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EARLY ACHEULEAN PEBBLE TOOLS IN MORAVIA

ABSTRACT: During the past 25 years in Southern Moravia (Czech Republic) numerous localities with surface finds of Lower Palaeolithic pebble tools have been registered. The artefacts have been discovered and collected by external co-workers of the Anthropos Institute, Václav Effenberger and Antonín Otta. Individual localities have gradually been published and there now follows a summary supplemented with new finds. The findspots are mostly situated on fluvial gravel accumulations at the level of about 30 m above the present-day floodplain; just those in the vicinity of Dolní Kounice are placed on the tops of higher elevations where only some residues of Lower Pleistocene or Tertiary gravels are found. The tools were mostly made of quartz pebbles, less frequently of quartzite or other kinds of rock (in the neighbourhood of Dolní Kounice, for example, chert was often used). All artefacts have had their edges rounded by the agency of wind and the surfaces polished, cherts are strongly patinated. The red-brown colouring of the cortex in some quartz artefacts suggests that they were exposed to pedogenetic processes of ferretisation, which means that they were already at that time placed on the surface of gravels. In terms of typology, the industries include choppers, chopping tools, polyhedrons, cores (and épannelés), hand axes and flakes which were also retouched and modified, mostly to side-scrapers (Pravlov I, Přibice I). Based on the occurrence of hand axes and with regard to analogies from France and Germany, these industries can be classed with Early Acheulean. Their dating is discussed in the work; the only hint for their chronostratigraphic position is provided by their relation to the ferreto soil and to the 30 m terrace. The terrace and the soil emerged before the end of the Cromerian complex. Therefore it can be supposed that at least some of the industries are of Upper Cromerian age. This article is a reprint of a previously published article (Valoch K., 2000: Anthropologie (Brno) 38, 2: 121-147).

KEY WORDS: Moravia – Early Acheulean – Surface finds – Pebble tools

During the past 25 years or so, finds of pebble tools from various localities in Moravia have gradually begun to increase in number thanks to the collecting activity of two self-sacrificing co-workers Václav Effenberger and Antonín Otta. I have published these finds continuously, scattered in various journals. This article gives

This article is a reprint of a previously published article "VALOCH K., 2000: Geröllgeräte des Altacheuléen in Mähren. *Anthropologie* (*Brno*) 38, 2: 121–147."

Translated from German to English by Jana Klíčová and proofread by Robin Smith.

Key words and headings added by Editors.

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a summary of all these surface finds and presents two new findspots.

Experts engaged in Pleistocene archaeology do not show much interest in Lower Palaeolithic, which surely springs from the fact that localities allowing systematic excavations are very rarely found (Stránská skála, Přezletice). In our country, similar to various regions of France (Collina-Girard 1975, Janot 1986, Tavoso 1978) and Germany (in summary Fiedler 1998), we mostly depend on surface finds which, however, give rise to methodical questions as well as to general scepticism. The methodical questions relating to the evaluation of pebble tools collected on the ground surface are addressed by the above French authors. Their work resulted in the positive knowledge that these collections, which are mostly much more voluminous than those obtained by excavations, can give relevant results when all factors are taken into account.

The problem of how to distinguish artefacts from geofacts is of fundamental importance; criteria are sought (Hahn 1991: 33–55) which would enable us to differentiate with some degree of certainty intentional flakes from the accidental ones (Peacock 1991), or worked pebbles from those exhibiting natural damage (Schmude 1997). This all requires a detailed study of products of current processes in rivers (Albrecht, Müller-Beck 1994) and of damage patterns on pebbles (Schmude 1999) resulting from various environments (river gravel, strands, moraines).

The following attributes can be regarded as generally positive criteria for the pebble artefacts under review: multiple parallel scars on one or both sides of a pebble (chopper, chopping tool) or numerous scars in various directions on the whole surface or at least on one side of a pebble (polyhedron, épannelé, core). From these negatives (as well on quartz as a raw material) can be identified the bulb scar and the direction of impact. Pebbles with only one or two negatives, if found isolated, cannot be considered evidence of human activity. Flakes must exhibit a well-formed bulb of percussion and clearly identifiable direction of impact. The negatives of previous removals on the dorsal surface support their interpretation as an artefact. A proof that the objects in question are not recent or did not originate in later phases of Palaeolithic (Middle Palaeolithic, Zotz, Freund 1973; Upper Palaeolithic, Klíma et al. 1962, Valoch 1965; Post-Palaeolithic, Vencl 1976) is given by rounded and/or smoothed edges and removal facets, and in some kinds of rocks (e.g. chert) also by an intensive patina. The abrasion is prevailingly caused (in Southern Moravia) by wind, less frequently by flowing water.

