

# The Unwrapping of a Mummy

by

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## Summary

The unidentified mummy of a child aged about thirteen years was unwrapped. The embalmers appeared to have been uncertain about the sex of the body as they had supplied both gold nipple covers and an artificial phallus. The soft tissues were in a poor state of preservation and the internal organs were missing. There was considerable damage to the tissues in the neck. The lower parts of the legs had been amputated and the embalmers had provided an artificial leg and foot. Carbon dating indicated that the body was from the Twentieth or Twenty-first Dynasty but that rewrapping had occurred some thousand years later.

One of the results of the increasing interest in the history of Ancient Egypt, which arose in the eighteenth and nineteenth centuries was the rather fashionable occupation of unwrapping mummies. At this time the practice was often referred to as unrolling, and prominent amongst the people doing this was Thomas Pettigrew (1791–1865). Pettigrew was a surgeon whose main claim to fame outside Egyptology was that, as Surgeon to the Duke of Kent, he vaccinated Queen Victoria. Despite his medical qualifications however, his unwrappings of Egyptian mummies made little contribution to our knowledge of disease in Ancient Egypt (Pettigrew 1834).

At the beginning of this century, however, the unwrapping and the examination of large numbers of mummies by two distinguished anatomists gave firm basis to the study of what was to become known as palaeopathology (Ruffer 1913). Elliot Smith, who held the Chair in Anatomy in Cairo between 1900 and 1909 and later held similar appointments in Manchester and University College, London, examined mummies from many sites and in particular those found in the archaeological survey of the Nubia. Wood Jones who later held Chairs at a number of universities including that at Manchester from 1938, assisted Elliot Smith in this study and made many valuable contributions to our knowledge of mummification and of disease in Ancient Egypt (Elliot Smith 1907; Wood Jones 1910; Elliot Smith and Dawson 1924).

Meanwhile Marc Armand Ruffer (1859–1917) during his period as Professor of Bacteriology in Cairo, was applying histological techniques to the examination of the tissues from mummies being unwrapped at this time. These studies were extensive and should be recognized as the starting point in the application of scientific techniques to the study of Egyptian mummies (Ruffer 1921).

During the same period, Margaret Alice Murray was Assistant Keeper in Egyptology at Manchester Museum.

It was she who, during the unwrapping of the Two Brothers, appears to have originated the idea of applying a multidisciplinary team to the study of Egyptian mummies, for in addition to an extensive examination of the skeleton by an anatomist, there were chemical studies by a number of eminent scientists (Murray 1910).

After this period the multidisciplinary team approach was allowed to lie fallow for many years. With the advent however, of so many new techniques which can be applied to the study of Egyptian mummies, the concept has been expanded considerably by another Egyptologist in Manchester, Dr Rosalie David, who, in 1972 activated the present project and involved, in addition to Egyptologists, specialists in radiology, dentistry, pathology, electron microscopy, biochemistry, serology, textiles, carbon dating, and fingerprinting. Recently there has been a similar revival of interest in the intensive study of small numbers of mummies in the United States of America (Cockburn, Barraco, Reyman, and Peck 1975), and in Canada (Hart, Cockburn, Millet, and Scott 1977).

In the present study the work done by the many specialists on the collection of mummies in the museum is dealt with in other chapters; here it is proposed to concentrate on a description of the unwrapping of one particular mummy referred to throughout by its museum number '1770'. Mummy '1770' came into the possession of the museum about 1896. Little is known of the source but Sir Flinders Petrie's diary, and a letter he sent to a friend after a visit to Manchester, indicate that '1770' probably came from his excavation site at Hawara in Middle Egypt. An exact date for the mummy is not known but it was thought to be from the Greek or Roman period. X-rays had been taken some years ago and they indicated that the mummy was that of a child aged about thirteen years. In addition, they showed that the lower parts of the legs were missing. However, a much more extensive radiological survey, using the latest techniques, was carried out shortly before the unwrapping and these findings will be described in the appropriate chapter.

