

# The use of nummulitic chert in the Middle Palaeolithic in Hungary

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## Introduction

Nummulites are unicellular organisms (foraminifers), typical for the Palaeogene shallow marine carbonate rocks in the Carpathian Basin. They are often present in rock-forming quantity in the Middle Eocene to lowermost Oligocene sediments of Transdanubian Central Range of Hungary and in southern Slovakia. Uncommon occurrences of *Nummulites-bearing* rocks are in Lower Miocene and younger conglomerates, which yield nummulitic chert pebbles of various colours (grey, brown or yellow), with striated and usually black cortex. Time, place and mode of silicification is an open question for the time being, since the siliceous variety of the rock is unknown from primary geological outcrops.

Some types of the pebbles can be distinguished easily macroscopically, but the majority of the pieces is covered by thick patina layer, that's why the original colour and texture of the stone cannot be observed. The pebbles generally consist of chalcedony, rarely opal and quartz; sometimes, when the rock is not completely silicified (e. g. the piece from Opatovská Nová Ves) primary quartz is also present in considerable quantity. During our recent studies several kinds of *Nummulites* (*N. millecaput*, '*N. striatus*' and '*N. perforatus*'), and other foraminifer genera (*Discocyclina*, *Asterigerina*, *Assilina*), a boring sponge (*Entobia*) were identified as well as remains of annelids (*Rotularia spirulea*, *Ditrupa*), molluscs, corals, *Crinoidea*, *Bryozoa*, echinoids and algae.<sup>1</sup>

The presence of nummulitic chert was first reported from Ipolytarnóc,<sup>2</sup> later from the gravel pits westward from Budapest (Budafok, Biatorbágy, Etyek),<sup>3</sup> from the Pest plain (Rákosszentmihály, Csömör, Fót, Mogyoród) and from Nógrád.<sup>4</sup> After the World War II it was found at several points in the Ipoly/Ipel' valley in Slovakia (Slovenské Ďarmoty, Dolinka, Ipel'ské Predmostie, Nenince).<sup>5</sup> Geological age

<sup>1</sup> Lajos Bartkó and M. Vaňová identified different Nummulitic species (*Nummulites millecaput*, *N. irregularis* var. *regulata*, and *N. millecaput millecaput*, *N. anomalus*, *N. chauvannesi*) and other foraminifer remains (*Assilina*, *Discocyclina*, *Globigerina*); *Ostrea*, *Crinoidea*, algae and Molluscs were also found – BARTKÓ 1939.; MIŠÍK 1969, 127.

<sup>2</sup> SZABÓ 1879. Recently this locality was discovered again: BARTKÓ 1985, 30., 59., II. ábra.

<sup>3</sup> SCHAFARZIK 1928, 10.; JASKÓ 1939, 122–123.

<sup>4</sup> BARTKÓ 1939, 58.

<sup>5</sup> MIŠÍK 1969, 127.; 1975, 99–101.

of the gravel formations varies from the Lower Miocene (Ipolytarnóc: *Eggenburgian*, Slovenské Ďarmoty: *Egerian/Aquitanian*) through Middle Miocene (Rákosszentmihály) to the Pleistocene and Holocene (in the Pest Plain, and in the Ipoly/Ipel' valley). Recently some outcrops were found in the Pest Plain (Délegyháza, Dunavarsány) and in the Cserhát Mountains (Debercsény-Mogyorós, Vanyarc – Makói oldal).

In archaeological context the use of the raw material was first identified in the case of the *Charentian* site near Érd<sup>6</sup> and on the surface sites lying in the Ipoly/Ipel' valley (Malá Čalomija, Bátorová, Opatovská Nová Ves and Kiarov II.).<sup>7</sup> On the Early Palaeolithic site of Vértesszőlős and on the *Mousterian* site of Tata nummulitic limestone pebbles were used for tool-producing.<sup>8</sup> During the intense field surveys in the territory of the Cserhát Mountains and the revision of some older assemblages several sites have been identified where the raw material was used. Some of them dates to the *Aurignacian* (Acsa-Rovnya), *Gravettian* (Püspökhatvan-Takács-hegy, Galgagyörk-Kelemen-földek, Csővár-Arany-hegy), and *Epigravettian* period (*Pebble Gravettian* or *Ságvárian* after V. Dobosi;<sup>9</sup> Szob). The assemblage from Hont-Várhegy was interpreted as Epipalaeolithic, while a core of Neolithic character came into light near Nógrádsipek. Several sites from the outskirts of Vanyarc, Bér, Galgagyörk, Kálló, Erdőtarcsa and Cserhátsurány has no proper dating for the time being. Finally a depot find have to be mentioned from the territory of the Bronze Age fortified settlement of Dunaföldvár. The pieces of this later assemblage were examined by petrographical methods (thin sectioning) too (Map 1.).<sup>10</sup>

1.

