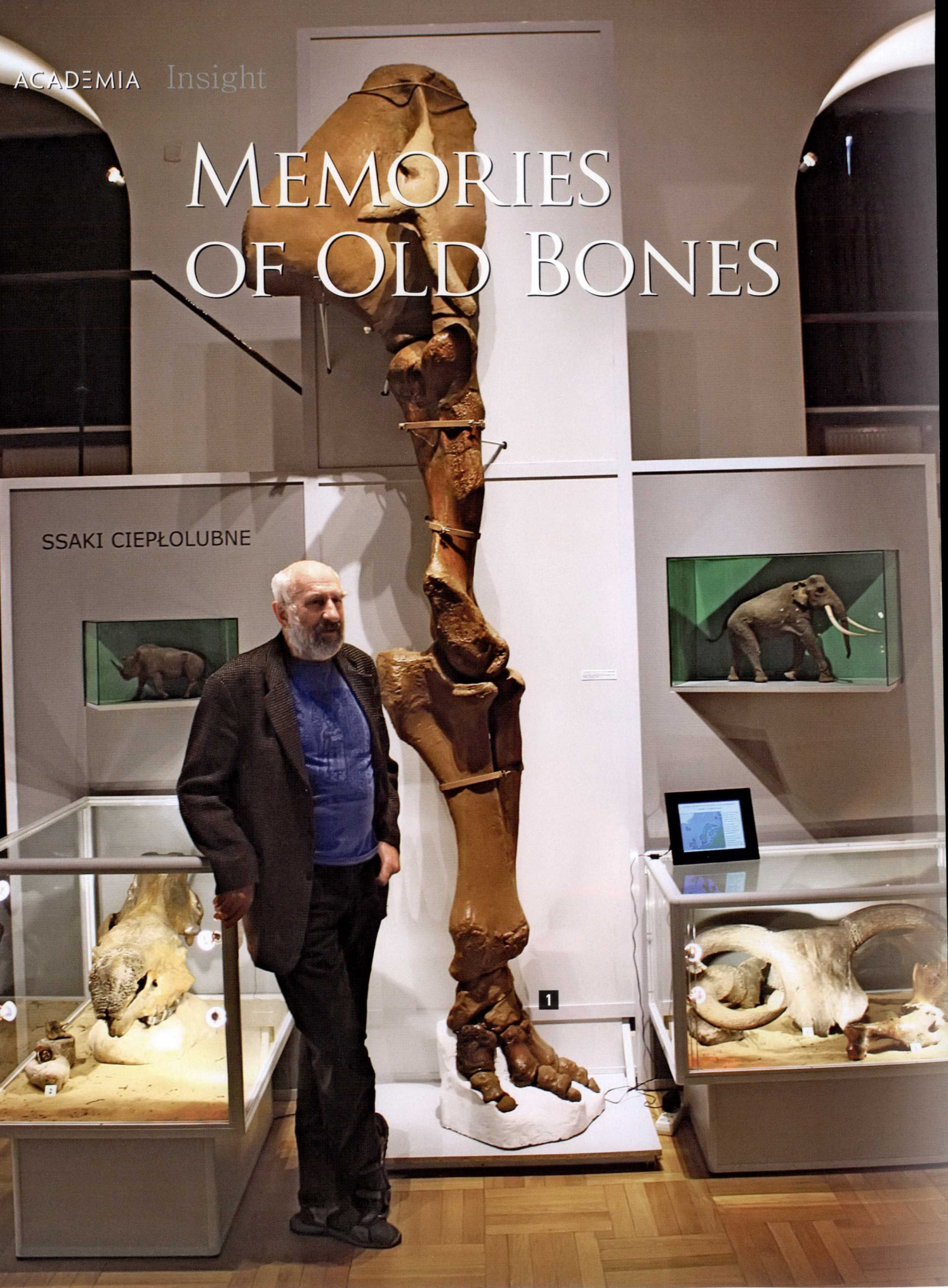


MEMORIES OF OLD BONES



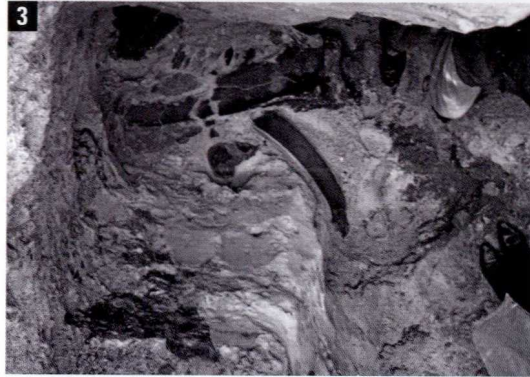
SSAKI CIEPŁOLUBNE

Mammoths, woolly rhinos, and forest elephants died out long ago, but the massive bones they left behind enable us to imagine how impressive these prehistoric animals truly were