## The Unwrapping

The unwrapping and autopsy of '1770' was carried out at the New Medical School in Manchester in June 1975. Each stage of the unwrapping and dissection was recorded carefully both by ciné and still photography. In addition, the position of each bandage or layer of bandages was recorded as it was removed and in the same way tissue



(1) There are wide pieces of material running lengthways beneath the diagonal bandaging.



(2) Dead insects amongst the bandages were removed carefully for future study.



(3) The lower part of the cartonnage mask is now coming into view.



(4) The lower part of the cartonnage mask after preliminary cleaning.



fragments were carefully labelled and stored in sealed plastic bags for future reference and examination. This was, of course, a time-consuming exercise which involved a team of at least three people working for some six hours each day for five days before the autopsy was complete. The team, however, felt that this slow systematic approach was essential if nothing was to be missed and the maximum amount of scientific information was to be obtained from the dissection.

The outer layers of bandages were about four inches in width and arranged in a circular or diagonal pattern. When these had been removed much wider pieces of material running lengthways were revealed (1). Very little resin was present in the wrappings, and consequently the bandages were not stuck together and each layer could be removed individually. This aided the examination of the way in which the bandages had been applied and clearly was much more satisfactory than having to use chisels and electric saws to remove multiple layers of resin-infiltrated bandages (Cockburn et al. 1975). At various stages during the unwrapping, dead insects, beetles and larval pupae were seen amongst the bandages



(5) The face and head of the mask has been separated from the lower part.

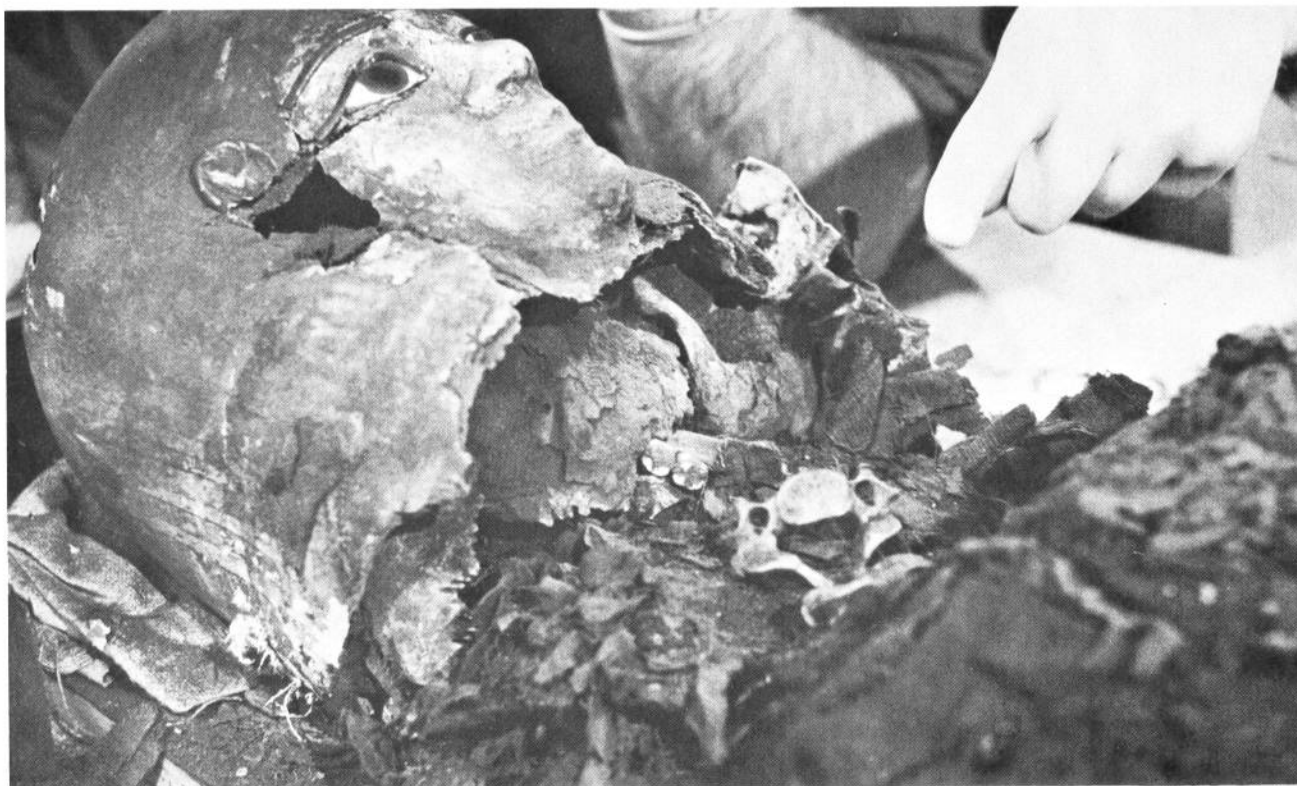
and these after noting their position, were removed carefully for future study (2).

