

## LARGE MAMMALS AND THE NEANDERTHAL MAN

by

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Middle Palaeolithic animal bones are commonly found in Europe. Of course, they are more valuable and significant for examination when accompanied by artifacts. In some of those sites, however, remains of human skeleton occur. On the basis of the respectively rich material of animal bones, some aspects of the life of the Neanderthal man and his coexistence with large mammals may be discussed for some choosen sites and for the European area as a whole.

This paper is also an attempt to answer the question which species of mammals were the preferred prey of the Neanderthal hunter.

The earliest real kill site known thus far is Lehringen in northern Germany. There, a relatively primitive individual of a forest elephant (*Palaeoloxodon antiquus*) was found in a marl pond (ADAM, 1951). More than likely, the Lehringen site dates from an interglacial within the Middle Pleistocene, more than 130,000 years ago (MÜLLER-BECK, 1982). In any case, below the ribs and in the abdomen of this elephant a well-preserved lance 2.15 m long was found, made from the wood of yew (*Taxus*) with a well-cut tip hardened by fire. Some 30 simple flakes produced by the Levallois technique were also found near the skull. ADAM (1951) was able to reconstruct the events convincingly. Evidently the elephant, about 45 years old, was wounded by the lance, which was pushed into the chest or abdomen, and tried to escape. Possibly the animal was ambushed very close to the pond in which its remains were found, or perhaps it was wounded farther away and sought relief in the marly pond, was trapped there, and died. The distribution of the flakes suggests that not much more than the trunk and parts of the head could be reached by the hunters.

Another important early site is the sequence of travertine layers at Weimar-Ehringsdorf, generally considered to be of Eemian age (STEINER, 1979). There, the sediment contains remains of the woolly mammoth (*Mammuthus primigenius*) which indicates a steppe landscape and of *Palaeoloxodon antiquus*, typical for a forested landscape and a thermal interval. During the period in which the travertine was formed, the slopes of the Ilm Valley attracted animals to ponds in which they had some difficulty in moving and could be ambushed rather easily by experienced hunters (MÜLLER-BECK, 1982). The hunters there were early variants of Neanderthal, man using well-made tools, often bifacially worked, including some very functional knives and points that represent early weapon tips (MÜLLER-BECK, 1966). There is evidence that carnivores (spotted *paneuropa Crocuta* in the lower travertine bed and lion *Panthera leo* in the upper one) as well as man were present.

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The faunal remains at Weimar-Ehringsdorf have been collected only very rarely by planned excavation, but at least it may be assumed that the elephant remains belong to individuals hunted by carnivores and man. GÜNTHER (1975) shows in figures on age classes a clear difference in the age distributions of the *Palaeoloxodon* and *Mammuthus* populations, but it remains open to question whether this reflects a change in human hunting techniques or, as seems more likely, differences in the behaviour of the two elephant species. It should be mentioned that the roe deer (*Capreolus capreolus*) is present in both the lower and the upper travertine, indicating relatively thermal local conditions during the accumulation of both layers. However, the wild boar (*Sus scrofa*) and the rhinoceroses (*Dicerorhinus kirchbergensis* and *D. hemitoechus*) occur only in the lower bed with *Palaeoloxodon*. On the other hand, the woolly rhinoceros (*Coelodonta antiquitatis*) is found only with *Mammuthus* in the upper bed, and this may also be the case for the reindeer (*Rangifer tarandus*).

Seventy or eighty thousand years ago a slightly warmer interval that brought forest cover at least to valleys sheltered from harsh continental winter winds has left two sites where remains of the activity of man close to a river and a lake have been excavated and reported. Neither has a real living floor, but the sites are preserved as a result of hunting close to water (MÜLLER-BECK, 1982).