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The Pleistocene, the geological epoch that immediately preceded the times in which we now live, lasted around 2.5 million years. Due to great climate variations and the related periodic glaciations of a large share of the northern hemisphere, the lands that now make up Poland were inhabited by very diverse fauna during the epoch, making it particularly interesting to paleontologists and geologists. In times when the ice sheet was in the process of advancing or retreating, the climactic conditions in the glacial foreland were close to those that today prevail in the Siberian tundra – a landform known as “mammoth tundra,” which was inhabited by animals adapted to nearly polar conditions: mammoths, woolly rhinoceros, reindeer, and musk oxen. But when the ice sheet had retracted maximally to the north, the climate was distinctly warmer than it is now, and was hospitable even to such warmer-clime species as the forest elephant and Merck’s rhinoceros. Transition periods with an intermediate, moderate climate were favorable for animals similar to those we know today, such as aurochs, deer, moose, wolves, and badgers, whereas giant deer, horses, and steppe bison preferred a somewhat colder climate. The caves were occupied by predators, such as bear, hyenas, and cave lions.



AUTHOR'S ARCHIVES (6)

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Of course, over the Pleistocene as a whole the areas that today make up Poland were inhabited by representatives of hundreds of other animal species – small insectivorous mammals, bats, and rodents, as well as larger species such as martens, weasels, foxes, and beaver. Many of these species have survived to the present, but many have long gone extinct, especially the largest ones. However, we gain some idea of what they were like when their bones are found and excavated.

A “petrified head”

The skeletons of large ancient mammals were being discovered in Polish lands back in medieval times, but such finds are recorded in the form of printed documents dating from 1758. The descriptions are in German, because they pertain to findings in Upper and Lower Silesia and central Pomerania, areas which were then under Prussian administration. The first scientific mentions of Pleistocene mammal bones written in Polish are to be found in the works of the first Polish paleontologist Jerzy Bogumił Pusch dating from 1830–1837. Descriptions were also published by the father of Polish geology, Stanisław Staszic, in his 1805 work on the origin of the Carpathian mountains, and – in 1815 – by Józef Śniadecki, professor at the University of Wilno (Vilnius), in an article on extinct animals.

Even before then, however, sensational reports about bone discoveries began to appear in the daily press or special publications. In 1822, the newspaper *Rozmaitości* in Lwów (now Lviv) published an article on “Bones Excavated at Miechów.” In 1834, *Przyjaciel Ludu* carried an article on mammoth remains unearthed near Leszno. In the same year, the founder

Photo 1:
The massive front leg of a forest elephant

Photo 2:
The skull of a Merck’s rhinoceros (*Dicerorhinus kirchbergensis*)

Photo 3:
The most intriguing paleontological find ever made in Warsaw itself was in 1962, when the nearly complete skeleton of a forest elephant *Palaeoloxodon antiquus* (Falconer & Cautley, 1847) was unearthed on Leszno Street. The first to come across the bones were workers digging a hole nearly 5 meters deep. They completely destroyed the jaw, the cranial portion of the skull, half of the pelvis, several vertebrae, many ribs, and probably the limb-bones. Not until a passing teacher intervened did they stop breaking apart the huge bones with picks. The fragmented bones were taken to a refuse heap and were never recovered.

of the Natural Science Museum in Lwów, Tytus Dzieduszycki, published a report under a name that rings a bit odd nowadays: "Description of a petrified head found in the Przemyśl District, including some general remarks."

The Starunia discovery

The story of Polish paleontological discoveries of the 20th century began in October 1907, immediately with a find unique on a worldwide scale. In the small village of Starunia (now in present-day Ukraine), workers came upon the remains of a large animal in one of the shafts of an earthwax mine, at a depth of 2.5 meters. Thinking that it was a dead ox, they cut it apart, destroying the skull almost completely in so doing, and threw it onto the scrap heap. They divided most of the skin among themselves.

It took a month before news of the find reached Dzieduszycki's Museum in Lwów. The remains, which turned out to belong to a mammoth *Mammuthus primigenius* (Blumenbach, 1799), were secured and a further search was launched at the mine. Eventually, at a depth of 7.6 meters, the front portion of a woolly rhinoceros body was found, including the head and a section of skin 2.5 meters long.

