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Jeskyně Býčí skála. Geometrický vzorec, datovaný do eneolitu.  
Býčí skála Cave. A geometric pattern dated to the Aeneolithic.

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# THE YOUNGER PHASE OF THE MIDDLE PALAEOLITHIC IN UPPER SILESIA

## MLADŠÍ FÁZE STŘEDNÍHO PALEOLITU V HORNÍM SLEZSKU

Eugeniusz Foltyn, Edelgarda M. Foltyn, Janusz Krzysztof Kozłowski, Jan Maciej Waga

### Abstract

The younger phase of the Middle Palaeolithic (OIS 5e-OIS3) in Upper Silesia is discussed on the basis of the sites buried in loess, alluvial and deluvial deposits of the upper Oder and upper Vistula river catchment systems and surface sites. From a taxonomic point of view, these sites represent the Mousterio-Levalloisian, the Taubachian/Mousterian without Levallois technology and the Eastern Micoquian.

### Keywords

Oder and Warta Stages, Eemian, Early Vistulian, Middle Palaeolithic, Mousterian, Levallois, Micoquian

The beginnings of the investigations into the Middle Palaeolithic in Upper Silesia date back to 1923. Among the earliest discoveries belong the sites of Opava-Kylešovice and Racibórz-Stara Wieś. In the course of systematic investigations, conducted before 1945, various exposures – natural or industrial – were examined and finds were also collected from field survey. The contributions first of all of H. Lindner also O. Hanske, B. von Richthofen, H. Kurtz, Knebel, G. Raschke and Bittner are noteworthy. The only site where archaeological rescue excavations were conducted was Pietraszyn 11. This stage was summed up in the works of H. Lindner (1937, 1941), J. Andree (1939), M. Schwarzbach (1942) and F. Zeuner (1952).

In 1954 M. and W. Chmielewski and J.K. Kozłowski began investigations in Upper Silesia which consisted of surveys and verification. Excavations were conducted on three sites (Pietraszyn 11, Racibórz-Ocice 1, Tworków C). This stage, including the verification of inventories obtained earlier, was summed up by J.K. Kozłowski (1964b, acc. to 1964a) in his monograph of the Palaeolithic in Upper Silesia.

In the 70s and 80s of the XXth cent. field studies in Upper Silesia lost their intensity, but since 1978 surveys have been conducted as part of the Archaeological Map of Poland project. Detailed surveys were conducted only at two sites (Kornice 11, Lisięcice Z).

In 1999 A. Wiśniewski (1999) and J.M. Burdukiewicz (1999) published two monographs of the Middle Palaeolithic of Upper Silesia. New discoveries in the eastern part of Upper Silesia are reviewed in the work by E.M. and E. Foltyn (2003). Paradoxically, recent years have brought more data on the Older than on the Younger phase of the Middle Palaeolithic.

The source base for the study of the younger phase of the Middle Palaeolithic in Upper Silesia are lithic inventories of very different qualities, generally not very numerous. They come mainly from surface surveys, examination of gravel or clay extraction pits. A large group are loose, single finds, discovered accidentally. Only 5 sites were excavated. This situation seriously limits the cognitive value of finds and possibilities of their interpretation. At present, the list of sites

assigned to the younger phase of the Middle Palaeolithic includes 41 locations.

### 1. Glacial events of the end of the Middle Pleistocene in the southern part of Upper Silesia

The most generalized stratigraphic sequence of the younger phases of the Pleistocene in the territory of the Upper Oder basin was elaborated by J. Lewandowski (1988, 2001). The Oder glaciation (OIS 8) is represented by fluvioglacial deposits and one layer of till clays, also by the terminal morain formations: kames and outwash (Lewandowski 1988). The Pilica (Lublin) Interglacial (OIS 7) is documented by levels of fossile soils in the profiles at Stara Bela (Macoun & al. 1965), Neplachovice (Macoun 1980) and Branice (Jersak 1988), probably also by lower organic silts at Golasowice (Waga 1992, Granoszewski 1993). The Warta Stage (OIS 6) is represented by the sediments of the "Muglinów" terrace in the Upper Oder basin which J. Macoun (1980) believes to represent the older phase of the Warta Stage. In the Oder basin near Racibórz the Warta Stage formation is the "Ocice" terrace (Jersak 1991, Lewandowski, Wieland 1994). Of the same age are the older loesses at Neplachovice (Macoun 1980) and Branice (Jersak 1988) that are covered by the soils of the Eemian Interglacial. According to J. Waga (in press) the "Ocice" terrace should be placed at the Late Oder Stage, whereas the associated narrow terrace benches, that can be seen at Miedonia and Racibórz at about 15 m above the river level, can be interpreted as fragments of the Warta Stage terrace. The Eemian Interglacial is represented by, among others, the fossil soil at Dzierżysław (Fajer & al. 1993) and peats at Golasowice (Waga 1992, 1993, Granoszewski 1993).

Large areas of the southern part of Upper Silesia, notably the Głubczyce and the Rybnik Plateaux, the Carpathian foreland and the Pszczyna Upland are covered by loess or loess-like formations of the Warta Stage.

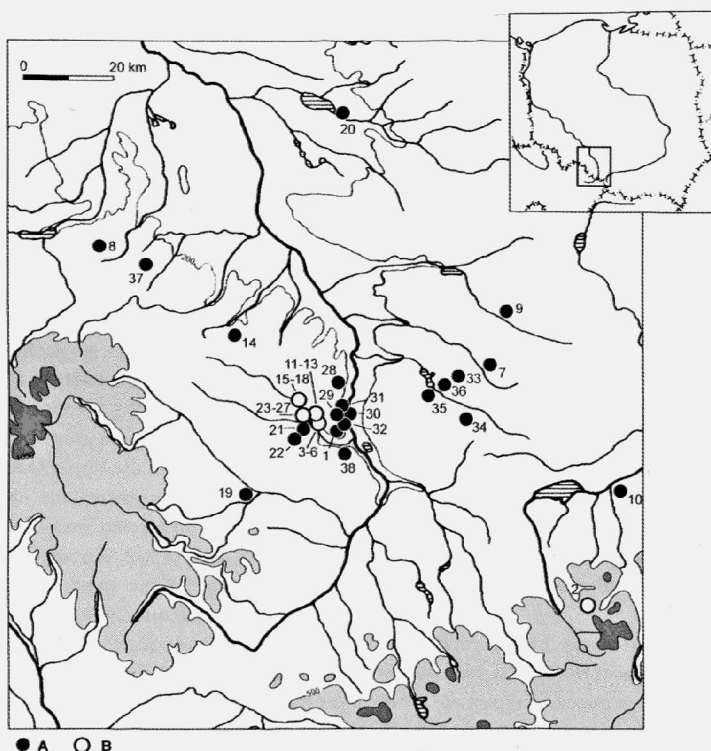
## 2. Environmental changes in the southern part of Upper Silesia in the Late Pleistocene

After the southern Polish ice-sheet had transgressed, erosional-denudation processes began on the uplands of Upper Silesia related to the reconstruction of the deep river system of the pre-Oder. These processes led to serious reduction of glacial sediments. On the other hand, thicker fluvioglacial series, stagnant water sediments and boulder clays of the Oder Stage have been preserved (Lewandowski 1988, 2001). When the advancing Oder ice-sheet approached the montane zone it blocked river valleys forming stagnant water reservoirs that in filled with limnoglacial sediments and, subsequently, were covered by outwash formations. Some of the buried lakes were covered by the oscillating ice-sheet. The clastic materials that were being provided by meltwaters built outwash plains and flat benches. The most conspicuous of such benches extends, for example, in the Kozielek Basin, at elevations of about 240, 220 and 190–200 m a.s.l. (Waga 1994, 2001).

In the morphology of river valleys of the Upper Oder basin a conspicuous terrace rises to an elevation of 25 m above the river valley floor. The terrace was built and sculptured in the conditions of a periglacial climate by the waters of braided

ivers. In the region of Racibórz it is described as the "Ociçe" terrace and is usually dated at the Warta Stage. According to J. Waga (in press) the terrace formed in the terminal phase of the melting of the Oder icesheet which, at that time, covered the Silesian Lowland. Subsequently, the terrace was only sculpted. The "Ociçe" morphological terrace near Racibórz is clearly related to the morphological levels in the lower Oder basin: above the valley floor and in the valley itself (Waga 1994).

The Late Oder Stage morphological terrace near Racibórz in the Oder valley was deeply cut, probably in the warm Pilica Stage (Lublin), and sculptured in the Warta Stage. Together with the lower Warta terrace the Oder terrace was cut again in the Ecmian forming two generations of high terrace benches. On the Głubczyce Plateau older loesses accumulated during the Warta Stage (Jersak 1991). These loess covers are probably the sediments of the younger part of the fully developed Warta Stage, characterized by small thickness of layers, a large sand component, a bimodal curve of grain fraction, and - generally - strong transformation by subsequent pedogenetic processes.



**Map 1.** Late Middle Palaeolithic sites in Upper Silesia (A – single sites; B – group of sites): 1 – Bieńkowice, 2 – Brenna 7 (Grabowa), 3 – Cyprzanów 2, 4 – Cyprzanów 3, 5 – Cyprzanów 6, 6 – Cyprzanów-“Ost”, 7 – Czerwionka-Leszczyzny, 8 – Domaszkowice 16, 9 – Gliwice-Sośnica, 10 – Kaniów 4, 11 – Kornice 2–4, 12 – Kornice 11, 13 – Kornice, 14 – Lisieście Z, 15 – Maków 4, 16 – Maków 12, 17 – Maków 15, 18 – Maków 20, 19 – Opawa-Kylešovice (?), 20 – Ozimek, 21 – Pietraszyn 4, 22 – Pietraszyn 11, 23 – Pietrowice Wielkie 5, 24 – Pietrowice Wielkie 8, 25 – Pietrowice Wielkie 21, 27 – Pietrowice Wielkie 76, 28 – Racibórz-Miedonia, 29 – Racibórz-Ociçe 1, 30 – Racibórz-Plonie 3, 31 – Racibórz-Stara Wieś, 32 – Racibórz-Studzienna 12, 33 – Rybnik-Kamień D, 34 – Rybnik-Orzepowice 1, 36 – Rybnik-Piasek C, 37 – Smicz 12, 38 – Tworków C.

**Pozdně středopaleolitické lokality v Horním Slezsku.**

In the zone of the present Oder-Vistula watershed, near Golasowice and in the upper Vistula catchment basin erosional conditions differed from those in the Oder basin. On the tributaries of the Oder and in the pre-montane zone the elevation of the Warta terrace was small. Because of this near Golasowice and Strumiéń, this terrace was covered by an extensive level of Eemian boggy sediments, subsequently by loess-like formations of the Vistulian. A possibility that sedimentation also occurred in sub-aquatic conditions cannot be excluded (Waga 1992). Consequently, the Warta terrace near Golasowice and Strumiéń is a fossil terrace.

The fossil soils complex of Nietulisko I type from the end of the Warta Stage and the beginning of the Eemian was uncovered in the vicinity of the site of Dzierzyslaw I on the Głubczyce Plateau (Fajer & al. 1993). Soil levels were uncovered in a trough valley filled with banded and laminated loamy sand-and-gravel sediments.

Prior to the fully developed Eemian (in the descending phase of the Warta Stage and the ascending phase of the Eemian) growth of steppe vegetation alternated with phases of its degradation which caused denudation and slope-washing. In this way three levels of humic "sieroziems" developed. The underlying grey forest soil must have developed during the Eemian (Jersak 1991, Jersak & al. 1992, Jary 1996, Jary & al. 2002).

In other profiles the soil complex of Nietulisko I type consists of "sieroziems" whose entire top portion is gleyified. During the ascending phase of the Vistulian, in some areas in the top portion of this soil the process of grassland soil formation led to three episodes of the development of chernozems (Jersak 1991, Jersak & al. 1992, Jary 1996, Jary & al. 2002).

Younger loess II, overlying the Nietulisko I soil complex, was divided by J. Jersak into three portions. The lower portion sedimented in wetter conditions, usually oxidizing-reducing, on a waterlogged substratum. This loess is more silty, usually decalcified, grey with rusty and black patches, with ferruginous and manganese concretions. The middle portion was accumulated in drier conditions - the loess is the colour of ochre, it is less clayey, and - occasionally - contains about 1% of carbonates. The top portion of this loess was partially changed by the soils of the Komorniki complex. At Dzierzyslaw a thicker level of sub-arctic soil on slopes passes laterally into pseudo-gley soil usually disturbed by slope processes. Further the pseudo-gley soil level is separated by a 50 cm thick loess level that can be identified with the - so-called - younger middle loess (Jary 1996, Jary & al. 2002). When younger loess II is not underlain by older loess the sand fraction in it increases. The Komorniki complex soils separate younger loess IIa and younger middle loess from younger loess IIb. Younger loess IIb, which is non-gleyified and beige in colour, at many areas of the Głubczyce Plateau is dissected by large frost structures with secondary filling from the melting of ice-wedges. The material filling these pseudomorphoses is lighter in colour than the surrounding material. Their tops are usually obliterated by modern soil processes. The pseudomorphoses evidence a more severe and more continental climate.