The first is Salzgitter-Lebenstedt near Braunschweig, west of the Harz Mountains in northern Germany (TODE *et al.*, 1953). Unfortunately the precise age of this site is in doubt. Conceivably Salzgitter-Lebenstedt is older than 80,000 years. The site does illuminate the activity of man – *Homo sapiens neanderthalensis*, based on a skull fragment found in the site. The site consists of a midden formed by scattered bones of butchered animals that are washed down a slope near a small creek. According to the arctic plants found in the site a cold and relatively wet oceanic steppe environment which without doubt belongs within the range of steppe-tundra (GITERMAN, SHER and MATTHEWS, 1982). In addition to well-made flake tools produced by the Levallois technique, the site yields somewhat asymmetrical hand axes of a late type. Also present are well-made bone tools, including lance points made from ribs of large mammals and a small point which was to be attached to a larger shaft, probably of wood. The fauna, according to the accounts of KLEINSCHMIDT (1953) and STAESCHE (1983) consists of *Rangifer tarandus* (at least 80 animals, among them 15 juveniles, totals 74.8 %), *Mammuthus primigenius* (minimum of 16 individuals, 10.6 %), horse (*Equus remagensis*, 8.2 %), bison (*Bison priscus*, 1.7 %), and the woolly rhinoceros (*Coelodonta antiquitatis*, 1.3 %). A few bones belong to the giant deer (*Megaloceros giganteus*, 0.3 %), wolf (*Canis lupus*, 0.3 %), cave lion (*Panthera leo spaelaea*, 0.1 %), jerboa (*Allactalaga sp.*), and unidentified birds and fishes (less than 0.1 %). However, these proportions are only valid on the basis of the numbers of bones. If one considers the bone weights, the picture changes somewhat. Thus the reindeer makes up only 26.2 % of the total weight of identified bone. Mammoth increases to 39.8 %, horse to 14.0 % and rhinoceros to 10.7 %. Although Salzgitter-Lebenstedt became known as a reindeer hunters camp-site, it is evident that the mammoth was the most important prey, at least in terms of quantity of meat, and that it was hunted within at least the summer range of the reindeer. This is the earliest documented instance of mammoth hunting outside the range of the red deer (*Cervus elaphus*). *Bison*, *Equus*, and *Coelodonta*, however, are present in the butchering area. While hunters who specialized in reindeer hunting would have had to migrate with the reindeer herds, Salzgitter-Lebenstedt man could have lived for longer periods of time at this presumably comfortable place. Unfortunately the bone material does not give any hint as to the season of occupation (STAESCHE, 1983).

The other site close to water from early Vistulian time is the well-excavated Königsau near the lake of Aschersleben (MANIA and TOEPFER, 1973). Königsau consists of three archaeological horizons occupied during a warmer interval, very likely the Brörup Interstade of European authors, about 60,000 years ago. The three levels at Königsau are



characterized by tools that are within the range of the Micoquoid-Mousterian technocomplex. Concerning the mammal remains there are only two species – *Equus sp.* and *Canis lupus* – preserved in level C, the highest horizon. Level B has a richer fauna, including a minimum of 1 to 3 individuals each of *Mammuthus*, *Rangifer*, *Bison*, *Crocota*, *Canis lupus*, *Panthera leo spelaea*, *Coelodonta*, *Equus (Asinus) hydruntinus*, *Equus sp.* and *Cervus elaphus*. Level A, the lowest, is richer and contains *Mammuthus primigenius* (minimum of 4 individuals), *Rangifer tarandus* (5), *Bison priscus* (3), *Equus caballus ssp. cf. E. caballus mosbachensis* (4), *E. (Asinus) hydruntinus* (1), *Coelodonta antiquitatis* (2), *Cervus elaphus* (1) and *Crocota spelaea* (1). The fauna is similar to Salzgitter-Lebenstedt, differing only in the presence of *Cervus elaphus* and *Equus hydruntinus*, which hints that the climate may have been slightly warmer. Vegetation documented by macrofossils in the archaeological horizons confirms this.