Since no exact criteria have been set so far, the possibility of distinguishing between both these processes is based on experience and observation. By the agency of wind the removal facets become slightly uneven, small dimples emerge on them, and the contours of scars become abraded and rounded. The artefact-like character becomes indistinct when rounding is too strong, and a ventifact can emerge. It must be remarked that Upper Palaeolithic artefacts found by field walking never show traces of aeolian changes, and Middle Palaeolithic artefacts exhibit a weak gloss and slight abrasion of edges at the most.

Aeolian changes of Lower Palaeolithic artefacts were supposed to be here for the first time by geologist K. Žebera (1952), who has collected pebble artefacts in elevated locations (Mlazice) where he did not find any evidence of the agency of a river and so the whole secondary rounding was attributed to wind.

To be able to classify surface finds as Lower Palaeolithic, we must first be sure that humans visited the Central European region during the early Middle Pleistocene. This is evidenced by several excavated settlement sites (Bilzingsleben. Schöningen. Vértesszőlős), by the Mauer mandible and by some isolated but well-stratified, unquestionable artefacts (Fiedler 1998, Svoboda et al. 1998, Valoch 1991a, 1996b, 1998). Thereby a seeming discrepancy arises between, the mostly small-shaped excavated industries, and the large pebble tools and flakes collected on the surface. Nevertheless, artefacts (of Pre-Mesolithic age), which are as tiny as for example those from Bilzingsleben (where, however, also "normal-size" pebble tools were found; Mania, Weber 1986) can neither be preserved nor found. The question arises whether all the pebble tools are perhaps not only a coarse-shaped result of natural selection (removal or ablation of small forms beyond recognition) or whether they indeed represent their own tradition in Lower Palaeolithic development. The relative general scarcity of flakes in pebble industries can possibly be explained in a similar way. That the group of small-sized tools encompassed the time span until around 800 ka BP seems to be proved by finds from the Bizat Ruhama site (Israel) (Ronen et al. 1998).

Thanks to the kind helpfulness of D. Mania, I was able to study the collection of artefacts from Bilzingsleben in the summer of 1999. After having excluded the Muschelkalk artefacts, which are typical of this site and various flakes and shattered pebbles, 51 true pebble artefacts were left over. Compared to Moravian surface finds, the collection from Bilzingsleben comprises more relatively large and heavy pieces (20×20 cm and more) and the typological spectrum also is a little different. Most frequent are simple choppers, mostly with multiple negatives (43 pcs), some of which are tapered and reminiscent of picks (4 pcs). Chopping tools, (4 pcs) as well as unquestionable cores are rare. *Épannelés*, polyhedrons, and bifaces are completely absent. This is why it might be concluded that the typological spectrum of coarse tools from Bilzingsleben is a little different from that of Moravian surface finds.

Other than a polyhedron discovered in the Mladeč Cave (Valoch 1993), all the other pebble artefacts were found in southern part of Moravia (south of Brno), which is undoubtedly linked with the existence of quite high (at least 30 m above the current floodplain) and extensive terraces of the Svratka, Jihlava, and Dyje Rivers. In these areas, neither a loess sheet was formed nor have any fundamental change of relief occurred, so the evidence of humans, who probably walked on exposed gravel fields, remained preserved. In some places on the gravels a weathering product emerges, the so-called ferreto soil, in which the artefacts were exposed to pedogenetic chemical processes so that the cortex and scars of the original light-coloured quartz pebbles became dark reddish-brown. This is also one of the indicators of high age of artefacts, because the ferreto soils have formed here for the last time during the Cromerian complex (Smolíková, Zeman 1981, 1982).

SITES

Podolí

The findspots are named from N to S where Brno is considered the starting point. From the close neighbourhood of Brno comes only an isolated find of an extensively worked and slightly wind-cut chopper from Podolí (*Figure 1:1*), which was found on the ground surface together with two atypical old-fashioned artefacts (Valoch 1962). The findspot is situated on a terrace where, however, very old gravel remains can be observed.