### 3.1. Loess sites in the Oder basin

#### 3.1.1. Racibórz-Ocice 1

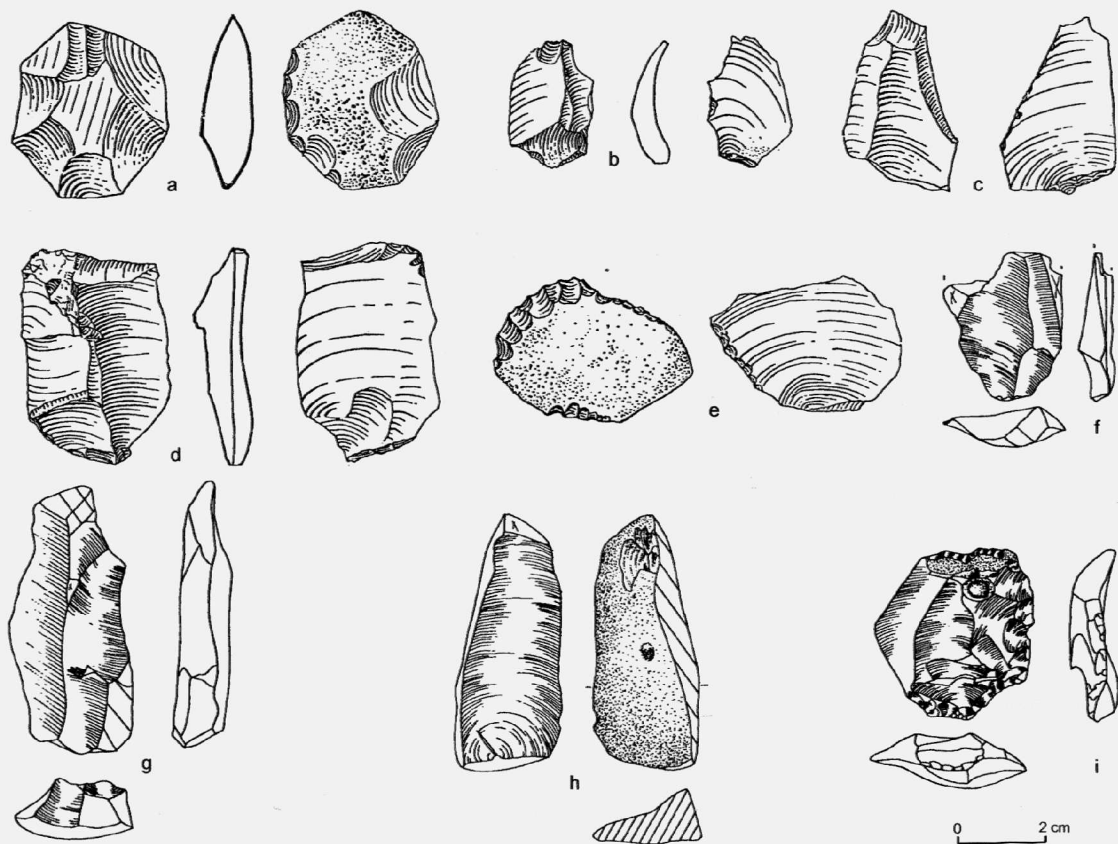
The site was investigated by H. Kurtz in 1928 and by H. Lindner in 1934. In the years 1960-1962 it was excavated by J.K. Kozłowski (Czeppe & al. 1963, Kozłowski 1964b). The site is situated on the left-side, western terrace of the Oder, at 210 m a.s.l. In this section the Oder flows at an elevation of 190-192 m a.s.l.

The top of the sand-and-gravel series had, first, been eroded and then covered by silty sediments with gravels, probably also of fluvial origin. Hydrogenic, biogenic and geochemical processes occurred here in various climatic conditions (Jersak 1991). The sediments of the top portion of the fluvial series are enriched with organic material, just like the lower portion of the higher-lying loess. In all likelihood, these are the remains of several, superimposed soil levels. The investigations so far do not unequivocally assign the relics of soils from Racibórz-Ocice to Nietulisko I complex. At the interface between sandy and loess sediments, besides remnants of Nietulisko I soils, there are probably traces of older soils, difficult to identify as they had been obscured by subsequent pedogenesis (Jersak 1991). It is noteworthy that the sediment itself of the terrace, transformed by pedogenesis, is not homogeneous. In the upper portion of the soil complex two levels of chernozems were distinguished (Jersak 1991). The humus content is different in each level: in the upper level it is 0.7-0.9% which is three times as high as in the lower level. The charcoal content (*Pinus silvestris*), too, is highest in the top level. C-14 dating determines the age of charcoals at 52 000 years BP. Consequently, the upper portion of this soil has been assigned to the Brórup Interstadial (Czeppe & al. 1963) and only Z. Jary (1996) places it at the Oderade warming. Above the chernozems weakly gleyified layers of sandy loess and a hardpan layer were overlain by gleyified typical loess. J. Jersak (1991) assigned the whole series to younger loess IIa admitting, at the same time, that the upper - strongly gleyified - portion of the sediments had undergone gleyification process under cool climatic regime. He assigned this soil to the Komorniki soil complex (Jersak 1991). Above the Komorniki soil level there is weakly gleyified and nongleyified loess (younger loess IIb) whose top was changed by Holocene pedogenetic processes. The lower loess would, then correspond to Pleniglacial I (OIS 4), whereas the upper loess would correspond to Pleniglacial II.

The few lithic finds (5 specimens) were contained within the upper portion of the lower loess level (Czeppe & al. 1963, Kozłowski 1964b). Cores are represented by a unifacial discoidal core with partial preparation of the back (Fig. 1:a). Two flakes, a triangular and a blade-like specimen, come from Levallois cores (Fig. 1:c-d). The third, small flake was detached from the edge of a discoidal core (Fig. 1:b). There was one tool: a transversal, undulating side-scraper (Fig. 1:e).

#### 3.1.2. Miedonia

The site of Miedonia, investigated by J.K. Kozłowski (1964a), is situated in the Oder valley, in the morphological level that corresponds to the "Ocice" terrace. The top of fluvial sands and gravels from the period of the Oder ice-sheet retreat



**Fig. 1.** Racibórz-Ocice 1. a: core, b–d: flake, e: side-scraper (after Czeppe et al.), Bieńkowice, f, h–i: flake, g: blade-like flake (drawing E. M. Foltyn, B. Czader).

Racibórz-Ocice 1. a: jádro, b–d: úštěp, e: drásadlo (podle Czeppe et al.), Bieńkowice, f, h–i: úštěp, g: čepelovitý úštěp (kresba E. M. Foltyn, B. Czader).

is stratified at an elevation of about 211 m a.s.l. This level is overlain by sandy loess disturbed by periglacial processes. The top of this loess is covered by a thin layer of hardpan above which there is a layer of banded, decalcified loess with ferruginous concretions, 0.6 cm thick. The upper series of lighter loess contains carbonates. The decalcified layer above the hardpan layer is younger loess IIa transformed by pedogenesis and slope processes that occurred on the mild slope. Above this is younger loess IIb with frost cracks extending from it. The interpretation of the lower level of sandy loess causes the greatest difficulties. This sediment must have accumulated before the development of the Komorniki soil i.e. in the older period of accumulation of younger loess II – at the latest or even earlier. It could be dated at the beginning of the Vistulian (OIS 5b) or at Pleniglacial I (OIS 4). This loess yielded one Levallois blade-like flake (Kozłowski 1964a).

### 3.1.3. Racibórz-Stara Wies

The site, discovered by J.K. Kozłowski (1964b), has a similar morphological position to that of Racibórz-Ocice or Miedonia, within the “Ocice” terrace in the Oder basin. The stratigraphy, revealed in the profile of the site, resembles the morphology of the upper part of the profile at Ocice. In the

higher part of the profile there is loess with horizontal pseudo-lamination which is caused by uneven distribution of iron oxides. Lower down the loess does not show structures like laminations. In the lower portion of loesses soil levels have not been registered. Soil levels developed directly upon fluvial formations of the Oder Stage. It can be assumed that loess accumulated during the early Vistulian. It yielded a blade-like flake with a faceted butt split off from a Levallois core (Fig. 2:c) (Kozłowski 1964b).

## 3.2. Sites embedded in aluvial or deluvial deposits on the uplands of the Oder catchment basin.

### 3.2.1. Lisięcice Z

The site was excavated in 1991 and 1992. In the excavated area of more than 60 sq m 375 artefacts were uncovered (Wiśniewski 1994, Plonka, Wiśniewski 1994). The site lies at 252 m a.s.l., on the lower slopes of the Głubczyce Plateau inclined to the north. The site extends at the edge of the Plateau which, here, is dissected by the system of river valleys of the Stradunia catchment basin. After the retreat of the Oder ice-sheet surface waters were drained to the north. The upper portions of Quaternary sediments uncovered in archaeological trenches, too, shifted to the north. The

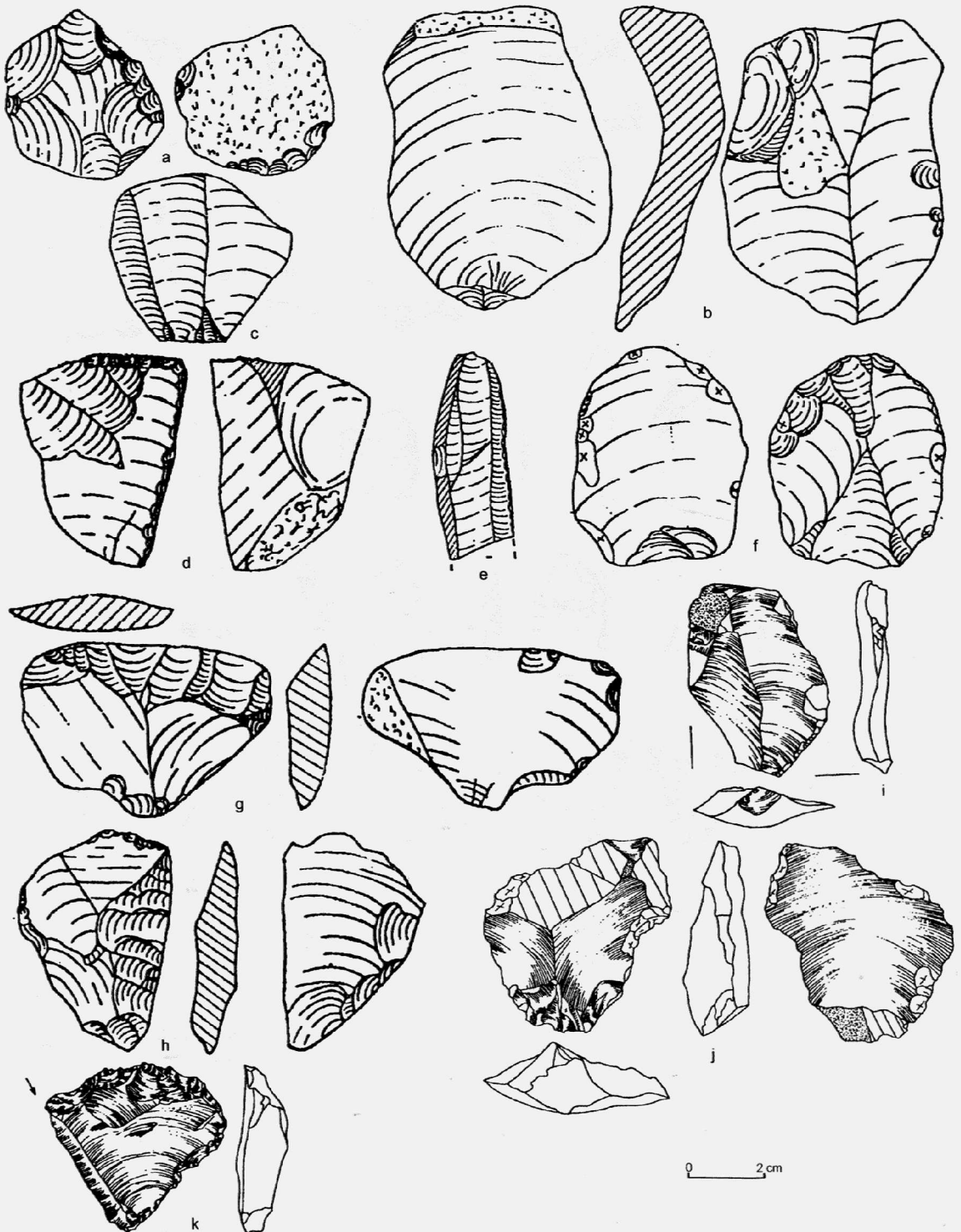


Fig. 2. Racibórz-Studzienna 12. a: core, Śmicz 12, b: flake, Racibórz-Stara Wieś, c: flake, Maków 4, d: side-scrapers, Racibórz-Płońia, e: blade, f: flake, Kornice 2-4, g-h: side-scrapers, Rybnik-Kamień D, i: flake, Cyprzanów 3, j: flake, Rybnik-Kłokocin A, k: burin+transveral side-scrapers (a-h – after J. K. Kozłowski, i, k – after E. M. Foltyn, E. Foltyn) (j – drawing E. M. Foltyn, B. Czader).