In the followings the use of the nummulitic chert in the MP will be discussed (Table 1.). Two types of archaeological industries used the pebble raw material in great quantity. The *Charentian* site of Érd was investigated in 1963–1964<sup>11</sup>. The ratio of the nummulitic chert is 4,61% among the tools. They are mainly side scrapers (20 pieces), raclettes (3), couteau a dos (4), choppers and chopping tools (4), two pseudo-Levallois points and a burin.

Artefacts made of nummulitic chert came into light exclusively from the upper culture bearing layer. The uppermost level *a* was the most important, where 9 side-scrapers, two chopping tools, a retouched flake, a worked pebble and a burin (14 pieces altogether) came into light. Level *b* yielded an atypical chisel, 3 *couteau à dos* (one of

<sup>6</sup> DIENES 1968.

<sup>7</sup> BÁRTA–PETROVSKÝ–ŠICHMAN 1962, 300., 304–306.; MIŠÍK 1969, 127–129., Abb. 1.; 1979, 9.; BÁRTA 1979, 9.

<sup>8</sup> VÉGH–VICZIÁN 1964, 129.; VARGHA–MÁTHÉ 1990, 287.

<sup>9</sup> DOBOSI 1994.

<sup>10</sup> BIRÓ 2000, 242–243.; BIRÓ–DOBOSI–SCHLÉDER 2000: Litotheca 1416.

<sup>11</sup> GÁBORI–CSÁNK 1968. The petrographical study links to the name of István Dienes. – For further data about this site see the study of Zsolt Mester in this volume.

them is atypical), a raclette, an atypical chopper and a retouched flake. From level k a single simple side-scrapers on flake, from level k an angular side scraper and a *couteau à dos* were found.

2.

The other industry with pebble working tradition originates from the *Kiskevély Cave*, in the Pilis Mountains, near Csobánka. It was the first cave site in Hungary, where systematic excavation was taken (Antal Koch, 1868), however archaeological material was collected only during the excavations of Jenő Hillebrand, in 1912–1914. In the fourth, brownish, clayey geological layer he exposed a fireplace containing a great quantity of burned bones and chipped stone artefacts. For the first time Hillebrand mentioned exclusively unifacial tools, analogous to the *Mousterian* site of Tata, later he classified the assemblage as ‘*Praesolutréen*’ or ‘*Protosolutréen*’ because of the only one leaf shaped implement, similar to the tools from the Jankovich cave, which was found *above* the level of the hearth.<sup>12</sup>

After World War II László Vértes placed the age of the reddish brown layer into an interstadial period, probably to a humid phase of the W<sub>1</sub> (e. g. Early Würm) or to first half of the W<sub>1/2</sub> (e. g. Interpleniglacial). He suggested that the leaf shaped scraper came into light from a distinct layer dating to the end of the W<sub>1/2</sub> interstadial or the beginning (tundra phase) of the W<sub>2</sub> stadial, and that it has nothing to do with the assemblage similar to the Tata-type Middle Palaeolithic industry.<sup>13</sup> V. Gábori-Csánk placed both assemblages into the same, partly washed out layer; she identified the *Mousterian* finds by the lower culture layer of Érd and placed chronologically to the beginning of the *Altwürm*.<sup>14</sup>

Based on the palaeontological data the age of the brownish layer was taken to the Subalyuk faunal phase (Lower Würm), together with the Middle Palaeolithic pebble using industry from the Diósgyőr-Tapolca cave (I/3–4, II/3–5. layers),<sup>15</sup> Lambrecht Kálmán cave (IIIrd, yellow layer), Érd-Parkváros and Tata-Porhanyó and finally with the upper layer complex of the Subalyuk cave.<sup>16</sup>

In the collection of the Hungarian National Museum artefacts of Middle Palaeolithic type (*Jankovichian* and *Mousterian*) were made of quartzite, hydrothermal and radiolarite pebbles and nummulitic chert. During the inventorising these later ones were identified as *Magdalenian* and *Mousterian*. A double side-scrapers, or raclette

<sup>12</sup> HILLEBRAND 1935, 15–16.

