls, spatulae and other tool-types (Klíma 1963; 1987f).

Bone tools at the western slope of site DV II were scatte-red throughout the excavated area (Fig. 22). Ivory points with circular section are preserved in 5 longitudinaly splitted fragments, 3 of which could be refitted (Fig. 24:8). Two of them are decorated by pattern of short parallel incisions (Fig. 24:11-12). The same pattern is common throughout the Pavlovian sites (cf. Klíma 1987f). Awls were made of long bones by polishing the terminal part into a point and some of them preserve the ulna joint at the base. Five awls are comple-te (Fig. 24:1-2, 4-5, 13), the last is only a broken point. Carefully polished spatulae are typical for the Pavlovian as well; in the literature they were mostly called shovel-like or spoon-like tools. Two exemplars occure at the western slope (Fig. 25:1,2). As a solitary piece appears an antler handle with a lens-shaped hole for fixing a stone tool (Fig. 24:7); parallels have recently been found at Trenčianské Bohuslavice (Bárta 1988).

It is possible to postulate a hypothesis that fragments of the oblong sandstone plates with rounded edges (Fig. 21:3) served for polishing bone. However, no coincidence in spatial distribution between the plates (concentrated in the 3rd unit) and bone tools (widely dispersed - Fig. 22) is observed.

Splitted bones. More numerous than bone tools are the large, mostly mammoth bones, intentionally splitted and reshaped. We noted that if mammoth remains appear within the settlement, they were frequently modified. They concentrated rather outside the settlement units and only in the 3rd unit