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The Middle Paleolithic Anthropological Discoveries in the 19th Century

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Abstract: *The Middle Paleolithic Anthropological Discoveries in the 19th Century*. The paleoanthropological discoveries of the 19th century, even though rare, generated a huge interest in the scientific world. The revolution generated by accepting the existence of other human species, especially of the Neanderthals, has fundamentally changed the way we see the world and, especially, its past. The study reviews, in chronological order, all of the archaeological discoveries associated with the Middle Paleolithic made in the 19th century and aims at underlining the importance of each and every one of them in the context of understanding out evolutionary past.

Key words: Middle Paleolithic, Neanderthal, anthropological discoveries, Europe

Introduction

The entire 19th century was marked by major changes of mentality with respect to the human evolution and to the existence of a distance past not only of our species, but of other human species as well. If Lamarck, Darwin or Wallace introduced the concept of evolution in the scientific circles, in archeology, Schmerling, Dupont, Fuhlrot or Kramberger proved a hypothesis considered, till not long ago, a mere phantasy: that of the existence of a new human species, namely the Neanderthals. The anthropological discoveries related to the Middle Paleolithic that were made in the 19th century, accidental or not, strengthened this hypothesis and turned it into certainty. Each one of the discoveries played a part in revealing a new episode from the past of the human species, piecing together a new world, whose existence was still denied in many scientific circles. The purpose of this study is to synthesize all of the archaeological discoveries relate to the Middle Paleolithic made in the 19th century and to underline the importance of each and every one of them in the context of understanding our evolutionary past and of the birth of the sciences related to this field.

Inventory of discoveries

Belgium, Engis Cave (1829 -1830)

In the winter of 1829-1830, the Belgian-Dutch medical doctor Philippe-Charles Schmerling discovered, in Engis Cave (fig. 1), near Liege, Belgium, two partial human skulls, one adult and one juvenile, together with several other cranial remains. The juvenile skull was positioned next to a mammoth tooth and numerous artefacts, lithic or made of bone (M. J. S. Rudwick, 2014). The historical context in which these discoveries were made was a very delicate one, especially in the light of the scientific debate on the age of the human species. The most important scientist of the time, the French naturalist George Cuvier, promoter of the catastrophism hypothesis, was vehemently denying the old age of the human species, an idea embraced by other important scientists of the time (G. Cuvier, 1840; P. Jordan, 1999).

Aware of the fact that he might lose his

credibility and end a promising career, the Belgian avoided insisting on the age of the fossils and, in his book *Recherches sur les ossemens fossiles découverts dans les cavernes de Liege*, published in 1833, one year after the death of Cuvier, Schmerling has only briefly discussed the discovery of these human remains, calling them "antediluvians". Yet, he does not forget to mention the fact that "*I, personally, am convinced that the remains belong to a person with limited intellectual faculties, to a person who knew a low level of civilization*" (P. C. Schmerling, 1833, p. 61).