Přibice

About 30 km to the south near the village of Přibice (Břeclav district) there is already an extensive 30 m terrace between the Svratka and Jihlava Rivers. The rivers flow together near the village of Ivaň and run further to the south under the name Svratka. The 30 m terrace represents the so-called younger sand and gravel cover (after Zeman in Valoch *et al.* 1978), which begins near Brno (Tuřany terrace, Zeman 1974a), extends as far as Southern Moravia (Syrovice-Ivaň terrace, Zeman 1974b) and forms a distinctive geomorphological unit. This cover was formed during the Cromerian complex and is finished by a ferreto soil (Smolíková in Valoch *et al.* 1978).

Three Lower Palaeolithic localities are situated in area of the village of Přibice. Their description shall begin with the third one (Přibice III), whose location in the landscape is not entirely clear. It was in 1958 that NW of the village in the tract of land U jezera, almost on the bank of a dead arm of the Jihlava River, V. Effenberger discovered three old-looking flakes and later one more (Valoch 1971, 1977), which together create an assemblage. All four pieces exhibit rounded edges and glossy surfaces which in this case have probably emerged by the agency of water. Each particular flake is made of a different raw material; the bulb of percussion is well-formed in all of them. The assemblage comprises a greenish-brown piece of siliceous rock (chert?) with partly preserved cortex on the dorsal left surface (Figure 1:3), a triangular spongolite flake, as well with a cortical remnant on the dorsal left upper surface (*Figure 1:2*) and a flake of black quartzite or quartz breccia respectively, whose colouring is probably of secondary but unknown origin (determined by A. Přichystal). The black-coloured cortex remained preserved only on the butt (Figure 1:5). The fourth piece is just a cortical flake of blue-grey chert with black cortex. The artificial character of these pieces is beyond doubt but their age is unknown. The findspot is situated in the lower part of a slope on which in some places Pleistocene gravels have been exposed by ploughing and elsewhere Miocene plastic clays have come to light. The artefacts were probably washed down to this position but it is not clear from where – maybe from the Přibice II site, which extends on a plateau above.

The first Lower Palaeolithic site (Přibice I) extends SE of the village at the height of 200–205 m asl on a terrace plateau below the Slaniskový kopec hill. The gravels here outcrop as high as the surface and are mixed with topsoil. In the area of the findspot a fairly spacious gravel quarry was opened in the mid-1970s, which along with boreholes enable us to take a look at local stratigraphy (Zeman in Valoch *et al.* 1978). The subsoil is formed here by some dozens of metres of Miocene gravels (Baden), which also were also mined in the quarry. Upon them rests a relatively thin (max 6 m) Pleistocene gravel cover, whose base rises approximately 30 m above the Svratka and Jihlava Rivers. Not even the repeated examination of sections revealed any artificially modified pebbles in the Pleistocene gravel deposits. In a place in southern part of the area, fine sand was identified 140 cm below the topsoil and on this sand a fossil soil (ferreto), about 40 cm thick, was formed. A pebble, which may have been intentionally modified, was recovered from a thin subsoil gravel layer and a second one was discovered in a place where a cryogenic gravel layer was directly overlaid with Holocene soil. From this it seems to follow that the artefacts are not scattered within the gravel deposit itself but are rather found only on its surface or in the uppermost gravel layer and in the fossil soil lying above respectively (Valoch *et al.* 1978).

The collection of artefacts from Přibice I (Břeclav district) is quite voluminous and is stored partly in the Anthropos Institute in Brno and partly in the Regional Museum in Mikulov. All the material was collected by V. Effenberger (Valoch 1977b, 1986, Valoch et al. 1978). Most artefacts are made of quartz pebbles, sporadically also spongolite and quartzite are found, which approximately corresponds to petrographic composition of gravels. Some pieces are brown-coloured (e.g. Figure 3:1-2), others (e.g. Figure 2:6) retained their natural white or yellowish-white colour. The artefacts exhibit more or less wind-rounded edges and polished surfaces. Some flakes have been found which were further modified to tools, and a few of well-formed side-scrapers can be distinguished (convex transversal side-scraper, Figure 1:4; planoconvex side-scraper from yellowishwhite patinated spongolite, Figure 1:6; coarse-shaped angular side-scraper, Figure 1:7; convex side-scraper, Figure 2:1). Flat-worked pebbles also can be classified as side-scrapers (Figure 2:3). Bifacially worked artefacts are rare but are always present in larger collections. The assemblage under review includes a small biface-like tool (Figure 2:4) and a larger true hand axe (Figure 2:6) where both distal margins, however, are unfortunately freshly damaged. In the so-called épannelés, which may be considered cores, one side of the pebble is worked either completely on the whole surface, mostly in centripetal direction (Figure 2:5), or at least partly (Figure 2:2). Two artefacts, which also are worked almost completely as if they were cores, exhibit a zigzagshaped edge opposite to the cortical remnant (Figure 3:1-2; they can be classified as chopping tools.

