

An Egyptian Mummy of the Late Old Kingdom in the Michael C. Carlos Museum, Emory University

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Abstract

This article discusses the history, importance, and conservation treatment of an Egyptian Old Kingdom mummy, purchased from the site of Abydos in 1920. It is the oldest, substantially intact, mummy of this date in the Americas.

Introduction

Very few intact human mummies of the Old Kingdom exist today, in part due to their great antiquity, which has made them prey for almost five thousand years to the ravages of time, environmental fluctuations and events, natural disasters, and the constant activity of tomb robbers.¹ Thus, the few that have survived are extremely important resources, as this is where one first sees the development of artificial mummification in Egypt. A rare, and heretofore unreported, example is held in the collection of the Michael C. Carlos Museum of Emory University.

The Acquisition of the Carlos Mummy

Emory University's William Arthur Shelton, Candler School of Theology professor in 1920, purchased the mummy, with the remains of its original wooden coffin, from excavations at the site of Abydos, in Middle Egypt. Shelton had been a student of James Henry Breasted, Director of the University of Chicago's Oriental Institute, and was invited by him to join his expedition to Egypt and the Middle East.² The purpose of Breasted's Scientific Mission was to survey the newly redrawn map of the Middle East after the end of World War I in order to assess the potential for future archaeological work.

¹ The extant Old Kingdom Mummies (as opposed to skeletons) include the mummies from the Tomb of Nefer at Sakkara (Ahmed Moussa and Hartwig Altenmüller, *Das Grab des Nianchnum and Chnumhotep* [Mainz, 1977]); Idu II [Inv. 2639] from Giza, now in Hildesheim (Ulrich Weser, Yoka Kaup, Hedwig Etspüler, Johann Koller, and Ursula Baumer, "Embalming in the Old Kingdom of Pharaonic Egypt," *Analytical Chemistry* 70 [15][1998], 511A–16A); two others from Gebelein (Anna Marie Donadoni Roveri, *Gebelein: Il villaggio e la necropoli* [*Quaderni del Museo egizio*] [Rome, 1994]); one from Abusir (Borchardt, *Neuserre*, 114); an unnamed woman excavated at Giza, whose mummy was autopsied by Douglas Derry and its integrity compromised in the process (Sue D'Auria, Peter Lacovara, and Catharine Roehrig, eds., *Mummies and Magic: The Funerary Arts of Ancient Egypt* [Boston: 1988], 76–77). For a discussion on burial practices of the period, see Karin N. Sowada, "Forgotten Cemetery F at Abydos and Burial Practices of the Late Old Kingdom," in Alexander Woods, Ann McFarlane, and Susanna Binder, eds., *Egyptian Culture and Society: Studies in Honour of Naguib Kanawati*, (Cairo, 2010), 219–32.

² See Emily Teeter and Geoffrey Emberling, *Pioneers to the Past: American Archaeologists in the Middle East 1919–1920* (Chicago, 2010), 10, 34, 45, 59, 150–51.

Fortunately, an Atlanta businessman John A. Manget had generously donated funds to not only enable Shelton to join the expedition, but also to acquire objects for the University's Museum. Relying on the expert advice of Breasted and the other Egyptologists accompanying them, Shelton was able to collect many important artifacts, purchasing a number from the saleroom in the Egyptian Museum in Cairo. Having purchased a Late Dynastic and a Ptolemaic Mummy in Cairo, along with coffins of the Middle Kingdom and Late Dynastic periods, as well as a cleverly wrapped human thigh bone purported to be a child's mummy from the Late period, Shelton set off for Abydos in search of a mummy of an early date to complete the series of Egyptian funerary customs.³