Racibórz-Studzienna 12. a: jádro, Śmicz 12, b: úštěp, Racibórz-Stara Wieś, c: úštěp, Maków 4, d: drásadlo, Racibórz-Płońia, e: čepel, f: úštěp, Kornice 2-4, g-h: drásadlo, Rybnik-Kamień D, i: úštěp, Cyprzanów 3, j: úštěp, Rybnik-Kłokocin A, k: rydlo+příčné drásadlo (a-h – podle J. K. Kozłowski, i, k – podle E. M. Foltyn, E. Foltyn) (j – kresba E. M. Foltyn, B. Czader).

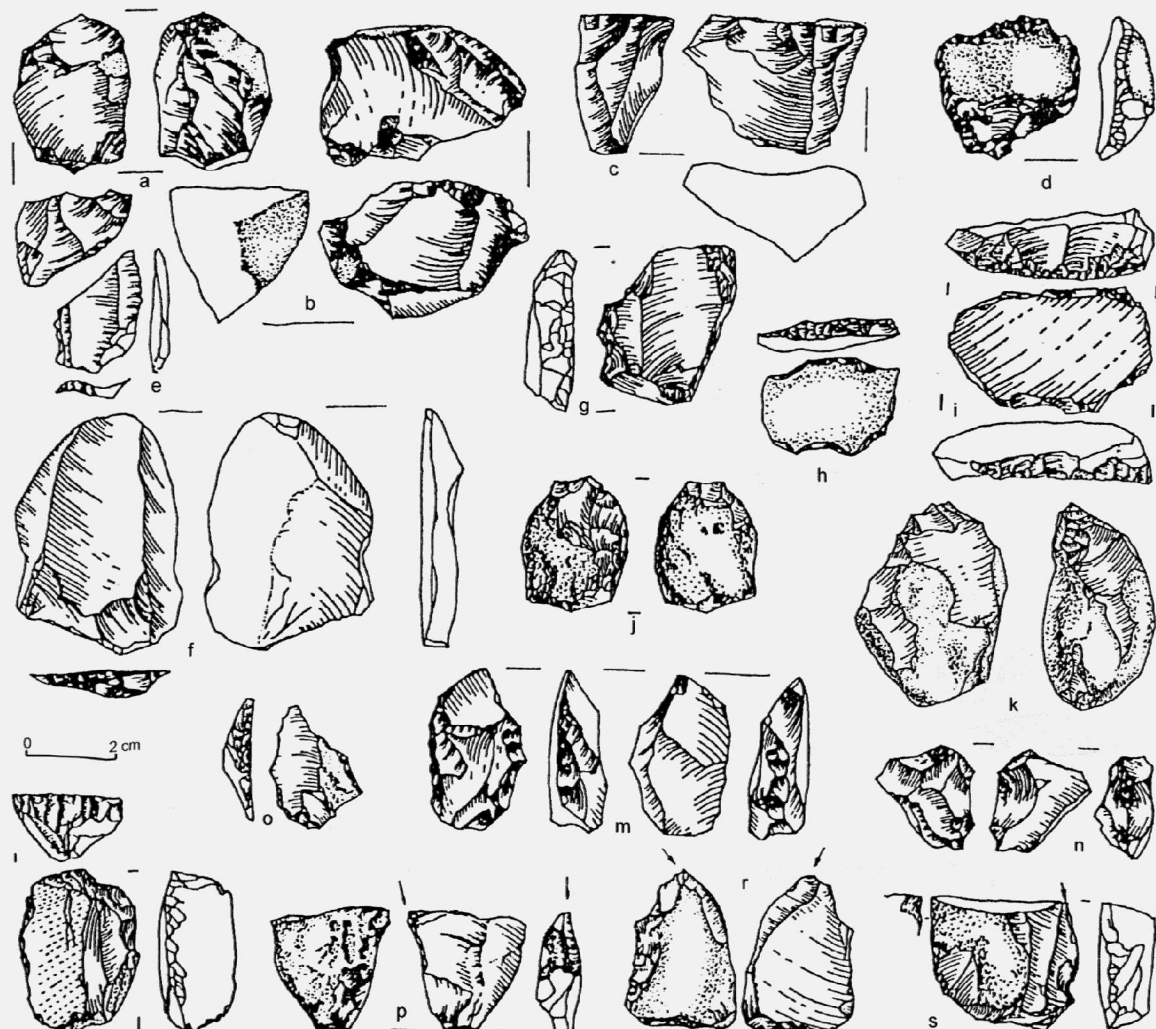


Fig. 3. Lisiećice Z. a–c: cores, d, g, i–k: side-scrapers, e–f: flakes, h: raclette, l: end-scaper, m–o: notched tools, p–r: burins, s: burin+side-scraper (after A. Wiśniewski, T. Płonka).

Lisiećice Z. a–c: jądra, d, g, i–k: drásadlo, e–f: ústěpy, h: raclette, l: škrabadlo, m–o: vruby, p–r: rydla, s: rydlo+drásadlo (podle A. Wiśniewski, T. Płonka).

lithology and stratigraphy of formations uncovered in the gravel extraction pit were described by T. Płonka and A. Wiśniewski (Wiśniewski 1994, Płonka, Wiśniewski 1994). A series of horizontally laminated fine sand and silts with fine gravels and sands-and-gravels was overlain by variegated sand-gravel-silty sediment resembling an ablation morain. This level was, subsequently, distorted by periglacial processes. The whole of these sediments has been assigned to the Oder Stage (OIS 8). On the uneven top of clays there were sand-gravel slope sediments containing numerous artefacts. This series was covered by unstructured loamy-sand sediment with gravels that, in all likelihood, was also disturbed by slope processes. On this sediment developed Holocene podzol soils. Płonka and Wiśniewski (1994) date the sand-gravel sediments above the morain to the early Vistulian, before the end of Pleniglacial I (OIS 4), and the top of the sequence to "a post-glacial period". It should be added that as the source of

material for this series Płonka and Wiśniewski (1994) identify the loess with carbonate precipitations in the higher part of the mild slope. This loess can be dated to Pleniglacial II (OIS 2), although the beginnings of its accumulation, in the vicinity of the site, are registered already in the Warta Stage (OIS 6). A. Wiśniewski (1994) places the assemblage from Lisiećice in the Brörup and Odderade Interstadials (OIS 5c/5a), but this seems uncertain. The sediments that yielded lithic artefacts could be earlier than the Brörup Interstadial.

The inventory consists mainly of multiplatform cores with separate flaking surfaces and changed orientation. There are also single-platform flake cores, including specimens with separate flaking surfaces and a discoidal unifacial core with partial preparation of the back (Fig 3:a–c). Flake blanks (65%) are most important (Fig. 3:c–f). The proportion of blades is 0.53%. Unworked chunks with single scars, fragments and chips are fairly numerous (24.8%). In the tool group (14.4%)



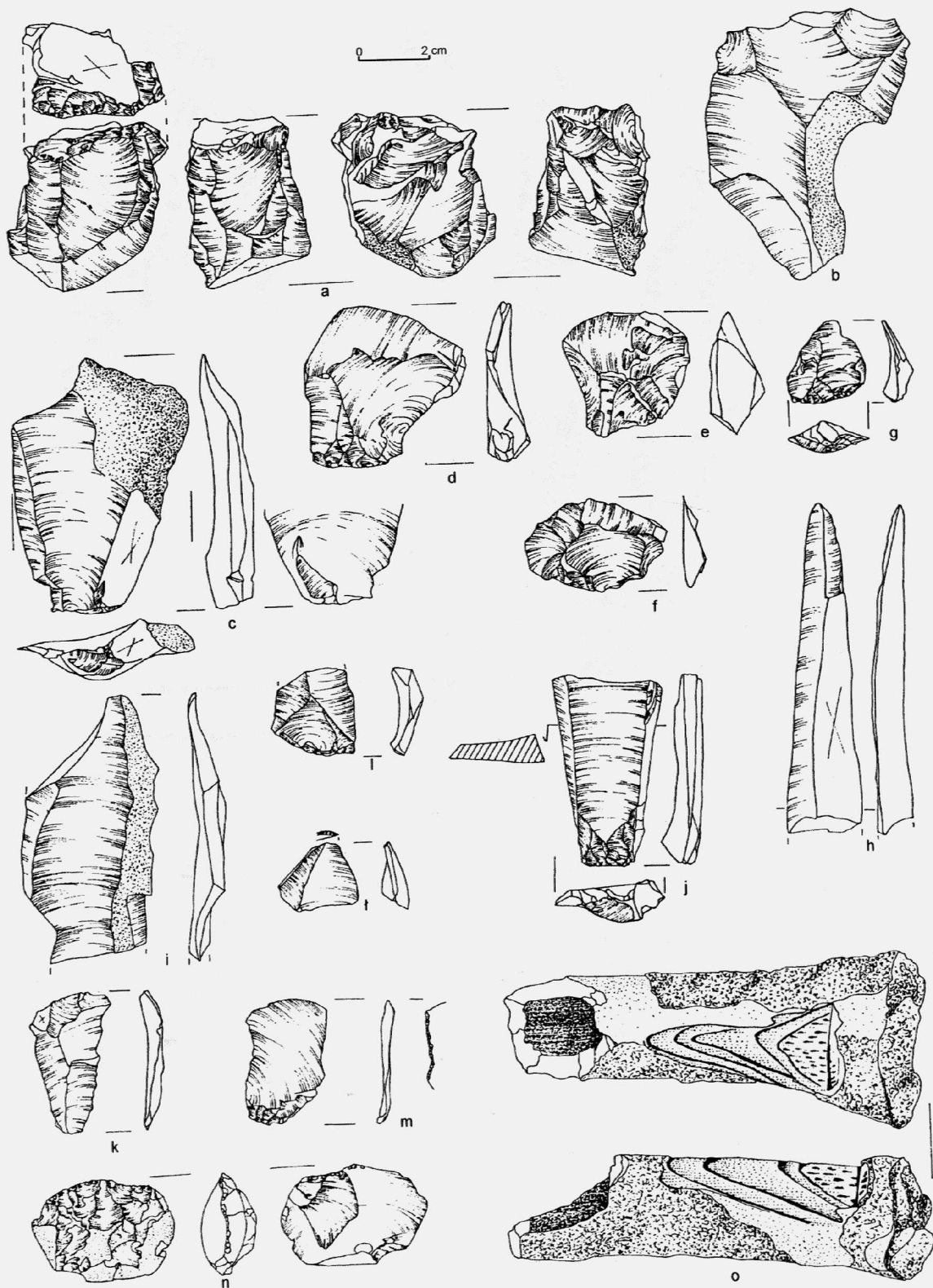


Fig. 4. Pietraszyn 11. a-b: cores, c-g, k-l: flakes, h-j: blades, l-m: retouched flakes, n: side-scraper, o-bone (drawing E. M. Foltyn).  
 Pietraszyn 11. a-b: jádra, c-g, k-l: úštěpy, h-j: čepele, l-m: retušované úštěpy, n: drásadlo, o: kost (kresba E. M. Foltyn).

