

# Valley of the Sun Kings

New Explorations in the Tombs of the Pharaohs

Edited by Richard H. Wilkinson



The University of Arizona Egyptian Expedition

# **Valley of the Sun Kings**

**New Explorations in the Tombs of the Pharaohs**

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Papers from The University of Arizona  
International Conference on the Valley of the Kings

**Edited by Richard H. Wilkinson**

**The University of Arizona Egyptian Expedition**

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## Introduction

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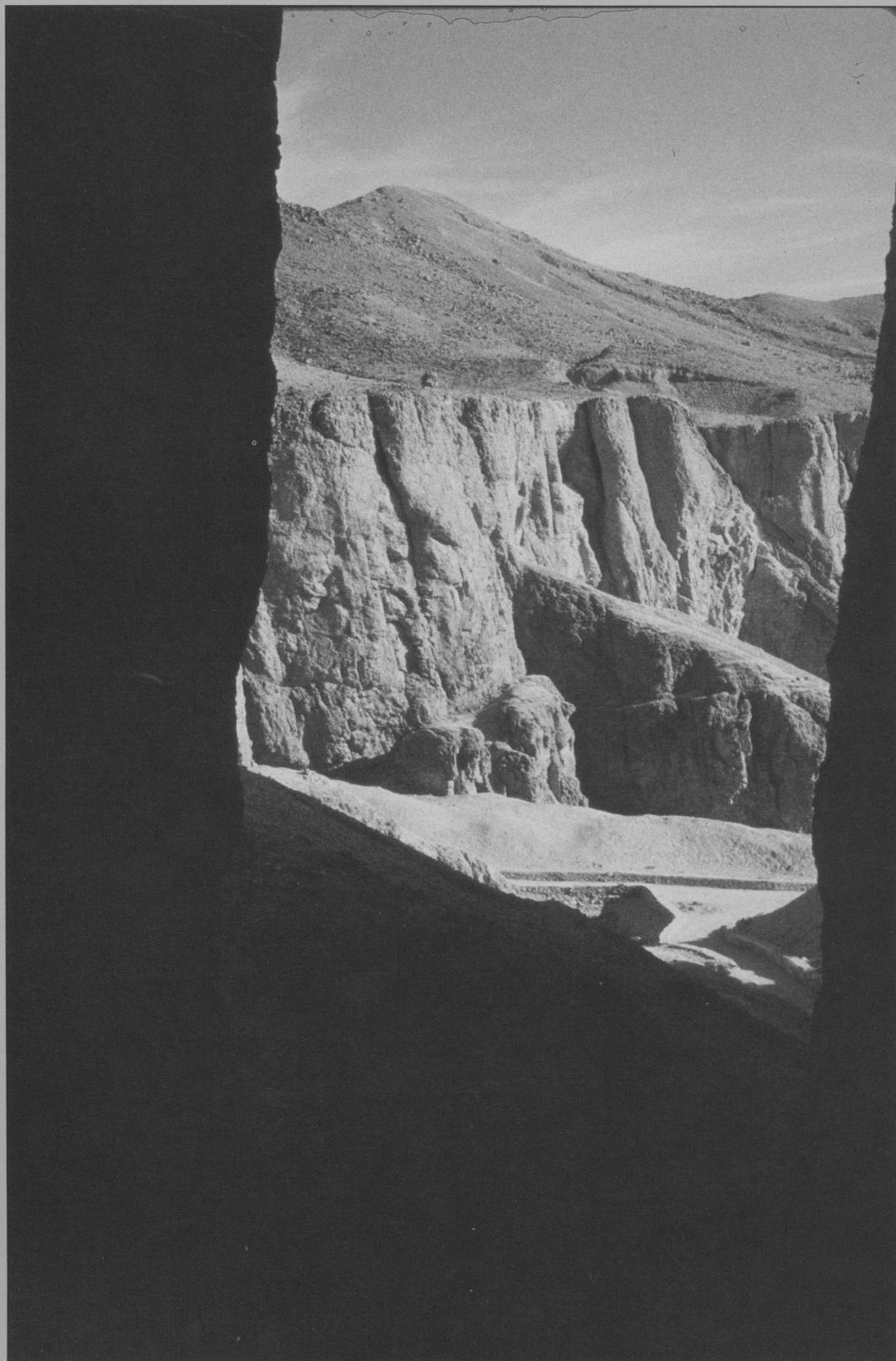
Probably no other single archaeological site in the world is as famous or has provoked the same degree of scholarly and popular interest as the Valley of the Kings—most famous as the burial place of Tutankhamun, but also the royal necropolis of Egypt's pharaohs throughout five hundred years of their New Kingdom power. Revered as incarnate sons of the sun god who joined the solar deity at their death, these rulers were indeed "sun kings" whose monuments reflected their transcendent status in the magnificence of their construction and decoration.

To the ancient Egyptians, the royal valley was *ta set aat* "the Great Place," and today it forms the largest open air museum in the world. Yet it is a "museum" with a difference. Excavation and study are ongoing, and the dedicated research of a number of Egyptologists working in this area is constantly providing new discoveries and understandings of the royal tombs—not least of which is the realization of the ever-increasing need for the successful conservation of these fragile monuments.

The chapters of this book reflect the ongoing scientific and public interest in this pre-eminent archaeological site and are based on papers given at the International Conference on the Valley of the Kings held at The University of Arizona in October, 1994. Yet this book is certainly not a routine conference publication; the papers were specifically invited to show both the range of research and exploration which is currently being conducted and the new understandings of the royal tombs which have surfaced in the last few years.

Not all of the presented papers could be included here, but the major themes of the conference are all explored in the three sections of this volume: recent excavation of the monuments; new studies in the decorative art and funerary treasures found within the tombs; and finally, the urgent need for restoration and conservation which must continue to be addressed before more of the unique archaeological and cultural heritage of the royal valley is lost.

*Richard H. Wilkinson*  
*Tucson, August 1995*



PART ONE

**THE ROCKS REVEAL:  
Explorations Old and New**

“Most of the passages that have been opened penetrate far into the mountain, and generally contain a granite sarcophagus, but there are many which remain untouched ... it is not improbable that the discovery of many objects of considerable importance would be the result of further excavation.”

(Thomas Legh, 1816)

It is perhaps ironic that after almost two centuries of exploration and excavation in the Valley of the Kings, it is still not known which monarch was the first to be buried in this royal necropolis. While it is known that Amenhotep I, the second king of the 18th dynasty, constructed a tomb in the area of Thebes, it seems to have been outside of the Valley of the Kings—though perhaps not where previously believed, as research by Daniel Polz may confirm. The favorite candidate for “first king in the valley” seems now to be Amenhotep’s son Tuthmosis I, though there are a few scholars—such as Claude Vandersleyen—who argue for the priority of the tomb of the singular Queen-King Hatshepsut, showing the uncertainty which still remains concerning the founding of the royal necropolis.

Of the seventy-five or so known royal and non-royal tombs and burial-related pits in the Valley of the Kings, a surprising number are still encumbered with the *turab* or sand and debris which have filled them through the ages. Others, although open and even investigated at some point, are only now receiving full and thorough excavation or “re-clearance.” This latter situation is especially true of the tomb of Amenhotep III in the Western Valley of the Kings, now undergoing full clearance by a Japanese team under the direction of Jiro Kondo, and the tomb of Ramesses VII which has been reinvestigated by Edwin Brock. The work of these and other researchers has provided us with a far clearer picture of the history of several tombs than had previously been possible.

Continuing excavation not only adds to our knowledge of the distant past, but also can help us better understand the results of previous archaeological work and thus better assess its conclusions. This type of “detective” work also involves the reassessment of the formal and informal reports of earlier archaeologists, as is demonstrated in the paper by Lyla Pinch Brock on KV 55—one of the most enigmatic tombs in the royal valley.

# The Location of the Tomb of Amenhotep I: A Reconsideration<sup>1</sup>

*Daniel Polz*

In 1991, the German Institute of Archaeology, Cairo (DAI) started a new archaeological project in the necropolis of Dra' Abu el-Naga on the West Bank of Thebes.<sup>2</sup> Since 1994 this project has been a joint venture of the German Institute and the University of California, Los Angeles. The major aim of the project is the identification of the private and royal tombs of the 17th and early 18th Dynasties in the Theban Necropolis. A large tomb in the hillside of Dra' Abu el-Naga currently excavated by the project has yielded a substantial amount of material dating to the early 18th Dynasty. For this and other reasons, that tomb is a possible candidate for being one of the lost royal tombs of the late 17th or early 18th Dynasties, including the still unknown tomb of Amenhotep I.

The present article is in a way a by-product of the project; it is meant to be a critical reconsideration and re-evaluation of the sources that have led scholars over nearly one century to numerous attempts to localize and identify the lost tomb of the second king of the 18th Dynasty, Amenhotep I.

Basically, there are three different categories of sources that have been utilized for the attempts to identify king Amenhotep's tomb:

- a. textual           •the Abbott Papyrus (B.M. 10221)<sup>3</sup>
- b. archaeological   •the discovery and partial excavation or clearance (?) of KV 39 around the year 1900, and the visit of the tomb, probably in 1908, by Weigall<sup>4</sup>
- the excavation of a tomb in the cliffs of Dra' Abu el-Naga in 1914 by Carter<sup>5</sup>
- the clearing of TT 320 (the "Royal Cache") in 1881 by Maspero<sup>6</sup>
- c. typological       •several attempts to establish a sequence of the royal tombs of Dynasty 18 in and outside the Valley of the Kings based on the development of certain architectural features by Carter, Weigall, Romer, Dodson, etc.<sup>7</sup>

The sequence of these categories is a deliberate one, i.e., it displays a hierarchy: if viewed against the background of our present knowledge about the tombs on the West Bank of Thebes, the textual category should have—methodologically seen—the strongest evidence: up to the present, pAbbott remains the only known source that not only proves that the tomb of Amenhotep I was somewhere on the West Bank of Thebes but also gives a very detailed description of its exact location. Without this textual source, the meager archaeological evidence and the even more meager typological evidence could not have possibly led to any serious attempt to identify this royal tomb. And indeed, regardless of how

meager the overall evidence was, two particular passages of pAbbott have always been utilized to substantiate it. It is the main goal of this paper to demonstrate how methodologically questionable this procedure is. I will therefore put a certain emphasis on this first category, the textual evidence of pAbbott.