As the longitudinal bandages were removed the lower part of the cartonnage mask was exposed (3). This, on cleaning, was seen to be an excellent example with most delicately executed designs painted on it (4). That part of the mask covering the head and neck was found to be damaged, the head being completely separated from the lower part (5). When the damaged part of the mask had been removed it was found that the bones of the neck and skull were fragmented and had to be removed piecemeal (6). Some of the pieces of bone from the vault of the skull had red and blue paint on the outer surface. The bones forming the upper jaw were intact and after cleaning, damage to the left side of the nose and the base of the skull was revealed, probably the site at which the embalmers had introduced the iron hook during the removal of the brain (7 and 8).

When the cartonnage mask and the remaining bandages had been removed, it was clear that the body was poorly preserved. All the tissues were extremely dry and separated readily from the bones. The arms were folded across the chest (9). There was some skin on the back of the hands and arms and beneath this tendons and muscles could be identified. There were gold finger stalls on some fingers and further gold leaf was found loose beneath the bandages (10). There was little skin or subcutaneous tissue on the chest wall but amongst the dust close to the ribs were two gold nipple covers. The thoracic cavity was empty, there being no sign of either the heart or lungs. The thoracic spine was intact and showed a peculiar distribution of resin in the intervertebral disc (11). Later similar resin was found in the epiphyseal plates at the ends of long bones and in some joint cavities.

Within the tissues of the anterior abdominal wall there was a hard mass one inch in diameter in a position corresponding with that of a small opaque object that had been seen in radiographs of the trunk. This mass proved to be the remains of a calcified guinea worm and will be described in detail later. The abdominal cavity and pelvis were packed with bandages and mud and despite a careful search no signs of the organs which normally occupy the abdominal and pelvic cavities could be found (12). Just outside the pelvic cavity there was a small roll of bandage which was continuous with the bandages covering the lower part of the anterior abdominal wall (13). Although the possibility was considered that this might be a roll of bandages from the vagina, there was little doubt from its position and relationship to the abdominal wall that it was an artificial phallus.

The legs, as anticipated, had been amputated, the left below the knee (through the tibia), and the right above the knee (through the femur). The right leg had been lengthened by an artificial leg of wood, covered with mud and bandages to make it the same length as the left (14). Removal of the mud from the end of the femur showed pieces of wood splinting the bone to the artificial limb. The bandages on the femur were closely applied to the bone and it was clear that very little flesh had been attached to the bone when the bandages were applied (15). Further examination of the ends of the femur and



(6) There was considerable damage to the structures in the neck. A cervical vertebra and some teeth can be seen lying free amongst the rubble.



(7) The facial bones, upper jaw, before cleaning.



(8) Same bones after cleaning. There is damage to the bones on the left side of the nose.



(9) The arms are folded across the chest.



(10) Gold finger-stalls are present on some of the fingers.



tibia showed that the amputation line was irregular and moreover no evidence of bony callus could be seen.

Beneath the bandages, at the lower end of the tibia and at the end of the artificially lengthened femur were a pair of beautifully decorated slippers (16). Beneath them on the right side was an intricate structure of reeds and mud in the form of an artificial foot, the ends of the reeds representing the toes (17). In a similar position on the left side was merely an irregular mass of mud and reeds.