The Přibice II site is situated NW of the village in the tract of land Vinohrady at a height of 200–205 m asl as well (Valoch 1983). Here also the gravel deposits reach as far as the topsoil; their thickness is unknown but it is most probably small because on low elevations and at the bend to the slope (to site Přibice III) Miocene plastic

clays outcrop to the surface. This site, too, was discovered and the material was collected by V. Effenberger. The collection of artefacts is smaller than that from Přibice I; after V. Effenberger quit his collecting activity for reasons of age, further finds can hardly be expected.

Here also mostly white and yellowish quartz pebbles were worked, only a few pieces are brown-coloured. All artefacts are more or less abraded by the agency of wind. A large flake is made of limestone, two out of three quartz flakes (Figure 4:1-3) have two edges partially retouched to form a biface-like tool (Figure 4:2-3). A pebble with alternately worked edges (Figure 5:1) can be classified as side-scraper. An épannelé is worked bidirectionally on the whole surface (Figure 5:2), a convex nosed chopper has the left side modified (Figure 5:3). There is also an elongated pebble of greenish metabasite, most probably from the metabasite zone of the Brno Igneous Massif (determined by A. Přichystal), whose one longitudinal edge is extensively retouched on both sides. It can be classified as chopping tool or side-scraper.

Ivaň

The flat Syrovice-Ivaň terrace extends from Přibice about 1 km further to the south as far as the village of Ivaň where it ends. Fields in this whole area contain plenty of gravel. In a place, which is now a fenced vineyard, V. Effenberger collected an assemblage of pebble artefacts, from which two large quartz flakes are pictured here. The first one bears multiple scars on the dorsal surface and its base does not show any butt (*Figure 12:3*). The other has a cortical remnant distally on the dorsal surface and a wide plain butt (*Figure 12:4*).

Pravlov

About 15 km NNW of Přibice, upstream along the Jihlava River is the small town of Dolní Kounice (Brnocountry district), in whose neighbourhood A. Otta discovered many Lower Palaeolithic but also Middle and Early Upper Palaeolithic sites. All finds are stored in his private collection. The most important Lower Palaeolithic site is situated near Pravlov, a village less than 2 km south of Dolní Kounice. It extends on the top of an elevation (258 m asl) on the eastern riverbank above the village that is 68 m above the present-day floodplain at the height of 190 m asl. The finds are scattered not only over the top of the elevation but also over the moderate upper part of its W slope. The slopes are planted with vineyards; the top is no longer cultivated.



FIGURE l. Lower Palaeolithic artefacts. 1, Podolí; 2, 3, 5, Přibice III; 4, 6, 7, Přibice I.



FIGURE 2. Lower Palaeolithic artefacts. Přibice I.



FIGURE 3. Lower Palaeolithic artefacts. Přibice I.



FIGURE 4. Lower Palaeolithic artefacts. Přibice II.



FIGURE 5. Lower Palaeolithic artefacts. Přibice II.



FIGURE 6. Lower Palaeolithic artefacts. Pravlov I.



FIGURE 7. Lower Palaeolithic artefacts. 1–7, Pravlov I; 8, Pasohlávky.



FIGURE 8. Lower Palaeolithic artefacts. Pravlov I.

Any gravel accumulation such as that in Přibice is not present in this area. There is only a thin spread of gravel, which may probably be considered residue of a (Lower Pleistocene or Miocene) gravel cover. The bedrock is composed of crystalline rocks of the Brno Igneous Massif which, outcrop on the top of the elevation and are mined here in a small quarry. The slopes, above all their lower parts, are covered with loess, in some places up to several metres thick (Valoch 1992).