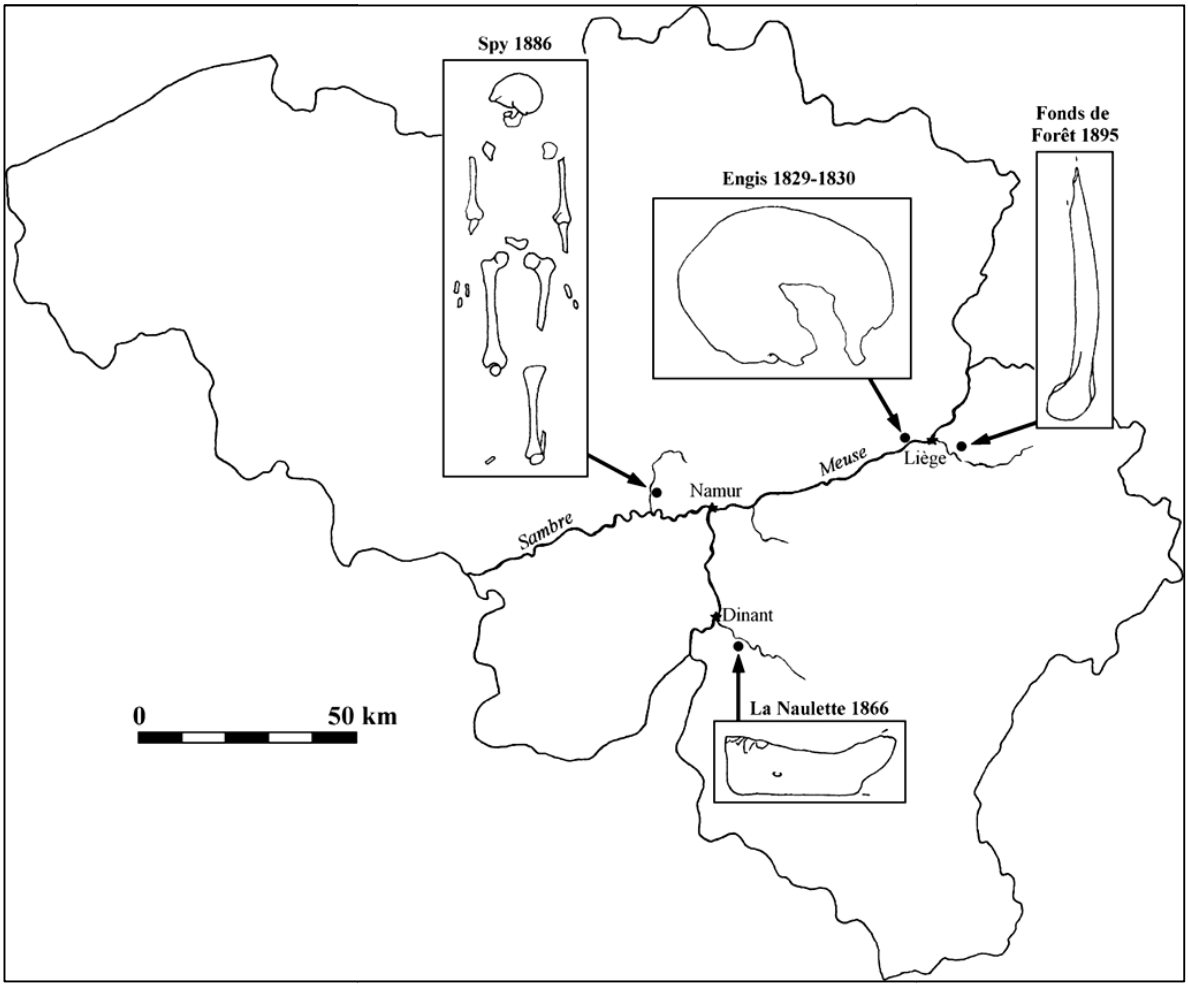

Fig. 1 - Map of the Belgian Neanderthal sites from 19th century (modified after M. Toussaint et al., 2004, p. 34, fig. 1)

The stratigraphic position of the two skulls remained uncertain for over one century. Schmerling mentioned the fact that the first skull, that of an adult (Engis 1), was discovered *"at a depth of one and a half meters, under a breccia"*, while the second, the juvenile one (Engis 2), *"was discovered in the terminal part of the cave, next to an elephant tooth"* (P. C. Schmerling, 1833, p. 62). Later tests proved that Engis 1 is 4,590 +/- 80 years old, which puts him in the Neolithic Age, while Engis 2, of an unknown age, belongs to a juvenile Neanderthal, deceased at the age of 4-6 (M. Toussaint et al., 2014).

Without a comparison term and in a time when the origins of the human species were subject to harsh academic and theological debates, P. Schmerling missed his chance at describing the first Neanderthal Man remains ever found, a fact which was confirmed nearly one century after the discovery of the two skulls. Still, history keeps him

as he first man who made such an archaeological discovery.

Gibraltar, Forbes Quarry (1848)

In 1848, the second, this time a nearly complete, Neanderthal skull was identified in the Forbes Quarry cave, Gibraltar (fig. 2). Even though unearthed by chance, during works on a British fortification, the skulls has immediately caught scientists' attention. Lieutenant Edmund Flint of the Royal Navy, Secretary of the Gibraltar Scientific Society, the man who found it, presented it to the Society on March 8th 1848. Yet, it wasn't recognized as a true vestige of a prehistorical man until 1864, when it was presented to the British Association for the Advancement of Science (P. Jordan, 1999).