### Comments

It is clear from the appearance of the tissue that the body was poorly preserved, very little skin, muscle, or soft tissues being present. Such tissue that was detected proved extremely friable and very difficult to prepare for examination under the microscope. In addition to the soft tissue damage the bones were broken in a number of places. It is probable that some of the damage to the head and to the pelvis was due to lack of care in handling the mummy in the past. There is no positive evidence that the bones were broken during the life of '1770'. When bone is broken during life, tissue known as callus forms at the site of the fracture, producing a mass around it and holding the bones together until healing has occurred. Callus is easily recognized in fresh autopsies and indicates that the fracture occurred during life. Unfortunately callus of sufficient density to enable it to be recognized at the fracture site in such a poorly preserved body would take a few weeks to develop. Consequently, it is impossible in this case to exclude the possibility that the fracture had occurred one or two weeks before death. Some of the damage to the head and neck was almost certainly caused at the time that the cartonnage mask was broken, probably by the action of tomb robbers in antiquity. Further evidence for this is seen in the absence of eye covers, amulets or other objects around the neck, whilst gold finger stalls were present on the fingers and gold nipple covers on the chest.

The amputations of the legs are a more difficult problem. There is no evidence of callus at the ends of the bones indicating that if the amputations were antemortem then the period that elapsed before death would only be one or two weeks. The appearance of the ends of the bone do not suggest a surgical amputation although it is probable that these were carried out in Ancient Egypt (Moeller-Christensen and Brothwell 1963). The irregular line of the amputations are more like those of accidental trauma such as might occur in a body damaged by falling masonry or even a road traffic accident. It is also known that there was a certain amount of carelessness in the embalmers workshops and it has been suggested that occasionally limbs were accidentally lost from bodies during mummification. This type of loss probably occurred through joints and is an unlikely explanation for the loss of the lower parts of the legs in this case, since it would require considerable force and a deliberate act to amputate the limbs through the bones.

Turning now to the condition of the soft tissue of the body, the poor state of preservation has already been noted. The state of preservation clearly would be deter-



(11) A single vertebra showing the resin in the intervertebral disc.

mined by the method of embalming and there is little doubt that the best preserved bodies are those in which resins have been used liberally to infiltrate the tissues and bandages, and of course in this body little resin was found outside the joints and spine. However, there are a number of features which suggest that the body was in a fairly advanced state of decomposition when mummification took place. Comments have been made on the almost complete absence of soft tissues. Some of this may have been consumed by insects feeding on the body after death but is unlikely to be the full explanation. It is interesting to note that the bandages on the legs close to the amputation sites appear to have been applied directly to the bone indicating the absence of any soft tissues on the limb at the time of bandaging.

The absence of internal organs is also interesting. It was, of course, customary for the embalmers to remove certain organs and for these to be preserved separately either in canopic jars or placed back in the abdomen in separate packages. None of the organs could be found and whilst the thoracic cavity was completely empty, the abdomen and pelvis were packed with mud and bandages. Such complete removal of all the organs would be rare and their absence again suggests decomposition of the body at the time of wrapping. Moreover, the patella and the fibula from the left leg above the level of the amputation were missing. These bones are normally attached firmly to ligaments around the knee and would only be separated if the ligaments had been softened by decomposition.

A further point indicating absence of soft tissues on the head at the time of embalming is the presence of red and blue paint on the skull bones. Clearly for skull bones to be painted in this way, very little of the normal soft tissue of the scalp must have been present. Moreover, it is possible that there was decomposition with possible obliteration of the external genitalia at the time of embalming. This could explain the fact that the embalmers



(12) Bandages and mud in the abdominal and pelvic cavities.

