An Elephant's Last Meal

— by Elena Marinova, Katholieke Universiteit, Leuven; and Wim Van Neer, Royal Belgian Institute of Natural Sciences, Brussels

The excavation of Tomb 33 provides us with one of the most exciting finds from HK6 so far: the burial of an African elephant with over half of the body intact. Analysis of the dentition suggests that the animal was about 10 years of age when it died. It is believed that this elephant and the one from Tomb 24 were imported from further south along the Nile where they were captured, and perhaps tamed, before being brought to Hierakonpolis and kept alive until the ceremonies that necessitated their death. Besides keeping them in confinement, their owners also needed to feed them adequately. Preliminary analysis of the botanical material found within the elephant in Tomb 33 gives us a first glimpse of its final meal.

The large amounts of dark matter found between the posterior ribs and in the pelvic region obviously represent the gut content of the elephant. Already with the naked eye one could see the fibrous plant remains, but for a more detailed understanding, a microscopic analysis was necessary. Four small samples were examined under a low magnification microscope. Such analysis allows the identification of plant remains with sizes of over 0.5mm, such as seeds, small branches, etc. Careful examination of these macro-remains showed us that the samples contained brittle but clearly distinguishable plant material and that the elephant was willing to disclose its inner secrets.

The elephant's last meal, still *in situ*.

The dominant plant in the samples studied thus far is emmer, represented mainly by chaff fragments showing that the elephant fed on the residue of threshing. The use of emmer chaff as fodder for domestic animals is well known at Hierakonpolis and throughout the Near East; however, there are also intact spikelets which are unlikely to have survived the threshing process. These spikelets suggest that whole, unthreshed emmer grains were also consumed by the elephant, but as the grains themselves are much less resistant to digestion and destruction in the soil, none could be detected on the scale at which this first analysis was carried out.

Another item on the elephant's menu was the young twigs of trees. Wood anatomy observed on some of the thicker twigs revealed the typical morphological characteristics of acacia. The sharp thorns also support the identification of this desert-growing tree.

In addition, the elephant also feasted on a number of herbaceous stems and inflorescences which have been identified as *Ceruana pratensis*. This weedy species grows along the Nile's banks and large irrigation canals. It was used for garlands in offerings, in the manufacture of mats, as wattle for walls, and also as animal fodder. Since the *Ceruana* finds were imbedded inside the lumps of gut content, they can be safely considered remnants of the elephant's diet rather than as parts of the matting on which he was laid. Previous studies by Ahmed Fahmy (Helwan University) showed that this plant was also ingested by the Tomb 24 elephant, who in addition consumed quantities of the rush *Juncus*, which grows along the Nile banks and in wetlands (*Nekhen News* 14: 11). No evidence of these rushes was observed in the gut content of the Tomb 33 elephant, but there were a few remains typical of the sedge family (*Cyperaceae*), which would come from the same humid, river-side environment as the *Ceruana pratensis*.

Elephants can survive on a wide variety of plants. They can feed on grasses and herbs, break off tree branches, strip off leaves and bark, uproot shrubs, and pick up fruits and nuts. When grazing in their natural environment they can find enough forage, but meeting their dietary needs in captivity may have been more problematic for the zookeeper of ancient Hierakonpolis.

A young elephant of the size found at HK6 would have needed about 50 kilograms of food each day. The variety of plant remains identified in the stomach contents so far indicates that he partook of the bounty of the river side, low desert and cultivated fields, the three eco-zones exploited by the ancient Egyptians. The question is: did the food come to the elephant or the elephant go to the food? While not ruling out the occasional walk-about, in terms of logistics, it may have been more practical to keep the elephant close to places near the settlement where the chaff was deposited. This is further suggested by the numerous flints, partly digested potsherds and two fish bones recovered from within the rib cage.

The vertebra of a *Clarias* catfish and a pectoral spine from a *Synodontis* catfish are most probably the left-overs from hu-

On the Menu

Retrieved from the inner elephant: *Acacia sp.* thorns, *Ceruana pratensis* inflorescence; emmer spikelet.