Fig. 2 - Gibraltar 1 skull, discovered by Lt. Edmund Flint in 1848 (after H. J. Schwarts, I. Tattersall, 2002, p. 167, fig. 1)

Later the skull was analyzed by Charles Darwin who concluded that it belongs to an extinct human species (R. C. Darwin, 1871). Another analysis, conducted by Paul Broca, confirmed the fact that it belonged to a woman of a primitive species (P. P. Broca, 1869). Given the fact that the fossil remains were discovered by chance, all geological and chronostratigraphic data on where the Gibraltar 1 skull was found are missing. Its classification as Neanderthal was confirmed only in the early 20th century. A second skull, discovered at Devil's Tower, Gibraltar, by archaeologist Dorothy Garrod in 1926, in association with the Mousterian lithic artefacts, proved to be that of a four-year-old child (D. A. E. Garrod, 1928).

Germany, Neander Valley (1856)

Workers at the stone quarry from the Fedhof Cave, located in the Neander Valley, on the Düssel

river, approximately 12 kilometers away from Düsseldorf, discovered, in late summer of 1856, several fossilized bones which they mistook for those of a bear (P. Jordan, 1999). One of the owners of the stone quarry, Wilhelm Beckershoff, asked the workers to bring him the "bear" bones and to look for more. But in spite of all efforts, no other fossils were found, Beckershoff had realized that the skull fragment found by the workers was human, but the protuberant arcades, never seen before in a human, determined him to look for someone who might have known what this was. Thus, Beckershoff and his associate, Friedrich Wilhelm Pieper, gave them to Johann Carl Fuhlrott, Grammar teacher at the town's school (F. Schrenk, S. Müller, 2009).The remains were not discovered in situ, which means that their age could not have been determined at that time.

Fuhlrott correctly identifies the fossilized bones – one skull fragment, five rib fragments, one pelvic fragment, two femurs, two ulnae and one radius, one right collar bone, one scapula fragment and two humeri – as, beyond any doubt, human (F. Schrenk, S. Müller, 2009). The discovery raises the interest of two German scientists, Hermann Schaaffhausen and Franz Josef Carl Mayer, who asked Fuhlrott to send them the remains for detailed analysis. Fuhlrott complies and travels to Bonn, where he hands the bones to Hermann Schaaffhausen, Mayer being unable to attend due to an illness.

On June 2nd 1856, Schaaffhausen and Fuhlrott present the discovery to the academic world at the Natural History Society of Prussian Rhineland and Westphalia, concluding that the fossil remains belong to an extinct human species. In spite of the controversy created by this conclusion, in 1863, English-Irish geologist William King published a new vision on the Neanderthal fossils (W. King, 1864). "*According to King, the remains belonged to a different species from the modern human one. He called this new species Homo Neanderthalensis, the Neanderthal Man. Moreover, King's opinion on the nature of the Neanderthal man was a foundation stone in science. It was the first time when a scientist suggested that there had been several human species in the past, not just one, and this was the beginning of paleoanthropology*" (R. Stefoff, 2009, p. 12).

Belgium, La Naullette (1866)

In 1866, 36 years after Schmerling's discovery from the Engis Cave near Liege, another Belgian, geologist Édouard-François Dupont, makes another discovery. Dupont identifies in La Naullette cave (fig. 3), in Namur, Belgium, a human mandible, an ulna and a metacarpus with archaic features. All these were found in the same geological deposit as the fossils of mammals from the ice age: mammoth, wooly rhino, reindeer or mouflon (M. Toussaint, S. Pirson, 2006).

The first to analyze these fossils was the great anthropologist Pierre Paul Broca (1824-1880), the one who, by comparing the mandible discovered in La Naullette with those belonging to chimps, to modern Malaysians, to Neolithic men and to a contemporary resident of Paris, concluded: "*it is the first time when there is an anatomical argument supporting Darwinism. This is the first link of the chain which stretches between man and monkey*" (E. Trinkaus, P. Shipman, 1996, p. 111).

No lithic elements that could have been connected to the human remains were discovered but Dupont claimed that some animal fossils "*bear the human touch*", having been brought into the cave by prehistoric men. Yet his accounts are not always convincing (M. Toussaint et al., 2004). Furthermore, the anthropic remains discovered in La Naullette cave have not been dated and present a mosaic of archaic, classic Neanderthal features, as well as some which are morphologically comparable to the anatomically modern human (M. Toussaint et al., 2004).