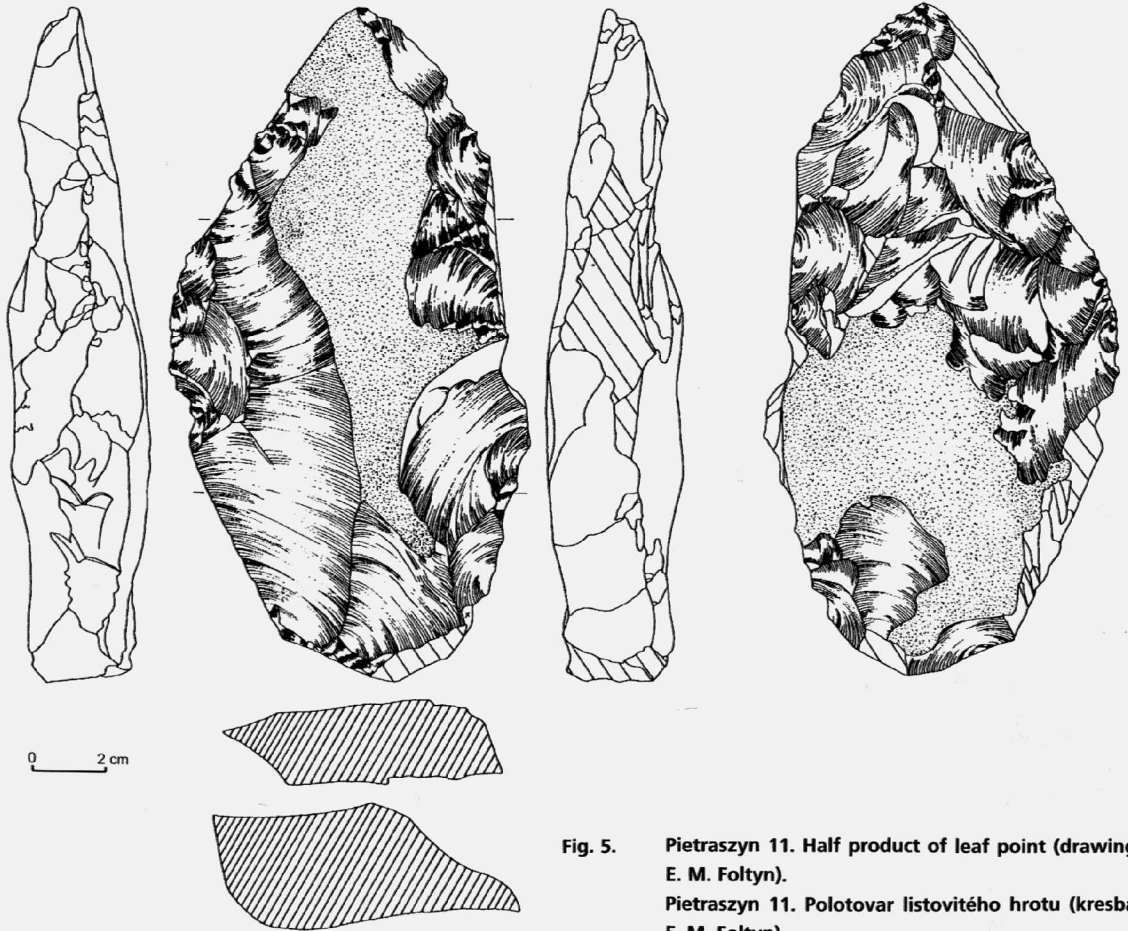


Fig. 5. Pietraszyn 11. Half product of leaf point (drawing E. M. Foltyn).  
Pietraszyn 11. Polotovár listovitého hrotu (kresba E. M. Foltyn).

side-scrapers predominate (31%): transversal, longitudinal, oblique, double specimens simple and alternate, convergent pieces and bifacial specimens (Fig. 3:j,k). The last could be also the initial cores (Fig. 3:j,k). The retouch is semi-steep and steep, exceptionally semi-flat and flat. The group next in number are retouched simple flakes (18.5%) and racettes (9.3%), also retouched fragments (Fig. 3:h). Two flakes show traces of splintered retouch. Denticulated and notched tools are also present (11.1%) (Fig. 3:m-o). The remaining tools are: burins (dihedral, atypical, truncation and single burins) (Fig. 3:p-r), an end-scrapers (Fig. 3:l), a perforator, a truncation, a side-scrapers+burin (Fig. 3:s). Moreover, three burin spalls (?) were found.

### 3.2.2. Pietraszyn 11

The site was discovered in 1932. A year later official excavations were conducted by O. Hanske (AB 1933/3). In the years 1936, 1939 and 1955 the site was explored by G. Raschke and M. and W. Chmielewski (1975). In 1960 new, verifying investigations were carried out by J.K. Kozłowski (1962, 1964, 1964b).

The site lies at the foot of the left slope of the Biała Woda valley - a tributary of the Psina river. The fossil relief of the site area shows a ravine cut in the morainic sediments, transversally to the axis of the modern valley. The fossil ravine is filled with deluvial sandclay sediments covering

a solifluction series composed of sand and clay packets. The solifluction series and the deluvial sediments are separated by a denudation surface. The mantle formation is sandy loess of the deluvial facies. According to W. Chmielewski (1975) the ravine formed in the last Interglacial and was filled in during the "early Würm". Such a view is well grounded: if the ravine had formed earlier the soil of Nietulisko I complex must have been preserved at least in the floor of the ravine - which is not the case. The process of infilling of the ravine was the effect of solifluction forming tongues. The formation of this series is consistent with cool and moderately humid climatic conditions of deposition. The solifluction series is cut by a degradation surface due to the erosion of the slope of the Biała Woda valley. Erosion and degradation must have operated during the relatively warm Brörup/Odderade Interstadials with, at the same time, relatively fast vanishing of permafrost. On the degradation surface sandy deluvia with flat lamination, mirroring the Lower Vistulian relief of the slope, were deposited. Because there exists a stratigraphical gap embracing the Interpleniglacial (OIS 3), observable in the profile, the sandy loess can be interpreted as corresponding to Pleniglacial II.

Archaeological materials were contained within the deluvial deposits at various depths. Besides lithic artefacts bones of young horses (*Equus foss.*) and Cervidae have been preserved (Lindner 1937, 1941, Kozłowski 1964b). In the

culture level a kind of trough-shaped basin was uncovered. It was a kind of dark patch or band, deformed and washed out at the edges. The outline of the depression appeared at a depth of 0.75 cm from the surface. Its colour and texture differed from the yellow background. The maximum depth of the basin-like depression, from its outline, was 25 cm. The filling consisted of sandy-loess material dark red and black in colour which was the effect of burning and the admixture of ash and charcoals. Within the area of the feature, at a depth of 10–15 cm, stones of greywacke, some well smoothed, formed – partially – an oval. In between the stones there were numerous lithic artefacts. We can assume that the feature was a hearth in an intentionally dug basin strengthened with stones (Foltyn 2003) also a stone workshop (Lindner 1941) or a part of the culture level with a strewn hearth (Kozłowski 1964a). In the vicinity of this feature, beyond its outline, artefacts formed two, loose concentrations on an area of 16 sq m. A total of 121 lithic artefacts were uncovered or collected from the walls of the clay extraction pit. These were: cores – 4 (3.3%), flakes – 99 (81.9%), blades – 13 (10.7%), hammer-stones – 1 (0.8%), tools – 4 (3.3%). Among cores there were: an initial, single-platform blade-flake core (Fig.4:a) resembling a subdiscoidal type; a double-platform blade-flake core; a core in between a Levallois recurrent type (Fig.4:b) and a discoidal type, in all likelihood exploited on both sides. Flakes are represented by Levallois specimens (9.0%) and one Levallois point and some trimming flakes (Fig. 4:c–g, k–l). Blades (10.7%) were detached from Levallois and single-platform cores (Fig. 4:h–j). Only one specimen confirms exploitation of double-platform cores. Retouched tools are: an undulating transversal side-scraper with stepped retouch (Fig. 4:n), two flakes with fine retouch (Fig. 4:l–m) and a halfproduct of a large leaf-point (Fig. 5). Bone working is confirmed by the presence of a split and polished long bone forming a kind of haft (Fig. 4:o) and two *Belemnitella mucronata* fossiles used, probably, as pendants (Lindner 1937, XVIII: 78-79).

### 5.2.5. Maków 20

The site was discovered and explored in detail by H. Lindner in the years 1932–1939. In 1954 M. and W. Chmielewski together with A. Jahn (1955), and in 1961 J.K. Kozłowski (1964b) conducted stratigraphical investigations of the site. Maków 20 is situated on the left slope

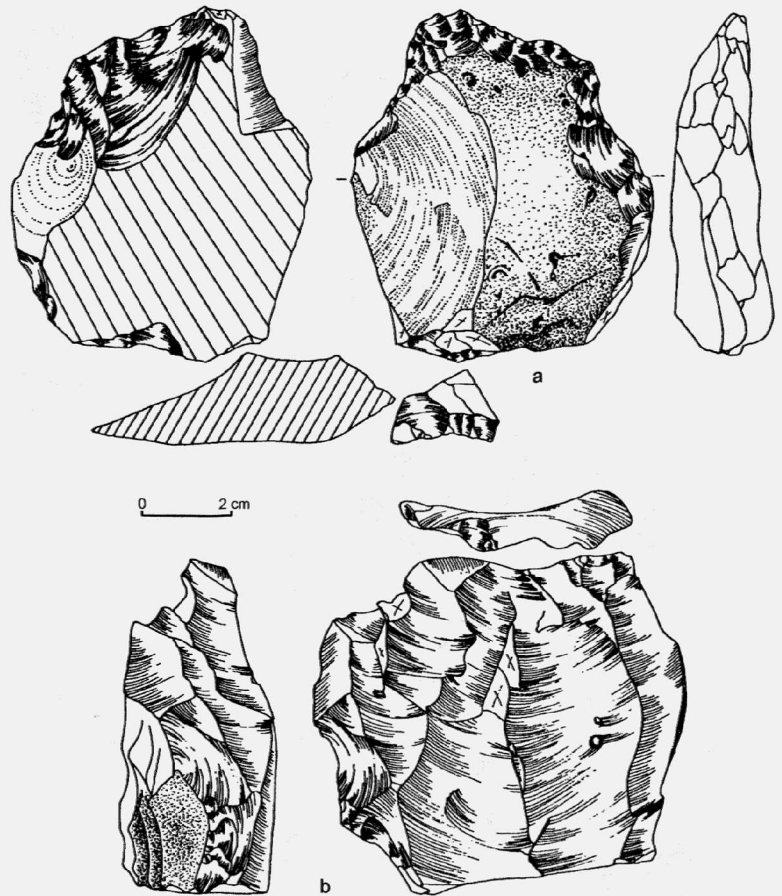


Fig. 6. Maków 20. a: side-scraper, b: core (drawing E. M. Foltyn, B. Czader).  
Maków 20. a: drásadlo, b: jádro (kresba E. M. Foltyn, B. Czader).

of the Psina river valley, on a flat denudation spur, at an elevation of 207.5 m a.s.l., 5 m above the water table. This section, according to the description by M. and W. Chmielewski and A. Jahn (1955), revealed fluvioglacial sands and gravels covered by a morainic pavement which is overlain by distorted sandy silts. Above there are sands and gravels of a braided river whose upper part is disturbed by periglacial structures.

This series was cut by an erosional surface which is overlain by sands and fine gravels with artefacts and a mantle of loamy-sand formation (also with finds) that passes upwards into a level of modern soil. The formations stratified above the morainic pavement were interpreted as transformed in the periglacial conditions during an older cool episode – probably “at the end of the Central Polish glaciation”. The periglacial structures discovered above and the sediments with artefacts above them have been dated at the Vistulian. The whole series stratified between the fluviglacial sands and gravels and the layer with artefacts, or – at least – sediments with distorted stratification, could date to the phase of Oder ice-sheet melting; in consequence the morainic pavement itself could be older than the Oder Stadial.

