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SOME REMARKS ON CAT MUMMIES
IN LIGHT OF THE EXAMINATION
OF ARTEFACTS FROM THE NATIONAL
MUSEUM IN WARSAW COLLECTION

Abstract: *Votive mummies of cats were offered at the shrines of particular gods, to whom these animals were sacred. They played an important role in Egyptian religion during the Late and Greco-Roman periods and represent an important source on the popular beliefs and practices of ordinary Egyptians at the twilight of their civilisation. For many years, this subject was neglected and a large number of animal mummies were simply destroyed. However, many specimens of unknown origin are still preserved in collections around the world, which allows further research to be conducted upon them.*

After the Second World War, the National Museum in Warsaw received five such artefacts. Their exact provenience, archaeological context and the precise time of their execution is unknown. In April 2011, an x-ray examination of the artefacts was conducted by Łukasz Przewłocki, Wojciech Ejsmond (students at the Institute of Archaeology, Warsaw University) and Dr. Monika Dolińska (curator of the Egyptian collection at the National Museum in Warsaw).

This paper presents an interpretation of these objects in the wider context of animal mummies and also provides a description of the results of their recent examination. All the specimens can be dated to the Greco-Roman period (332 BC-AD 390) with the exception of one, which probably dates to an earlier time. There are some unusual aspects to the group, such as the presence of a human tooth in one specimen and traces of restoration carried out at an unknown date in other one.

Keywords: *Cat; mummies; animals; ancient Egypt; popular beliefs; Greco-Roman period; National Museum in Warsaw*

Animal mummies: a mixture of religion and magic

In ancient Egypt a deity was worshipped in its visible epiphany as a cult image. These could be of various type, either inanimate (statues or two-dimensional representations of deities, heavenly bodies, exceptionally even objects) or live animals. An animal was chosen to act as a god's image for the period of its natural life because of its special external characteristics, such as an unusual pattern of markings or special behaviour. It was unique and when it died, it was buried as befitted its status and a successor was selected. The role of animals in Egyptian religion was quite different from zoolatry and to talk about the 'deification' of cats would be misleading (Malek 1993, 76).

Different methods of mummification were used for animals and the number of specific species to be mummified varied. In essence, the scale of mummification of a specific animal depended on whether it represented or was dedicated to a god whose cult was widespread. The reasons for mummification depended on the use of the animals. Salima Ikram distinguished four main types of animal mummies: 1. food offerings for the afterlife; 2. beloved pets, buried with their owners; 3. sacred animals, recognised as a living incarnation of a special god, worshipped during their lifetime, buried in an opulent way and, especially in later times; 4. votive mummies of animals, dedicated as offerings at the shrines of specific gods, to whom these animals were sacred (Ikram and Iskander 2002, I-V; Ikram 2005a, 1-5).

Yet not all mummies conform to this division. Some mummies from human cemeteries, for example the Valley of the Kings, may not have been pets, but instead had a cultic function or were dedicated to local divinities (Ikram 2005a, 1).

The first group consists of preserved meat, which was covered in simple bandages and linen. It was intended to be food for the afterlife. Cats were not mummified as food and Egyptian sources do not mention that cats were animals which were consumed.¹ However they could have been beloved pets or sacred animals, which were mummified after their natural death. All of the cats from the collection of the National Museum in Warsaw

¹ S. Ikram (1995, 5) does not mention cats as animals which were consumed in ancient Egypt in her list.

were most probably killed, which means they were not sacred animals or home pets, which were kept to the time of their natural death. The form of the mummies is also modest, which confirms their votive function and indicates mass production.