At this time, the area of the Middle Cemetery at Abydos, which was the location selected for their tombs by the important governors of the area in the Late Old Kingdom (ca. 2300 BC), was being quarried for mud brick by the neighboring modern village of el-Araba el-Madfuna. Auguste Mariette had originally excavated the site in the 1860s.⁴ Amongst the most significant finds that Mariette made was the mud-brick mastaba of Weni, a governor of the Abydene area during Dynasty VI. This contained a limestone slab inscribed with Weni's biography (JE 1435), a crucial document for our understanding of the international, political, economic, and social milieu of the Sixth Dynasty, as well as Weni himself. Mariette was only interested in the tomb's inscribed elements, which he removed without even recording their original locations. He left the human remains from the tomb behind, undocumented, and eventually carelessly tossed to the surface as rubbish. Recently, the University of Michigan Expedition, under the direction of Dr. Janet Richards, has reexcavated the site in order to locate the source of the biography and thus to recontextualize the important text. In addition, she and her team are examining the human remains, which have proved admirable comparanda for the Emory mummy, as well as establishing its possible findspot.⁵ Shelton apparently purchased the mummy and its coffin from a local antiquities dealer, mistakenly thinking it was a mummy of the Predynastic period. Reverend Shelton carefully placed the fragile remains in cotton and shipped it back to Atlanta with his other purchases. His trove of mummies caused great excitement when they were first displayed at Emory,⁶ but this mummy, the least photogenic of the acquisitions, was eventually forgotten and the remains of the coffin, except for the bottom on which it rested, was lost. The mummy and its baseboard lay in storage until recently, when its true nature and significance was discerned and a project conceived to have it examined and restored for a special exhibition entitled *Life and Death in the Pyramid Age: The Emory Old Kingdom Mummy at the Michael C. Carlos Museum* from September 8, 2011 to December 11, 2011.⁷

The Mummy

The Emory mummy has been radiologically studied twice: it was x-rayed in 1926 and CT-scanned in 2010. Because the mummy is so disarticulated, standard x-ray radiography proved most useful and is the basis of the following observations.

The body lies in a loosely contracted position on its right side (fig. 1). The limbs and extremities were individually wrapped with numerous layers of linen bandaging—at least seven layers of bandages remain in several instances. The torn and insect-damaged wrappings had fallen away in some areas revealing the bones and hollow spaces between the skeleton and the wrappings. The radiographs and visual examination showed that the skeleton is no longer fully articulated: the unwrapped cranium had been detached from the body and the mandible was missing. The clavicles as well as the thoracic and

³ William Shelton, *Dust and Ashes of Empire* (Nashville, 1924) 38–40.

⁴ Auguste Mariette, *Abydos II–III* (Paris, 1880).

⁵ Janet Richards, "Text and Context in Late Old Kingdom Egypt: The Archaeology and Historiography of Weni the Elder," *JARCE* 39 (2002), 75–102; idem, "Spatial and Verbal Rhetorics of Power: Constructing Late Old Kingdom History," *Journal of Egyptian History* 3.2 (2010), 339–66.

⁶ William Beierly, "One Brick from Babylon," *Emory Magazine* 64.4 (1988), 8–18.

⁷ Peter Lacovara, "Life and Death in the Pyramid Age," *Minerva* 22.5 (2011), 12–13.



Fig. 1. The Old Kingdom mummy MCM 1921.1 from Abydos (Sixth Dynasty), in its condition prior to restoration. Courtesy of the Michael C. Carlos Museum of Emory University.

lumbar vertebrae, and the ribs were dissociated and scattered within the thorax and pelvic region. The bones of the hands and feet were completely disarticulated, with some of the smaller bones missing. Both sets of humeri, radii, and ulnae were present, as were the femurs, with the fibulae.

From the skull, the pronounced mastoid process, the supraorbital margin, and nuchal crest suggest that the body belonged to a man (figs. 2-3). The pelvis was disarticulated in such a way that radiographs would have been of no use in establishing sex. His height, based on limb measurements, was most probably somewhere between 158 to 161 cm.⁸ Based on the epiphysial fusion of the limb bones, and the eruption of all the maxillary teeth, with limited wear, particularly on the third molar, the individual was at least twenty-four years old (fig. 4),⁹ while the less-reliable cranial sutures indicate that the individual

⁸ Michelle Raxter, Benjamin Auerbach, and Christopher Ruff "Revision of the Fully Technique for Estimating Statures," *American Journal of Physical Anthropology* 130 (2006), 374-84, <http://dx.doi.org/10.1002/ajpa.20361>.

⁹ C. Owen Lovejoy, "Dental Wear in the Libben Population: Its Functional Pattern and Role in the Determination of Adult



Fig. 2. Profile of the skull showing the mastoid process.



Fig. 3. Frontal image of skull showing intact cribriform plate.