Work at Starunia could not be resumed until 11 years had passed after Poland regained its independence, in 1929, with funding from the Polish Academy of Learning (PAU). A new shaft was dug, and from it successive corridors were excavated leading towards the old shaft. In the third one to be dug, at a depth of 2.5 meters, the searchers came upon an extraordinary sight: the nearly complete body of a woolly rhinoceros *Coelodonta antiquitatis* (Blumenbach, 1807) lying in Pleistocene clay deposits, on its back with its legs sticking up. After it was excavated, there turned out to be a large hole in the left side of the animal, though which its internal organs had flowed out. Its horns

and hoofs were absent, and to recover its fur the clay had to be flushed out. After two months of work, the body was recovered and taken to Kraków, where it can now be admired in the Natural History Museum of the Institute of Systematics and Evolution of Animals, Polish Academy of Sciences. It is the only such specimen in the world. A few years ago, investigation work at the Smithsonian Institution in Washington dated it as being 23,500 years old.

The longest leg

W 1959, excavation work at a peat bog in Skaratki near Łowicz came upon the feet of a mammoth that had fallen victim to hunters. After chasing the animal into the bog, they slaughtered it, then carried all the meat to the edge of the bog along a pathway they made using its vertebrae as stepping-stones. Numerous stone tools which the hunters accidentally left behind in the bog were also found. In 1967, the remains of mammoth that had also been hunted and killed by Paleolithic hunters were found in Nowa Huta. Fragments of the skull, vertebrae, aitchbone, and pelvis were found, together with stone tools used to work the carcass. Other finds similar to these could also be cited.

In late 1967, on Spadzista Street in Kraków, near the Kościuszko Mound, the remains of a 22,000 year old mammoth-hunter camp were found, composed of fragments of mammoth skeletons. Apart from long bones scattered around the site in a circle, several dozen molars and an extensive set of tools made of bone and flint were collected. The skeletal remains belonged to at least 60 individual mammoths killed by the hunters. A refuse-heap was also found, filled with a vast quantity of broken animal bones.

In August 1970, a dredging boat working on the channel of the Vistula River near Siekerki in Warsaw dredged up many Pleistocene mammal bones. The most valuable of these is a nearly complete skull of

Photo 4:
Part of a mammoth skull spotted sticking out of exceptionally low river water, with left molars visible. Successfully recovering it took much ingenuity and sacrifice



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DARIUSZ NAST (3)

the warm-climate-loving Merck's rhinoceros *Dicerorhinus kirchbergensis* (Jager, 1839), missing only one tooth and the left zygomatic arch. Unlike the woolly rhinoceros, which is known to have occurred frequently in Poland and has been recovered from more than 100 sites, Merck's rhinoceros remains have only been found in eight locations. The skull from Siekierki is the first and best-preserved of the four that have been described in the world literature to date.

In February 1984, while Quaternary caprock was being excavated at an opencast mine in Józwin, a set of large-sized bones was uncovered. They were noticed when the excavating machine working at the location broke down, although it had already destroyed a large portion of the find. Analysis of field photos showed that the skeleton was anatomically arranged, with only small displacements. Comparative study concluded that the skeleton belonged to a forest elephant, the largest-known specimen from the elephant family ever found. Its right front limb measures 4.05 meters from the metacarpus to the upper tip of the scapula. The specimen on display at the British Museum in London, from Upnor, measures 3.89 meters in this respect, and the largest front limb of the North American representative of the mammoth elephants, *Mammuthus columbi* (Falconer, 1857) previously known as *Archidiscodon imperator* and previously considered the largest elephant in the world, stands 3.97 meters high.

Rescued from the river

Paleontological and geological research enables us to reconstruct in great detail what the landscape of today's Poland was like thousands of years ago. It turns out, for instance, that from the Eemian interglacial

through the first part of the last glaciation, the territory of present-day Warsaw was occupied by a large lake. It was in the old sediments of this lake that the remains of the forest elephant and mammoths were found. The Vistula River changed its course repeatedly, depositing numerous bones of dead or flood-drowned animals within the broader Proglacial Vistula Valley. Now the river sometimes re-erodes them out of the same sediments it deposited thousands of years ago. When water in the river dropped to very low levels in the summer of 2015, the Museum of the Earth was lucky enough to another unique exhibit.

In late August, one of the paleontology enthusiasts who collaborates with our museum was walking along the Vistula when he spotted a strange shape in the newly exposed shallows, which turned out to be a large portion of a mammoth skull. The water-logged bones were so heavy that he was unable to lift them alone, so he called in acquaintances from our institution. Five people took part in recovering the find, and getting it to the riverbank was no easy task. A blown-up automotive inner-tube was used in the process, as an air cushion to keep the skull afloat. Preliminary examination of the animal's teeth at the museum indicated that it died at 35-37 years old. The bones were preserved in good condition only because they had been completely submerged in water. In contact with the air they would have dried out quickly and disintegrated.

And so, animals from the Pleistocene epoch, long extinct, still do make appearances in our world from time to time. It seems that they do not want to let us forget about them or the times long ago when they ruled the world.

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