Votive mummies are the most numerous of all of the groups discussed above and a votive function is the most probable interpretation of the artefacts from the museum. The meaning and function of votive mummies is unclear. They are usually described as the remains of animals which lived in temples and represented a sacred animal, but were not its main representatives, or as votive offerings made to the gods beside their figures (Ikram 2003, 77-78). The votive mummy is generally identified as an offering consisting of a specific mummified animal that was dedicated to its corresponding divinity, so that the donor's prayer would be addressed to the god throughout eternity. Cats were principally offered to the goddess Bastet, who manifested herself as a cat. They differed from sacred animals in that they were not unique, since they lacked the special markings that identified them as a god's incarnation. Instead, they acted as the mediators between a human and a god. They were purchased and offered by pilgrims at shrines dedicated to the relevant gods (Martin 1981, 9; Ikram 2005a, 9). It is not known whether they were bred in the place of their mummification or if they were imported from different areas of Egypt. They were placed in the temple areas of the gods for whom they were intended as a gift (Ikram 2003, 77-78).

Such animals, for the purpose of votive offerings, are believed to have been killed prior to their natural death. Many of the cat mummies discovered at the Bubasteion in Saqqara, as well as examples from the British Museum's collection, show that they were put to death at a young age (Ikram 2005a, 13; Zivie and Lichtenberg 2005, 114). Specimens from the British Museum were killed either between the age of two to four months, or between nine to 12 months (Armitage and Clutton-Brock 1980). A similar situation was noted with the mummies from Balat, Saqqara and those kept in the Louvre Museum (Summerfield Estep 1995, 77). According to S. Ikram (2005a, 13), the cats were killed in one of two ways: 1. by breaking the neck or 2. by smashing the skull with a blunt object, but a third option may also be added: 3. strangulation (Zivie and Lichtenberg 2005, 114-117). Ikram (2005a, 13) points out that this is inconsistent with the concept of the sanctity of the animals devoted to the gods. It might be possible, however, that the cats intended to be mummified were not sacred until they were mummified and the rituals were completed. This would mean that any cat

would be suitable for the creation of a votive mummy, as it was the later ritual that transformed the cat into a sacred votive object.

There is a theory that the animals were sacrificed during the mummification process, which would have involved the immersion of the live animals in a vessel of boiling resin, bitumen or pitch (Ikram 2005b, 26; Nicholson 2005). However, there is no proof of this. There is also no clue in Egyptian texts as to what form the death of these animals took. The process of mummification was dependent on the properties of their anatomy. After evisceration, the cats were dried with natron and covered in resin, applied either directly to the body or to the bandages (Pettigrew 1834, 214).

Another issue closely related to votive mummies is that of false mummies. These included symbolic animal parts (sometimes of several quite different animals) and even bandaged pieces of clay. A good example is the fake crocodile burials discovered by Edme-François Jomard (see Pettigrew 1834, 214). In one instance, only the head was real and the rest of the body was replaced by the stem of a palm tree, bandages and other materials. Ikram (2003, 77-82) has explained this fact by stating that if it was difficult to get the animal needed for mummification, as was the case with most birds of prey and other predators, the whole animal was represented by just a part of its body. According to other theories, this type of mummy was made by priests to cheat pilgrims (Ikram 2003, 90-94). Dieter Kessler and Abd el Halim Nur el Din (2005, 156) meanwhile assume that fake mummies could have honoured divine animals by preserving parts of them found in nature or that they were simply a response to the problem of answering the heavy demand for mummies.

However, the situation seems to have been far more complicated. In mummies with the sketched heads of falcons in the Naparstek Museum in Prague, the bones of different birds were found, including ibises, members of another order (Hanzák 1977, 83). There is also a mummy in the same collection (no. 2501) with the exterior form of a human child, but radiological examination has proved that in fact an *Abdim's* stork is inside (*Ciconia abdimii*) (Hanzák 1977, 83, fig. 1).² The combination of animal parts inside a bundle varies from one example to another (Summerfield Estep 1995, 77). For example, D. Kessler and Abd el Halim Nur el Din

² According to Ikram (2003, 90-94), the mummies of birds of prey were often confused with the mummies of small babies due to their thick layer of bandages, which made them resemble humans. In this case, the feet are clearly marked, so there is no doubt that the mummy was intended to look like a man.