Fig. 4. The dentition.

was more than thirty but less than fifty years old (fig. 5). The skull shows bone wear and growth on and around the occipital condyles. The right condyle, in particular, has growth from the atlas articular surface that has blocked the condylar foramen (a canal allowing for the drainage of cranial fluids via the emissary vein). The skull has compensated for this obstruction of fluid expulsion with an enlarged jugular canal; the nuchal crest is very robust and could suggest an occupational pathology, possibly load bearing that would complement the arthritic pathology of the occipital condyles.¹⁰ On the whole, the bones were robust and in good condition: well mineralized and dense, suggesting access to good nutrition, with no evidence for disease or trauma. The humeri in the upper arms display some thickening, which could suggest repetitive motion such as lifting or carrying.¹¹

Samples were removed from two incisors and the right, upper third molar. Isotope analysis revealed evidence for cereal consumption, which is unsurprising as bread and beer formed a central part of the Egyptian diet.

Brief Overview of Old Kingdom Burial Practices

The Old Kingdom was a time for innovation and experimentation in ways of preserving the body. However, then, as indeed throughout Egyptian history, a variety of methods of mummification were used at any given time, depending on the embalming atelier's preferred methods, the client's preferences,

Skeletal Age at Death," *American Journal of Physical Anthropology*, 68.1 (1985): 47–56.

¹⁰ Kathryn Marklein (pers. comm); Douglas Owsley, Karin Bruwelheide, and Kate Spradley, *Osteological Examination of Skeletons at Texas A&M University* (Washington, DC, 2002).

¹¹ The authors would like to thank Dr. George Armelagos, Goodrich C. White Professor of Anthropology at Emory University, for his insights.

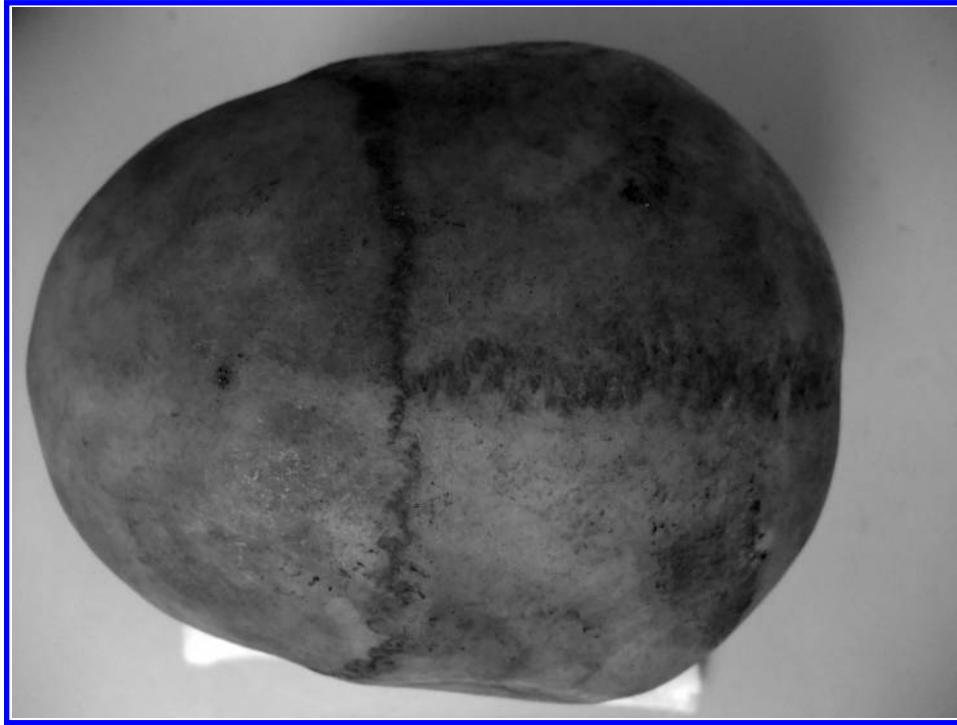


Fig. 5. The cranial sutures on the mummy.

the amount spent on embalming, the current fashion, or the method most reflective of contemporary religious beliefs.

The paucity of Old Kingdom mummies that have been found, much less carefully studied, makes it difficult to document the various forms of mummification during this time. From the extant evidence, however, it seems that the emphasis was on making the final product look like an image of the deceased, thus there was less emphasis on preserving the body, as was the case in later times. Excerebration was not practiced in the Old Kingdom, the earliest evidence of brain removal appears to be in the early Middle Kingdom,¹² while evisceration seems to have been used sporadically starting at the end of the Third Dynasty, and apparently more frequently in the Fourth Dynasty, as is attested from the burial of Queen Hetepheres: her internal organs were found in a canopic chest immersed in a solution of natron.¹³ This is perhaps one of the earliest securely attested examples of the use of natron in mummification, though it is quite possible that natron was used to prepare the body of a Second Dynasty burial of a woman found in 1911 by James Quibell.¹⁴ This woman was found lying flexed on her left side in a wooden coffin, and was wrapped in more than sixteen layers of bandages. Each limb was separately wrapped, and the outermost layer was worked to indicate the genitalia. This sort of detailed modeling became the norm in the Old Kingdom. Thus, although the preparation of a separate canopic chest to hold the internal organs for Hetepheres's mummy indicates an example of surgical intervention to preserve a mummy, much of the embalmers' skills during the Old Kingdom seem to have been primarily cosmetic.