Although the faunal samples from Salzgitter-Lebenstedt and Königsau are still small, they provide documented proof that man – still in the form *Homo sapiens neanderthalensis* – adapted at least 60,000 years ago to the edge of the steppe-tundra in Central Europe (MÜLLER-BECK, 1982).

Another site dating from the early Vistulian time is Zwoleń near Radom in central Poland. This is a typical kill site, preserved as a result of hunting close to water. A long period of accumulation in a valley system of the Zwoleńka river could be stated so far (SCHILD and SULGOSTOWSKA, 1988). The sediment contains remains of mammoth, woolly rhinoceros, bison, reindeer, horse (*Equus remagensis*) and beaver (*Castor fiber*).\* The predominance of horse is striking. Although the number of individuals is not yet known, it may be estimated that at least ten horses are present. The collected faunal assemblage represents the remains of several consecutive taphocoenoses. These can be either the result of attritional or catastrophic mortality in favourable conditions for preservation. Such catastrophic mortality in periglacial environments appears to be mainly a winter calamity striking megafauna concentrating in valleys for protection. If not formed in winter the taphocoenoses are probably attritional. In this case the favourable conditions for burial have been created by Middle Palaeolithic people who hunted and killed megafauna on specific spots suited for such effort. The Zwoleń site is situated on the edge or slope of a valley system and could easily have been such a preferred locality. If this is the case, the Zwoleń fauna may illustrate a long period continuity of behaviour of early man in his slowly changing adaptation to the animal surroundings. Differential preservation may furthermore have favoured horses in this assemblage. As it is, it reflects essentially a cold open landscape with a predominance of steppe biotops (horses) and gallery forests along the river providing building material for the beaver. Further excavations and research work on artifacts and animal remains of the site may help to find the answer of several interesting questions.

Another culture of the Mousterian complex, the south-east Charentian was distinguished from the Raj Cave in the Holy-Cross Mountains, near Kielce, Poland, dated back to the younger part of the early Vistulian. The sediments of Raj Cave contained a large number of animal remains. Out of the 12 layers distinguished in the profile only layer 7 had no identifiable remains of animals. Vertebrates were represented by a small number of fish bones and numerous bones of amphibians, reptiles, birds and mammals. The remains of large mammals were most abundant in layers 6 and 10, where the following species could be recognized: *Alopex lagopus*, *Vulpes vulpes*, *Canis lupus*, *Ursus spelaeus*, *Ursus arctos*, *Crocota spelaea*, *Panthera leo spelaea*, *Equus caballus*, *Coelodonta antiquitatis*, *Mammuthus primigenius*, *Bos* or *Bison*, *Ovibos moschatus* and *Rangifer tarandus* (KOWALSKI, 1972). This author emphasized, owing to the possibility of mixing of remains coming from different layers, the fauna of each individual layer cannot be treated as an isolated whole.

\* Preliminary results of studies by Dr. A. Gautier (Gent, Belgium) and Dr. H. Kubiak (Kraków, Poland).



Nevertheless, the analysis of the faunal composition of particular layers of deposits in Raj Cave indicates clearly that they all come from a cool period. A distinct cooling of the climate accompanied the formation of successive layers of the cave. Generally, it caused a gradual transformation of a wet meadow environment with shrubs and, perhaps, a forest in the vicinity into dry tundra which is indicated especially in the period of formation of layer 6. The abundant occurrence of hoofed mammals (horse, rhinoceros, mammoth, reindeer, bison) was probably connected with human occupation, the traces of which were found in layers 4 and 6. In a considerable portion of the cave sediments layer 10 lays directly on layer 6. Bones of large mammals, and especially reindeer antlers, which accumulated on the surface of layer 6, got covered by sediments of layer 10 and entered into its composition. In consequence, small bones and teeth were embedded in layer 6 and large bones, and particular reindeer antlers, were buried by deposits of layer 10 and included in its fauna. The lower cultural horizon (layer 4) has provided relatively numerous charcoals, driven from a fire washed away. The charcoals are exclusively from pine wood (*Pinus silvestris*). The action of water in the final phase of deposition of layer 4 disturbed the original arrangement of the remains, which show no concentration, though their arrangement indicates human occupation. At the time when the cave was occupied by inhabitants of the upper culture horizon (layer 6) tundra conditions still persisted in this region, but the predominating environment was dry woodless tundra. The huge number of reindeer antlers in layers 6 and 10 is striking, a vast majority of them being shed antlers not those broken off, and therefore gathered in the tundra, not derived from killed animals.