The lithic inventory consisted of 14 specimens (Lindner 1937, Chmielewska & al. 1955, Kozłowski 1964b). Cores:

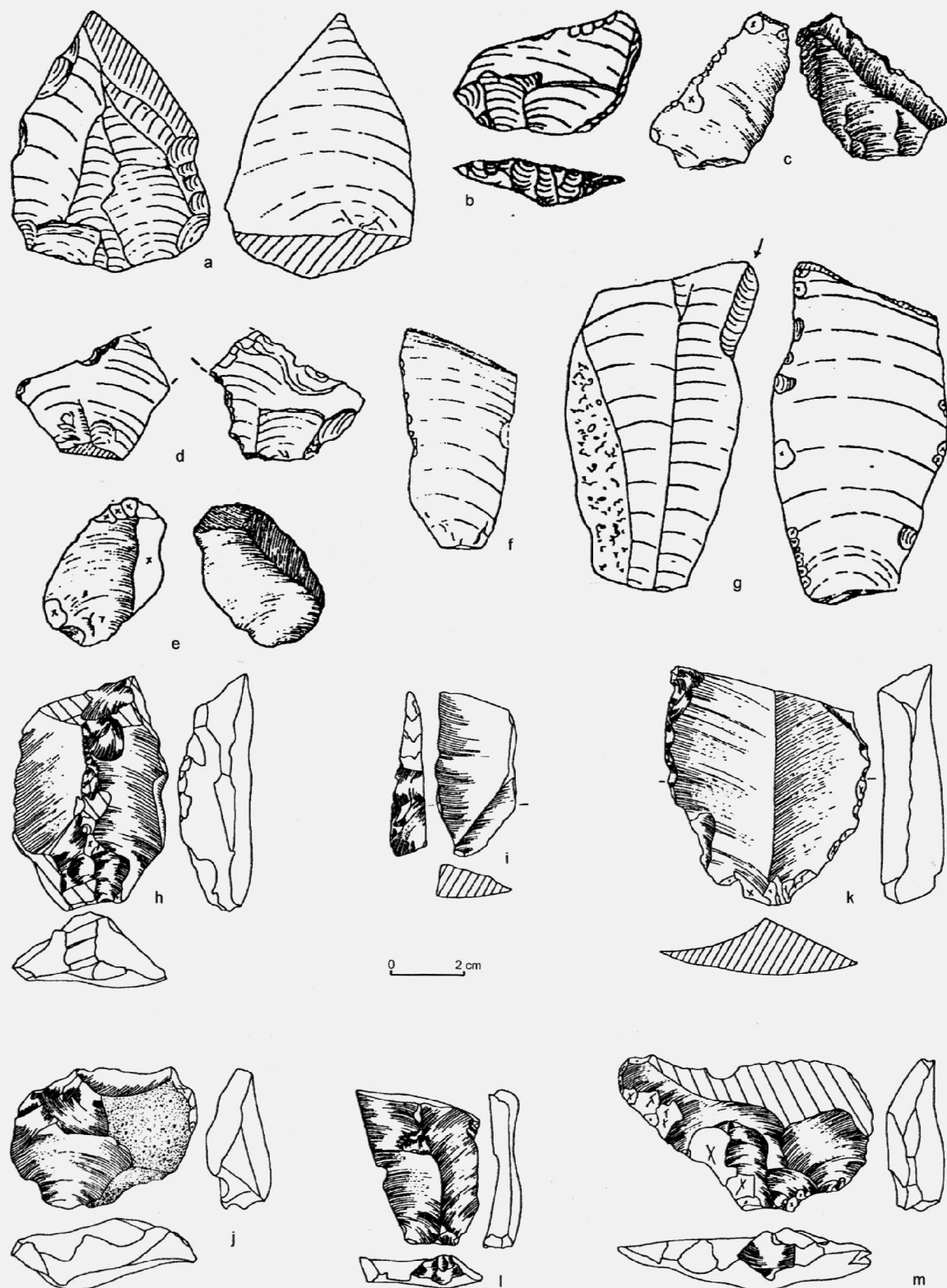
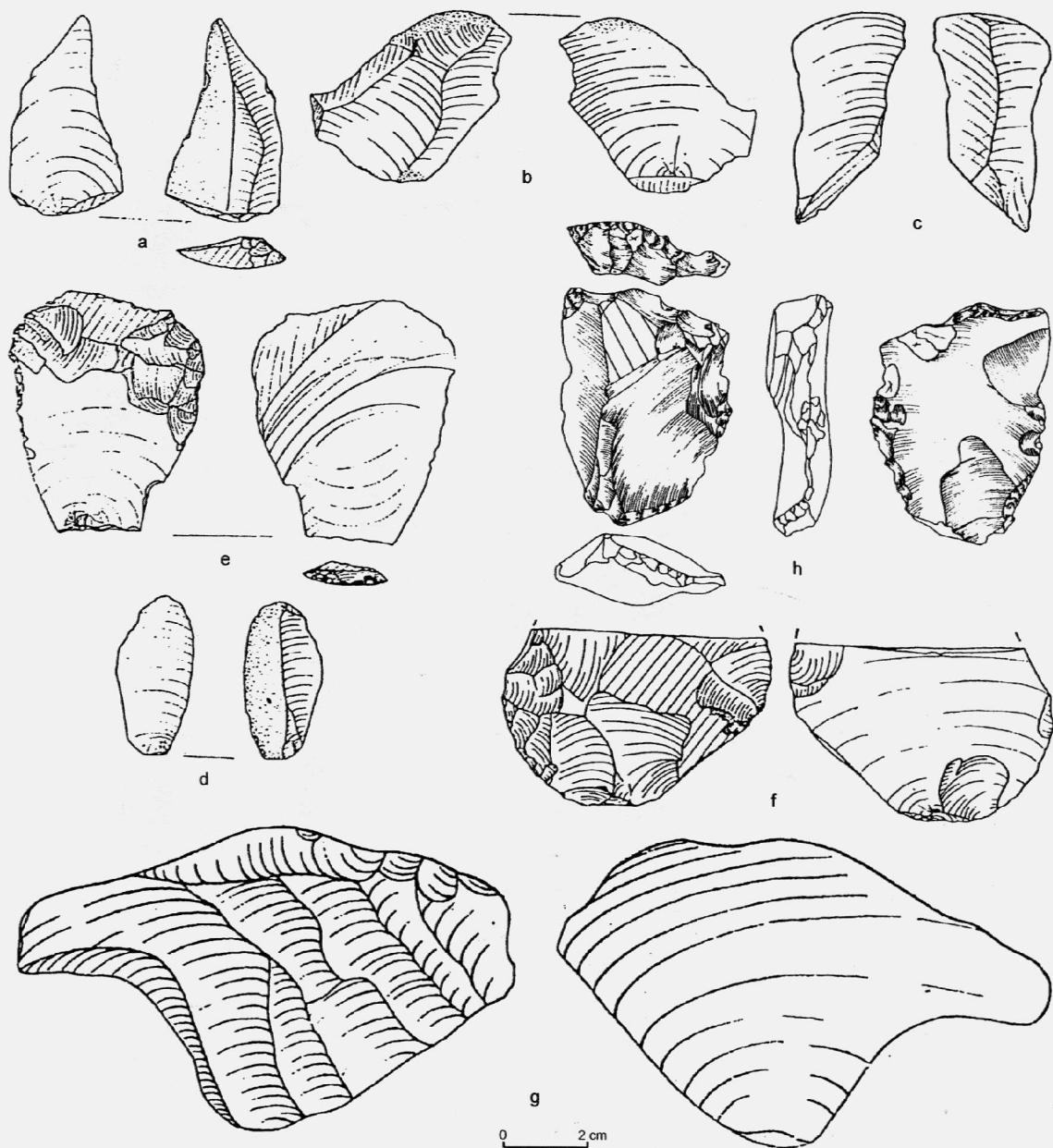


Fig. 7. Maków 20. a–b, d–e, h, j: flakes, c, f, i: blade-like flakes, g: burin (after J. K. Kozłowski). Maków 15, k, m: flakes, l: blade-like flake (drawing E. M. Foltyn, B. Czader).

Maków 20. a–b, d–e, h, j: úštěpy, c, f, i: čepelovité úštěpy, g: rydlo (podle J. K. Kozłowski). Maków 15, k, m: úštěpy, l: čepelovitý úštěp (kresba E. M. Foltyn, B. Czader).



**Fig. 8.** Kornice 11. a, c: blade-like flakes, b, d, g: flakes, e: side-scraper, f: retouched flake (a–f – after E. i J. Chochorowsky, g – after J. K. Kozłowski), Kornice, h: side-scraper (drawing E. M. Foltyn, B. Czader).  
Kornice 11. a, c: čepelovité úštěpy, b, d, g: úštěpy, e: drásadlo, f: retušovaný úštěp (a–f – podle E. i J. Chochorowsky, g – podle J. K. Kozłowski), Kornice, h: drásadlo (kresba E. M. Foltyn, B. Czader).

a blade Levallois recurrent core with prepared flaking surface, the back and the platform (Fig. 6:b). Flakes: detached from bifacial and unifacial discoidal cores, with no preparation or limited preparation of the back (Fig. 7:a–b, d–c, j). Blade-like flakes and blades were detached from single-platform unprepared cores or from cores with a faceted platform resembling Levallois forms (Fig. 7:c, f, h, i). Tools: three retouched flakes and a single burin-on-a snap on a blade-like flake (Fig. 7:g), and a macro-side-scraper on a thermal fragment of flint nodule, with bifacially retouched edge (Fig. 6:a).

#### 5.2.4. Kornice 11

The site was discovered by H. Lindner and excavated in the years 1976–1978 by E. and J. Chochorowski (1986). It is situated in the alluviation, up to about 218 m a.s.l. which is up to 10 m above the Psina river water table. The site is in the area of the confluence of the Psina river and its left-side tributary Both the proximity of the site of Maków 20 and the nearly identical morphological and geological position of Kornice 11 allow to correlate the series of sediments. Two culture levels were discovered. The lower level rested on residual till clays. The two levels have been dated at the last

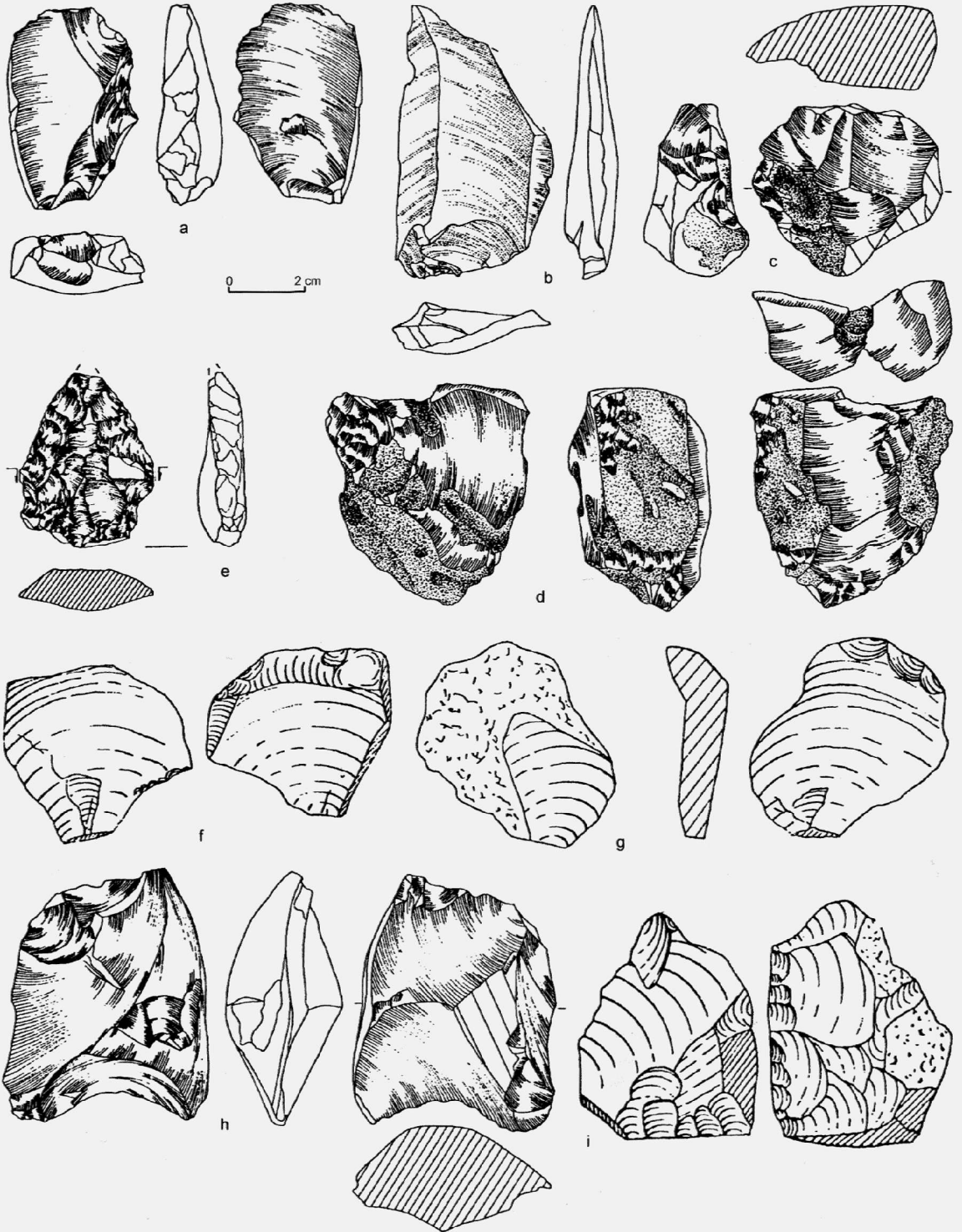


Fig. 9. Cyprzanów 2. a–b: flake, Czerwionka-Leszczyny, c–d: cores, Gliwice-Sośnica, e: Mousterian point, Pietrowice Wielkie 21, f–g: retouched flake, h: “Clactonian” notch, Pietrowice Wielkie 5, i: core (f–g, i – after J. K. Kozłowski, e – after E. M. Foltyn, E. Foltyn), (a–c, d, h – drawing E. M. Foltyn, B. Czader).  
 Cyprzanów 2. a–b: ústěp, Czerwionka-Leszczyny, c–d: jádra, Gliwice-Sośnica, e: moustérský hrot, Pietrowice Wielkie 21, f–g: retušovaný ústěp, h: “Clactonský” vrub, Pietrowice Wielkie 5, i: jádro (f–g, i – podle J. K. Kozłowski, e – podle E. M. Foltyn, E. Foltyn), (a–c, d, h – kresba E. M. Foltyn, B. Czader).