¹² For example, the body of Djehutynakht (Rita Freed, Lawrence M. Berman, Denise M. Doxey, and Nicholas S. Picardo, *The Secrets of Tomb 10A, Egypt 2000 BC* [Boston, 2009]); Andrew Wade, Andrew Nelson, Greg Garvin, "A Synthetic Radiological Study of Brain Treatment in Egyptian Mummies," *HOMO-Journal of Comparative Human Biology* 62 (2011), 248–69, <http://dx.doi.org/10.1016/j.jchb.2011.01.004>.

¹³ Mark Lehner, *The Pyramid Tomb of Hetep-Heres and the Satellite Pyramid of Khufu* (Mainz, 1985); Reisner and Smith, *Giza 2*.

¹⁴ Quibell, *Excav. Saqq.*, 44, pl. 29.

Several Old Kingdom mummies, such as that of Ranefer from Meidum,¹⁵ Nefer at Saqqara,¹⁶ and an unidentified man from Gebelein (Inv. Nr. S. 13966),¹⁷ were made into virtual statues. In the case of the Memphite examples, each finger and toe was separately wrapped, while the hands of the mummy found at Gebelein were wrapped to resemble mittens. The body itself was spirally bound in large quantities of linen wrappings. The outermost wrappings were soaked in gesso or some other stiffing agent and were modeled and sometimes painted to give a naturalistic appearance. Sometimes even the genitals were carefully modeled, and the body could be dressed in clothing or adorned with jewelry. The linen wrappings that covered the head of Weserkafankh from Dashur had the eyes and brows cut out suggesting to the excavator that this was a mummy mask; however, it may be that the eyes were painted features that deteriorated the linen beneath them.¹⁸ Thus, it seems almost as if the purpose of mummification was to create a *ka*-statue, a place for the soul of the deceased to dwell. The body position also varied during the Old Kingdom: lightly flexed and lying on the left side, or supine, the latter position being more common toward the end of the Sixth Dynasty.

Mummification Methods Used on the Carlos Mummy

Although it is clear that the few surviving examples of mummification in the Old Kingdom represent a pivotal step in the history of the mummification, there is as yet no overall survey of them, and mummified human remains of this period have rarely been subjects of scientific study.¹⁹ From what remains, we can determine that the Carlos mummy was prepared in a method that is in keeping with other Fifth and Sixth Dynasty mummies. There is no excerebration, as is attested by the presence of the brain in the cranium, in addition to the fact that the ethmoid is intact. Because the mummy was so damaged, it is unclear if evisceration took place. The mere fact that the flesh has been reduced to powder and the connective tissue has also largely disintegrated might indicate that the body was neither eviscerated nor desiccated properly, and the absence of flesh is a result of the rotting of the body within the wrappings, or insufficient/poor desiccation. The body was wrapped in linen bandages and a coating was applied to these. This, together with the decomposed body, has adhered to the bones in some cases. Remains of an organic substance are evident on the bandages and were found pooled behind the feet. Other mummies indicate that tree resins were sometimes used both for their ritual significance as well as for antibacterial properties, and also used to hold the bandages in place.²⁰

Due to the very deteriorated state of the remains, it was difficult to reconstruct the way in which the mummy was wrapped. It appeared as if the arms and legs were bandaged individually. After wrapping, the hands were tied together, as were the feet, to better protect the extremities and for ease of manipulation of the body. The head and the torso were also wrapped separately, after which the whole body was wrapped together. At least seven layers of linen wrappings were noted, all with differing weave densities and thread thickness, ranging from a coarse burlap-like fabric to very fine, warp-faced fabrics. The outermost preserved layer (or layers) of wrappings is composed of rather finely woven, warp-faced linen fabrics. Unlike later dynastic mummies, the wrapping cloth does not seem to have been torn into narrow strips, but rather folded and gathered to allow wide pieces of linen (averaging 10 to 12 cm wide) to be wrapped around the body. The layers of fabric are tightly creased and compressed together,

¹⁵ The mummy of Ranefer was taken to London by the excavators, but was destroyed in the bombing of London during the Second World War; see Salima Ikram and Aidan Dodson, *The Mummy in Ancient Egypt* (London, 1998), 111.