Ever since pAbbott was published for the first time,<sup>8</sup> scholars were attracted by two different indications in the first part of it:

- A. The passage that deals with the location of the tomb of Amenhotep I in the Theban Necropolis and,
- B. The sequence of the other royal tombs that were inspected by the official “tomb-robberies-commission.”

A. This passage indeed gives a detailed and complete description of the tomb’s location—at least as far the potential ancient Egyptian reader is concerned. Fig. 1 shows the hieroglyphs and Peet’s translation of the hieratic text:<sup>9</sup>

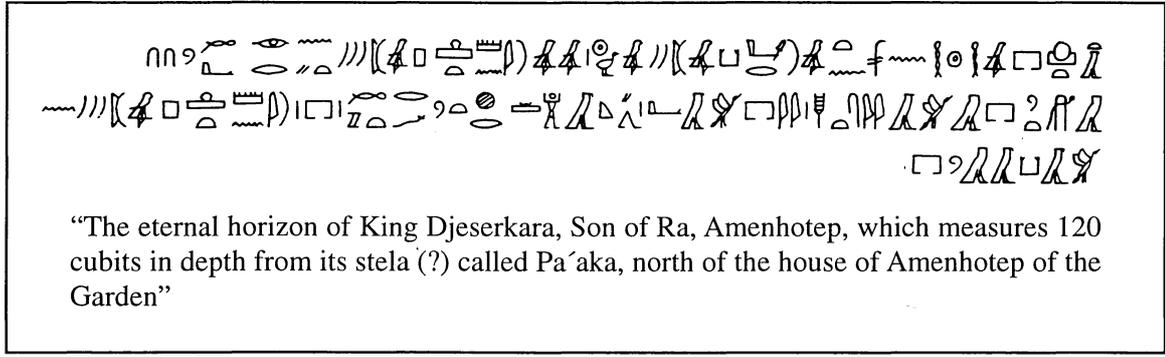


FIGURE 1: pAbbott, p. 2, lines 2-4 ( Peet, *The Great Tomb-Robberies*. Hieroglyphic text, pl. I; translation, pp. 37-38.)

The description of the location of the king’s tomb is far more detailed than those of the following nine royal tombs, and for the ancient Egyptian reader it must have been unambiguous. The passage is, however, extremely ambiguous for us: besides the question of whether the adverbial phrase “north of the house (or temple) ...” is controlled by “stela / Pa’aka” or by “the eternal horizon,” the passage contains at least three if not four unknown or unclear terms: *m dt* in connection with buildings is used for both “depth” and “height,”<sup>10</sup> the word which Peet translates with “stela,” *ḥꜣy* seems to be a *hapax legomenon*; the same is true for “Pa’aka” (*pꜣ ḥꜣꜣj*), which by its determinative seems to indicate a term connected with the verb *qꜣj* (“be high” or the noun “height”); lastly, the toponym *ḥwt Jmn-ḥtp n pꜣ kꜣmw* (the “temple of Amenhotep of the Garden”) is not yet positively identified with a known building on the West Bank. In other words: we are confronted with an equation of four unknown quantities!<sup>11</sup>

The first to actually combine the textual and the archaeological evidence was A. Weigall, who in 1911 published a short article on this subject.<sup>12</sup> Weigall held the position of Inspector-General of Antiquities for the Egyptian Government from 1905-14, when he was also



PLATE I: Location of Carter's tomb in Dra' Abu el-Naga

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PLATE II: Entrance to Carter's tomb in Dra' Abu el-Naga

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responsible for supervising the archaeological work in the Valley of the Kings;<sup>13</sup> during that time, Weigall also stepped into KV 39 which was still mostly unexcavated, and he eventually came to the conclusion that this tomb belonged to Amenhotep I. He took “Pa’aka” to be the peak of the mountain path leading from the workmen’s village of Deir el-Medina to the Valley. On that peak, the famous “workmen’s huts” are located; measuring down 120 cubits (i.e., approximately 63 meters) from that spot, Weigall arrived at the mouth of KV 39. To match the other indication of pAbbott, “north of the house of Amenhotep of the garden,” Weigall identified this building with either the temple of Amenhotep III or an unknown temple of Amenhotep I at Medinet Habu.

His interpretation of the passage in question of pAbbott and the subsequent identification of KV 39 as the king’s tomb were adopted by only a small group of Egyptologists;<sup>14</sup> the most recent support of Weigall’s identification is that of Dodson in an article dealing with the royal tombs of the early 18th Dynasty.<sup>15</sup> After a thorough discussion of all the different attempts to identify the king’s tomb, Dodson finally supports in a cautious way Weigall’s attempt.

A new development in the discussion about Amenhotep I’s tomb was initiated by Howard Carter in an article which appeared in 1916; while working for Lord Carnarvon in the Dra’ Abu el-Naga area in 1914, Carter discovered a rock tomb in a somewhat remote area in the hillside to the west of the modern village (pls. I and II).<sup>16</sup> The subsequent excavation and clearance of that tomb showed that it was in a rather deplorable state: obviously plundered both in antiquity and quite recently, an unknown amount of what Carter identified as parts of the original burial equipment was “scattered in the valley outside the entrance of the tomb, and on the floors of the interior as far as the end of the Sepulchral Hall.”<sup>17</sup> This “deposit” itself is intriguing: it consisted of a large number of fragmented pottery and stone vessels; some of the latter are inscribed with the names and titles of royal personages from the early 18th Dynasty. On three fragments the names of king Neb-pehtj-Ra Ahmose are found; one is inscribed with the cartouche (!) names of the last Hyksos king, Aa-User-Ra Apophis, and of one of his daughters, *Hrj* or *Hrtj*; nine fragments mention the names of Amenhotep I; and another eight fragments show the names of the king’s mother, Ahmes-Nefertari.<sup>18</sup> As those last mentioned fragments form the basis for Carter’s identification of the tomb, it seems appropriate to take a closer look at the rather enigmatic circumstances of the actual finding of those “debris”; collecting the various bits of information about the “debris” it is by no means clear whether or not the number of fragments bearing the names of Amenhotep I and his mother includes those two fragments Carter “procured ... in the local antiquity dealers’ shops,”<sup>19</sup> and those which were offered to him by one of the West Bank tomb-plunderers who eventually pointed out the tomb’s position to Carter.<sup>20</sup> In other words, there is absolutely no certainty about where exactly the inscribed fragments came from or how many of them really came from the tomb itself!

Yet, for Carter, the noticeable imbalance between those fragments which mention the names of Amenhotep I and Ahmes-Nefertari and those bearing other names clearly indicates that this tomb must have belonged to either Amenhotep I alone or to the king and his mother. He supports his theory with two additional hints:

a) The head of a small royal statue which, according to Carter, dates to the early 18th Dynasty. Again, the circumstances of this object are far from being clear: “During the season of 1912-13 the beautiful head ... was purchased in Cairo.”<sup>21</sup> When Carter was clearing the tomb in 1914, apparently “small fragments belonging to its headdress were found

in this tomb...” Since Carter fails to give any details on the whereabouts of those pieces and whether they really belonged to the head, i.e., whether they were fragments chipped or broken off the head, his statement that the fragments allow us “to identify (the head’s) provenance” should be taken very carefully. Besides, Carter’s dating of the head is more than questionable: it seems that a date later in the Dynasty is much more likely.<sup>22</sup>

b) Like Weigall before him, Carter makes intensive use of pAbbott, especially of 1) the passage that deals with the dimensions of the tomb and 2) the fact that it lies to the North of the *ꜥwt Jmn-ꜥtp n pꜥ kꜥmw*. The latter presents a problem only insofar as one has to accept Carter’s identification of this temple as the one that was excavated by Spiegelberg in 1895 and by Spiegelberg and Newberry in 1898-99.<sup>23</sup> Up to now, however, there is nothing to support this identification: as has been earlier mentioned, the “Temple of Amenhotep of the Garden” is not yet positively identified. The former is a remarkable example of a purposeful manipulation of data. Figuratively speaking, Carter puts the zero of a long measuring tape at the mouth of the vertical shaft of the tomb (pl. II) that he has excavated; he then measures down the shaft, along the first corridor, down the so-called “tomb-robbers-shaft” (his “protective well”) and up again (!), all through the second corridor, and along the burial chamber into one of the corners of that chamber. Not surprisingly, the entire distance of 62.80 meters comes very close to the 120 cubits (= 63 meters, with one cubit equaling 52.31 cm, an average measurement based on three preserved wooden cubits in different collections) of pAbbott! Although Carter’s method of applying the 120 cubits of pAbbott to the inside part of the tomb has provoked various critical comments, his identification of this tomb as the tomb of Amenhotep I (and perhaps his mother) has been accepted widely.<sup>24</sup> There are three major obstacles to Carter’s method:

- 1) No part of the passage in pAbbott suggests that the mouth of the vertical shaft is the point from where the 120 cubits are counted.
- 2) It is difficult to imagine that the ancient Egyptian scribe would include the absolutely insignificant depth of the “tomb-robbers-shaft” in the figure if he wanted to describe the tomb’s dimensions. Why should he? Besides, as in the case of King Intef II’s tomb, the detailed remarks of the papyrus seem to aim more at indicating the position of the tomb in the necropolis area than the interior dimensions of the subterranean, concealed, and inaccessible part of it.
- 3) This tomb must have been blocked and sealed somewhere, presumably either close to the shaft’s mouth or at the beginning of the second corridor—just behind the “tomb-robbers-shaft”; according to pAbbott, the tomb of Amenhotep I was *intact*<sup>25</sup> when the officials inspected it: would those inspectors remove the debris, break the seals, enter the tomb, and proceed into the last corner of the burial chamber in order to find out whether it was broken into (and also its exact dimensions)? Most likely not!

Recently, Carter’s identification of the tomb of Amenhotep I was supported by N. Reeves,<sup>26</sup> who after a discussion of the two other major candidates, KV 39 and TT 320 (see below), comes to the conclusion that Carter’s tomb in Dra’ Abu el-Naga “is most likely to be the tomb described in P. Abbott ...” Reeves’ critical attempt is also mainly based on the indications of pAbbott and it is innovative insofar as he introduces a new “datum” which in his opinion the 120 cubits of the papyrus refer to: he suggests that the crucial word *ꜥꜥꜥy* (the “stela” in Peet’s translation) could be the word *ꜥꜥꜥ* (“*Haufen*,” “heap, pile”) referring to one

of the “cairns” on Carter’s map. This particular “cairn” is about 80 meters (or 153 cubits) to the north of the tomb’s entrance and would have been some sort of a “marker” indicating the position of the tomb.<sup>27</sup> This is, however, not very plausible: first, the “cairns” on the Theban West Bank have not been systematically studied yet and up to now there are no clear indications as to their date or dates;<sup>28</sup> secondly, the position of the Dra‘ Abu el-Naga tomb is a hidden one: whoever excavated it originally did obviously not intend to make the tomb an easily accessible place. Hiding a tomb and afterwards “marking” it by a widely visible “cairn” does not seem to make much sense. Finally, as Reeves correctly states, the number of still visible “cairns” in the mountainous area of the West Bank is immense (there are five on Carter’s “sketch map” alone!)—how could those many piles of stones be *significant* “markers”?