The bones and teeth of reindeer are not the most numerous in the fauna, being exceeded by those of other mammals. The horizontal distribution of the reindeer antlers, besides, shows a fairly characteristic arrangement: in the entrance portion of the cave, where the Entrance Passage widens to form a terrace in front of the cave, there is an accumulation of antlers in the form of a crescent. The accumulation consists of 79 antlers, varying in position, i.e., lying parallel and transverse to the axis of the Entrance Passage, mainly in layer 6. The obtained data allow the conclusion that the antlers were accumulated in the entrance portion of the cave so as to form a rampart preventing access to the cave. A similar arrangement of antlers, which formed a sort of entanglement preventing access to a shelter, could be observed in another Quina-Mousterian site. Contrary to the lower horizon with bones of horse, reindeer, bos or bison, rhinoceros, musk-ox and wolf, in the upper culture horizon there are also remains of mammoth, arctic fox and grouse. Out of these animals the remains of the horse prevail in number and it was probably the most common object of pursuit. A similar structure of game can be observed in other Middle Palaeolithic localities. In connection with the deterioration of climatic conditions much bone coal has been found in layer 6, which indicates that firewood was less and less available as the area became deforested. The camp of layer 6 may be associated with a full one-season cycle of activities of a human group. It may be supposed, that it was founded by comers from the south in a summer season (Studies ..., 1972).

The cave of Bacho Kiro (Bulgaria), known from the XIX century, was first investigated in 1938. The excavations conducted during the years 1971-1975 have provided a stratigraphy – unique in the Balkans – of sediments embracing times ranging from the last glaciation (Vistulian) up to the Holocene. At the same time this is the only sequence of cave deposits in this area to have been investigated by employing sedimentological methods. Its importance rests furthermore in the discovery of the richest collections of Pleistocene fauna (108 species) in this part of Europe. Archaeological research has established that the cave was visited approx. 20 times by Middle and Upper Palaeolithic population groups; their respective sojourns in the cave are marked either by single artifacts, or by well expressed culture layers with preserved elements of the original structure of camps or hearth (Excavation ..., 1982). In two of the archaeological culture levels bone remains were found, which are the earliest known traces of *Homo sapiens* in the Balkans and the first finds of Pleistocene man in Bulgaria.