(2005, 156) discovered a complete skeleton of a fish glued to two isolated ibis heads. Another bundle contained parts of three cats, small parts of fish, a bone of the glossy ibis, a skull of an ichneumon and birds of prey. There was even a human rib in between the animal remains. According to the authors, this may be due to the proximity of a human embalmer's workshop to that of the animal embalmer. According to Ikram (personal communication, March 22, 2013), human remains inside animal mummies (and *vice versa*) are not a rarity. It could be explained by the assumption that the same people prepared both human and animal mummies in one workshop and that, during drying in natron, certain parts may have become mixed up among the different bodies. A human tooth was found in the bandages of one mummy from the collection of the National Museum in Warsaw (see below).

The mummification of many creatures in a single bundle seems to count against the theory of supply problems or at least suggests that it should not be taken as a general rule. It is also possible that embalmers once created mummies on special request, for some reason putting different creatures and their parts into one bundle. It was uneconomical to mummify more than one animal in a bundle, so this practice must have had some significance, probably religious or magical. In some cases, embalmers bandaged every part of an animal that they could find. They may have had poor knowledge of human and animal osteology and therefore mistaken human and animal bones and teeth. It is also true that the mummies were not intended to be unrolled and that nobody checked their contents, so the embalmers could have put practically anything or nothing at all inside.

It may therefore be concluded that there is no fixed rule according to which the appearance of human parts in animal mummies and *vice versa* can be explained. This is also the case for odd situations, such as the child-shaped mummy containing an Abdim's stork. If Ikram (personal communication, March 22, 2013) is correct to believe that the presence of human teeth and bones in animal mummies is not a part of a ritual practice and that it is rather the fault of the embalmers' incompetence, this would mean that strong decomposition of bodies (as P. Gray suggests [1966, 138]) occurred in workshops and that both animals and humans were mummified together. The child-shaped mummy of the bird and the multiple-animal mummies suggest the existence of a ritual or magic purpose for the creation of such objects, which would in turn mean that the artefact composition was not accidental.

Mass-scale devotion: cat mummies

The cat was one of the 'protective animals' in Egyptian religious beliefs. Cat burials have been found at Mostagedda (in the tomb of a man, a cat lay at his feet with some bones of a gazelle) (Summerfield Estep 1995, 74) and at the Predynastic elite cemetery (HK 6) in Hierakonpolis (Friedman 2011, 39). Small amulets representing cats may be dated to the late Old Kingdom and the 1st Intermediate period, during which the relationship between man and cat became closer (Malek 1993, 52). Depictions of domesticated cats seem not to have been made before the times of the Middle Kingdom and up until the New Kingdom these depictions remained rare (Malek 1993, 44). At Abydos, W. M. F. Petrie (1925, 11) found a small tomb with a pyramidal superstructure. In the cruciform chamber, there were 17 skeletons of cats and nearby a row of small offering pots dating to the 12th Dynasty, which might have contained milk. This confirms the role of the cat in funerary beliefs. The cat's apotropaic qualities strengthened over time, which gave it widespread respect and a prominent place in the personal religion of ordinary people. The male cat became associated with the sun-god and the complex beliefs concerning the sun's night journey through the underworld. An unexpected twist in history helped the cat in the early 1st millennium BC, when the city of Bubastis (where Bastet represented by cat was worshiped) provided some of the Egyptian rulers of the Late period. It appears that the linking of the female cat with the goddess Bastet started at this time (Malek 1993, 73). During the Ptolemaic period, the cat's popularity reached its peak.

Popular religious beliefs possessed more vitality than the elaborate and more abstract religious systems of the ruling class and these ideas were therefore supported by a vast number of Egyptians. The personal devotion of the opulent owners of decorated tombs was not the same as the religion of the lower classes. The complex religious ideas expressed in the texts and decoration of Egyptian tombs and temples were taken from an ideology known only to the minority. Only the priests associated with these temples would have been able to read the inscriptions and to see the images of the divinities. The majority of people were not allowed beyond the temple's gate (Malek 1993, 73-74). It is natural to suspect that simpler, illiterate people were looking for holiness in their surroundings, but it is hard to understand their 'logic'. The small number of texts referring to cats and cat mummies in a religious context makes it difficult to understand the phenomenon. Cats appear in magical and medical texts, in which their excrement,

fat, hair *etc.* are used (Summerfield Estep 1995, 74). As N. Summerfield Estep (1995, 84) wrote: ‘cat mummies were “magical devices used for a variety of purposes”.’