A third and more recent attempt to identify the royal tomb may be added: in his comprehensive biography of king Amenhotep I, F.J. Schmitz also lengthily discusses and finally rejects Weigall’s and Carter’s attempts.<sup>29</sup> On the basis of later textual sources—the inscriptions on some of the coffins in the Deir el-Bahri Cachette<sup>30</sup>—which mention the Cachette (TT 320) as the tomb of Queen Inhapi “... in which Amenhotep rests,” Schmitz identifies TT 320 as the original tomb of the king. He also uses some of the indications in pAbbott to support his idea: for Schmitz, the passage *m p3jj.s ʿhʿy p3 ʿ-q3j hr.tw r.f* should be translated as “at its mountain ridge, called the high track / the high path,” referring to the old (and modern) foot path on the ridge high above the Deir el-Bahri valley. Measuring down from that path directly above TT 320, we find the vertical (!) distance from the path to the mouth of the tomb shaft to be 73 meters; to tally with the 63 meters of pAbbott, Schmitz has to subtract 10 meters which brings him to a small platform in the area above the shaft—presumably the old entrance, according to Schmitz. Again, and to no surprise, the “archaeological” record seems to perfectly match with the indications of pAbbott!

As is quite obvious from these examples of different attempts to identify the original tomb of Amenhotep I, any attempt to apply its description in pAbbott to the archaeological record is, at the most, a matter of likeliness or unlikeliness, of plausibility or implausibility. This is in itself, of course, an absolutely acceptable methodological procedure—as long as the line of argumentation is incontestable. This is not the case in any of the discussed attempts: Weigall based his approach on a tomb which wasn’t even excavated at his time.<sup>31</sup> In addition, Weigall identifies, for no obvious reasons, the mortuary temple of Amenhotep III, or else an otherwise unattested temple of Amenhotep I at Medinet Habu, as the “Temple of the Garden” of pAbbott. Carter’s main line of argumentation is based on the inscribed jar fragments which may or may not have come from the tomb he was excavating. Schmitz’s results are entirely based on textual evidence and the interpretation of two of the unknown words in pAbbott.<sup>32</sup> Besides, why would a 21st Dynasty scribe call the king’s original tomb “the tomb of (Queen) Inhapi ... in which Amenhotep rests”?

It seems, therefore, that all pAbbott-based attempts to identify the tomb of Amenhotep I over the last nearly 100 years have yielded close to nothing: the alleged tombs of the king are scattered throughout the necropolis, from Dra‘ Abu el-Naga in the northeast, and the valley of Deir el-Bahri, to the Valley of the Kings in the southwest. One of the attempts may be more plausible than another, depending on the point of view, but if one considers all the possible criticisms, none of them has any great chance of actually having been the king’s tomb.<sup>33</sup> In addition, the pAbbott-based attempts may have had one side-effect: they somewhat obscure the possibility of dealing with the alleged tombs of Amenhotep I solely

on the basis of their internal archaeological, architectural or typological evidence.

B. The second information, the sequence of the royal tombs visited, has played an important role, too, as a supporting evidence in the attempts to identify king Amenhotep's tomb. The papyrus starts with an introduction (page 1, line 1): "[year 16], 3rd month of the inundation season, [day] 18, under ... king Ramesses IX ... [On this day were sent the] officials of the Great and Noble Necropolis, ..., [to examine] the graves [of the] kings of old and the tombs and resting-places of the blessed ones [of days gone by, which are on the] West of Thebes, ..." <sup>34</sup> Then follows a list of the officials and (from page 2, line 2) the description of the location of the tomb of Amenhotep I and the remark *sw gmy wds*, "it was found intact." The text continues (on pages 2 and 3) with a list of nine more royal tombs which were also inspected on the same day. The complete list has the following order:

Amenhotep I	Senakhtenre
Intef II	Seqenenre-Tao
Intef V	Kamose
Intef VI	Ahmose-Sapair
Sobekemzaef II	Mentuhotep II

According to the remarks that accompany each entry, out of the ten tombs inspected nine were found to be intact, only the tomb of Sobekemzaef II was obviously badly plundered and its contents utterly destroyed.

The crucial point is that among Egyptologists this list has almost unanimously been regarded as describing the *chronological* order in which the tombs were inspected by the commission, thus reflecting a *topographical* order or an itinerary, i.e., the actual way the officials took on their one-day inspection.

H.E. Winlock in his brilliant article <sup>35</sup> on the royal tombs of the 17th Dynasty was the first to carefully suggest that the list actually describes the route of the inspection; the problem remains that only two of the tombs mentioned in pAbbott are positively identified, that is the tomb of the second king of the list, Intef II, and that of the last of the list, Mentuhotep II.

The tomb of the former is the so-called Saff el-Kisasiya in el-Tarif, which is the most northern part of the Theban necropolis and the burial ground of the first three kings of the 11th Dynasty and their officials. In pAbbott the tomb of Intef II is identified by the mentioning of a stela of that king on which, among other things, a number of the king's pet dogs are depicted with their non-Egyptian names written above their heads. The papyrus cites one of the dog's name: *Bhk3(j)* (page 2, line 11). During excavations in the entrance building of the Saff el-Kisasiya in 1860 and 1889, parts of that stela were found where the very same dog's name is mentioned. <sup>36</sup> This, indeed, is a rare example of a high probability of a match between textual and archaeological evidence!

The tomb of Mentuhotep II is part of the king's temple complex at Deir el-Bahri, also identified beyond question by excavations. There can be but little doubt that these two tombs are the same as those mentioned in pAbbott.

In his article, Winlock added another royal tomb to the two known ones: it is Carter's tomb, in the cliffs of Dra' Abu el-Naga. For Winlock, basically these three identified tombs — one at the northern end of the Theban Necropolis, one at Deir el-Bahri, and the third in the hillside of Dra' Abu el-Naga, somewhat half way between the other two tombs — were the topographical frame of the scenario that is described in pAbbott; according to him, the unknown tombs of the other kings clearly must be somewhere in the area between el-Tarif,

the Carter-tomb and Deir el-Bahri. Splendid as this idea was, there remained one problem, that is, the sequence of the tombs visited. Winlock had to reconstruct the events of that particular day of the inspection and he did it in an admittedly charming way:

“The inspection was made in September, and we might quite safely assume that the eleven officials, many of whom may well have been old and corpulent, would prefer to puff their way up the desolate little valley to the High Ascent (i.e., the tomb in Dra‘ Abu el-Naga) before the sun shone down upon it in the fierceness of full mid-day heat.”<sup>37</sup>

The next tomb visited was that in the farthest north, the tomb of Intef II, followed by the inspection of the unknown tombs and at the end of the day the officials visited the tomb of Mentuhotep II at Deir el-Bahri. Those unknown other tombs, then, must have been in the Dra‘ Abu el-Naga area, apparently somewhere in the plain, and this is where Winlock tentatively placed the tombs of the kings of the 17th Dynasty. His ideas are supported by the fact that from the 20’s to the 60’s of the 19th century a considerable number of coffins and parts of the funeral equipment of royal 17th Dynasty burials were found somewhere in the Dra‘ Abu el-Naga plain. Without doubt, Winlock’s reconstruction is one of the cornerstones of Theban archaeology; ever since his article appeared there was a solid and well researched basis<sup>38</sup> to locate those lost royal tombs of the 17th Dynasty in the Dra‘ Abu el-Naga area. The brilliance of Winlock’s article lies partly in the fact that his basic ideas still hold true, even if the tomb of Amenhotep I is most probably not the one Carter discovered and the tombs of the 17th Dynasty are most probably not exactly where he put them.

Yet, is the list of pAbbott really an itinerary? Did the ancient Egyptian scribe really have in mind, or was he ordered to list the tombs according to the *order* in which they were *visited* during the inspection? Or, are there any other possible explanations regarding the order of the tombs listed?

In attempting to answer these questions, a closer look at the text of pAbbott is necessary.

Page 1: The first page of the papyrus is the introduction, so to speak, to the inspection of the tombs. It contains the [regnal year], month, and day of king Nefer-Ka-Ra Setep-en-Ra (Ramesses IX) under whose reign the inspection took place; this is followed by two brief statements introducing:

a) the main actors,

“...the inspectors of the ... Necropolis, the scribe of the vizier, the scribe of the overseer of the treasury of Pharaoh....”

and b) the action that they undertook,

“[to inspect] the *js*-tombs [of the] kings of old and the *m<sup>c</sup>h<sup>t</sup>*-tombs (and) resting-places (*swt n htp*) of the blessed ones [of days gone by, which are on the] West of the City” (follows a detailed list with the titles and names of the involved officials).

Page 2/3: The first line is the heading for the following paragraphs (until page 4, line 4, where the official inspection on this day ends):

“The *mr*-tombs, the *js*-tombs, (and) the *m<sup>c</sup>h<sup>t</sup>*-tombs, inspected on this day by the officials.”

It follows the above-mentioned list of royal tombs, starting with the tomb of Amenhotep I and ending with that of king Mentuhotep II. Except for Amenhotep's tomb which is called *t3 3ht nhh* ("the eternal horizon"), all royal burial places are called *p3 mr* ("the pyramid tomb").

Close to the end of page 3 (line 15) we find a summary:

"Total: *mr*-tombs of the kings of old inspected this day by the officials (and) found to be intact: 9 *mr*-tombs; found to have been violated: 1; total: 10."

Page 3/4: The last two lines of page 3 introduce a new group of inspected tombs:

"The *m<sup>c</sup>h<sup>t</sup>*-tombs of the chantresses of the temple of the Divine Adoratrice of Amun-Ra, King of Gods, found to be intact: 2; found to have been violated by the thieves: 2; total: 4."

The first four lines of page 4 report on the inspection of yet another group of tombs:

"The *m<sup>c</sup>h<sup>t</sup>*-tombs (and the) *js*-tombs in which rest the blessed ones of old, the citizenesses (and) citizens on the West of Thebes. It was found that the thieves had violated them all ..."