¹⁶ Moussa and Altenmüller, *Tomb of Nefer*.

¹⁷ Ernesto Schiaparelli, "La Missione Italiana a Ghebelein," *ASAE* 21 (1921), 126–28.

¹⁸ Borhardt, *Das Grabdenkmal*, fig. 92.

¹⁹ Weser et al., "Embalming in the Old Kingdom," 511A–516A.

²⁰ The authors are grateful to Richard Newman and Margaret Serpico for their discussion about this substance. Also, see Katherine Clark, Salima Ikram, and Richard Evershed, "Organic Chemistry of Balms Used in the Preparation of Pharaonic Meat Mummies," *Proceedings of the National Academy of Sciences*, published ahead of print November 18, 2013, doi:10.1073/pnas.1315160110; <http://www.pnas.org/content/early/2013/11/15/1315160110>.

suggesting that they had been applied wet or damp, perhaps with the same coating substance applied to the wrapped mummy. As far as one can establish, the hands were wrapped as if the deceased were wearing mittens. In the current restoration, the conservators rearticulated the hands, recreated the missing bones, and padded the ancient remains, preparing the hands as if they were unflexed, which is why they look disproportionately large for the body. A similar treatment of the extremities is found in the Gebelein Mummy at Turin and in fragments recovered from the tomb of Weni at Abydos,²¹ although in both those cases the hands were partially clenched, which made for hands that look smaller than those in the Emory reconstruction.

It appears that the wrapped mummy was covered with a finely woven shroud, a warp-faced fabric with thread counts over 45 warps/cm. Fragments of clothing items were loosely placed over the final wrapping layer and beneath the shroud. These garment fragments included lengths of fringe and sections of seams joined with overcast stitches along the selvage edge, perhaps fragments of a child's shirt. Similar garments have been recovered from burials of the First Intermediate period at Naga ed-Deir.²²

Only the bottom of the wooden coffin has survived, the rest having been lost at some point during the many moves of the mummy in storage. It is made of two large wooden boards of *Ficus* sp. (probably sycamore fig) mortised together with tenons of Red Pine (*Pinus resinosa* sp.)²³ and is similar to the large, undecorated wooden coffins of the period.²⁴ One should note that pine is not indigenous to Egypt and thus the tenons were of imported wood, and possibly indicative of a slightly higher socioeconomic status—and also stronger than the sycamore. One of the boards is notched as if it had a small “patch” added to complete the size, while the other board is now fragmentary. The dimensions are estimated as being 173 cm long × 49 cm wide × 4 cm thick. Deeply tunneled grooves that run through the wood coffin base were likely caused by termites.

Condition Prior to Restoration

Preliminary examination of the mummy showed that the head was detached, and missing the mandible. The structure of the body had collapsed, with the clavicle, ribs, spine, and pelvis displaced within the jumble of wrappings. The soft tissue had deteriorated to piles of fine dust, leaving voids around the bones. The left femur was almost completely exposed through the collapsed wrappings, and both patellae had fallen out of the wrappings onto the wood coffin base. The hands and feet bones were completely disarticulated. Voids within the mummy were filled with raw cotton, inserted to provide support during shipment in the early twentieth century. The debris of soft tissue dust and deteriorated linen found inside and around the body was tacky from the coating applied over the wrappings. The hands and feet appear to have been more thickly coated, perhaps explaining their more severe deterioration.

As soft tissue was completely absent, all the linen wrappings had sagged against the bones, like a deflated balloon. The left arm had separated at the elbow and fallen over the right arm, tearing the linens in the middle of the upper arm exposing half of the left humerus. The linens had collapsed inward over the left femur exposing nearly its entire length, revealing that the pelvis was also displaced and out of sight. Both patellae had fallen out of the wrappings and were lying on the coffin base and the bones of the feet were arrayed on the wood below the leg bones. Two deep cracks through all the linen layers had formed across the center of the back, one between the hips and the other running from between the shoulders as the weight of the upper body had compressed the wrappings over the centuries.