Wales, Pontnewydd (1874)

Pontnewydd Cave (New Bridge), located approximately 10 kilometers south to the city of Rhyl, was first mentioned by a reverend Stanley, the one who had dug in Cefn cave, located close by. 40 years later, Professor William Boyd Dawkins carries out the first archaeological digging and discovers prehistorical fauna remains, including from a hippopotamus, but notices the absence of artefacts and of human fossil remains (S. H. Green, 1981b).

Geologist McKenny Hughes, together with reverend D. R. Thomas, resumes digging in 1874. On this occasion, the two unearth not only fauna remains, but also artefacts and a human molar (C. Stringer, 2006). The molar was analyzed by George Busk, the naturalist who had also analyzed Gibraltar 1 skull, who concluded that the tooth belonged to a Neanderthal man, the first ever

discovered in Great Britain. It is considered missing at present (C. Stringer, 2006).

Later research, resumed in 1987 by Professon Stephen Green with the Wales National Museum, revealed a new human molar which was dated by thermoluminescence and uranium-thorium at 200,000-250,000 years old, being associated with archaic Neanderthals (S. H. Greene, 1981a). Afterward, 17 other human teeth, belonging to approximately five individuals, were discovered in the same context. According to Chris Stringer and Tim Compton with the London Natural History Museum, the molar discovered in 1874 belonged, without a doubt, to one of the same individuals (C. Stringer, 2006).

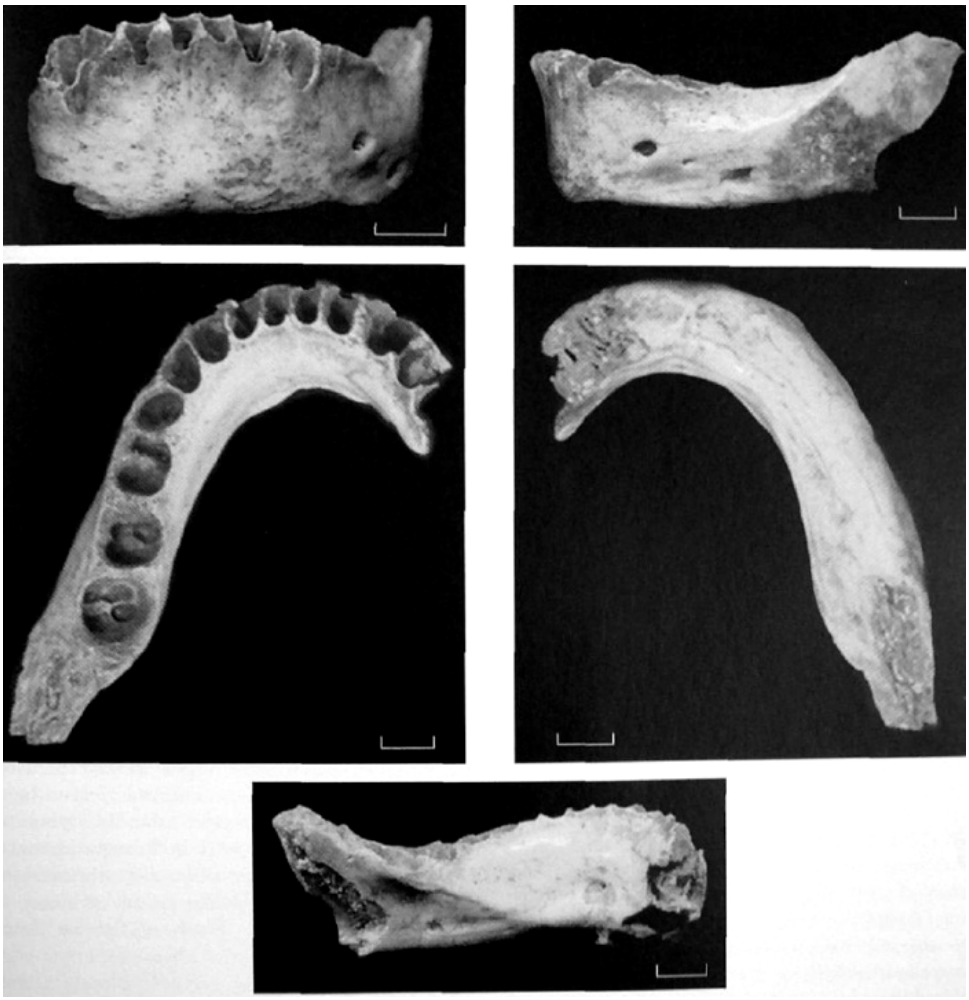

Fig. 3 - La Naulettt mandible, 1866 (after H. J. Schwarts, I. Tattersall, 2002, p. 249, fig. 1)