It follows a description of the nature of these last robberies and of the legal procedures that were taken by the officials and which mark the end of that day of inspections.

Coming back to our initial question, it seems that there are at least three important observations to make, based solely on the contents of the papyrus and without any further interpretation:

1. The inspection on that 18th day of the third month of the inundation season in the 16th year of king Ramesses IX did not exclusively deal with royal tombs; four tombs of chantresses of Amun-Ra and an unknown number of other private tombs were also inspected.
2. Although there seems to be a confusingly large number of terms for "tomb," a certain pattern is detectable: the ten royal tombs listed in the first paragraph are all called *mr*-tombs—except for the first one (that of Amenhotep I), but in the summary (page 3,15) this tomb also falls under the category "*mr*-tomb." The second paragraph lists the four tombs of chanteresses all of which are *m<sup>c</sup>h<sup>t</sup>*-tombs. Finally, in the third paragraph, the tombs of other private individuals are mentioned: this group apparently contains tombs of both the *m<sup>c</sup>h<sup>t</sup>*—and the *js*-type.<sup>39</sup> These three different terms also occur in the line that heads the three paragraphs (page 2,1) in the order: *mr*-tombs—*js*-tombs—*m<sup>c</sup>h<sup>t</sup>*-tombs.
3. The meticulous description of the location of the tomb of Amenhotep I and the somewhat vague reference to the position of the tomb of king Intef II (page 2, line 8: "... north of the temple of Amenhotep of the Garden") point to the fact that also all the other tombs visited on that first day of the inspection lay outside the Valleys of the Kings or the Queens—in a later part of pAbbott both places are indeed mentioned but with other terms (*p3 hr 3 šps / t3 st nfrw*; for example, page 6, line 6).
4. Except for the first (Amenhotep I) and the last (Mentuhotep II) in the list of inspected royal tombs, the sequence of tombs no. 2 to no. 9 partly shows a striking affinity to the Egyptologically reconstructed *chronological* sequence of kings in the 11th/17th Dynasties (fig. 2).<sup>40</sup>

	Franke <sup>41</sup> /von Beckerath <sup>42</sup>	pAbbott
<b>Dynasty 11</b>	1. Intef I 2. Intef II 3. Intef III 4. Mentuhotep II 5. Mentuhotep III 6. Mentuhotep IV	1. Amenhotep I 2. Intef II
<b>Dynasty 17</b>	1. Intef V 2. Rahotep 3. Sobekemzaef I 4. Djehuti 5. Mentuhotep VI 6. Nebiriau (I) 7. Nebiriau (II)? 8. Semen-Re 9. Seuserenre Bebi-ankh 10. Sobekemzaef II 11. Intef VI 12. Intef VII 13. Senakhtenre 14. Seqenenre 15. Kamose	3. Intef V 4. Intef VI 5. Sobekemzaef II 6. Seqenenre-Taa 7. Seqenenre-Taa-aa 8. Kamose
<b>Dynasty 18</b>	-- (Ahmose-Sapair <sup>43</sup> ) 1. Ahmose 2. Amenhotep I	9. Ahmose-Sapair 10. Mentuhotep II

FIGURE 2: Reconstructed sequence of kings in Dynasty 11 and Dynasty 17 and the sequence of royal tombs in pAbbott

It follows then from these observations that the sequence of royal tombs in pAbbott does not *necessarily* display an itinerary. It could also very well be organized in a more or less chronological order of kings, starting with Amenhotep I because at the time he was probably regarded as being the most important king of the list.<sup>44</sup> Besides, the tomb of Amenhotep I could have been the initial cause for the inspection and the subsequent trial: it is the only one in the list that was (falsely) reported to the mayor of Thebes and the vizier to have been violated by the tomb-robbers.<sup>45</sup>

Finally, it seems appropriate to utter a suspicion concerning the general reliability of the descriptions and statements of pAbbott.<sup>46</sup> Without doubt, the report on the inspection of tombs is everything else but an unbiased legal document or a copy thereof. In between the lines one detects a different issue, that is, the conflict between the two leading political figures in Thebes at the time, the chief of the Madjoi of the Necropolis, Pamer-aa, and his “rival,” the mayor of Thebes, Paser. Although dealing with this political issue is outside the scope of this paper, one should be aware of the possibility that there could have been underlying reasons for filing this document other than just the report on the inspection of allegedly plundered or robbed tombs.<sup>47</sup> That in turn may have influenced the accuracy or thoroughness of the inspection; in at least two cases suspicion arises as to what and how they were inspected.<sup>48</sup> The first case is the tomb of king Intef II “whose pyramid,” according to pAbbott, “has been removed from it, but its stela is still fixed in front of it and the figure of the king stands on this stela with his dog called Behkay between his feet” (page 2, lines 9-10). This description clearly refers to the huge entrance building of the king’s gigantic tomb-complex. This entrance building indeed was an impressive piece of architecture and it is also the place where parts of the stela were found. The rock-cut royal burial chamber, however, lies in the western part of the large court—more than 250 yards away from the entrance building! What, then, did the officials of pAbbott inspect and find *intact*? The second case is the last on the list of inspected tombs, i.e., the tomb of king Mentuhotep II at Deir el-Bahri which was also found to be *intact*. At the time of the 20th Dynasty, the entrance to the long corridor and burial chamber was hidden below the pavement of the hypostyle hall and a huge sandstone wall; besides, the king’s burial chamber had already been plundered for the first time before the end of the 18th Dynasty—again, what did the officials inspect and what did they find to be *intact*?<sup>49</sup>

To sum up, on the basis of these last remarks and of our present state of knowledge about the tombs of the early New Kingdom Necropolis of Thebes, there seems to be only one way to step on methodologically solid ground: we simply have to *disregard* pAbbott as a source for any attempt to locate the royal tombs of the late 17th and early 18th Dynasties. Only additional information will enable us to identify these tombs; this information can only come from the discovery of new textual sources or through new excavations.

— University of California, Los Angeles

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NOTES:

1 For various comments I am indebted to: Andrea Gnirs, Antonio Loprieno, Felicitas Polz, and William Schniedewind.

2 See the preliminary reports: D. Polz, *MDAIK* 48 (1992), 109-130; *idem*, *MDAIK* 49 (1993), 227-138; *idem*, *MDAIK* 51 (1995), 207-225; see also: *idem*, “Dra’ Abu el-Naga: The First Five Years,” *Egyptian Archaeology* 7 (1995), forthcoming.

3 Peet, *The Great Tomb-Robberies of the Twentieth Egyptian Dynasty* (1930), pp. 28-45.

4 A. Weigall, “The Tomb of Amenhotep 1st,” *ASAE* 11 (1911), 174-75; according to E. Thomas, *The Royal Necropoleis of Thebes* (1966), p. 98, note 54, KV 39 was (re-)discovered by two inhabitants of Luxor around the year 1900 and visited by Weigall, C. L. Smith, and others, probably in 1908 (cf. D. Rose, “An Interim Report on Work in KV 39, September-October 1989,” in: C.N. Reeves, *After Tut’ankhamun* [London, 1992], pp. 28-40).

5 H. Carter, “Report on the Tomb of Zeser-Ka-Ra Amen-Hetep I, Discovered by the Earl of Carnarvon in 1914,” *JEA* 3 (1916), 147-54.

6 G. Maspero, "Les Momies royales de Deir el Bahari," *MMAF* I (1889), 516-19; cf. Thomas, *op. cit.*, pp. 228-47.

7 Carter, *op. cit.*; Weigall, *op. cit.*; J. Romer, "Royal Tombs of the Early Eighteenth Dynasty," *MDAIK* 32 (1976), 191-206; A. Dodson, "The Tombs of the Kings of the Early Eighteenth Dynasty at Thebes," *ZÄS* 115 (1988), 110-23.

8 *Select papyri in the hieratic character from the collections of the British Museum* (1841-60), part II, pls. I-VII. Since its publication in 1930, Peet's *The Great Tomb-Robberies of the Twentieth Dynasty* has become the *editio princeps* of pAbbott.

9 The hieroglyphs in fig. 1 are those of Peet, *op. cit.*, pl. I, reduced to fit the space in the present publication; translation, pp. 37-38.

10 *WB* II, 184, 12-13.

11 In dealing with this sort of text, we have to keep in mind that we know neither the author (i.e., the person or persons who signed as responsible for it) nor the purpose: the obvious issue of the text is, of course, the report on an inspection of tombs in the Theban Necropolis. It is, however, very probable that there are one or more underlying issues which might be less obvious to us (see below). At any rate, the "intended reader" of pAbbott most probably knew or was able to find out what and where *p3 ̄-qj* was, and he almost certainly knew the building "The temple of Amenhotep of the Garden."

12 A. Weigall, *ASAE* 11 (1911), 174-75; two years before, in 1909, Weigall published his *A Guide to the Antiquities of Upper Egypt*, where tomb KV 39 is already listed as being the tomb of Amenhotep I and where Weigall refers to his (later) article in *ASAE* (A. Weigall, *op. cit.*, pp. 223-24). After Carter's discovery of the Dra' Abu el-Naga tomb (see below), Weigall continued to identify KV 39 as the king's tomb (A. Weigall, *Tutankhamen and other Essays* [1923], p. 18; A. Weigall, *A History of the Pharaohs*, vol. II [1927], pp. 262-64).

13 W. Dawson, *Who Was Who in Egyptology*, 2nd ed. (1972), p. 299.

14 Thomas, *op. cit.*, pp. 70-1 and 73-5; C. Nims (following Thomas), *Thebes of the Pharaohs: Pattern for Every City* (1965), p. 133 and p. 202, note 33.

15 Dodson, *op. cit.*

16 Carter, *JEA* 3, 147-54. See also the detailed description of the events that led to "Lord Carnarvon's discovery" of this tomb in T.G.H. James, *Howard Carter: The Path to Tutankhamun* (London, 1992), pp. 93-94 and 167-72.

17 Carter, *JEA* 3, 151.

18 Carter, *JEA* 3, 152 and pl. XXI,1; for a photograph of a restored jar with the titles and the name of Ahmes-Nefertari, now in the Metropolitan Museum of Art, see W. Hayes, *The Scepter of Egypt*, part II (1959), p. 45, fig. 64; C.N. Reeves and J.H. Taylor, *Howard Carter before Tutankhamun* (1992), p. 122.

