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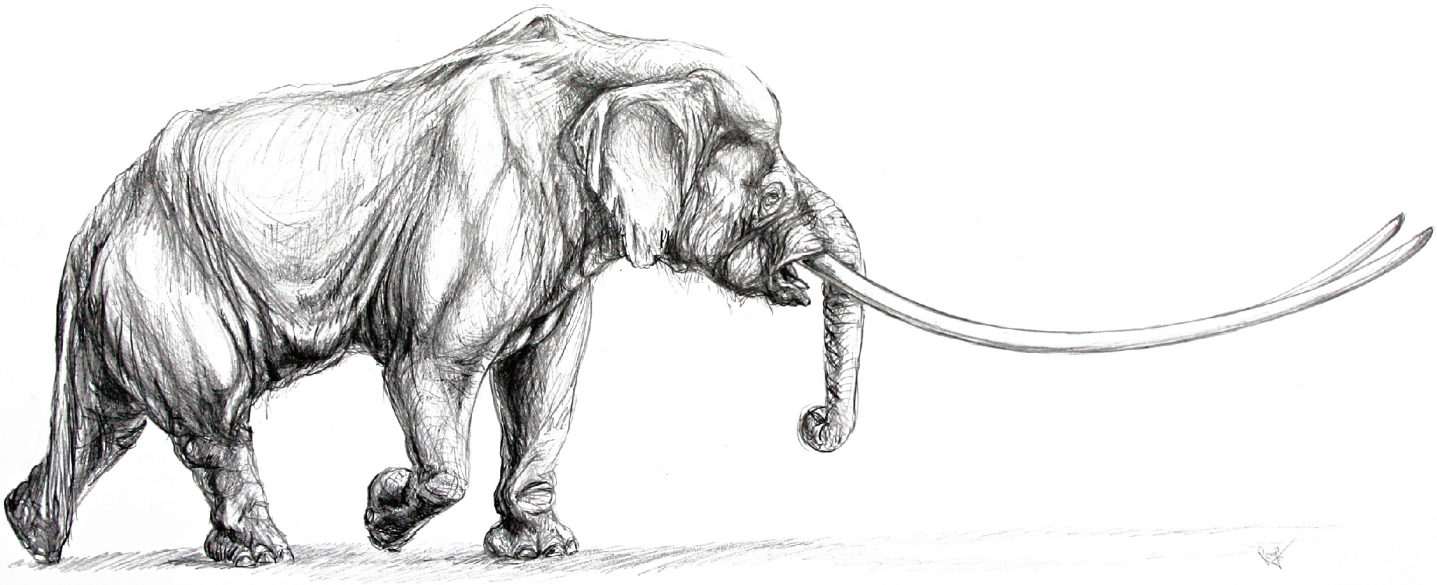

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ABSTRACT BOOK

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Abnormal mammoth remnants in the Ice Age Museum Collection

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The Ice Age Museum stores mammoth remains found in the North East of Russia. The museum includes the most scientifically valuable specimens, especially those with pronounced deviations from normal morphology. Some remains belonged to one and the same individual, others are just single.

The skeleton of an adult female mammoth F-2466 from Kastykhtakh river (Taimyr) has some peculiarities: fractures of ribs caused during lifetime that led to the false joint formation of them, fissures in the atlas' neural arch and a sigmoid contact of m2 and m3 teeth (Kirillova et al., 2012). These characteristics may have been caused genetically or by metabolic disorder during pregnancy and lactation, which is peculiar for females.

A few specimens of pathologically changed vertebras represent a different kind of spinal diseases. There is a case of an ankylosing hyperostosis (Fig. 1) caused by the tissue ageing. The fusion of four vertebrae was caused by ligaments and muscles ossification. The surface of the proliferative tissue is firm and shiny. Between vertebrae there are empty spaces that were occupied by intervertebral discs during the lifetime. Another case is pathology of the atlas (F-910) and epistropheus (F-769) of one individual. Surface accrementition is porous, dim; on the corpus vertebrae there is a large abnormal cavity. There are specimens with marked osteochondrosis, arthrosis and osteoporosis.