The general method of shaping a mummy had two variants: 1. forming a compressed cylindrical body and sometimes placing a cartonnage mask on top or 2. preserving the natural shape of the animal. In the second case, the body was placed in a cat-shaped sarcophagus (Budge 1893, 356).

Cats were commonly mummified during the Late and Greco-Roman periods as votive offerings to a local goddess, who manifested herself as a cat or a lioness. An important cult of a lioness goddess was that of Pakhet at Speos Artemidos near Beni Hassan (Malek 1993, 96-97). Thousands of cat mummies have been excavated at sites such as Bubastis, Saqqara and Speos Artemidos, to name just the most celebrated cult centres. These cats were also often accompanied by mummies of other species (Zivie and Lichtenberg 2005, 107).

Pilgrims who visited temples during annual religious festivals may have wished to pay for the mummification and burial of a cat as a visible expression of their piety (Malek 1993, 133-134). Death from natural causes could not be predicted, so the deaths needed to be arranged out appropriately throughout the year. A certain degree of clever and unofficial management would therefore have been required to ensure that pious Egyptians who wanted to display their religious feelings would not be disappointed. According to J. Malek (1993, 133-134), the two age groups mentioned above may have been selected, because the size of very young animals would have been most suitable for the small containers in which they were buried. Furthermore, the practice enabled the population of temple cats to be regulated. However, numerous cases are known in which extra bandaging was applied to young and small animals, in order to make them appear larger (see mummy 252 from the National Museum in Warsaw below and Ginsburg 1999, 184; Ikram 2003, 92-94), so the size explanation seems unsatisfactory.

An alternative theory may, however, be more plausible. Small cats were the product of two mating seasons a year³ and were killed once a year, most

³ I did not find any specific information on the reproduction of cats in Egypt or Northern Africa, except for this short remark: ‘young of *Felis chaus* are born from January to April’ (Osborn and Helmy 1980, 440). The mating season varies latitudinally and depends on seasonal temperatures. Globally, most kittens are born from December to June, but sometimes there is a second or even third litter later in a single year (Sundquist and Sundquist 2002, 63). In India, as well as Eurasia, *Felis chaus* produces two litters annually. In both zoological gardens and the wild, births are recorded in March-April and August. Estrus lasts *c.* 60 days (Heptner and Sludskii 1992, 393). *Felis libyca* has kittens

likely to provide mummies for a single annual festival, during which pilgrims came to the temples and bought animal mummies as votive offerings. Kittens were born in two time intervals, from January to April and in August. The killing took place from the end of September and lasted until the end of December. After this, mummies were prepared in order to be ready for sale in the winter and spring.

Examination of the specimens in the collection of the National Museum in Warsaw

General description

Both the provenance of the five mummies and their state of preservation when they became the property of the National Museum in Warsaw are unknown. The specimens were given to the National Museum at different times after 1949. Due to the complicated nature of the country's situation after the Second World War, it was difficult to ensure that all the formalities related to new acquisitions of the museum were observed. As a result, there is no information on their archaeological context, place of origin, previous owners or on the dating of the artefacts. In general, the manner in which animal mummies were bandaged in the Late and Greco-Roman periods was very sophisticated on the surface, but inside the situation was completely different. The artefacts were carefully wrapped in resinated bandages, which formed geometrical patterns (except for mummy inv. no. 252 MNW). In the upper part, they were made to resemble the cat's head, except for mummies inv. nos 252 MNW and 253 MNW, whose heads have not been preserved. The eyes, mouths and noses were marked with black paint to portray the faces of the animals. X-ray examination shows that three of the five cats are more or less intact, but their position is not natural. Their forepaws are extended along the trunk, and their hind-legs are folded up along the abdomen. The tail has been pulled through the hind-legs and rests on the belly. The mummies resemble a sort of cylinder of bandages topped by a head, which is also wrapped and provides a silhouette of the animal's head.

from the first litter from the end of April to May in Western Europe. The second litter arrives from the end of July to early August and the third (in Scotland) from the end of November to early December and also mid-January (Heptner and Sludskii 1992, 435). *Felis libyca* rarely features in cat mummies (see below) and should therefore not be considered here.