19 Carter, *JEA* 3, 151. The passage in his autobiographical sketches in which Carter refers to those two fragments seems to indicate that the purchase took place "about 1907," see Reeves and Taylor, *op. cit.*, p. 121 and James, *op. cit.*, p. 169. James, however, seems to doubt the reliability of this entry and suggests that "These earlier fragments might have provided the spur for his 1904 attempt to find the tomb (i.e., of Amenhotep I) for Lord Amherst." It seems that Carter had developed "quite an obsession" (James, p. 93) to find that tomb already 10 years before he worked on the Dra' Abu el-Naga tomb.

20 Cf. James, *op. cit.*, p. 169.

21 Carter, *JEA* 3, 151 note 1. Cf. Romer's interesting, if unsubstantiated, comment on Carter's statement "... a well-used euphemism at the time for articles purchased on the illicit antiquities market, and Carter had probably bought it at Luxor..." J. Romer, *Valley of the Kings* (1981), p. 239.

22 W. Hayes, *op. cit.*, p. 49, p. 123 and fig. 64, dates the head to the times of Thutmose III. Concerning the provenance of the head, Hayes becomes rather explicit: "The once prevalent belief that it came from the tomb of Amun-hotpe I at Thebes and is a representation of that king appears to be without foundation." In his article, Carter also mentions "a small number of basalt fragments of two statuettes, presumably of the king and the queen ...." obviously also coming from the debris of the tomb (Carter, *JEA* 3, 153). From the photograph of the restored female statuette (*JEA* 3, pl. XVIII), it seems to be a work of the end (Amenhotep III?) rather than of the beginning of the 18th Dynasty; see Hayes, *op. cit.*, p. 311, who dates it to "the latter part of the Eighteenth Dynasty." Cf. Romer, "Royal Tombs," pp. 203-4.

23 W. Spiegelberg, "Zwei Beiträge zur Geschichte und Topographie der thebanischen Nekropolis im Neuen Reich, I. Der Grabtempel Amenophis' I. zu Draḥ Abu' l Negga (1898), pp. 1-5; Northampton, W. Spiegelberg, and P. Newberry, *Report on Some Excavations in the Theban Necropolis during the Winter of 1898-9* (1908), pp. 6-9.

24 In statements like this one, a sharp line has to be drawn between those scholars who simply adopted Carter's ideas and those who critically scrutinized his line of argumentation; the former group are: Steindorff and Wolf, "Die thebanische Gräberwelt," *LÄS* 4 (1936), 73; Vandier, *Manuel d'Archéologie Égyptienne*, part II (1954), pp. 223-28; H. Kees, *Ancient Egypt: A Cultural Topography* (1961), p. 254; Hayes, *op. cit.*, p. 48; W. Helck, "Soziale Stellung und Grabanlage," *JESHO* 5 (1962), 227-28. The latter group consists of: H.E. Winlock, "The Tombs of the Kings of the Seventeenth Dynasty at Thebes," *JEA* 10 (1924), 217-77; Peet, *op. cit.*, p. 43, note 4; Romer, *op. cit.*, pp. 238-39; C.N. Reeves, *Valley of the Kings: The Decline of a Royal Necropolis* (1990), pp. 3-9; Reeves and Taylor, *op. cit.*, p. 125.

25 For the purpose of this article, the legitimate question of whether the meaning of the term *wḏj* includes that of "intact" (in the restricted sense of "undisturbed," "undamaged") is not a crucial one: in our part of pAbbott, *wḏj* occurs twice (page 3, lines 16 and 17/8) in direct opposition to *thj* ("attack," "violate;" see *WB* V, 319). *thj* is also the term used in the description of the tomb of king Sobekemzaef, which was seriously violated and parts of its contents totally destroyed (page 3, line 2).

26 Reeves, *Valley of the Kings*, pp. 3-9.

27 Reeves, *Valley of the Kings*, p. 5.

28 In fact, it seems that at least some of them may be somehow connected to prehistoric activities; see the map of Schweinfurth, *Karte der westlichen Umgebung von Luxor und Karnak* (1909).

29 F.-J. Schmitz, "Amenophis I.," *HÄB* 6 (1978), 205-232.

30 Schmitz, *op. cit.*, pp. 223-32.

31 KV 39 is currently being excavated by J. Rose (cf. above, note 4); according to the results of Rose's first excavation campaign, it seems that it was not fully cleared by its original discoverers round the turn of the century (Rose, *op. cit.*, p. 38). The question, then, is what did Weigall see when he visited the tomb? His descriptions of the tomb's plan in his various articles on the tomb (see note 12) differ considerably (cf. Rose, *op. cit.*, p. 38, note 6). It is now quite clear from the preliminary plan published by Rose (*op. cit.*, p. 34, fig. 7) that the real plan of the tomb has almost nothing in common with Weigall's descriptions of it or with the rough plans in Thomas, *op. cit.*, p. 85, fig. 9 and Dodson, "Tombs of the Kings," p. 115, fig. 2, which are ultimately based on the descriptions of Weigall and Lindon Smith.

32 Cf. Dodson's rightful rejection of Schmitz' interpretation of the "datum" indicating the position of the tomb as the mountain path over Deir el-Bahri (Dodson, "Tombs of the Kings," p. 117.)

33 The most sober look at the sources and their evaluation to be found is that of Hornung: "Das Grab Amenophis' I., meist in Dra' abu el-Naga angenommen, ist noch nicht mit Sicherheit identifiziert, daher ist auch die Trennung von Grab und Totentempel nicht erwiesen." (E. Hornung, "Amenophis I.," *LÄ* I [1975], p. 202.)

34 Peet's translation, slightly altered and abbreviated, *op. cit.*, p. 37.

35 Winlock, "Tombs of the Kings," pp. 217-77.

36 D. Arnold, "Gräber des Alten und Mittleren Reiches in el-Tarif," *AV* 17 (1976), 25-32.

37 Winlock, "The Tombs of the Kings," p. 224.

38 It had been noticed before Winlock's article appeared that the Dra' Abu el-Naga area was the most likely candidate for the location of the 17th Dynasty burial ground; see Winlock, "The Tombs of the Kings," p. 217, note 2.

39 The occurrence of those different terms for "tomb" has, of course, already been noticed by the early translators of pAbbott; see Winlock, "The Tombs of the Kings," pp. 225-26. It lies, of course, outside the scope of this article to deal with the otherwise intriguing question of whether or not the terms for "tomb" could relate to distinctive architectural types of "tomb."

40 For different chronological approaches see, for example, A. Dodson, "On the Internal Chronology of the Seventeenth Dynasty," *GM* 120 (1991), 33-38; C. Bennett, "The Structure of the Seventeenth Dynasty," *GM*, forthcoming; I am indebted to Chris Bennett for a copy of his article before publication.

41 D. Franke, "Zur Chronologie des Mittleren Reiches - Teil I," *Or* 57 (1988), 262-73.

42 J. Von Beckerath, "Untersuchungen zur politischen Geschichte der Zweiten Zwischenzeit in Ägypten," *ÄF* 23 (1964), 165-96 and table 224; *idem*, "Königsnamen," *LÄ* III (1980), 549.

43 The "dynastic position" of Prince Ahmose-Sapair is still not perfectly clear; for the most recent attempt to clarify his genealogical position, cf. the interesting article of C. Bennett who suggests that the Prince was a younger son of Seqenenre and Ahhotep, thus a younger brother of Ahmose and possible father of Thutmosis I: C. Bennett, "Thutmosis I and Ahmes-Sapair," *GM* 141 (1994), 35-7.

44 Why the last king of the list is Mentuhotep II, I cannot convincingly explain.

45 pAbbott page 2, lines 4-7; cf. Peet, *op. cit.*, p. 30.

46 Cf. James, *op. cit.*, p. 170.

47 For a discussion of this issue see Peet, *op. cit.*, pp. 28-37 and his notes on the translation, 43-45; cf. Winlock, "The Tombs of the Kings," p. 265.

48 Both cases have been noticed by Arnold during his work on the royal tombs of the 11th Dynasty in el-Tarif and Deir el-Bahri, D. Arnold, *Gräber des Alten und Mittleren Reiches*, p. 25, note 55; *idem*, "Der Tempel des Königs Mentuhotep von Deir el-Bahari," *AV* 8 (1974), 38, note 70.

49 Or did they simply rely on the statements of the priests, as Arnold suggests (*loc. cit.*)?

## Who Was the First King in the Valley of the Kings?

*Claude Vandersleyen*

In asking who was the first king to be buried in the Valley of the Kings, I do mean *within* the Valley, for tomb 39, for instance, with which Bill Manley has recently been dealing,<sup>1</sup> is located on the edge of the Valley rather than inside it.

As for inside the Valley proper, the discussion is open. Is KV 20—Hatshepsut's tomb—the most ancient one, or is it tomb 38, the tomb of Tuthmosis I? Many archaeologists would say that this debate is over. As far back as 1974 John Romer<sup>2</sup> showed that there was nothing in tomb 38 that could date it to Tuthmosis I's reign. The most important object found in tomb 38 is the sarcophagus, which Hayes showed years ago is definitely from the time of Tuthmosis III. As Romer stressed, it is impossible to prove that any of the other objects found in KV 38 belongs to an original burial of Tuthmosis I in that tomb. Moreover, the structure of tomb 38 is similar enough to that of tomb 34 and tomb 42 to make a group with them; the most salient common feature being the cartouche-shape of the funeral chambers. Tomb 34 is Tuthmosis' III tomb; tomb 42 was prepared for Merytre Hatshepsut, Tuthmosis III's wife, as shown by the foundation deposits. It is very likely, therefore, that all three tombs were made during the time of Tuthmosis III and that not only the sarcophagus of Tuthmosis I belongs to Tuthmosis' III reign, but the tomb containing it as well.

I think that Romer is still right, and that tomb 38 is later than tomb 20. However, a recent paper published in 1993 by Der Manuelian and Loeben<sup>3</sup> has argued for the alternate opinion, that is to say, that tomb 38 is the one dug for Tuthmosis I by the architect Ineni. Actually, this study may have no weight in respect of an early foundation of tomb 38 as the authors do not seem to me to give solid arguments to revalidate the former view,<sup>4</sup> or to disprove Romer's assertion that KV 38 is later than KV 20.

To this point, certain things are clear. It is pretty sure that KV 20 was rearranged to make room for a double burial and that the room where the two sarcophagi—Hatshepsut's and the one she had recarved for her father—were found must have been *purposefully* cut for them by Hatshepsut.