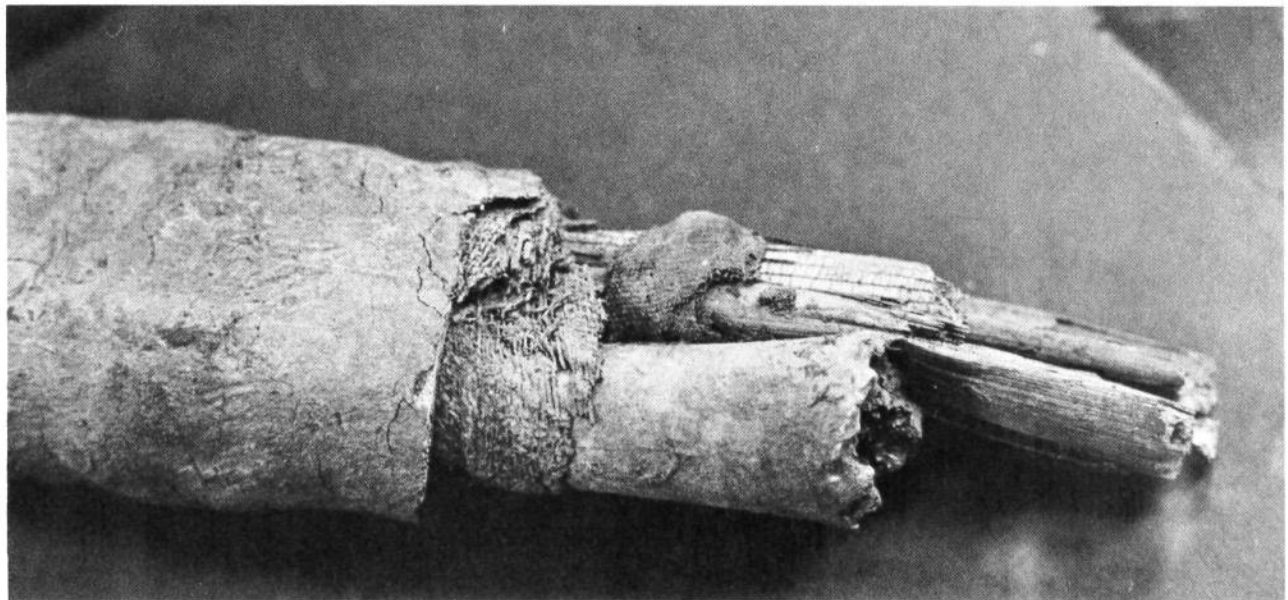


(13) A small roll of bandage is seen between the upper ends of the femurs.





(14) The right leg has been lengthened by an artificial leg of wood covered with mud and bandages.



(15) The bandages on the femur are very closely applied to the bone.



(16) The decorated slippers.

did not appear to know whether they were embalming a girl or a boy, hence the presence of both nipple covers and an artificial phallus.

Various possibilities were considered as to why the body should be in an advanced state of decomposition before bandaging took place. The practice of leaving girls and young women to putrify for a few days before allowing the embalmers to take the body was considered, but it is difficult to see how a short period of putrefaction would result in such marked decomposition. It was also suggested that the body might have been hidden or lain undiscovered for some time after death and this could have happened if it had been buried under masonry in an accident or possibly left in water after death. Certainly, since water accelerates putrefaction, decomposition would occur much more readily in a body left in water.

A problem which appeared to defy explanation, however, was related to the fact that there was no form of identification on the wrappings of the body or its coffin. Hence it seemed very odd, if the child was an unknown body, that the Ancient Egyptians would have taken such great care in reconstructing the limbs and feet and in fitting the body with gold nipple covers and finger stalls. An explanation for this, however, became apparent when the carbon dating studies revealed that the bones dated from c.1000 B.C. whilst the bandages were some 1300 years later. It would appear therefore, that the body dates from the Twentieth or Twenty-first Dynasty and that rewrapping took place at a much later date.



(17) There is an artificial foot made from reeds and mud.

There is evidence that some Royal mummies were moved to new tombs and it is possible that '1770' was one of these. The Egyptians, therefore, would not necessarily know whom they were rewrapping, hence the lack of identification. On the other hand, they would know that it was someone of importance and this would explain the careful reconstruction and the gold nipple covers and finger stalls. It is probable that much of the original tissue and wrappings of the body were lost when it was rewrapped accounting for the difficulty in finding any tissue.

The rewrapping also explains the presence of resin in some of the joints and in the epiphyseal plates of the long bones and spine whilst there was very little in the rest of the wrappings. It would appear that a type of resin which produced the discolouration of the cartilage in the bones and spine was used in the original wrapping whilst very little was employed when '1770' was rewrapped some thousand years later.

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