France, Le Rivaux

The Le Rivaux archaeological site from south-eastern France, on the outskirts of Puy-en-Velay city, was discovered in 1855, but the first truly important discoveries were made in 1876 (M. P. Mathys, 2008), at the initiative of French archaeologist and geologist Bertrand de Lom. Next to remains of fauna characteristic to the ice age, a human tooth was found, a fossil remain which was analyzed only 100 years later, when digging was resumed under the guidance of J. P. Daugas și J. P. Raynald (J.-P. Raynal, 1988). According to Daugas and Raynald, four stratigrahic elements are characteristic for the open air site at Le Rivaux: ploughable soil reaching a depth of 1.5 meters; grey sandy soil, with basalt blocks, starting at the

depth of 2 meters; compact clay soil, with three humifère levels, representing three level of human habitation, from the depth of 10 meters; basalt layer at the depth of 14 meters (M. Philibert, 1982).

The human tooth was discovered in the clay formation, next to lithic artefacts and fauna remains. This ensemble was initially thought to be Aurignacian, but later analysis (J.-P. Raynal, 1988) proved its Mousterian origins (M. Philibert, 1982), its age being estimated at 70,000 years B. P.

Czech Republic, Šipka (1880)

In 1880, in the Šipka cave in Moravia, the Czech Republic, Professor Karel Jaroslav Maška identified a mandible fragment belonging to an approximately 8-10 years old Neanderthal (fig. 4), in association with fossil bones of animals from the ice age, together with Mousterian-type stone tools (A. Hrdlička, 2010).

In Šipka, K. J. Maška discovered the first undisputable piece of evidence that Neanderthal men used fire, as the mandible was found near a hearth. The age of the mandible was calculated at 55,000 years (J. Svodoba et al, 1996).

Fig. 4 - Šipka mandible fragment (after H. J. Schwarts, I. Tattersall, 2002, p. 335, fig. 1)

Belgium, Betche-al-Rotche (Spy) (1886)

Spy Cave (municipality of Jemeppe-Sur-Sambre, Namur province), located on the left bank of Orneau river, if a small-sized cave whose main chamber leads to several narrow corridors. The first archaeological research was conducted in 1879 by A. Rucquoy. A second digging series was started by archaeologist Marcel de Puydt, paleontologist Julien Fraipont and geologist Max Lohest in the summer of 1885, but no truly important discovery was made until the following year (M. Toussaint et al., 2004).

We are talking about two nearly complete adult Neanderthal skeletons (Spy 1 and Spy 2) and one child's skeleton (Spy 3), together with fossil remains which belong to at least two or three individuals (fig. 5), in association with Mousterian artefacts (F. Schrenk, S. Müller, 2009). A first description of the two adults, Spy 1 and 2, was provided in 1888 (J. Fraipoint, 1888), confirming their Neanderthal origins.

"*It is certain that the excavation methods used by DuPuydt and Lohest were far from the scientific requirements, the two having erroneously catalogued the geological strata. Today at least seven habitation levels of the cave are recognized, at least three Mousterian and four Upper Paleolithic, as compared to the three recognized in 1886*" (M. Toussaint et al., 2004, p. 25).

Spain, Bañolas (1887)

The first fossil Neanderthal remain discovered in Spain, and the second in the Iberian Peninsula after the Gibraltar 1 skull, was a mandible inlaid in a travertine rock, found by chance by the owner of a stone quarry located near the city of Bañolas, 23 kilometers North-West of Gerona. Lorenzo Roura, the owner of the quarry, offered it to a pharmacist in Bañolas, Pedro Alsius, the man who made the first attempt to remove the mandible from the travertine rock (G. MacCurdy, 1915).

There are no chronostratigraphic details to indicate the possible age of the mandible, nor the

context in which it was extracted from the stone quarry. Its Neanderthal origin was confirmed by the latest tests performed in 2006 on one of the molars' enamel and dentine. These tests indicated an age of 66,000 ±7.000 B.P. (R. Grun et al., 2006), conclusion which reinforces the results of the first monograph written in 1915 (H. E. Pacheco, E. H. Obermeier, 1915). Yet, both the mandible's age and origin are still highly disputed, some arguing that it belonged to a Homo sapiens (A. A. Velasco et al., 2011).