Here a new problem arises. In order to add this burial room Hatshepsut may have extended a tomb first meant for Tuthmosis I, or she may have cut from the outset a tomb for herself and extended it for her father. There are foundation deposits of Hatshepsut before the entrance of tomb 20, yet John Romer has shown the weakness of this argument: the queen may have added these deposits after completing the digging of tomb 20, and thus, this is not an incontrovertible argument in her favor.

So, one solution is: the long gallery of tomb 20 may have been dug by Tuthmosis I<sup>5</sup> and reused and enlarged, at least at the end, by his daughter. This was the conclusion of Romer in 1974.

A second solution could be: Hatshepsut decided on the cutting of this tomb, and this is my opinion. While I cannot prove this, this solution still seems more likely. I see at least three reasons in favor of Hatshepsut being responsible for the tomb attributed to her and for being the first to construct a tomb in the royal Valley.

The first reason is the strongest, and this argument has been put forward for years: the position of the tomb in relation to the temple of Deir el-Bahri, behind it on the other side of the cliffs. In order to cancel this argument, there should be evidence that Tuthmosis I had already asserted his presence at the place where the queen built the temple, but there is none.

The second reason is the fact that the queen had one of her sarcophagi transformed for her father. I realize that this reason is not a strong one. Obviously *she* took the initiative of a change. We do not know why she did it, but we do know that the wooden coffins of her father were too large for her sarcophagus. The inner ends of this sarcophagus were recut, indicating that the time was short, whereas Tuthmosis III had had plenty of time to make a new sarcophagus of the needed size. The wooden coffins of Tuthmosis I might have lain in KV 20 either before Hatshepsut's time, if the tomb had been cut by Tuthmosis I (hypothetical objection to my general conclusion), or, at least, before the time Hatshepsut had made a sarcophagus ready for her father.

The third reason is quite subjective. Hatshepsut's reign is characterized by many novelties and signs of originality. For instance, she revived the custom of carving stone sarcophagi, and she conceived the idea of making sarcophagi in the form of a cartouche. This idea was repeated by Tuthmosis III, but he gave the form to the whole burial chamber of the tombs already mentioned. Such an innovative person as Hatshepsut might well have made this huge unusual tomb without any parallel. It suits the spirit of her reign; *she* probably was the first "king" to cut a tomb in the valley.

If this is true, we can add some more remarks. It seems that neither of the sarcophagi of tomb 20 had ever been used. If Hatshepsut died in Year 22, we may easily understand that Tuthmosis III had a sarcophagus made for his grandfather and didn't use the one prepared for him by Hatshepsut. The queen decided perhaps too late to transform the tomb and the sarcophagus, and death may have prevented her from bringing her project to an end. What if the queen had withdrawn from the throne and had died later on? She then would have lost or (better?) renounced her regal rights. If her death occurred in the Year 42 or 43 of Tuthmosis III, this would coincide with the beginning of her *damnatio memoriae*. She was most likely not buried in the huge tomb she had dug for herself, but then, between the Years 22 and 42, the project of giving a more stately burial to Tuthmosis I was perhaps given up by her. Probably because it was really necessary to give Tuthmosis I a more decent tomb and sarcophagus, Tuthmosis III did it, but in his own way.

As already pointed out, it is not *proven* that the mummy of Tuthmosis I ever lay in KV 20. Let us imagine another scenario: the mummy of Tuthmosis I was in the tomb dug by Ineni; for an unknown reason, perhaps because this tomb was thought unworthy, too simple, or in an unsuitable place by Hatshepsut and Tuthmosis III, the queen decided to change the king's burial. She prepared a sarcophagus and enlarged her own tomb, but she did not have time enough to achieve her project, because of either her death or her renunciation of her

regnal rights. Tuthmosis III took up the idea, but without using the sarcophagus or the burial chamber prepared by Hatshepsut; the mummy of the old king was thus only once transferred from the tomb built by Ineni to KV 38.

The usual interpretation is that of a sort of war between Hatshepsut and Tuthmosis III, both using the mummy of Tuthmosis I as a weapon. Actually, we don't know, but my proposal is perhaps better, at least more peaceful. The solution of the problem would be to find or securely establish the tomb built for Tuthmosis I by Ineni. It might well not be in the Valley.

I expressed here my own conviction, and I am aware that I didn't *prove* anything. The basis of my conviction, I confess, is that such an outstanding tomb as KV 20 must have been planned and dug by an outstanding personality, as Hatshepsut indeed was.

— Université Catholique de Louvain

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NOTES:

1 B. Manley, "Tomb 39 and The Sacred Land," *Journal of Ancient Chronology Forum* 2 (1988), 41-57.

2 J. Romer, "Tuthmosis I and the Biban el-Moluk: Some Problems of Attribution," *JEA* 60 (1974), 119-33.

3 P. Der Manuelian and C. E. Loeben, "New Light on the Recarved Sarcophagus of Hatshepsut and Thutmose I in the Museum of Fine Arts, Boston," *JEA* 79 (1993), 121-55; cf. *History and Discovery*, 122-28.

4 There are disputable points and some grave inaccuracies in this paper: to marry Tuthmosis III with Nefrure; or to confidently attribute tomb 42 to Tuthmosis II, requires more specific justification; to give tomb 20 a length of 2 km 133 m (p. 124) and a depth of almost 1 km (960 m!), is ten times too long and too deep.

5 No securely attributable foundation deposits have been discovered in association with any structure dated to the reign of Tuthmosis I: J. Weinstein, *Foundation Deposits in Ancient Egypt* (Ann Arbor, 1973), p. 88.

# The Re-clearance of Tombs WV 22 and WV A in the Western Valley of the Kings

*Jiro Kondo*

## Introduction

Waseda University initiated its work in the Western Valley of the Kings in September, 1989, with the preparation of a 1:1000 topographical map of the area. At the same time, a start was made on the clearance (now completed) and consolidation of the tomb of Amenhotep III, with the carefully monitored removal of 30 - 40 cm high piles of rubble left by previous excavators and the replacement of the descending staircase at the entrance and the wooden bridge over the shaft, E. An electromagnetic survey has been carried out outside the entrance to the tomb, and the area around the stone-built wall between WV 22 and the small tomb WV A has been fully excavated. Since it is functionally related to WV 22, tomb WV A has also been re-cleared. A report on Waseda's work in the Western Valley, in English, is in preparation.

## The Tomb of Amenhotep III: Historical Background

The existence of the tomb of Amenhotep III, now numbered WV 22, was first noted by two engineers of Napoleon's Egyptian Expedition in August, 1799. The Expedition's plan of the tomb and a selection of the fragments recovered were subsequently published in the *Description de l'Egypte*.<sup>1</sup>

In 1804, five years after the French, the tomb was visited by the enigmatic John Gordon, who carved his name on the south wall of the entrance. Gordon was followed, in 1829, by Champollion and L'Hôte, Champollion being the first to identify the owner of the tomb. The graffito of L'Hôte may be seen on the north wall of room I. In the middle of the 19th century WV 22 was visited by Lepsius, who copied portions of the Imy-Duat on the walls of the sarcophagus chamber, J.<sup>2</sup> Sometime between 1905 and 1914, the tomb appears to have been explored by Theodore M. Davis, though no details of this clearance are known.<sup>3</sup> Howard Carter's work at the tomb on behalf of Lord Carnarvon, their first season of exploratory work in the Valley of the Kings, was carried out between 8 February and 8 March, 1915. According to Carter's records,<sup>4</sup> his efforts appear to have been concentrated on the area immediately in front of the tomb entrance (where he found five intact foundation deposits<sup>5</sup> consisting of the heads of calves, miniature pottery vessels, model implements and cartouche plaques of blue faience bearing the prenomen and nomen of Tuthmosis IV)

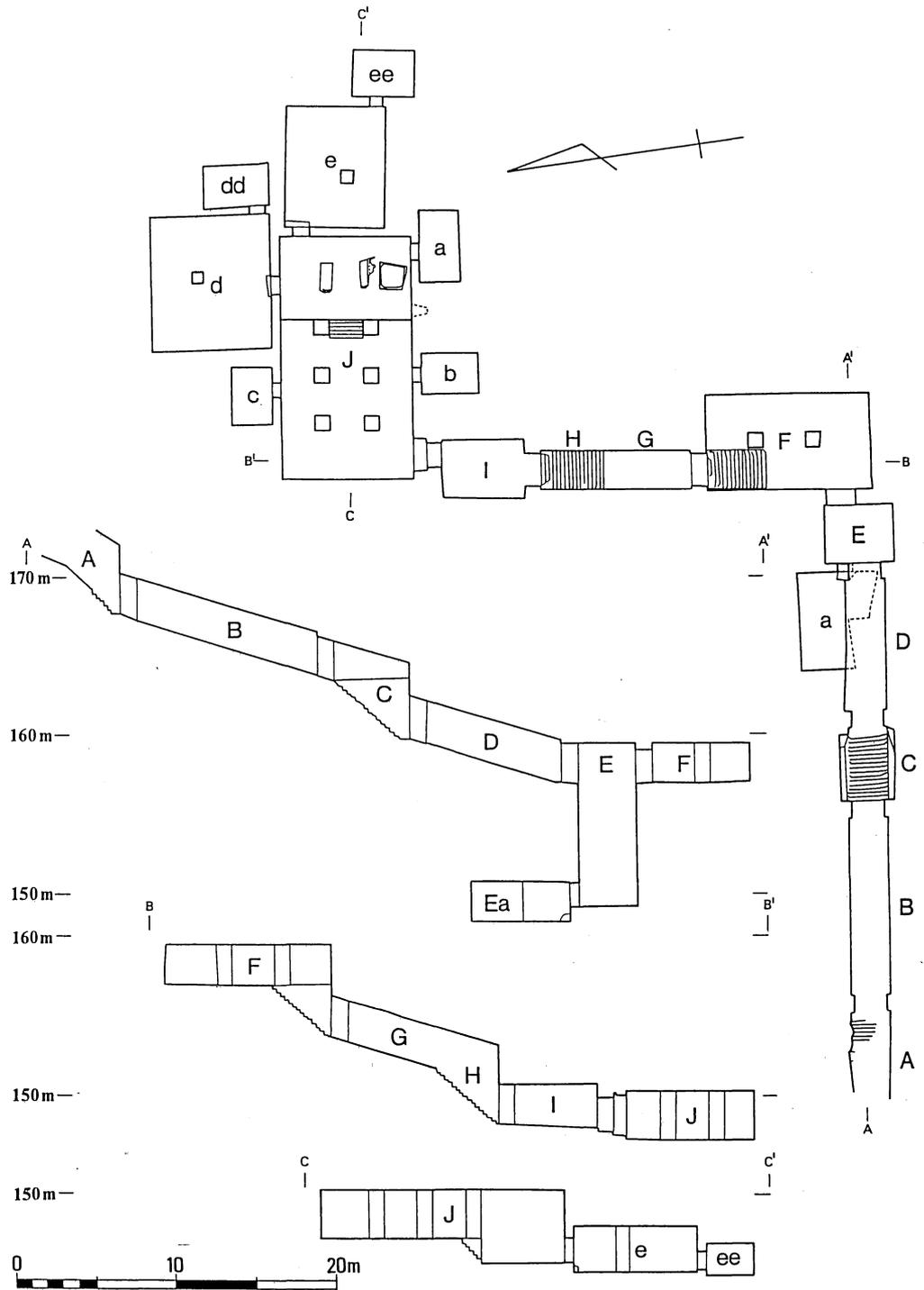


FIGURE 1: WV 22—The tomb of Amenhotep III.