The artefacts from Pravlov I differ from those from Přibice I and II by the raw materials used. In Pravlov mostly Jurassic cherts were used, which are found in vast amounts in the form of pebbles in Miocene (particularly Ottnangian) gravels in wider surroundings. The assemblage pictured includes four pieces of quartz, eleven of chert and two of quartzite. The cherts are mostly greyish-white patinated and their surface is abraded by wind, the same way as with quartz. The flakes are mostly thick and convex, unmodified (Figure 6:1-4; 1, 2, quartz; 3, chert; 4, quartzite). Choppers, chopping tools and bifaces also were found. An oval chert pebble with bilaterally worked zigzagshaped longitudinal edge (Figure 6:5) can be classified as chopping tool, and a worked natural chert splinter (Figure 6:6) as steep chopper. A typical chopping tool was made of a chert pebble (Figure 8:4). From chert is also made a small bifacially worked flake (Figure 8:1). An almondshaped hand axe, dorsally convex and ventrally almost flat, is made of brownish patinated quartzite (Figure 8:2). Among bifaces also counts a thick triangular artefact of grey quartz (Figure 8:3).

In following text, new finds are presented, pictured for the first time. The edges in all of them are distinctly rounded by the agency of wind. A discoidal quartz pebble with one side entirely worked as is typical with an épannelé. The removal facets are brown, the cortex dark brown (Figure 7:7). A small planoconvex and bifacially worked core or polyhedron respectively, with small cortical remnants. Brownish patinated chert (Figure 7:2). Steeply worked piece of pebble (carinated core) with cortical remnant at its base, made of greyish-white patinated chert (Figure 7:1). A blade-shaped flake with both edges retouched, the distal end is formed as with a carinated endscraper. Grey patinated chert with black cortical remnant (Figure 7:8). Left-edged convex (hollow) side-scraper on flake of yellowish-white patinated spongolite with unrecognisable bulb of percussion (Figure 7:6). A convergent side-scraper on chert flake with cortex on the dorsal surface and on the butt, light-grey patinated (Figure 7:4). An angular side-scraper with step-wise retouch on three edges and a burin-like removal on ventral side, made of grey and spotted patinated chert, the bulb of percussion is well-formed and the butt is plain (*Figure 7:3*). Nosed pointed flake of brown quartzite, one quarter of the dorsal surface bears a cortical remnant, on the ventral surface there is a distinctive bulb of percussion and a cortical butt, the base is freshly damaged on the left side (*Figure 7:5*).

The collection from Pravlov I is sufficiently voluminous to set up a list of finds, from which is evident the spectrum of artefacts (*Table 1*).

TABLE 1. Raw material from Pravlov I.

Description	Chert	Quartz	Quartzite
Flakes			
Cortical / 100%	7	1	
Cortical / 75%	9	3	
Cortical / 50%	3	4	1
Cortical / 25%	8	10	1
Non-cortical	7	12	
Butts			
Cortical	7	1	
Plain	9	7	2
Linear	5	1	
Indistinct	13	1	
Modified flakes			
Various side-scrapers	9	5	1
Modified pebbles and its pieces			
Hand axes	1	3	
Choppers with one removal	3	0	2
Choppers with one removal alternately on both sides	3	2	
Choppers with multiple removals	5	6	
"Burin-like" artefact with one lateral removal	1		
Chopping tools	22	1	
Cores with parallel negatives	18	8	
Carinated cores	4		
Épannelés	1	5	
Discoidal cores/polyhedrons	4	2	
Hammerstones		2	

Dolní Kounice

In the area of Dolní Kounice there are numerous Palaeolithic localities of various ages, all of them discovered by A. Otta; the numbering is associated with their total number (Valoch 1991). The Lower Palaeolithic



FIGURE 9. Lower Palaeolithic artefacts. Dolní Kounice XVII-Šibeničná III.



FIGURE 10. Lower Palaeolithic artefacts. 1–4, Dolní Kounice XX-Nová Města; 5, Dolní Kounice XVII-Šibeničná III.



FIGURE 11. Lower Palaeolithic artefacts. 1–3, Dolní Kounice VI-Karlova hora I; 4, Dolní Kounice XX-Nová Města; 5, Dolní Kounice IIIb-Žleby.



FIGURE 12. Lower Palaeolithic artefacts. 1, 2, Nová Ves; 3, 4, Ivaň.



FIGURE 13. Lower Palaeolithic artefacts. 1, 5, Mušov III; 2, 4, Drnholec; 3, Mušov II.

sites in this area are again dominated by quartz as raw material but chert and quartzite were also used. The material consists of small collections, and new finds hardly can be expected because most plots were planted with vineyards and the rest lies in waste.