The attribution of the species of cats

Two species of cat were known in ancient Egypt. The African wild cat (*Felis silvestris libyca*) measured about 60cm in length, had dark or yellow-gray fur, a lightweight body construction and a long tail with two dark rings. This species was only mummified in rare cases. It is possible to recognise the African wild cat by its size, but in the case of young cats it is very difficult (Malek 1993, 22-24). The second recognised species is the swamp or jungle cat (*Felis chaus*), bigger and heavier than the previous one, as it measures about 65-75cm in length and weighs 3.5-6.5kg. It has long pointed ears and a short tail. As the name suggests, the cat is especially fond of wetlands and areas covered with reeds (Arnold 1995, 21). Amongst animal mummies, a serval (*Felis serval*) is also sometimes found, but it is assumed that this cat did not naturally occur in Egypt and was rather an imported species. This was possible because of the role played by these animals and their presence among spoils of war, such as the Ramesside list of Nubian tribute (Malek 1993, 27).

It is very difficult to distinguish the African cat from the jungle cat on a purely osteological basis,⁴ since there are significant variations within each group at a similar level to the statistical difference between the two species (Malek 1993, 26). Most preserved mummies are examples of very young cats, which makes the situation even more problematic. It is therefore sometimes impossible to distinguish the species. The general principle of the individuality, contrariness and unpredictability of the cat is demonstrated very well here.

Materials and method of examination

The fabric in which the mummies were wrapped had different thicknesses and widths. The multiple braiding of the body was also different in each case. As a result, it was necessary to obtain images in two registration ranges (28kV [the end of soft x-ray radiation] and 30kV [the beginning of hard x-ray radiation]) for better readability. These images were made by Mr. Roman Stasiuk, a photographer from the Academy of Fine Arts of Warsaw using a Baltospot 100kV x-ray camera by Balteau. He used Fuji Medical X-Ray Super RX film for his work at the Department of Conservation and Restoration of Works of Art of the Academy of Fine Arts of Warsaw.

The fabric in which the mummies were wrapped was produced by interlacing longitudinal (warp) and latitudinal (weft) threads. All the

⁴ See research and bibliography in Morrison-Scott 1952 and Ginsburg 1999.

artefacts were wrapped in different fabrics, which were mostly linen, but not of the same type. They all have a different number of warp and weft threads, which causes the density of the strands to vary. The number of warps ranges from 10 to 18 and the number of threads from 24 to 50 in a square centimeter. The bandages are cut-off strips of fabric and it is clear that their edges are jagged.⁵

Individual mummies

The first mummy from the collection of the National Museum in Warsaw (252 MNW) is 22.3cm long and 7.6cm wide (Fig. 1). It was donated by UNESCO in 1949. Information from the electronic catalogue inventory of the museum (MONA) states: 'an arm, without a hand, wrapped in bandages'. The x-ray shows that the artefact does not contain any human bone.

On the exterior, the mummy does not resemble the well-known standard image of a cat mummy. It is also the least attractive of the group. On this basis, we can conclude that it was either the least valuable in ancient times or that it is the oldest of the group in question, which dates to a period when animal mummy decoration was not very elaborate.

The exterior layer of the bandages was not resinated, but our preliminary analysis shows that the original color was changed using pigments.⁶ In Fig. 2 a notably large hole can be seen in the bandages. Its centre is quite dark and the material of the middle layer of bandages has the same colour. It seems that this colouring originated from the setting of the liquid resin that bound the bandages. This was done so that they would not unroll after the mummification process and so that the body would be better preserved. The bandages of the first layer that wrapped the body of the animal were narrow, but each following layer increased in length all the way up to the exterior layer.