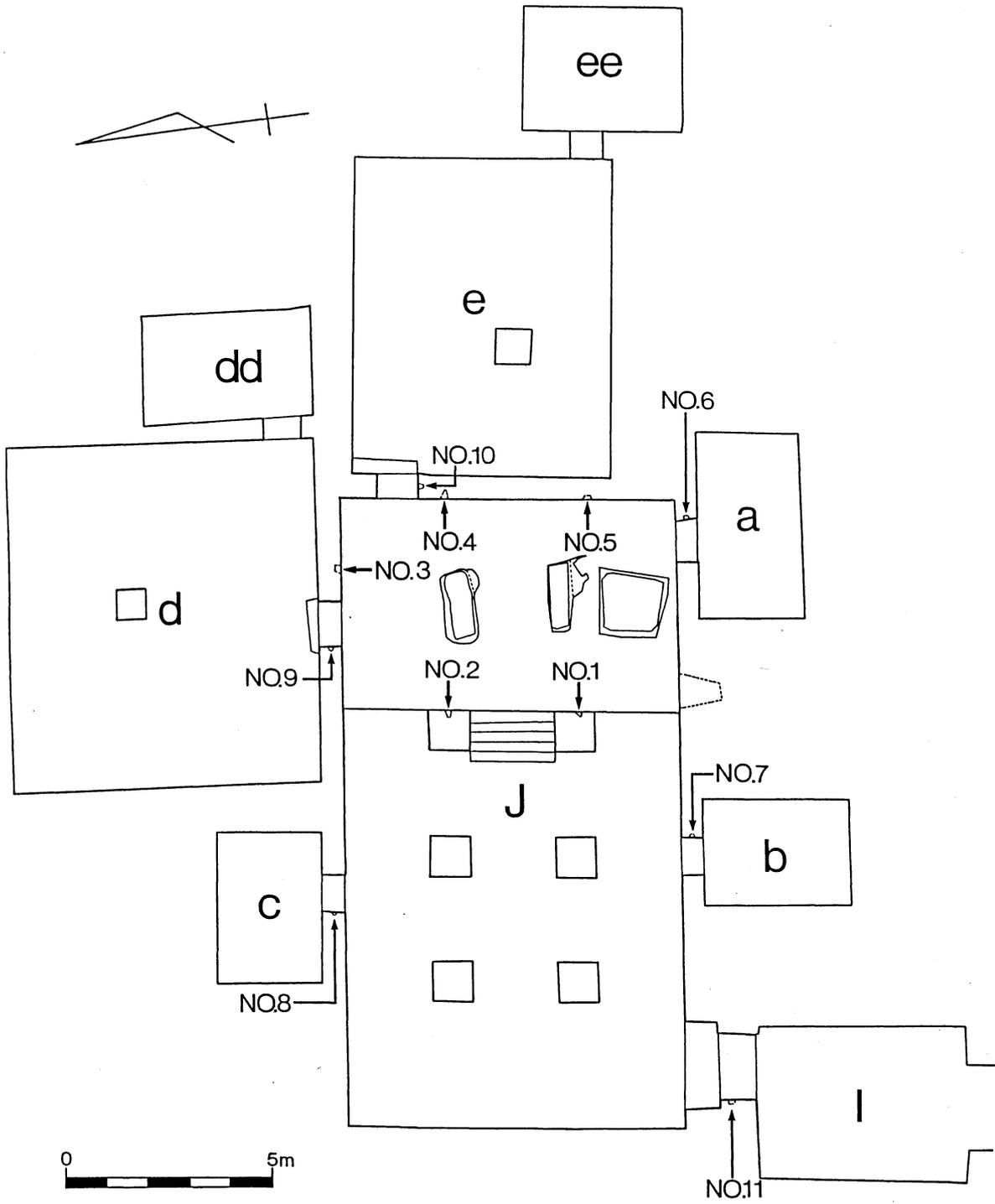


FIGURE 2: Magical niches of WV 22.

and the shaft. Several objects from the Carter clearance are now at Highclere Castle, near Newbury in England,<sup>6</sup> and in the Metropolitan Museum of Art in New York.

In 1959, Erik Hornung visited the tomb in company with Alexander Piankoff to study the Book of Imy-Duat inscribed upon the walls of the burial chamber, J, the results since published in his *Das Amduat*.<sup>7</sup>

In 1960, Elizabeth Thomas made detailed measurements of the tomb and published an excellent plan and elevations in her book *The Royal Necropoleis of Thebes*.<sup>8</sup>

## Update on the Plan of WV 22

Our preliminary plan of WV 22 was presented at the conference *After Tut'ankhamūn*, held at Highclere Castle in 1990.<sup>9</sup> Further work has resulted in a number of minor revisions (fig. 1) which call for comment.

### 1) Passage G and Staircase H

The point of connection between the descending passage G and descending staircase H is unique. The stairs are normally independent of other architectural features, with a narrow doorway between the end of the passage and the beginning of the steps. Between staircase H and passage G in the tomb of Amenhotep III, however, there is no such doorway. The difference is clear from a comparison with the tomb of Tuthmosis IV (KV 43).<sup>10</sup> It seems that there was an alteration in the plan of WV 22 during construction: presumably G had originally been planned as a passage similar in scale to the corresponding element in KV 43, but for some reason was shortened to the form we see today.

### 2) The Entrance to Room I

Rough chiselling is in evidence on the ceiling before the entrance to room I. Since the slope of staircase H had become rather sharp after the change in plan, it was evidently difficult to introduce the sarcophagus through the doorway into room I. Consequently the height of the ceiling had to be adjusted.

### 3) Magical Niches

Eleven so-called “magical niches” (fig. 2) have been noted within WV 22. One (no. 11) was found at the entrance to the burial chamber, J, on the left as one enters from the passage. Five (nos. 6-10) were found at the entrances of the side-rooms which lead off from J—Ja, Jb, Jc, Jd and Je—and are important in helping to establish the general function of these subsidiary chambers. Except no. 10 at the entrance to Je, the niches are located to the *left* of the doorway as one enters from the burial chamber; for room Je, the niche (no. 10) was located to the *right* of the doorway. This suggests that the function of room Je was different from that of the other side rooms. The basic principle seems to be that niches are located to the left of the entrance as one enters—and that, while Ja-d are accessed *from* the burial chamber J, the movement with Je is in the opposite direction, into the burial chamber. This point will be considered further below in relation to the role of the side chambers; briefly, however, room Je appears to have been conceived from the very start as a queen's chamber (presumably for Tiye), while room Jd, originally intended as a simple side storage-room, was changed into a second queen's chamber only subsequently. At the time the change in function of Jd had been decided, however, niche no. 9 had already been cut. The position of this niche, together with chisel marks in the ceiling and on the south wall of Jd, is important in suggesting the change in plan of WV 22 while under construction.

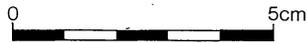
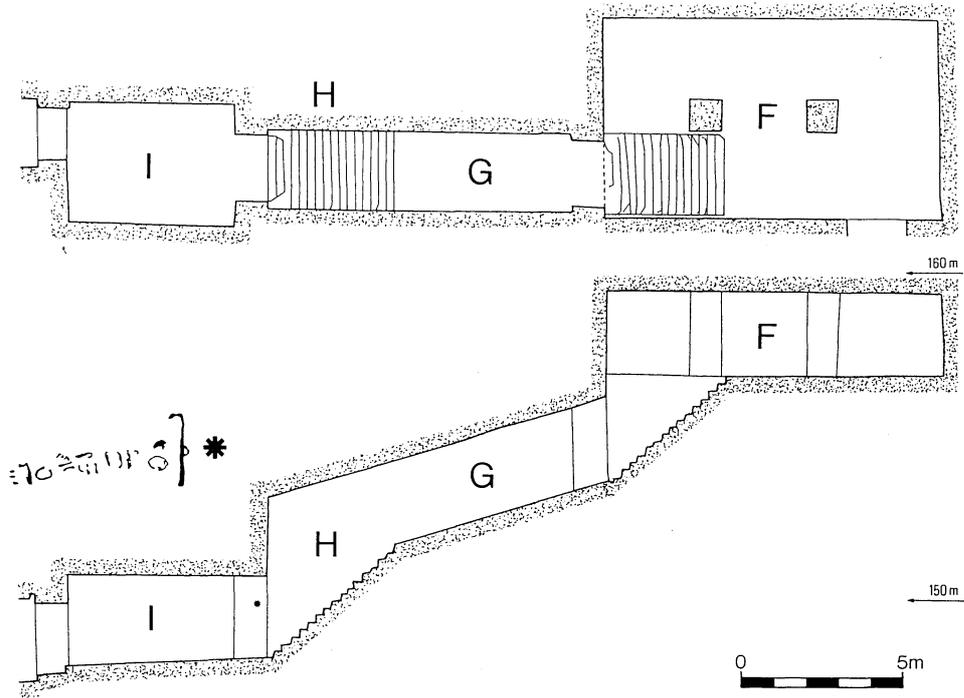


FIGURE 3: Hieratic graffito, showing location in WV 22.

The remaining five niches were positioned in the burial chamber, J: one in the north wall, on the eastern side; two niches in the east wall; and two niches in the columns to the west of the sarcophagus emplacement. The average size of these niches is 20 by 15 cm. These five are situated as if to protect the coffin, and will presumably have contained magical images similar to those discovered, intact, in the tomb of Tutankhamun (KV 62).