Dolní Kounice XVII-Šibeničná III. The site is situated west of the river on the SW to W slope below the top which reaches the height of 274 m asl. On the surface there are numerous pebbles (quartz, chert), residues of an old gravel cover. All the finds pictured are made of quartz.

The material comprises a small flake (*Figure 9:1*) and small choppers (*Figure 9:2–3*), unilaterally worked biface-like pebbles (*Figure 9:4–5*) and a heart-shaped hand axe with cortical remnant in its proximal part (*Figure 9:6*). A find, which is as yet unknown in our collections is a typical cleaver made of a quadrangular pebble (*Figure 9:7*). Among the best tools is a large chopper worked along the whole left longitudinal side (*Figure 10:5*).

Dolní Kounice XX-Nová Města. Also on the western bank of the river south of the town, on the border to neighbouring Pravlov village, on the top of an elevation at the height of 250 m asl. The subsoil is composed of eluvial sands of the Brno Crystalline Complex with a few pebbles scattered over the surface, maybe as a relic of former gravel cover. As a selection of the small collection two flakes are pictured along with a cortical flake (Figure 10:1) and a flake with a modified distal part whose butt also is formed by a removal (Figure 10:2). Two épannelés are also present, whose one surface is completely worked (Figure 10:3-4). A chopping tool was made of a white patinated wind-abraded chert pebble (Figure 11:3). This locality yielded an important new find: a compact hand axe with blunt tip, bilaterally worked, with a cortical remnant at the base, made of brownish grey-white spotted patinated chert. The whole surface is wind-abraded (Figure 17:4).

Dolní Kounice VI-Karlova hora I. NW of the town near the spot height of 332 m asl, N of the river. The lowermost layer consists of eluvial debris and sand in which individual pebbles with black cortex (of Miocene origin) are scattered. From this site so far only very few artefacts are known; presented is a massive flake (*Figure* 11:2) and a pebble trimmed chopper-like on the whole perimeter (*Figure* 11:3).

Dolní Kounice VIIIa-Karlova hora IIIa. Individual scattered pebbles, some of them worked, were found in eluvial sand on an elongated ridge at a height of 335 m asl. The best example is a spongolite *épannelé*, yellowish-white patinated and wind-abraded (*Figure 11:1*).

Dolní Kounice IIIb-Žleby. N of the town and N of the river on a wide ridge at a height of about 290 m asl, also on eluvial sand where pebbles are hard to find. There is only the isolated find of a large core-like trimmed quartz pebble (*Figure 11:5*).

Nová Ves

Now we return again to the area of Přibice. Near the village of Ivaň, the Svratka and Jihlava Rivers flow together and the course of higher terraces continues on the right bank of the river approximately 4 km SW of Ivaň near the village of Nová Ves (Břeclav district). On the elevation Karlovec at a height of about 200 m asl, Effenberger collected an assemblage of pebble artefacts from which a core on flake (Figure 12:1) and an épannelé (Figure 12:2) are pictured (Valoch 1982). A. Otta also has collected in Nová Ves and his collection contains following, yet unpublished finds: a slender pyramidal bilaterally reduced core with cortex on the striking platform and on the tip; grey-white quartz (Figure 18:1). A polyhedron with cortical remnant on one side; brownish-white quartz with light-brown cortex (Figure 18:2). Distinctly flat oval pebble, on whose longitudinal side is alternately made an indentation by multiple blows. Brownish-white quartz with similarly coloured cortex (Figure 18:3). A flat pebble with three deep scars made by one blow each. Brownish-white quartz with similarly coloured cortex (Figure 19:1). A splinter of a quartz pebble with use-wear marks on the distal part, the bulb of percussion is unrecognisable. Brownish-white colour (Figure 19:2). All artefacts are moderately abraded.

Mušov

The findspot of Mušov II is situated about 3 km SE of Nová Ves in the area of the derelict village of Mušov (today flooded by a reservoir), on the northern slope of the Hradisko Hill (with a Roman fortress) at a height of about 180 m asl. V. Effenberger collected here an assemblage, from which a small chopping tool is presented (*Figure* 13:3). About 1.5 km to the SE, during fieldwork around the reservoir the surface of an approx. 2 m thick gravel deposit was uncovered, whose base was 15 m above the then floodplain. On the gravel Effenberger collected 20 artefacts (Mušov III), from among which a quartz flake (*Figure* 13:1) and a large chopper with multiple negatives (*Figure* 13:5) are pictured.