The mummy does not have a head, which probably became detached or was dropped in an accident. The shoulder bones can be seen inside the mummy, upon which the head should be. In the left part of the x-ray

⁵ If the strips of the material were woven to be bandages for cat mummies or to respect a previously set width, the edges should be smooth and simply completed (consultation with Professor Helena Hryszko, a specialist on the reconstruction and conservation of fabrics, Academy of Fine Arts of Warsaw).

⁶ The surface of the mummy contains different tones of light brown. According to Professor Helena Hryszko, it seems that this colouring of the surface of the mummy was conducted after bandaging. Alternatively, the external fabric layer may have come from a different source.



Fig. 1. Mummy inv. no. 252 MNW. Photo by Ł. Przewłocki and R. Stasiuk

image, the bones of the lower limbs can be seen. Around the middle part of the spine, the broken connection between the lumbar vertebrae is visible (indicated by arrows). The damage is probably of a secondary nature, since most cat deaths were caused by the breaking of the neck or a blow with a blunt object to the back of the head. As a result, this was most probably not the cause of death.

The mummy is a special case, as its lower part (left on Fig. 1) does not contain bones. This was almost certainly done to create the illusion that the animal placed inside was larger than it was in reality. There are many examples of animal mummies that were intended to look bigger or smaller than they were (Ikram 2003, 92-94). This contradicts the opinion expressed by Malek (1993, 134), who believed that young cats were selected to be killed because their bodies were small and more of them could thus be inserted into containers.

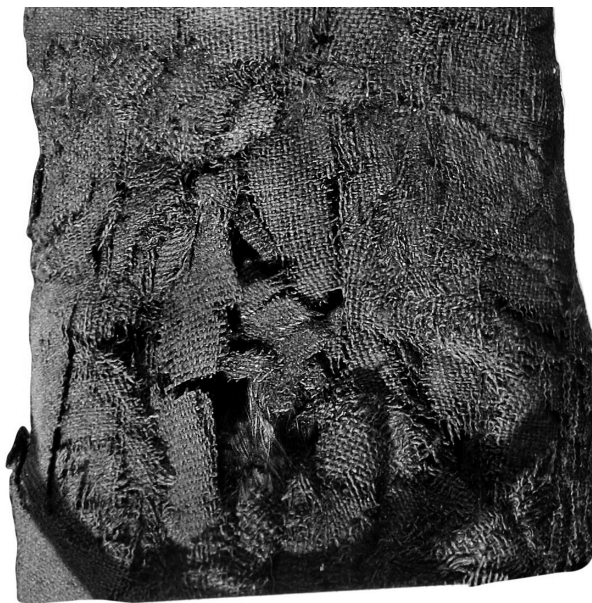


Fig. 2. Mummy inv. no. 252 MNW. Close-up of the hole and the cat's fur.

Photo by Ł. Przewłocki

In Fig. 2, there is an opening which was perhaps deliberately made by somebody who knew that ancient Egyptian embalmers placed amulets within the fabric and hoped to find one (?). Through this hole, preserved cat fur can be seen. About 4cm from the top edge, there is an insect larva.

The second mummy (inv. no. 139009 MNW) is 30cm long and 6.2cm wide (Fig. 3). It was donated by the General Directorate of Museums and Monument Protection.



Fig. 3. Mummy inv. no. 139009 MNW. Photo by W. Ejsmond and R. Stasiuk

On the surface, the mouth of the cat is clearly marked by paint (probably liquid resin) and its erect ears are also prominent. The fabric which wraps the body makes a chevron pattern. In its middle part, the mummy is damaged. On the x-ray, the bones are broken in the same place. There is complex damage of the cervical vertebrae, which would not have occurred in ancient times, but during exploration, transportation or storage of the mummy.

The third mummy is inv. no. 181 MNW (Fig. 4). It is 34cm long and 5.8cm wide. The specimen was x-rayed with a slat, which prevented the mummy from breaking up into three parts. The mummy was given to the National Museum in 1949 by UNESCO.