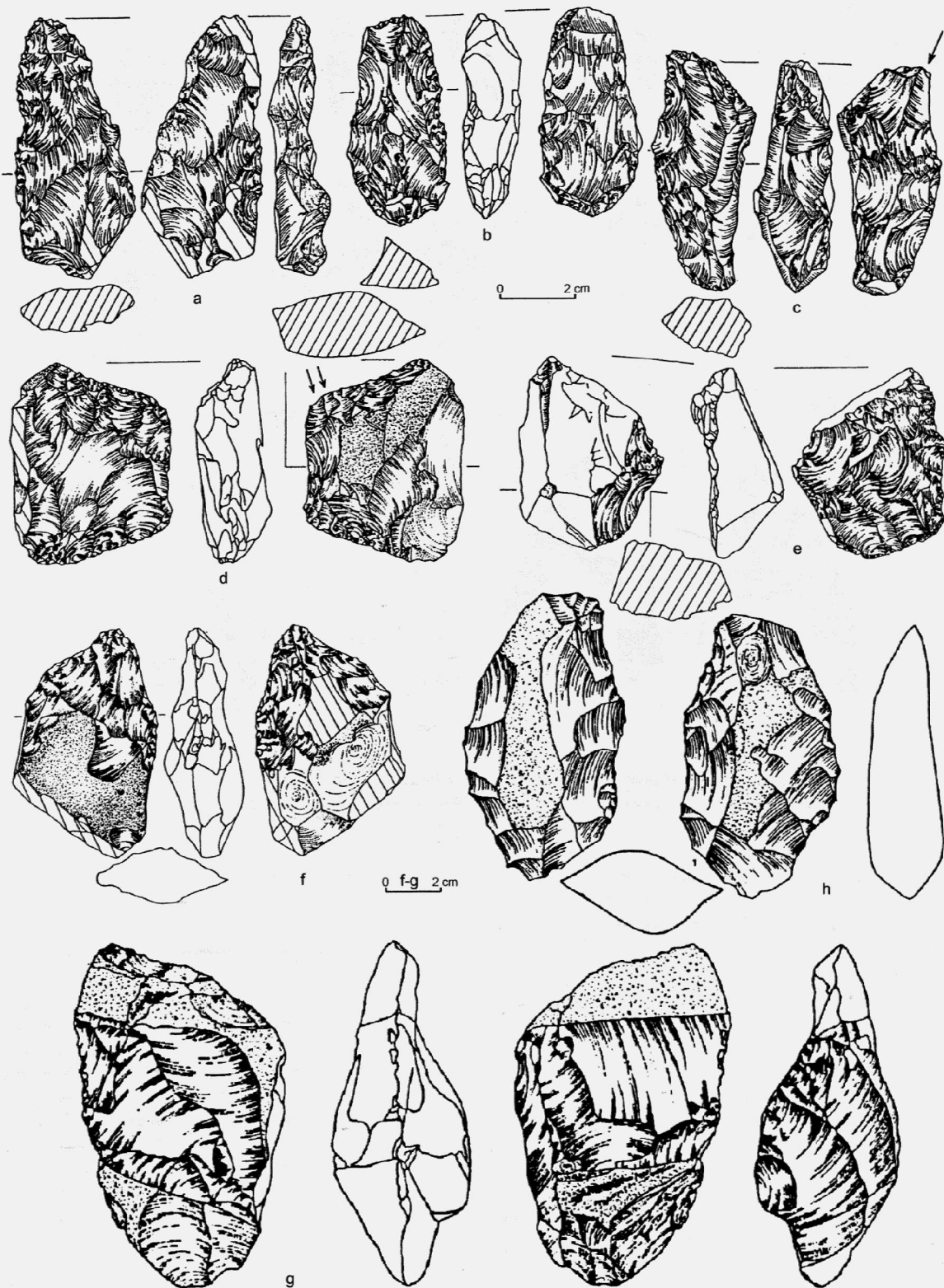


Fig. 10. Pietrowice Wielkie 8. a: kníže, Pietrowice Wielkie 76. b: kníže, Cyprzanów 3, c-d: kníže, e: half-finished kníže, Pietrowice Wielkie 23. f: kníže, Kaniów 4, g: kníže, Maków 12 half-finished bifacial tool (a-e – after M. Fajer et al., g – after E. Foltyn, J. M. Waga, h – J. K. Kozłowski, S. K. Kozłowski), (f – drawing E. M. Foltyn, B. Czader). Pietrowice Wielkie 8. a: nůž, Pietrowice Wielkie 76. b: nůž, Cyprzanów 3, c-d: nože, e: polotovar nože, Pietrowice Wielkie 23. f: nůž, Kaniów 4. g: nůž, Maków 12 polotovar bifaciálního nástroje (a-e – podle M. Fajer et al., g – podle E. Foltyn, J. M. Waga, h – J. K. Kozłowski, S. K. Kozłowski), (f – kresba E. M. Foltyn, B. Czader).

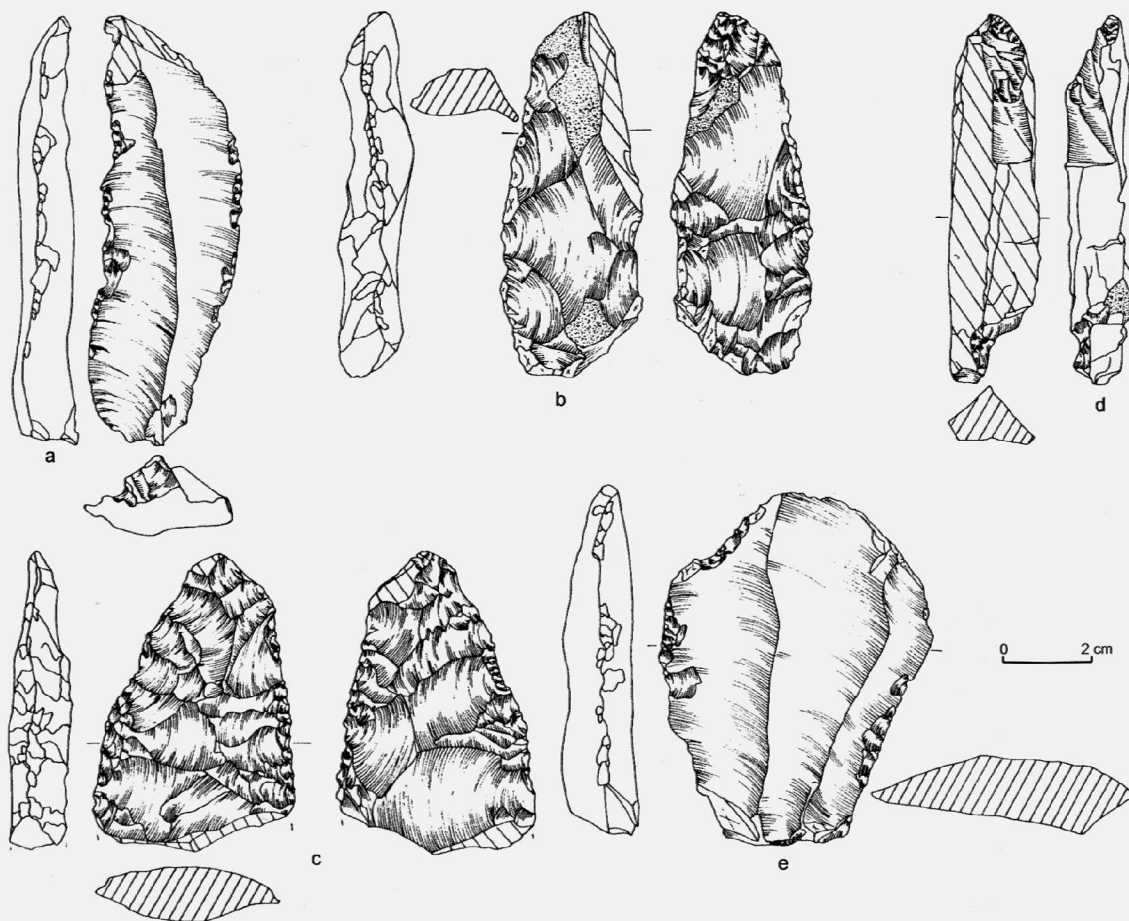


Fig. 11. Ozimek. a: blade, b-c: leaf point, d: perforator, e: flake (drawing E. M. Foltyn).  
Ozimek. a: čepel, b-c: listovitý hrot, d: průbojník, e: ústěp (kresba E. M. Foltyn).

cold stage (Lower Vistulian) although it is possible that these culture levels could be of Eemian age (Chochorowska, Chochorowski 1986). The inventory consisted of 18 artefacts (Chochorowska, Chochorowski 1986). Flakes are asymmetrical from subdiscoidal and discoidal, single- and double-platform cores without preparation (Fig. 8:a-d, g). Tools include a Levallois retouched flake (Fig. 8:f) and a half-product of an inversely retouched side-scraper (Fig. 8:e).

### 3.2.5. Czerwionka-Leszczyny

The site is situated on the western slope of a small rise (278 m a.s.l.) at the edge of the Mikołów Ridge (Salomon 2003). The site was discovered by E. Foltyn in 2003. In the top part of the profile there are glacial tills with sandy intercalations and sand-gravel sediments that fill the glacial channel. The eroded tills and fluvioglacial sediments are overlain by slope sediments such as weakly sorted sands and weathered clays with thick-grained fluvioglacial material. They were interpreted by T. Salamon (2003) as deluvial sands and Carbonian weathered mudstone redeposited as solifluction tongues, in all likelihood in the Vistulian. In the wall of an old clay extraction quarry two cores were found within the slope sediments: a discoidal unifacial specimen with a prepared platform (Fig. 9:c), and a single-platform blade-flake core with

prepared platform and back, less exhausted than the first core (Fig. 9:d).

## 3.4. Sites in the alluvial sediments of the Vistula basin

### 3.4.1. Kaniów 4

The site was discovered in 2001 in the course of a surface survey (AZP project) conducted by E.M. and E. Foltyn. In 2003 the stratigraphy of the site was examined by its discoverers and M. Fajer and J.M. Waga (Foltyn, Waga, 2006). The site is situated in the area of a gravel quarry, on an alluvial cone of the Biała river – a left-side tributary of the Vistula. The cone rises to 8–15 m above the Vistula water table. In the past the cone was built by the material carried by the Biała river that in colder periods flowed in numerous river channels. The stratigraphy of the cone was described by E. Gilot, E. Niedziałkowska, M. Sobolewska, L. Starkel (1982). On a series of sands and gravels there were two peat levels separated by silts. They were overlain by loamy and loamy-sandy formations, locally with organic admixture. The two levels provided radiocarbon dates: the floor of the lower level is older than 39 020 years BP, the upper part of this level was dated at 32 430±1140 years BP; the upper level was dated at 27 470±800 years BP. The top of the interstratified sands and



silts separating the two peat levels yielded an asymmetrical knife shaped using tri-facial technique (Foltyn, Waga, in press). The knife is robust and large. The working edge is slightly arched, the back is steeply retouched. The distal end and the base are thinned (Fig. 10:g).