France, Malarnaud (1889)

In 1889, French archaeologist Felix Regnault discovered a partial mandible in Malarnaud cave, near Montseron, Ariege. According to the description of the chamber in which the anthropic remain was found, a description provided by geologist Marcellin Boule, the partial mandible was discovered in the same context as fauna remains of a cave lion and bear, wolf and mammoth. No remains of Elephas antiquus, Rinoceros merkii or hippopotamus, the specific animals of the Quaternary Age, were discovered (M. Boule, 1921).

Fig. 5 - Spy: most representative Neanderthal bones (after M. Toussaint et al., 2004, p 35, fig.4)

An analysis of the same mandible was carried out by paleontologist Henri Filhol, who noted the similarities between it and the mandible discovered in La Naulette, Belgium (M. Boule, 1921). „*The mandible which belonged to a teenager is the first discovery, confirmed since the 19th century, of a Neanderthal fossil remain on the French territory*" (M.-P. Mathys, 2008, p.18).

Belgium, Fonds-de-Foret (1895)

The two Fonds-de-Foret caves, located on the left bank of Magne river, an affluent of Vesdre river, have been explored since the 1830s, with Philippe-Charles Schmerling digging in this area, possibly right in the big chamber of the cave located upstream. In 1895, Dr. F. Tihon carried out a series of archaeological diggings on the two caves' joint terrace before resuming research in the 30 meters long gallery which leads to the chamber explored by Schmerling. This is where Neanderthal remains – an upper left molar and a femur – were found (M. Toussaint et al., 2004).

The lithic material, belonging to the industries in both the Middle and Upper Paleolithic, has been repeatedly mixed, especially by F. Tihon, thus making it very difficult to provide an interpretation of the paleoenvironment based on the fauna remains. Still, both the femur and the molar bear the features of a classic Neanderthal (M. Toussaint et al., 2004).

Croatia, Krapina (1899)

In 1899 Croatian geologist Dragutin Gorjanović-Kramberger started digging in Krapina cave, located on Hušnjak hill, near the homonym Croatian city. Over the next six years, the Croatian

archaeologist unearthed over 900 anthropic fossil remains belonging to several dozen individuals, in the same stratigraphic context as Mousterian artefacts and quaternary age-specific fauna remains (D. F. Frayer, 2006).

Not only was this the richest archaeological site associated to the Middle Paleolithic discovered till that time, but the anthropologic fossil remains had marks of cuts or burns, a fact which generated numerous controversies among scientists. To Kramberger, these were signs of anthropophagous practices. His hypothesis was argued against by Emile Cartailhac, Adrien and Gabriel de Mortillet, scientists who supported the hypothesis of funeral practices, rather than that of cannibalism (M. P. Mathys, 2008).

The human remains in Krapina also bear the marks of injuries which healed, proof of a very difficult life style, as well as of a possible empathy which pushed members of the community to look after those sick or injured (W. Henke, I. Tattersall, 2007).

Conclusions

The first anthropologic discoveries related to the Middle Paleolithic, such as the ones in Engis cave, Belgium, or Forbes Quarry, Gibraltar, were overlooked, having been analyzed tens or even hundreds of years later. But they were not the last ones. There were also errors made by the pioneers who tried to reveal parts of a virtually unknown past and their errors cumbered, sometimes decades in a row, the work of those who followed in their footsteps. Some of these discoveries are still being analyzed and debated upon, with some such as the mandible from Bañolas, Spain, still generating heated controversies related to their Neanderthal origins. Yet, it is certain that, beyond such inherent errors, all efforts made in this field paved the way to the great discoveries of the 20th century and to understanding and accepting a very important episode of the human evolution. Reviewing and synthesizing the archaeological discoveries related to the Middle Paleolithic made in the 19th century are the more necessary not all of the typological, technical and statistical aspects related to these discoveries have been fully determined. On the same note, presenting them into a synthetic manner is intended to facilitate understanding the historical and scientific context in which they were discovered, interpreted and described later on, all in order to avoid the errors made in the past and to facilitate further studies.

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