<sup>13</sup> VÉRTES 1958.; 1959, 98–102.; 1965, III–III2.; VÉRTES 1964, 216.

<sup>14</sup> GÁBORI-CSÁNK 1993, 32–36.

<sup>15</sup> For recent data from this site and the age of the lowermost culture bearing layer see: RINGER–MONCEL 2002, and in this volume.

<sup>16</sup> JÁNOSSY 1979, 129., 136–137.; VÖRÖS 2000, 188–189.

were considered later as *Jankovichian*,<sup>17</sup> a double side scraper on pebble slice<sup>18</sup> and a fragment of a slice scraper,<sup>19</sup> two pebble slices, a fragment of a slice, seven flakes and two pebble fragments with flake scars<sup>20</sup> were made of nummulitic flint.

The pieces under consideration were made of the same type of Nummulitic chert of greyish colour and blackish pebble cortex containing *Nummulites* (mainly '*N. striatus*'), rarely *Discocyclina*, and red algae remains. Macroscopically similar type of raw material was identified in Érd and on the *Ságvárian* site of Szob.

Another raw material, also used in the cave contains only fragments of fossils (algae or foraminifers) and wears traces of sand-coloured, porous cortex. A double convergent side-scraper, a raclette, a simple side scraper and the leaf shaped scraper were made of this raw material. All of them has been ordered into the *Jankovichian*.<sup>21</sup>

3.

One of the most interesting site of the Middle Palaeolithic bifacial industries is lying near Hont,<sup>22</sup> in the Ipoly/Ipel' valley. After some field surveys a sound excavation was taken on the site in 1969 by M. Gábori. The find assemblage is unpublished and it was certainly mixed with other surface collections both of Middle Palaeolithic type and more recent periods. That is why the pieces without typological significance cannot date precisely, however the majority of the artefacts are from the Middle Palaeolithic period. M. Gábori compared the excavated assemblage to Razdrojovice (Moravia). Basing on the presence of Volgograd (Sukhaja Metchetka) type bifacial knife the site can be dated to the Early Würm, respectively.

Among the raw materials Szeletian felsitic porphyry, radiolarite, obsidian, 'Northern' flint, local and Mátra-type limnic quartzite and Nummulitic chert was used.<sup>23</sup>

During surface collections fragments of slices, some flakes and blades, flake-like blades and raw material fragments with scars were found. One type of the nummulitic chert used in the assemblage is similar to the Kiskevély pieces, it contains *N. 'striatus'* and *Discocyclina* remains. Another one, of yellowish colour with thick red weathered layer and bad quality containing also *N. 'striatus'* is known from Szob also. The brown pebble with brown, smooth cortex and without patina is known from

<sup>17</sup> Inv. nr: 108/914.34. – VÉRTES 1958, 130., XXI. T.; GÁBORI-CSÁNK 1993, 139.: pl. X. 4.; DOBOSI-VÖRÖS 1994, 19.

<sup>18</sup> Inv. nr: Pb. 825a. (179) – GÁBORI-CSÁNK 1993, 140.: pl. XI, 6.; DOBOSI-VÖRÖS 1994, 20.

<sup>19</sup> Inv. n: Pb. 825c – DOBOSI-VÖRÖS 1994, 20.

<sup>20</sup> Inv. n.: Pb. 824, 825, Pb. 825b (26), 826 and 827 – GÁBORI-CSÁNK 1993, 140.: pl. XI. 8., 12.; DOBOSI-VÖRÖS 1994, 20.

<sup>21</sup> Inv. n: Pb. 481, 483, 484, 914. – VÉRTES 1958, 129., XXXI. t. 2, 4.; GÁBORI-CSÁNK 1993, 139.: pl. XI. 2., 4.; DOBOSI-VÖRÖS 1994, 19.

<sup>22</sup> GÁBORI 1976, 1982.

<sup>23</sup> DOBOSI-SIMÁN 2000, Table II.

Hont only. It seems to be a hopeful separating sign, that beside the general species, other foraminifers (*Assilina*), annelids (*Rotularia spirulea*), *Crinoidea*, *Bryozoa* and red algae remains also occur.

4.