### 3.5. Surface sites

#### 3.5.1. Maków 15

The site is situated below the culmination of a denudation butte rising to 245.9 (246.1) m a.s.l., which wedges into and separates the Psina valley from a stream joining it in the north. The site was discovered in 1928 by Bittner and O. Hanke (AB 1929). In 1931 H. Lindner commenced surface collection. For the next 8 years it was continued together with Kucz, Hoffman, Raschke, Kleeman, Andree and Hanske (AB 1932/2-3, 5-6, 1933/3, 5, 1937/7, 1940/8). After 1945 the site area was explored by M. and W. Chmielewski (Chmielewska & al. 1955). Alluvial sediments and the surface of the site yielded 7 flakes: two flakes from Levallois cores with preparation, and two blade-flakes that can be interpreted as Levallois (Fig. 7:k-m). Moreover, there were 3 "Clactonian", cortical flakes.

#### 3.5.2. Bieńkowiec

The site is situated on the north, left slope of the Psina valley. In 1990s Father Pawlar – a local priest – collected from the surface 4 flint artefacts: two Levallois blade or blade-like flakes with a faceted butt (Fig.1:f, g), a flake detached – most probably – from a discoidal core (Fig.1:i); also a blade-like cortical "Clactonian" flake (Fig. 1:h).

#### 3.5.3. Ozimek

The site is situated on the left-side terrace of the Mała Panwia river. This is an accumulation terrace of the Vistulian age, rising 3-5 m above the river, and 180-182 m a.s.l. Palaeolithic materials were found during amateur explorations before 1943 (archives of the Gliwice museum). Lithic artefacts are supposed to have been distributed on a small area in two concentrations. These are: a Levallois flake with blade scars (Fig.1:e), a Levallois blade with a faceted butt (Fig. 11:a), and 4 tools including two bifacial leaf-points (Fig. 11:b-c). One leaf-point exhibits careful surface treatment, the other show multiseriate retouch from natural facets. There are also two atypical perforators slender (made on a chunk and on a thermal fragment), with pseudo-tangs (?), with steep lateral retouch (Fig. 11:d) (Foltyn, in press).

#### 3.5.4. Pietraszyn 4

The site is situated on the right side of the Troja river, on a bench at the foot of the slope weakly marked in morphology, rising about 3-15 (20) m (2-8-220 (225) m a.s.l.) above the water table (205 m a.s.l.). In 1932 O. Hanske or Bonzoll found here a loosely lying flint artefact (AB 1933/5). More or less in the same area, in 1995 J. Pawelek found another, single flint artefact (Foltyn, in press). There are: a Levallois recurrent blade core (Fig. 12:a) and a proximal fragment of a halfproduct of a leaf point with initial two-sided treatment and a cortical facet on the base (Fig. 12:b).

#### 3.5.5. Rybnik-Piasek C

The site is situated at 246.65 m a.s.l., on the south-southeast slope of an outwash cone (250.0 m a.s.l.). Surface survey was carried out under the direction of E.M. and E. Foltyn in 1995 (Foltyn, Foltyn 2003). Four artefacts were collected: a flake with ventral covering retouch and marginal, fine dorsal retouch (Fig. 12:c), a notched tool (Fig. 12:e), a flake and a blade fragment (Fig. 12:d). The flake with ventral retouch is believed by E. Foltyn (2003, Foltyn, Foltyn 2003) to be a miniature point Jankovich type.

#### 3.5.6. Kornice 2-4

The site is situated on the left-side slope of the Psina valley, on a small terrace about 5 m above the river level. Four artefacts were discovered (Lindner 1937, Chmielewska & al. 1955, Kozłowski 1964b). Tools: a transversal, convex side-scraper and an elongated simple side-scraper (Fig. 2:g-h). The latter tool has, in addition flat, thinning retouch on the ventral side. They were made on flakes, probably from discoidal cores.

#### 3.5.7. Pietrowice Wielkie 21

The site is situated on a Pleistocene upland, on the left-side, north bank of the Psina river. The site area extends between the localities of Pietrowice Wielkie and Cyprzanów. In 1934 and in 1939 H. Lindner conducted here a surface survey (Kozłowski 1964b). The assemblage consists of 3 flakes: a flake with fine retouch detached from a discoidal core (Fig. 9:f), a flake with "Clactonian" notch (Fig. 9:h) and a flake detached from an initial core (Fig. 9:g).

#### 3.5.8. Cyprzanów 3

The site is situated on the left-side slope of the Psina valley, about 17 m above the water level, i.e. 219.5 m a.s.l. The following artefacts were discovered: two Prądnik (Keilmesser) knives (Fig. 10:c-d), an initial bifacial tool (Fig. 10:e), and a bilateral convex-concave side-scraper (Fajer & al. 2001, 2001a). One of the Prądnik knives was sharpened by coup de tranchet latéral.

#### 3.5.9. Pietrowice Wielkie 8

The site is situated on a spur between river valleys, with three terrace benches descending towards the confluence of the Troja and the Psina rivers. It is located on the lowest terrace bench, 8-10 m above the valley floor (211 m a.s.l.). H. Lindner found here an asymmetrical Volgograd type knife (Fig. 10:a) and a convergent side-scraper (Fajer & al. 2001, 2001a).

#### 3.5.10. Maków 12

The site is situated on the left-side slope of the Psina valley, at an elevation of 227-230 m a.s.l., in the upper section of a small tributary of the Psina flowing from NE to SW. In 1928, on the surface of the site a bifacial implement was discovered. In shape it is irregular oval, slightly asymmetrical, bifacial. This artefact was interpreted as a Mesolithic tranchet Raschke 1931, Rothert 1936), an Acheulian handaxe (Kozłowski 1964b, 1965, Kozłowski, Kozłowski 1977, 1996), a Micoquian handaxe (Chmielewski 1975), or a Late Palaeolithic pre-core

(Burdukiewicz 1999, Wiśniewski 1999). In all likelihood, in terms of typology this is a half-product of a bifacial form – a handaxe or knife (Fig. 10:h). On the basis of its stratigraphical position the artefact could be older than the Warta Stadial (OIS 6).

### 3.5.11 Cyprzanów “Ost”

The situated in the ekstern part of Cyprzanów in the area of the farm Stańkowice (former Vorwerk Paulshof). Probably discovered by H. Lindner or G. Raschke in 30ies. In the inventory of this site are: round scraper (Fig. 13:b), round scraper with basal notch (recent ?) (Fig. 13:a), Levallois bidirectional flake with lateral inverse retouch and abrupt retouch (recent?) on other edge (Fig. 13:c).

Levallois flakes without the context of other artefacts were discovered at the sites of: Śmicz 12 (Fig. 2:b), Rybnik-Kamiień D (Fig. 2:i), Opava-Kylešovice (Bayer, Stumpf 1929, Kozłowski 1964a, 1964b, Jisl 1971, Foltyn, Foltyn 2003), Cyprzanów 2 (Fig. 9:a–b). Individual artefacts associated with the discoidal core technique were recorded at: Pietrowice Wielkie 5 (a core) (Fig. 9:i), Racibórz-Studzienna 12 (a core) (Fig. 2:a), Domaszkowice 16 (a flake), Racibórz-Płonice 3 (a flake) (Fig. 2:f), Rybnik-Orzepowice 1 (side-scraper+a burin), Rybnik-Kłokocin 2 (a trasversal side-scraper+burin) (Fig. 2:k)(Kozłowski 1964b, Foltyn, Foltyn 2003), Cyprzanów 3 (a flake) (Fig. 2:j), Cyprzanów 6 (a flake) (Fig. 13:d), Gliwice-Sośnica (a Mousterian point) (Fig. 9:c), Maków 4 (a side-scraper dejété) (Fig. 2:d) and “Charentian” side-scrapers at Brenna-Grabowa and Kornice (Fig. 8:h) (Kozłowski 1963, 1964a, Foltyn, Foltyn 1998, 1998a, 2003). Individual Micoquian artefacts (asymmetrical knives) were discovered at the sites of Pietrowice Wielkie 23 (Fig. 10:f), 76 (Fig. 10:b) and Maków 15 (Kozłowski 1964b, Fajer & al. 2001, 2001a).

## 4. Conclusions

The open-air sites described earlier of the Late Phase of the Middle Palaeolithic can be assigned to three technological units:

1. Mousterio-Levalloisian sites.
2. Sites with the features of the Mousterian or the “Taubachian” but without the component of Levallois technique.
3. Eastern Micoquian sites.

Although the attribution of these sites is based on small, in terms of quantity, series of artefacts, nonetheless they exhibit similarities to more numerous assemblages known in southern Poland and neighbouring territories.

### 4.1. Mousterio-Levalloisian sites

The following sites have been assigned to this group: Kornice 11, Racibórz-Ocice 1, Maków 15 and 20, Bieńkowice, and possibly also single artefacts found in Racibórz-Stara Wieś, Racibórz-Miedonia, Rybnik-Kamiień D, Śmicz 12 and Cyprzanów 2. At some of these sites leaf-points or their half-products occurred (Pietraszyn 4, 11 and Ozimek).

The oldest of these sites is most probably, Kornice 11, which could correspond to the last Interglacial (OIS 5e). The

site situated in the loess sediments, on the “Ocice” terrace of the Oder near Racibórz (Racibórz-Ocice 1, Racibórz-Stara Wieś) and they date from the Lower Pleniglacial (OIS 4). In between them there are the sites that are located in periglacial alluvial or solifluction sediments filling the valleys that dissect the Głubczyce Plateau (first of all Maków 20). These sites could correspond to the Lower Pleniglacial, but they could also be placed in cool episodes of the Early Vistulian (Pietraszyn 11).

The presence of Mousterio-Levalloisian industries in the territory of central Europe, beginning from the Last Interglacial has been confirmed, most importantly, at the site of Kraków-Zwierzyniec where in the upper portion of sandy Interglacial soil (OIS 5e), described as Nietulisko soil complex, W. Chmielewski (1975) discovered in layers 2 and 3 assemblages with Levallois technique of flake production, non-Levallois technique of blade production, and tools representing Mousterian types (points, lateral side-scrapers: convex and straight). To Interglacial Mousterio-Levalloisian assemblages in Poland we can also assign the assemblage from layer 12 in the Biśnik Cave (Cyrek ed. 2002), from layer 14 in the Nietoperzowa Cave (Chmielewski 1975), and from sector IIE in Piekary near Kraków. East of the Polish border among such assemblages belongs level III from Yuzipol in the Upper Dnester basin (Sitnik 2000).

Further evolution of the Mousterio-Levalloisian is documented first of all, in the multilayer complex of sites at Piekary (Sachse-Kozłowska, Kozłowski ed. 2004). The earliest phase of the Mousterio-Levalloisian is represented in this complex by the inventory from layer 9 from Piekary IIC (acc. to S. Krukowski the Piekary industry; S. Krukowski 1939) which can be dated to one of the cool episodes preceding the Lower Pleniglacial. Later phases are represented by relatively small series contained within loess and solifluction sediments deposited in the period following the maximum of the Lower Pleniglacial (OIS 4) i.e. in all likelihood at the beginning of the Interpleniglacial (Piekary I, the so-called Jama industry, Piekary IIa, layer 7a). Consistent with such chronology would be to assume the interstratification of the Mousterio-Levalloisian and the Micoquian in the sequence from Piekary: the main phase of the Micoquian (Piekary III, layer 7) would correspond to the interface of the Lower Pleniglacial and Interpleniglacial; above this layer (also at Piekary III, layer 6 and 7) Mousterio-Levalloisian artefacts occur (Tomaszewski 2004) confirming the interstratification of the Mousterio-Levalloisian and the Micoquian.

Finds in the Oder basin document the evolution of the Mousterio-Levalloisian in the time interval from the last Interglacial to the beginning of the Interpleniglacial. These finds represent – just as in the Vistula basin – short occupation by small groups whose traces are small series of artefacts – no more than several tens of artefacts that include several cores exploited on-site and a few tools. This situation is in sharp contrast with Mousterio-Levalloisian assemblages to the east of Poland, notably in the Dnester basin where large residential camps were registered with inventories of several hundred or even several thousand artefacts (Sitnik 2000). Camps like this date both to the early Glacial as well as to the beginning of the Interpleniglacial.