Among 66 mammal species from the deposits of Bacho Kiro, 22 forms of large mammals are present (Carnivora - 9, Perissodactyla - 3, Artiodactyla - 10) (KOWALSKI, 1982; KUBIAK, 1982a; KUBIAK and NADACHOWSKI, 1982). Most of them occurred in layers 11 and 13. However, beginning from layer 4, species typical of the Pleistocene begin to appear (*Ursus spelaeus*, *Bison priscus*). The Pleistocene fauna of Bacho Kiro is entirely characteristic of mountain environments (the chamois *Rupicapra rupicapra*, the ibex *Capra ibex*). The mountainous situation of the cave is also demonstrated by the lack of remains belonging to the mammoth and the reindeer, both of which are known from other caves in Bulgaria, as well as by the low incidence of rhinoceros remains. The fauna also points to a climate which was colder than that of today. Evidence for this is to be found in the presence of species now living much further to the north, these are among others the polar fox *Alopex lagopus* and the elk *Alces sp.* Moreover the cave fauna contains species still numerous in Central Europe but no longer found in Bulgaria. Finally, the cave deposits yielded abundant samples of species found today among the fauna of Bulgaria, but which are limited to mountain environments, such as the deer *Cervus elaphus*. The cold steppe-tundra of the Pleistocene was also characterized by such species, now extinct, as the cave bear *Ursus spelaeus*, the rhinoceros *Dicerorhinus hemitoechus* and the giant deer *Megaloceros giganteus*. The disappearance of the forests and the spread of open terrains, characteristic of the Pleistocene glaciations in Europe, brought about an expansion to the west of many steppe species. These include above all the large ungulates: *Equus caballus*, *E. (Asinus) hydruntinus*, *Bison priscus*, and the large carnivores connected with these: *Panthera pardus*, *Panthera leo spelaeus*, *Cuon alpinus* and *Crocota spelaea*. When compared with the fauna of the cave deposits from the period of the last glaciation in Western and Central Europe, the animal remains of Bacho Kiro reveal a number of differences. Above all there is a lack of tundra elements. Another feature distinguishing the fauna of Bacho Kiro from animal associations from the same period found in Central Europe is the higher proportion of steppe species, some of which never reached further north, as well as the presence, throughout the entire period of the formation of the deposits, of forest species (e.g. *Cervus elaphus*, *Capreolus capreolus*) which disappear from Central Europe during the coldest periods.

Attempts at reconstructing the changes in vegetation and climate, taking place during the deposition of the various layers in Bacho Kiro, encounter considerable obstacles. Nevertheless, it may be stated that most of the remaining animal forms had been hunted and killed by man. Man could have hunted at quite considerable distances from the cave. In the mountains climatic changes manifest themselves vertically by shifts in the vegetational zones of but a few hundred metres. For these reasons, despite the fact that the changes are clearly reflected in the fauna composition, during almost the entire deposition period there existed in the proximity of the cave such varied environments as steppe, forest and mountain meadows.

Layer 14 which yielded the first traces of human presence in the cave represented by a poor assemblage of artifacts. Faunistic data from the bottom of layer 13 provides evidence of the presence nearby the cave of deciduous forests, although the majority of the species found throughout the entire layer rather indicates the progressive cooling of the climate. Two fairly numerous assemblages of stone artifacts were recognized in layer 13. The lower culture level has statistical features characteristic of the typical Mousterian, non-Levallois facies. The next culture level, on the surface of layer 13, reveals also typological and statistical ties with the typical Mousterian, but this time with its Levallois facies. The carbon 14 dating obtained for layer 13 (> 47,500 years BP) enables us to associate the layer with one of the interstadials of the early Vistulian. Whereas on the border of layer 12 and 11a and in the very base of 11a products of Middle Palaeolithic type were discovered. Layers 11 and 11a represent a progressive warming of the climate, and subsequently an increase in the humidity. A change in the population (Middle and Upper Palaeolithic) took place during this interstadial period, and witnesses the substitution of *Homo sapiens neanderthalensis* by *Homo sapiens sapiens*. Radiocarbon dates, obtained from the charcoal found in the hearths of culture level I in layer 11 are > 43,000 years BP. The chronological and cultural position



of the archaeological finds from layer 11 lends a special significance to the human remains discovered in the top of this layer. Despite the fact that only the teeth have survived, anthropological research has clearly demonstrated the occurrence here of *Homo sapiens*; it should be noted that some features of the dentition suggest a rather primitive type, occupying a transitional position between Neanderthal man and *Homo sapiens sapiens*.

A younger kill site (37,000 years BC) is known at Skarlatki in the Lowicz district in Poland (CHMIELEWSKI and KUBIAK, 1962). At this site bones of an adult mammoth could be discovered. Some of the bones were found in the anatomical arrangement. The interpretation of the find as a game killed by Palaeolithic hunters is grounded on the finding of charcoal pieces and a flint flake as well as the presence of some broken and crushed bone fragments, of which one bears the marks of cutting. It may be supposed that the animal killed in the peat-bog was quartered at the site and taken away.