Pasohlávky

Within the past few years Effenberger has collected surface finds at the last of Low Palaeolithic localities discovered by him. It is situated west of the Pasohlávky



FIGURE 14. Lower Palaeolithic artefacts. Pasohlávky.



FIGURE 15. Lower Palaeolithic artefacts. Pasohlávky.



FIGURE 16. Lower Palaeolithic artefacts. Hlohovec.



FIGURE 17. Lower Palaeolithic artefacts. 1–3, 5, Hlohovec; 4, Dolní Kounice XX-Nová Města.



FIGURE 18. Lower Palaeolithic artefacts. Nová Ves.



FIGURE 19. Lower Palaeolithic artefacts. Nová Ves.

village (Břeclav district) on a moderate slope falling to the south, at a height of 185 m asl barely 4 km W of the Hradisko Hill near Mušov. Several distinctive artefacts are pictured; further finds can hardly be expected. The artefacts are large pebbles prevailingly of quartz; all of them are moderately wind-cut. A lateral chopper of brownish-white quartz (*Figure 7:8*). Bilaterally edged chopper of grey-white quartz with cortical remnant on the tip and a removal on the right side of the ventral surface (*Figure 14:1*). A chopper with two deep concave scars of quartzite or quartz conglomerate respectively, which probably originates from the underlying red Lower Devonian (determined by A. Přichystal) (*Figure 14:2*). Large distal chopping tool of grey-white quartz (*Figure 14:3*). Two lateral choppers, the smaller one of yellowish-white quartz (*Figure 15:1*), the larger one of brown quartzite (*Figure 15:2*). Double lateral chopper of yellowish quartz (*Figure 15:3*) and a chopper with alternating negatives of dark metabasite, probably of similar origin as the chopping tool from Přibice II (determined by A. Přichystal) (*Figure 15:4*).

Drnholec

Another 8 km SE of Mušov III lies the village of Drnholec (Břeclav district) directly on the Dyje River. On the southern river bank was a gravel quarry where Miocene gravels were mined; from the fields above the quarry, at about 180 m asl, come some artefacts found by V. Effenberger. Two simple choppers are pictured (*Figure 13:2, 4*).



FIGURE 20. Map of Southern Moravia with highlighted findspots. 1, Podolí; 2, Přibice I; 3, Přibice II, III; 4, Ivaň; 5, Pravlov I; 6, Dolní Kounice XX-Nová Města; 7, Dolní Kounice XVII-Šibeničná III; 8, Dolní Kounice VI-Karlova hora I; Dolní Kounice VIIIa-Karlova hora IIIa; Dolní Kounice IIIb-Žleby; 9, Nová Ves; 10, Mušov II, III; 11, Pasohlávky; 12, Drnholec; 13, Hlohovec.

Hlohovec

A. Otta also found a new findspot about 25 km further to SE near Hlohovec (Břeclav district), south of the Dyje River near the Austrian border. It extends in the

vineyards S of the village at a height of about 200 m asl. The collection comprises some dozens of artefacts, the best of them are described in detail. Flat piece of pebble completely worked on the dorsal surface, the ventral surface exhibits only marginal removals in three places as if from preparation of a striking platform. The surface is faint, wind-abraded, only the deep concave removal in the right bottom part is a little glossy. It is a core remnant (épannelé). Yellowish-white quartz, the cortex is lightbrown (Figure 16:1). A core with multiple negatives on the dorsal side and one on the other side. Brownish-white quartz, the cortex is light-brown, the whole surface is slightly wind-abraded (Figure 16:2). A chopper with multiple flat, almost parallel scars on the left side, and a deep concave indentation on the right. The whole surface is slightly and the right side heavily windabraded. Brownish-white quartz, the cortex is light-brown (Figure 16:3). Multilaterally worked polyhedron of rosy-white guartz, the cortical remnant is light-brown. The whole surface is slightly wind-abraded (Figure 16:4). A similarly worked polyhedron (chopping tool?) of yellowish-white quartz, the cortex is brownish. The whole surface is slightly wind-abraded (Figure 17:1). A thick left-sided steeply worked chopper, with probably natural split facets on the right. Brownish-white quartz with grey-brown cortex, slightly wind-abraded (Figure 17:2). A chopper steeply worked on almost the whole perimeter, light-brown quartz with equally coloured cortex, very slightly wind-abraded (Figure 17:3). A chopper with multiple, mostly flat removals of grey-white quartz with brown cortex, slightly windabraded (Figure 17:5). The new findspot near Hlohovec seems to be quite rich in finds but future collecting in vineyards will unfortunately be possible only on a limited scale.