²¹ Janet Richards (pers. comm.) in both cases the hands were partially clenched.

²² Elizabeth Reifsthal, “A Note on Ancient Egyptian Fashions, Four Early Egyptian Dresses in the Museum of Fine Arts, Boston,” *BMFA* 68.354 (1970), 244–59.

²³ The wood was identified by microscopy by Dr. Alex Wiedenhoft at the Center for Wood Anatomy Research, USDA Forest Service – Forest Products Laboratory in Madison, WI.

²⁴ See Anna Maria Donodoni Roveri, *I Sarcofagi Egizi Dalle Origini Alla Fine Dell'Antico Regno* (Rome, 1969), esp., pl. 14–15.



Fig. 6. The Old Kingdom mummy after conservation. Photograph by Bruce White. Courtesy of the Michael C. Carlos Museum of Emory University.

All around the body there were piles of fine, dusty debris. Below where the hands had originally rested the dust was at least five centimeters thick and intermingled with pieces of linen and the bones of both hands, as the left hand had been lying over the right. Similarly the wrappings over the feet had disintegrated. All the debris seemed to be quite tacky, and interspersed (or mixed) with the remains of soft tissue and powdered fragments of linen fibers. There was evidence of a variety of ancient insect infestations, including tunneling from termites in the wood of the coffin base, as well as flight holes and remains of a very few fly pupae in the wrappings.

Conservation Treatment

The mummy, including the bones and linen wrappings, was first documented using still and video photography as well as x-ray and CT imaging.²⁵ Bones were inventoried, and small samples of wood, debris, linen, and coating were removed for analysis. The sticky dusty debris of deteriorated soft tissue was collected into Tyvek bags, which were labeled and placed back into the body.

The goals of the treatment were to stabilize the mummy, to restore its original appearance by rearticulating bones and reattaching the head, as well as avoid altering or obscuring details of the wrappings and mummification. The concepts of reversibility and retreatability guided choices for conservation materials and methods, limiting long-term damage as well as permitting future intervention and research.

²⁵ The authors would like to thank Dr. William E. Torres, Professor of Radiology, Emory University Hospital and his staff for facilitating the examination of the mummy and the interpretation of the results.

Paper maché tubes and curved forms were inserted into the largest open spaces to add rigid support. Small soft pillows made from nylon stocking material stuffed with polyester batting were placed into the cavities to cushion bones and fill voids. Missing bones from the hands and feet were recreated from two-part epoxy putty. The bones of the hands and feet were rearticulated, stitched to layers of Tyvek and polyester batting, and then encased in hollow paper maché forms. A plastic jaw was cast in a mold taken off a study mandible that closely fit the mummy's upper jaw, and the new jaw was secured with strips of Teflon. A paper maché mask was modeled over a separate plastic form and then secured over the skull with a nylon stocking. Carved polyethylene foam was added at the base of the skull to recreate the neck, and a padded wooden dowel was fitted through this foam neck into the hole at the base of the skull. Another piece of foam was anchored inside the chest, between the shoulders to receive the dowel from the skull. The head was externally supported by a replica of a wood headrest. Strips of dyed linen and sheer silk Crepe were used to secure the ancient wrappings, cover exposed paper maché, and wrap the skull. The proper left ear was formed from the dyed linen, to replicate one discovered from a mummy of similar date at Abydos, and glued onto the modern wrappings.²⁶

The mummy is now on display in the Michael C. Carlos Museum (fig. 6). It has provided an invaluable insight into the differing technologies of mummification used during the Old Kingdom, in this case indifferent desiccation and the use of impregnated wrappings to "sculpt" the form of the deceased. Additional study of this mummy, together with investigations in the area of its discovery at Abydos should further elucidate the diverse methods of mummification used during the Old Kingdom.

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²⁶ The analysis and conservation was conducted by Renee Stein and Margaret LeVeque with the assistance of Arden Davis, conservation intern, Georgia State University 2012 Kathryn Etre, Mellon Fellow in Objects Conservation at the Michael C. Carlos Museum; Patricia Ewer, textile conservator in private practice; Rebecca Levitan, conservation intern at Emory College 2013; and Kathryn Marklein, Emory College 2010; Joan Sammons, conservation volunteer Michael C. Carlos Museum; Gail Walter, conservation volunteer Michael C. Carlos Museum; Dr. Pat Kelley, InsectsLimited.com; and Arthur McManna, Emission Spectroscopist, Emory University.