Its mouth, eyes and nose are marked by a few lines and a pair of ears is stitched to its head. Some damage may be seen in two places on the surface of the artefact, which indicates that internal damage should be visible on the x-ray. This is the result of the mummy breaking, which most probably happened in modern times. A closer look at the back of the cat's skull reveals broken bones that do not occur in healthy cats. It therefore appears that the animal was put to death by a strong blow to the back of its head.

A very interesting discovery is a metal rod inserted between the skull and the thoracic vertebrae, which was intended to strengthen the structure of the mummy to prevent breakage. It is not known whether the installation of this rod occurred in ancient or modern times. It is certain, however, that it was done for aesthetic reasons to protect the stability of the mummy.

The fourth mummy (inv. no. 143329 MNW) is the most attractive on the surface (Fig. 5). It came from the Louvre Museum and was transferred to the National Museum at the beginning of the 1960s. Its length is 27.3cm and its width is 6cm.

Dummy ears and eyes are sewn to the head to imitate these natural features. The mummy is wrapped in two types of fabric, one white and one dyed brownish using vegetable colours (perhaps wood bark). The geometric decoration of the body is created with a subtle pattern of two-tone squares.

The x-ray image reveals displacement of the *atlas vertebra* orientation from horizontal to vertical. After consultation with H. Frankiewicz, T. Kalinowski and J. Jajkiewicz of the veterinary clinic in Wałbrzych and Dr. Anna Gręzak, archaeozoologist of the Institute of Archaeology of Warsaw University, it has been concluded that it is not possible for a cat's neck to be twisted this way by accident. The cervical vertebra must therefore have been intentionally twisted and displaced, but it is difficult to say whether this was the result of human action during the killing or the mummification process.



Fig. 4. Mummy inv. no. 181 MNW. Photo by Ł. Przewłocki and R. Stasiuk



Fig. 5. Mummy inv. no. 143329 MNW. Photo by Ł. Przewłocki and R. Stasiuk

The last mummy (inv. no. 253 MNW) is 35.9cm long and 9cm wide (Fig. 6). It came as part of an exchange deal with the former German Democratic Republic and arrived at the National Museum in 1957. The artefact is badly damaged. There are traces of modern glue, which was definitely used to correct the appearance of the mummy. The dark stains on its fabric may be traces of some of the resin used in the mummification of this particular mummy, but the fabric could also consist of re-used bandages from another mummy (?).

The bandages are damaged and the bones of the cat are visible through the holes. On the surface of the fabric is a carapace of a larva, probably *puparia*, which is also present on mummy inv. no. 252 MNW. The