One of the newly discovered sites in Cserhát Hills is near Legénd. At this place almost hundred finds were collected by now, made of mainly limnic quartzite, a kind of hydrothermal pebble, felsitic porphyry, quartzite, radiolarite and 'northern' flint. What makes this site worth to mention are the tools (12 pieces): side scrapers, leaf shaped scrapers, bifacial knives and short end scrapers made of limnic quartzite and felsitic porphyry. Five pieces were made of nummulitic flint: an irregular, pyramidal core, two fragmentary segments a flake and a chip. This raw material is similar to the geological pieces, which could be collected in the vicinity of Debercsény. This pebble raw material is covered by thick patina layer and contains *N. 'striatus'*, *Assilina*, *Discocyclina*, *Crinoidea* also.

### Preliminary conclusions

1.

Nummulitic chert is a special raw material, which was used for a long time, but only in a relatively small quantity. In the Middle Palaeolithic pebble working industries it was certainly used in Érd and in the Kiskevély cave. Another type of Middle Palaeolithic industries with leaf shaped implements beside the only one chopping-tool of Hont yielded flakes and raw material fragment by now. The use of the raw material in the *Jankovichian* assemblage and even the presence of this industry in the Kiskevély cave is an open question for the time being. In the later periods in the pebble working Upper Palaeolithic industries (Szob) and even in the Neolithic and Bronze Age the raw material was also known.

2.

The primary geological source of the nummulitic chert is not known yet and the overwhelming majority of the archaeological implements wear pebble cortex too. One may conclude, that all the finds of Nummulitic chert were made of pebble raw material even in the absence of pebble cortex.

The geological sources of the pebbles are situated on the territory lying southward from the Ipoly valley.<sup>24</sup> In the future pebble formations with nummulitic chert may be detected in the Middle part of the Great Hungarian Plain, in the environs of Dunaföldvár, which is the southernmost occurrence of the raw material in archaeological context. The connection between the macroscopic types and the fossil remains is not clear for the time being and the question of provenance can not be answered as yet, because the majority of the pebbles were found on archaeological sites. However, the greyish-brown pebbles from the Cserhát Mountains and the brown pebbles from the environs of Hont (from the Middle Palaeolithic site and from the 'Epipalaeolithic' site of Hont – Várhegy) contain very similar fossil remains, but the patina formation is at different degree. The yellow pebble with red weathered surface, used on the archaeological sites of Hont and Szob, may have been collected from the alluvia of the Ipoly/Ipel' river. Finally the grey variety of good quality, with black pebble cortex, similar to the Krumlovský les (Kromauer Wald) chert was extensively used, but the provenance is unknown.

Further studies by petrographical methods (thin sections) may answer the above mentioned questions.

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<sup>24</sup> Recently some Lower Palaeolithic sites were found in Italy where a kind of silicified Nummulitic limestone pebble was used as raw material (Isernia La Pineta in Central Italy and Ca'Belvedere di Monte Poggiolo in Emilia Romagna: LONGO et al. 1997, 580–583.; PERETTO et al. 1998, 357–361. The petrographical and geochemical investigations were carried out by Massimo Sozzi and Sergio Vannucci.). However the foraminifer remains from these samples are only microscopic dimensions and were not identified taxonomically.