It is evident that primitive pebble industries can be composed of typologically very varied inventory in which already appear various side-scrapers. It is important, however, that the material also includes bifacially worked tools which are recognised as bifaces and which sometimes attain the classical hand-axe form. This is the reason why our pebble industries can be classed with Early Acheulean.

Such industries were earlier simply designated as pebble-tool industries (*galets aménagés*). In France where larger collections were found (100 pcs and more) in which the share of bifaces is relatively higher and thereby more conspicuous, these industries began to be classed with Acheulean complex (*Acheuléen archaique* after Tavoso 1978, *Abbevillien* and *Acheuléen ancien* after Janot 1986). This division is now also accepted in Central Europe (Fiedler 1998, Fridrich 1977) and that is why the Moravian pebble industries are referred to as Early Acheulean. The number of bifaces (along with *hacheraux*) in the oldest French collections is not very high, either. Collina-Girard (1975) reported on a hand axe besides choppers and chopping tools, Tavoso (1978) identified 40–60% pebble tools in various collections, and Janot (1986) found up to 80% of pebble tools, among them 4% of hand axes. If our collections of 15–20 artefacts include 1–2 bifaces each, the proportion is not half bad. The existence of Early Acheulean in Moravia is herewith acceptable.

If our finds would be classified by structural categories (Carbonell *et al.* 1984, Ranov *et al.* 1995), it would come to light that most of the artefacts belong to the first-generation negative base, only a few artefacts (all flakes) to the first-generation positive base, and only the modified flakes to the second-generation negative base.

From this summarising work it follows that Lower Palaeolithic pebble industries in Southern Moravia are relatively often found in the neighbourhood of the Svratka, Jihlava, and Dyje Rivers. All assemblages have been collected on the ground surface, and the question of whether they originally rested within a gravel deposit can, according to current knowledge, be answered negatively. Surface collecting at the Přibice I outcrops, in the old small gravel quarry at Přibice and in the large ones at Żabčice and Hrušovany, all of them situated in the same area and gravel accumulation, yielded only sporadic artefact-like finds but none of them can be compared to the true artefacts collected. The surface origin is particularly evident with finds from the area of Dolní Kounice. All of them lie on eluvial deposits of the Brno Crystalline Complex in a very thin spread of gravel whose age, however, according to its relative height, greatly exceeds the possible date of human presence and is probably of Lower Pleistocene to Miocene origin. Here, it is clearly evident that people have visited high hills during a period in which the river formed its active bed at a deeper level. The pebbles in Miocene gravels, which were found on the spot or in its immediate neighbourhood have been worked and that is why a larger amount of cherts can be found, which are otherwise rare in gravels of the 30 m terrace. The rounding of edges and modification of surfaces could thus only have been caused by aeolian activity. An important fact is that the artefacts are always found in clusters, even though sometimes guite wide-spread, and are not scattered unevenly over large areas what they would have to if they would be ploughed out of the ground together with gravel. This, too, is a proof that the finds come from sites on terraces, and were neither scattered in gravels nor ploughed out of the ground by chance. Similar conditions were also identified with French sites.

The stratigraphic position of these industries cannot be directly determined because no hints are available. The age of terrace gravels is, in the case of the 30 m terrace, only a *terminus post quem* without any major significance. It can be supposed that people have walked on these grounds when the water level was not yet so deep and the river thus may have served as a watering place for animals, and when the gravels were not yet covered with dense vegetation. This may have taken place relatively soon after the gravels ran dry during the next erosive phase of the river (Tavoso 1978).

The exact dating of the artefacts still remains unknown; it can only be said, at least with some localities, that during pedogenetic processes associated with formation of ferreto soils the artefacts were already embedded on the Tuřany-Syrovice-Ivaň terrace (red colouring of pebbles). With regard to the assumed Cromerian age of both the gravel deposit (Zeman 1974a, b) and the ferreto soil (Smolíková, Zeman 1981, 1982, Valoch et al. 1978), the earliest human presence in this area might be supposed prior to the formation of the soil, and the later ones may have followed until the middle of Middle Pleistocene. This would be an indication of the (Upper?) Cromerian age of the assumed earliest settlement evidence. More cannot be said; maybe a lucky coincidence in the future makes it possible to recover pebble artefacts under conditions allowing us to draw any more exact conclusions.

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