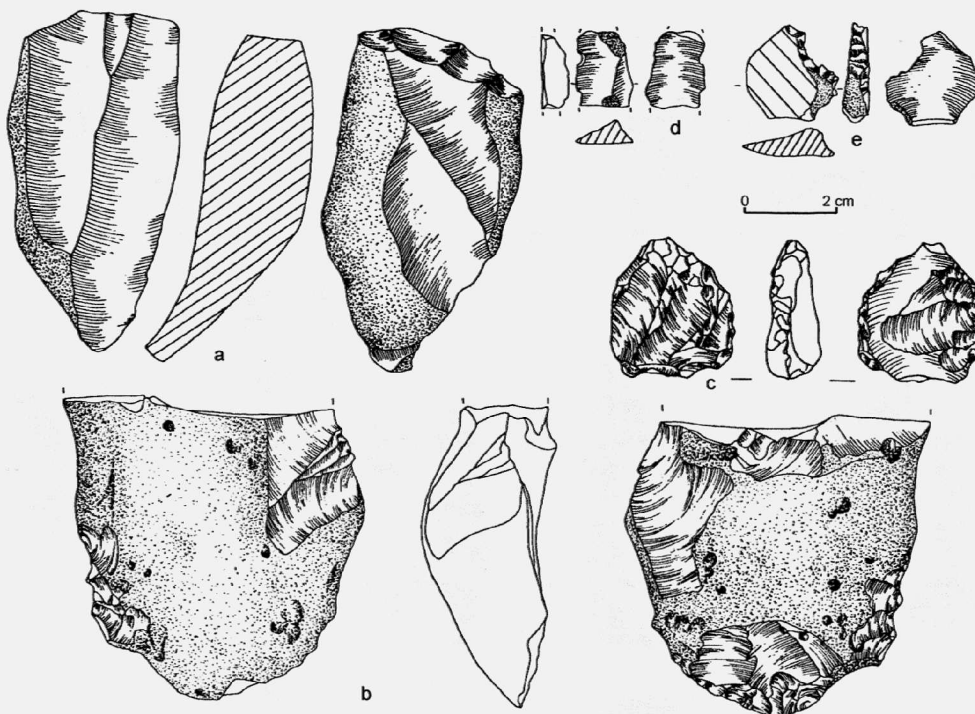


Fig. 12. Pietraszyn 4. a: core, b: half product of leaf point, Rybnik-Piasek C, c: point, d – blade, e: notched tool (c – after E. M. Foltyn, E. Foltyn), (a–b – drawing E. M. Foltyn, d–e – E. M. Foltyn, B. Czader).  
 Pietraszyn 4. a: jádro, b: polotovar listovitého hrotu, Rybnik-Piasek C, c: hrot, d – čepel, e: vrub (c – podle E. M. Foltyn, E. Foltyn), (a–b – kresba E. M. Foltyn, d–e – E. M. Foltyn, B. Czader).

Silesian assemblages are characterized by the presence of Levalloisian technique of flake production, both preferential and recurrent, with simultaneous use of discoidal core technique. Flakes and blades could also be obtained from unprepared, single- and doubleplatform cores. Tools include side-scrapers (lateral and transversal, occasionally with inverse retouch), retouched flakes, atypical perforators and a unique specimen of a burin.

Some Silesian Mousterio-Levalloisian assemblages contain leaf-points and – first of all – their half-products, notably at the sites of Pietraszyn 4 and 11 and Ozimek. Of these only Pietraszyn 11 is located in a well defined stratigraphical context, within the deluvial sediments corresponding to the Lower Pleniglacial. The technique used at this site is based on Levallois flake cores, cores transitional from Levalloisian to discoidal, and single- and double-platform blade and flake cores. Some of these cores had prepared platforms or even flaking surfaces, which is evidenced by the occurrence of partial trimming blades. Generally, these artefacts are workshop specimens, characterized by flakes from platform rejuvenation. Tools are few: raclettes and one side-scraper. The presence of a half-product of a large point made on a tabular concretion which was thinned from lateral facets indicates that leaf-points were produced. Such a technique of leaf-point production is distinctive for Levalloisian assemblages with leaf-points that occur in south-east Europe, especially in the Lower Danube basin (e.g. in the Early Interpleniglacial assemblages from Ripiceni-Izvor – Paunescu

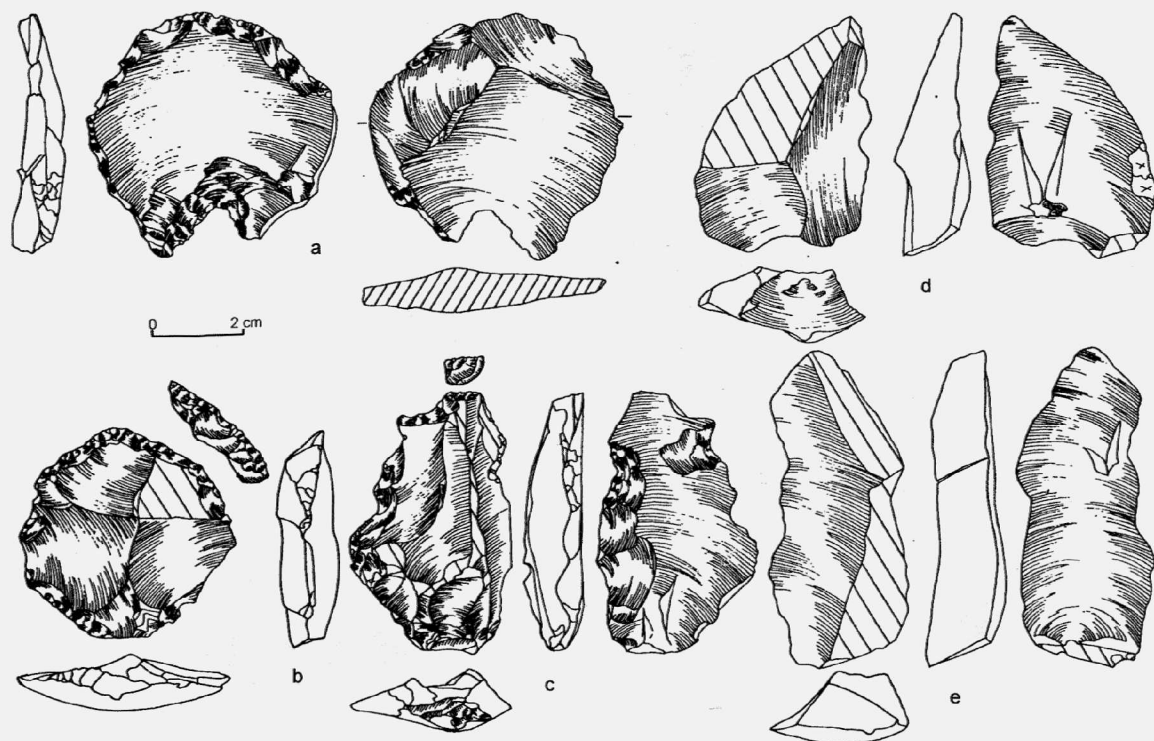
1992 and from Muselievo – Sirakowa 1990). In Poland to this group has been assigned a small assemblage from the upper portion of Lower Pleniglacial loess from Kraków-Zwierzyniec (layer 11 – Kozłowski 2000), which, too, contained a half-product of a leaf-point made using a technique similar to that from Pietraszyn 11.

#### 4.2. Middle Palaeolithic sites with non-Levalloisian technology

In Upper Silesia to this group belong: the site of Liściec Z (Wiśniewski 1994, 1999, Płonka, Wiśniewski 1994), and in Lower Silesia at Wrocław-Oporów sites A, A' and B (Wiśniewski 1999, 2003) and the upper level of the site Wrocław-Hallera Street (Wiśniewski, Kufel 2002).

At Liściec lithic technique is based on the exploitation of single- and double-platform flake cores, often with a 90 degree change-of-orientation (Wiśniewski 1999, fig. 7: 2, 3). Flakes were used to produce side-scrapers and retouched flakes, often shaped by steep retouch, also denticulated and notched tools. The taxonomic position of the assemblage from Liściec is difficult to establish; the assemblage approximates more closely the so-called Taubachian (Valoch 2003), identified in the Eemian and post-Eemian assemblages in the northern part of the Carpathian basin and – recently – also in southern Poland (e.g. in the Oblazowa Cave, layers 19, 15, Valde-Nowak et al. ed. 2003).

The site at Liściec is interpreted by A. Wiśniewski (1999) as a kind of “habitation site”, contrary to Wrocław-Oporów



**Fig. 13.** Cyprzanów „Ost”. a: rounded scraper with basal notch (recent ?), b: rounded scraper, c: Levallois flake with lateral inverse retouch and blunted back (recent?), Cyprzanów 6, a–b: flake (drawing E. M. Foltyn, B. Czader).  
 Cyprzanów „Ost”. a: okrouhlé škrabadlo s bazálním vrubem (recentní ?), b: okrouhlé škrabadlo, c: levalloiský ústěp s postranní retuší (recentní ?), Cyprzanów 6, a–b: ústěp (kresba E. M. Foltyn, B. Czader).

where we are dealing with three small concentrations of 50–100 artefacts and single tools that are non-diagnostic. In the vicinity of the concentrations bones of horse, rhinoceros, reindeer and mammoth were discovered, which suggests a kind of short-term camps in the zone of “periodical hunting”, in a variety of environments (the wet valley bottom, the dry terrace and the ridge between valleys). The taxonomic position of the inventories from Wrocław-Oporów is, too, difficult to determine because the site is a workshop type – although it seems to exhibit more diagnostic features of a non-Levalloisian facies of the Mousterian complex. The age of the first occupational episode from Wrocław-Oporów was determined using TL and EPR methods at 66–41 Kyr, whereas the age of the younger episode is 35 Kyr (Burdukiewicz, Wiśniewski 2004). These dates demonstrate that at the transition of the Lower Pleniglacial/beginning of the Interpleniglacial Palaeolithic hunters penetrated southwestern Poland. On the other hand, the age of the younger occupational episode at the site of Wrocław-Hallera Street has been determined as at about 50 Kyr. This episode, too, shows the features of the technology of discoidal, single- and multiplatform core without preparation. At this site diagnostic tool forms are, too, absent, whereas it consists of small artefact concentrations (up to 160 specimens – some of them making up refits) and clusters of strongly fragmented mammoth, horse and bison bones.

#### 4.5. Micoquian sites

The earliest Micoquian sites in Central Europe were discovered in Upper Silesia and have been dated to the Penultimate Glaciation (Pietraszyn 49, Dzierżysław 1). There is, moreover, a group of sites that, in all likelihood, are later than the Last Interglacial and that yielded asymmetrical bifacial knives – side scrapers (Keilmesser). Among these sites belong: Pietrowice Wielkie 8, 23, 76, Maków 12, 15, Cyprzanów 3 and Kaniów 4. Site Cyprzanów „Ost” furnished two typical round scrapers (groszakis) and a Levallois flake with inverse retouch, possible with blunted (?) back. Regrettably, the dating of these sites is imprecise, with the exception of Kaniów 4 where a bifacial artefact (para-prądnik) was discovered within the sands intercalating bog soil dated by radiometry at the Interpleniglacial (between the radiocarbon dates of > 39 020 and 32 430 ± 1140 B.P.) Micoquian bifacial knives from Maków 12 and Pietrowice Wielkie 23 are unfinished, with cortical bases and – in the case of the specimen from Pietrowice Wielkie – a thinned distal part of the back. We can, therefore, assume that the uncovered artefacts are the remains of short-term camps where single bifacial tools were worked. This is not consistent with the picture of Micoquian sites in the Upper Vistula basin where both open-air sites (e.g. Pickary III) as well as caves (Kozłowski, Kozłowski 1996) yielded rich inventories numbering from several tens up to several hundred tools and numerous debitage products.

The overall picture of settlement of the younger phase of the Middle Palaeolithic indicates the presence of taxonomically varied units represented, however, by poor assemblages or single finds. This suggests that the territory of Silesia was seasonally penetrated by small population groups, that came from a variety of techno-typological traditions, throughout the entire Early Glacial, the Lower Pleniglacial and the early part of the Interpleniglacial. This specific picture of the settlement of the Younger Phase of the Middle Palaeolithic differs from the picture of settlement in the Upper Vistula basin where there also occur multilayer sites and long-term base camps; this, however, could be the effect of different taphonomic processes (repeated occupational episodes at the same place which guaranteed better protection from post-depositional destruction of settlement relics), especially in the case of cave sites.

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## Resumé

Príspevek diskutuje problematiku mladší fáze středního paleolitu Horního Slezska na základě lokalit pohřbených ve spraši, aluviálních a deluviálních uloženiích v povodí horní Odry a horní Vistuly i povrchových lokalit. Z taxonomického pohledu tyto lokality náležejí k levallois-moustérienu, taubachienu/moustérienu bez levalloiské technologie a východnímu micoquienu.