Deviations in buccal teeth structure in the Ice Age museum's collection are represented by different types: root formation pathology, odontoma, occlusion pathology of the last teeth (M3), cavities in the occlusal surface during lifetime, etc. Several M3 are so extremely twisted that their front and rear parts are almost touch each other. In early stages of development of some m3 the rear plates of the teeth are separated and later they are re-united with the same tooth in the form of excess appendage (Kirillova, 2009).

About 1500 mammoth tusks were examined. The most interesting ones were selected for the scientific collection according to a number of criteria. Specimens selected for taphonomical reasons include tusks of different conditions, from almost completely destroyed to excellent; a tusk that was broken up by a frost crack; tusks of different colors, from the "modern" ivory color to brown and black. Specimens selected by individual age include a range of tusks from juvenile to old, obliterated to the root.

Specific traces, both ancient and modern, are of different origin. Among them there are both lifetime peculiarities of a tusk (variations of working occlusion surface; hatchwork

Fig. 1. Sample F-313. Pathology of thoracic vertebrae, side view. Scale bar equals 10 cm.

that inscribed the directions of tusk's movement on the ground when unearthing it from snow) and postmortem ones. The latter include traces of a caterpillar's "fang", or other signs of human influence. There are specimens with numerous natural surface caverns of different size.

Tusks with marked individual peculiarities and pathologies usually belong adults and old individuals. Normally an elephant's tusk grows by means of adding one dentin cone a year throughout all life. Each subsequent cone of a growing animal is larger than the previous one. After animal's passing the physical matureness peak, the size of cones gradually decreases. Usually annual growths are distinguished by their colour but sometimes we can see a transverse ringed deepening. It is a sign of a sharp slowdown (until a complete stop) of process. Sometimes these features are expressed significantly (F-626). It is most likely that the reason of the formation of these narrowings is sharp climate (or food supply) changes. The feature is expressed sharply in about 3% of the tusks.

Odontoblasts in the pulp of adult and old animal tusks can come off (individually or in groups), then attach and grow elsewhere. These accretions have a specific texture that can be seen in their cross-cuts (F-197). Sometimes they form specific crests on cone surfaces (F-581). Very often the last cone on the tusk of old animals is formed on the side of the tusk but not at the end of it. A selection of such variations is collected. At that the last cone is frequently filled with dentin but the character of this process may be different. Usually this happens when the tusk is extremely worn out. There is only one instance of a mature female's tusk, which is slightly worn out and whose proximal part at the same time is completely filled with dentin (F-2921).

The example F-196 represents a unique case. 4 roundish clots of dentin were formed in alveole-like holes in the alveolar walls of large male's tusk. One of them sprang through a bone. Others are located on the internal part of the alveolar wall. All the formations are mobile in their hollows. In the cut of the largest of them it's possible to see the same cross-grained structure that accretions of old mammoths' tusks have.

It is not always possible to determine whether a deviation is pathology or not. The idea of norm is very well developed in serial materials for human but almost does not exist for proboscidean. Lifetime injuries were discovered on the mammoth remains of different individual age. But only adult and old specimens were registered with significant deviations, as pathology development is a feature of this age. In many locations such remains prevail. Mammoths had a chance to live long lives despite all the diseases. They were undoubtedly susceptible to illnesses related to the supporting-motor system (Krzeminska, 2009; Leshchinskiy, 2012). However analysis of similar diseases of modern elephants would probably give a very bright picture, too. Pathologies of buccal teeth and tusks of mammoths and of modern elephants are very similar.

The collection of aberrant remains provides new important knowledge of the mammoth biology.

References

Kirillova I., 2009. Unusual tooth pathology in mammoth (*Mammuthus primigenius*) from Yakutia. Russian Journal of Theriology 8, 29-36.

Kirillova I., Shidlovskiy F., Titov V., 2012. Kastykhtakh mammoth from Taimyr (Russia). Quaternary International 276-277, 269-277.

Krzeminska A., 2009. Pathologies of mammoth bones from Milovice site. Oliva, M. (Ed.), Milovice: Site of the Mammoth People below the Pavlov Hills. Studies in Anthropology, Palaeoethnology, Palaeontology and Quaternary Geology 27 (19), 118-125.

Leshchinskiy S., 2012. Paleoecological investigation of mammoth remains from the Kraków Spadzista Street (B) site. Quaternary International 276-277, 155-169.

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