The northern limit of human occupation 40,000 years ago seems to have been slightly north of the 10°C mean annual isotherm of the present time and somewhere between the 0°C and the 5°C isotherm of that time. After 40,000 years ago the situation was generally slightly different. During the so-called Hengelo Interstade, 39,000-37,000 years ago conditions were improving. Man and animals would have been able to move farther northward at the level of adaption reached by that time (MÜLLER-BECK, 1982). There was limited reforestation similar to that during the Brörup Interstade (FRENZEL, 1967). In the Central European highlands, forest-steppe or forest-tundra rich in *Artemisia* must have prevailed, and at lower altitudes with good wind and shelter some taiga areas reappeared. Closer to the Danube Valley and further to the southeast, the former open loess-steppe-tundra became overgrown by denser grass-steppe beneath which a brown arctic soil formed. There were scattered trees in moister areas: near water and at the base of well-watered slopes. Farther west, a grass cover mixed with herbs increased to form a rich hunting area with animals such as *Mammuthus*, *Equus*, *Bison* and *Cervus*. The large *Ursus spelaeus* (cave bear) replaced *Ursus arctos* (brown bear) in many herb-rich areas. More refined bone points were used to hunt these large bears, and leaf-shaped stone points were made for use as projectile points and knives. These projectile types mark the end of the Middle Palaeolithic Micoquoid-Mousterian in Central and Eastern Europe.

One of those sites is the Weinberghöhlen Cave near Mauern, in the Midlands of the Fränkische Alb, close to the Danube Valley (von KOENIGSWALD and MÜLLER-BECK, 1975). There, in the horizon IV, the following animals are present: *Mammuthus primigenius*, *Coelodonta antiquitatis*, *Rangifer tarandus*, *Cervus elaphus*, *Equus caballus*, *Bos* or *Bison*, *Capra ibex*, *Gulo gulo* (wolverine), *Crocota spelaea*, *Panthera leo spelaea*, *Ursus spelaeus*, and others. Local chronostratigraphy and typological cross-dating of the artifacts suggest that man was present in this region toward the end of or shortly after the Hengelo Interstade, about 37,000 years BP. It should be added that at the time of the Mauern occupation, Central Europe must have had warm continental summers: the high summer sun should generally have resulted in summers as warm as those of today. But summers must have been shorter and must have followed a cooler and often wetter spring and preceded a cold and brief autumn. The winter was also more continental and thus colder and longer than today.

Changes in climate, landscape and fauna may be observed on the basis of the sites mentioned above. It is markedly visible in the early Vistulian when a mosaic of different plant communities existed in the morphologically differentiated European Lowland and Upland with pretty large patches of forest side by side with steppe communities and even shrub tundra. After MADEYSKA (1988), the period of the Middle Palaeolithic culture development is characterized by considerable differentiation of the environment both areal and temporal, documented clearly by the coexistence of animals of different ecological demands.



Above mentioned several chosen European sites within the time span of the Neanderthal man seem to show with any doubt that also this form of early man has been hunting large mammals. Moreover, after MÜLLER-BECK (1982), there is evidence of man activity hunting elephants and other large mammals during the Middle Pleistocene, as early as 400,000 to 300,000 years ago, in the woodland, steppe and grassland areas of the Old World (still before the occurrence of the Neanderthal man).

As mentioned above the Neanderthal man hunted several species of large mammals, with mammoth, horse and reindeer among them, which probably were the main game. Perhaps there were different hunting methods. It seems that the Middle Palaeolithic man has been among others a collective hunter (KUBIAK, 1982).

Evidently the early man used not only the meat of the prey but also the skin and the bones (probably also collecting them in the environment) enabling him to produce better shelter for body temperature by better made dresses, tents und huts (KUBIAK and ZAKRZEWSKA, 1974).

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