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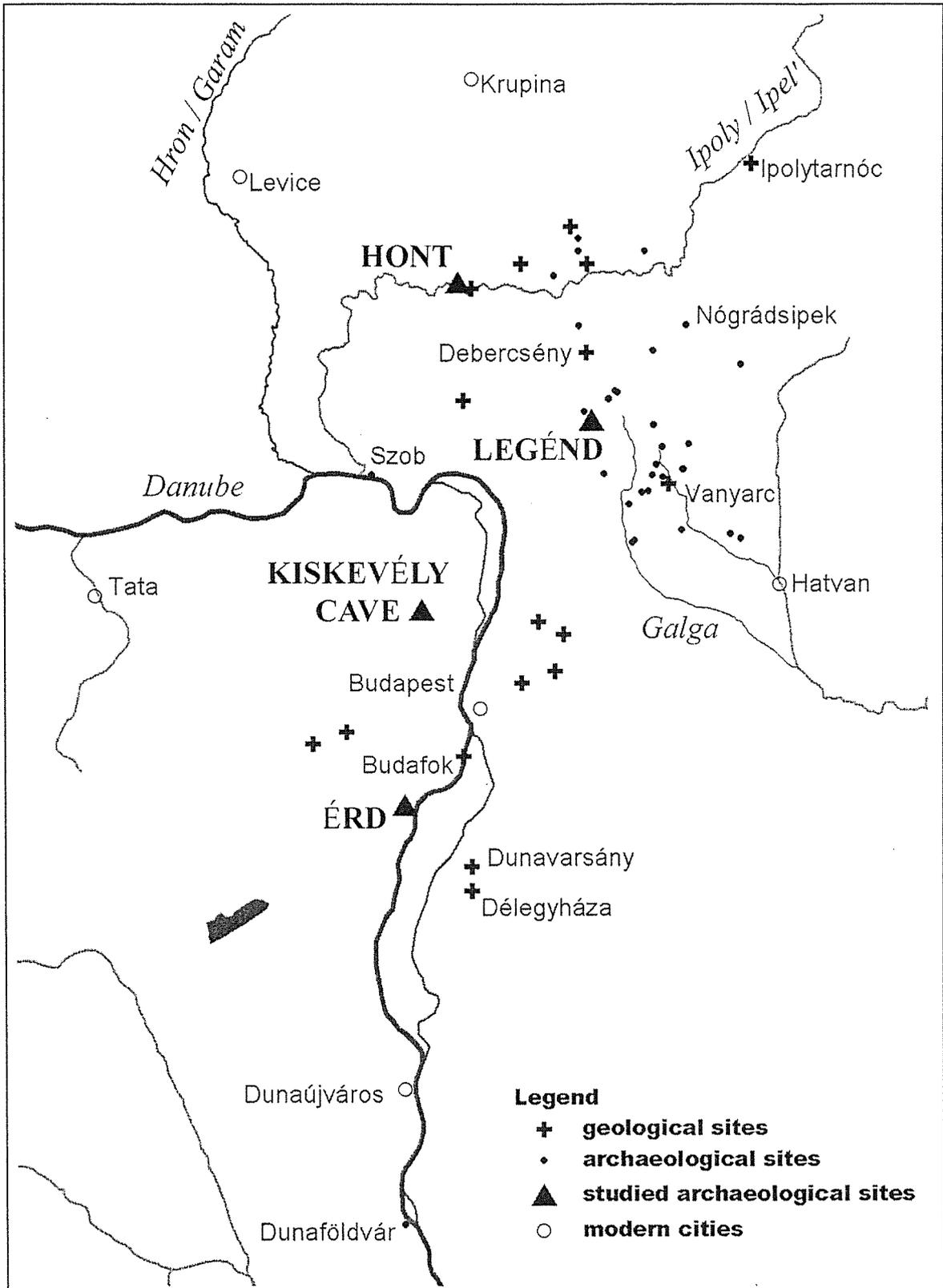
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Archaeological site	Inventory number	<i>N. millecaput</i>	<i>N. striatus</i>	<i>Nummulites</i>	<i>Discocyclina</i>	<i>Asterigerina</i>	<i>Assilina</i>	<i>Rotularia spirulea</i>	<i>Entobia</i>	<i>Peneroplis?</i>	small <i>Gastropoda</i>	<i>Mollusca</i>	rhodoid	red algae	algae	<i>Ditrupea</i>	<i>Bryozoa</i>	<i>Crinoidea</i>	bioclast	?
Hont	Pb. 99/165		+										+		+					
Hont	Pb. 99/176		+																	
Hont	Pb. 99/190		+		+	+			+		+									
Hont	Pb. 99/196		+																	
Hont	Pb. 99/197		+																	
Hont	Pb. 99/198		+																	
Hont	Pb. 99/212		+																	
Hont	Pb. 99/213		+				+						+							
Hont	Pb. 99/215		+		+															
Hont	Pb. 99/242		+					+									+	+		
Hont	Pb. 99/264																		+	
Hont	Pb. 99/270		+		+															
Hont	Pb. 99/328				+															
Hont	Pb. 99/342														+					
Hont	Pb. 2003/84		+				+				+									
Legénd			+		+		+											+		
Legénd				+																

Table 1. Identified fossil remains of the studied artefacts



Map. 1. Distribution of the nummulitic flint on archaeological sites and geological outcrops

# SZERZŐI KÜLÖNLENYOMAT

## A Tudományos füzetek 12. számához

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