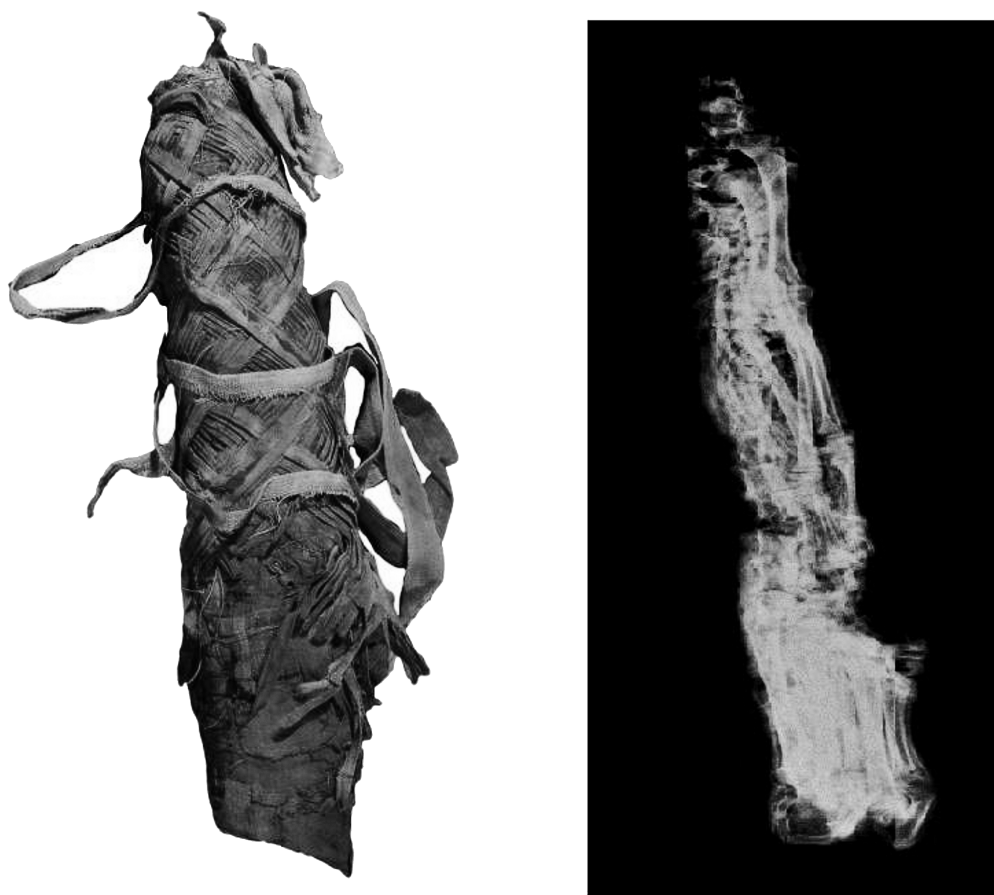


Fig. 6. Mummy inv. no. 253 MNW. Photo by Ł. Przewłocki and R. Stasiuk

mummy lacks a head and its lumbar vertebrae are broken. It was possible to determine that the cat was 24-26 weeks old at the time of its death on the basis of epiphyseal union.⁷ When shooting pictures of the mummy, a human tooth dropped out from among the bandages. A comparison with other ancient Egyptian teeth indicates a similar abrasion and signs of tartar or enamel hypoplasia,⁸ so it is most probably an ancient Egyptian specimen (see below).

⁷ Consultation with veterinarian Ewa Wiśniewsk-Sak.

⁸ Consultation with the anthropologist MA Marzena Ożarek -Szilke, Institute of Archaeology, Warsaw University and MA Halszka Przychodzeń, Institute of Experimental Physics, Optics Section, Department of Physics, Warsaw University.

Radiographic findings

The cat mummies of the National Museum in Warsaw all bear traces that indicate that the animals were put to death. All have broken spines, but one mummy (inv. no. 181 MNW) also has visible damage to the occipital bone, meaning it possesses indications of both killing methods. The damage to the skull may have occurred after the death of the cat, for example during mummification or after the completion of this process. There is a metal rod in the upper part of the same mummy and it is broken in three places, indicating that the reason for the rod was to keep the object straight. This destruction seems to be related to the skull damage, which means it was probably caused after mummification and was therefore not the cause of death.

The tooth

What could the reason for placing a human tooth in cat mummy inv. no. 253 MNW have been? The tooth was simply stuck among the bandages. On its surface, the tooth bears marks of strong polishing with sand and its upper part is covered with a shiny substance, probably the resin (?) used during mummification (?). P. H. K. Gray (1966) has presented some interesting cases of mummies with missing body parts, which were replaced by dummy substitutes. The reason for this practice seems to have been fairly obscure and ritual or magical significance cannot be ruled out. But what happened to the body parts which were extracted, probably *post mortem*? Perhaps they were inserted into other animal mummies which were made to a special order. This would also explain the occasional occurrence of human bones in animal mummies. It is hard to understand popular devotion and to explain it in terms of logic, but it is perhaps possible that people wished to leave both their own and their relatives' body parts in votive mummies, which were sacred in their own right and placed in sacred precincts. Neither the personalisation of a mummy in such a way nor the existence of magical procedures can be excluded at this stage. Both possible practices merit further research.

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