Less tasty, other bits found within include fishbones, flints and sherds.

man consumption, which were dumped as refuse along with the less-tasty items and subsequently became mixed with the elephant's food. However, it was not simply ordinary rubbish and animal fodder that was given to the elephant.

The presence of emmer spikelets in the stomach content in relatively high concentrations (on average 30 items per 10 ml of gut content) is surprising. This cereal crop was grown mainly for human consumption and was a major component of the diet at Hierakonpolis.

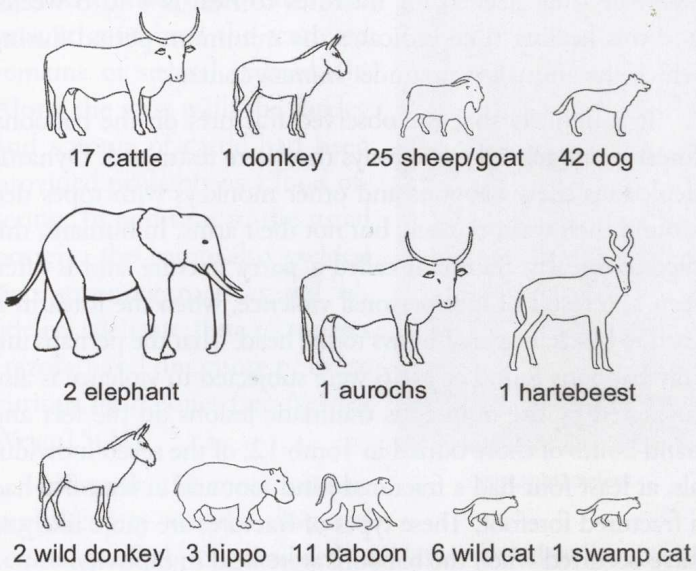
The elephant was no doubt a special animal that received particular attention whilst in captivity; however, considering the large amounts of food needed, it is very unlikely that emmer wheat was its main staple. Perhaps he received a special meal as a parting gift? More detailed analysis, not only of the elephant's final meal but also that of the hartebeest, aurochs, and domestic cattle buried near him, may answer this and other questions about animal care and feeding in Hierakonpolis' royal zoo as research continues.

Animal Hospital: Healed Animal Bones from HK6

— by Wim Van Neer, Royal Belgian Institute of Natural Sciences, Brussels, and Veerle Linseele, Katholieke Universiteit, Leuven

With the discoveries made this season, the tally of animals buried at the elite cemetery HK6 is now up to an impressive 112. The 2009 excavations uncovered ten dogs—at least six in Tomb 14 and two each in pit graves Feature D and G—as well as a cow and calf in Tomb 36, and a young hippo in Feature H. The excavations also yielded more skeletal material from animals that had been partly recovered earlier, the most notable being the elephant previously attributed to Tomb 14, but in reality interred in the far more substantial Tomb 33. The remains of the goat that were previously attributed to Tomb 13 now appear to originate from Tomb 35 in which another very large individual was also present. The shoulder heights of these specimens were calculated at 76 and 84cm respectively, which is extremely large for goats and shows once again that HK6 was special, not only for its wild species, but also for the type of domestic animals that were selected for burial. The hartebeest skeleton, of which only a few elements had been retrieved in 1998, is now more complete owing to additional finds, although its grave has not yet been located.

After the excavations, the various skeletal parts were carefully examined in the lab. Measurements were taken to reconstruct the size of the animals. Their age at death was determined using dental eruption, tooth wear and the fusion stage of the



The animal register at HK6 so far.

long bones. Morphological characteristics were observed to establish the breed to which the domestic animals belonged, and attention was also paid to pathologies visible on the bones.

We had already observed healed fractures on the jungle cat and baboons found in Tomb 12 (*Nekhen News* 14: 7–8).