In the case of niche nos. 11 (at the entrance to J) and 9 (at the entrance to Jd), one half of a wooden, vertically-divided panel which closed off the apertures was found preserved *in situ*. Remains of plaster within niche no. 11 suggest the original presence of a magical figurine; niche no. 6, at the entrance to Ja, also preserves traces in plaster of a magical amulet.

#### 4) Room Jd

In the tombs of both Amenhotep II (KV 35) and Tuthmosis IV (KV 43) there are four side rooms leading off the burial chamber. In WV 22, however, there are three small side rooms (Ja-c) and two larger pillared chambers (Jd-e), each of the latter with its own connecting side room. Room Je was presumably planned as a queen's chamber for the burial of Queen Tiye.<sup>11</sup> The plan of Jd, however, was changed at least three times, to judge from clear chisel marks on the south wall and ceiling. These chisel marks indicate that Jd had originally been intended as a room the same size as Ja-c, with a low ceiling. It was subsequently enlarged, and in its final form was of the same scale as, and presumably shared a similar function to, room Je. By Year 30 of the reign, Amenhotep III's daughter Sitamun had acquired the title of Great Royal Wife, in common with her mother, Tiye; this occurrence perhaps explains the need for two queens' chambers.

#### 5) Hieratic Graffito

A hieratic graffito (fig. 3) was discovered between room I and staircase H, written in black ink on the east wall 172 cm above the level of the floor. It reads as follows: "Year 3, third month of *Akhet*-season, day 7." This is the only hieratic inscription found so far. It promises to be an important document in assessing the history of the tomb.

#### 6) Other Hieratic Texts

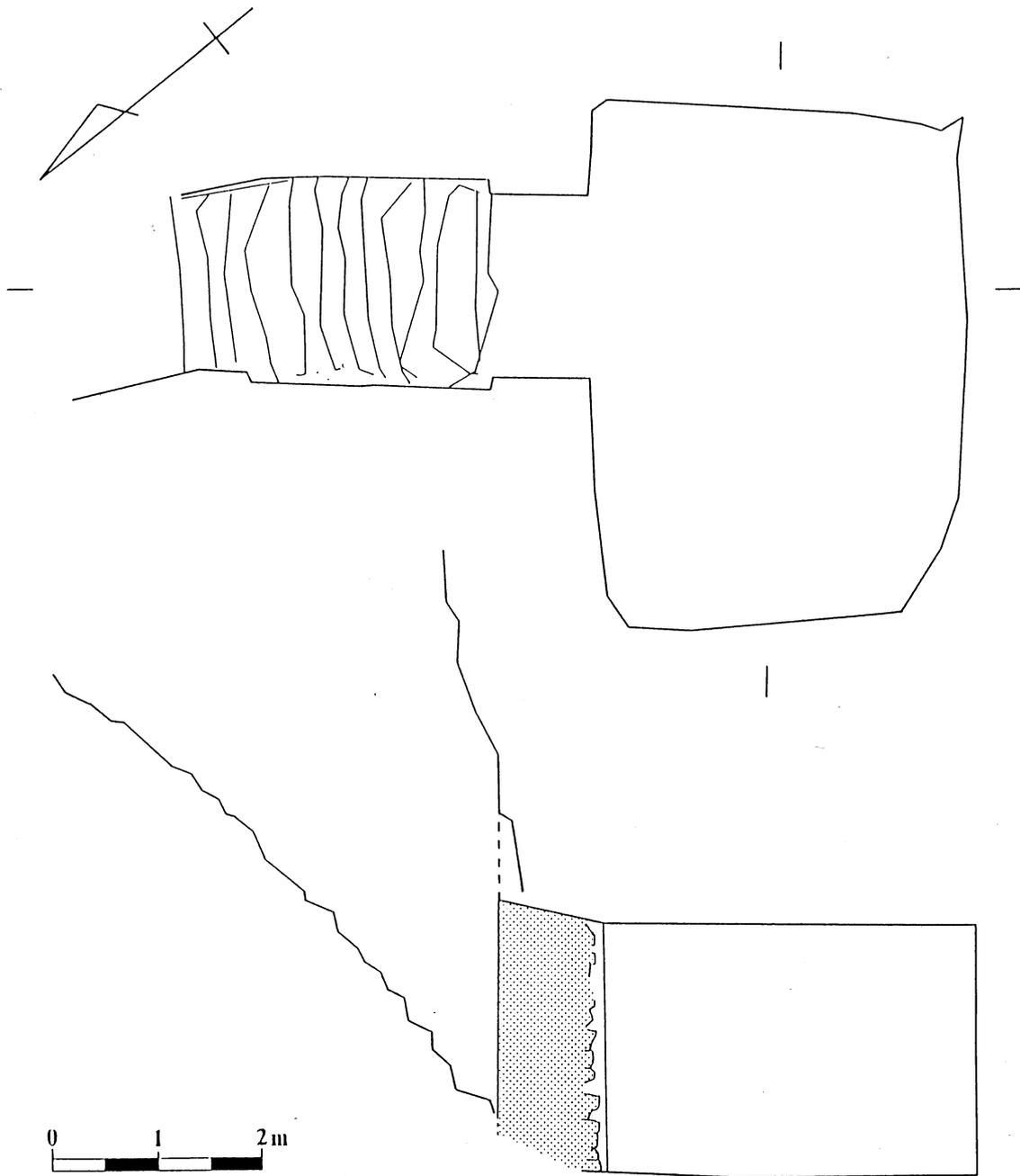
Since the report presented at the Highclere conference, an additional jar docket and one more wooden label have been brought to light.

### The Clearance of WV A

WV A, a rock-cut tomb dug into the cliff, is situated 60 meters to the south of the tomb of Amenhotep III. It is the only tomb in the Valley of the Kings to preserve substantial remains of its original stone blocking, and for this reason alone is extremely important.

Most of the objects recovered during the excavation of WV A consisted of fragments of wine jars and blue-painted pottery. Jar sealings and pot-stands associated with the wine jars were also found, together with jar dockets dated to Year 32 and 37 (the third Sed Festival) of Amenhotep III's reign. Other finds included ostraca (with drawings apparently produced by workmen employed upon WV 22), potsherds used as *ad hoc* paint palettes, lumps of plaster, a boning rod and a section of rope.

Apart from a single bead, no objects relating to a burial were found. The large amount of pottery recovered seems to suggest that WV A was used as a storeroom associated with the tomb of Amenhotep III, both during the construction of WV 22 (for tools?) and subsequently for the storage of funerary commodities. There was, however, a certain admixture



# W V A

FIGURE 4: Plan and elevation of tomb WV A.

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of material from previous excavations in the area, and the precise nature and contents of WV A should be assessed with caution.

### **Excavations in the Area between WV 22 and WV A**

A modern stone wall about 6 meters high located in the area between WV 22 and WV A enclosed an area filled with sand and rubble from previous excavations. No details concerning the history of the structure are known. Clearance of the area was begun during the winter of 1993/4, the work producing fragments of pottery, jar docketts, limestone ostraca (fig. 4) and fragments of French and English newspapers dating between 1889 and 1905. At bedrock, stone blocks were uncovered which may represent the remains of workers' huts. Work will be continued in this area during the winter of 1994/5.

### **“Enigmatic” Ostraca**

During clearance of the area between WV 22 and WV A, several limestone ostraca were recovered bearing cryptic “texts” similar to others known from Deir el-Medina and the main Valley of the Kings. Daressy years ago suggested that the symbols on such ostraca were each intended to represent the name of a worker, and that the dots mark the presence or absence of that worker at the site on a given day.<sup>12</sup> Since the signs on one ostrakon from the Western Valley follow in part (though in reverse order) the symbols on an ostrakon discovered by Bruyère at Deir el-Medina,<sup>13</sup> it is possible that these “texts” have more meaning than has hitherto been recognized.

### **Acknowledgments**

In closing this report, I should like to express my thanks to the Committee of the Supreme Council for Antiquities (SCA) for granting permission to carry out the project, in particular to Secretary General Dr. Abd al-Halim Nur al-Din. My thanks go also to Dr. Mohammed al-Sughayer, General Director for Luxor, Dr. Mohammed Nasr, Mr. Sabri Abd al-Aziz, Director of al-Qurna, Mr. Mohammed Abd Allah, Chief Inspector of al-Qurna and the staffs of SCA for facilitating our work. I should also like to thank Dr. Richard Wilkinson for giving us the opportunity of presenting a report at The University of Arizona on our work in the Western Valley of the Kings. Thanks are also due to Associate Professor Sakuji Yoshimura, General Director of the Egyptian Culture Center of Waseda University, and Dr. Nicholas Reeves for valuable suggestions concerning our work.

— Waseda University

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 NOTES

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- 9 Kondo, *op. cit.*, pp. 41-5.
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- 12 M.G. Daressy, *Fouilles de la vallée des roi (1898-1899); Catalogue général des antiquités égyptiennes du musée du Caire (nos 24001-24990)* (Cairo), pp. 64-65, pl. XVIII.
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# Theodore Davis and the Rediscovery of Tomb 55

*Lyla Pinch Brock*

## Introduction

The excavation of tomb number 55<sup>1</sup> in the Valley of the Kings in early January 1907, by the British archaeologist Edward Ayrton, has often been referred to as one of the worst ever conducted in Egypt.<sup>2</sup> Fairly or not,<sup>3</sup> part of the blame seems to rest with his wealthy American patron, Theodore Davis, whose personality dominated the excavation, much to the detriment of the historical record.<sup>4</sup>

Davis, a retired businessman and lawyer, arrived in Egypt as a tourist in 1889,<sup>5</sup> and through social contacts soon became acquainted with the local archaeological community. British colleagues encouraged him to become involved in excavation, and the Antiquities Service wanted the east side of the Royal Wadi cleared of rubble. A concession beginning in 1902<sup>6</sup> satisfied them both, though Davis was aware he had been given a dubious honor.<sup>7</sup> But he was blessed with luck and discovered many important tombs, among them, the almost intact sepulchre of Yuya and Thuya.<sup>8</sup> His archaeological work was supervised by Arthur Weigall, then Chief Inspector of Antiquities for Upper Egypt, who clearly found the American difficult to deal with:

*...the greatest tact had to be used in order to impose proper supervision on his work and check his enthusiastic but quite untrained interference in what he very naturally regarded as his own affair.<sup>9</sup>*

The feeling seemed to be mutual. Davis "...preserved a strict silence..."<sup>10</sup> regarding Weigall's participation when his elaborate publication, *The Tomb of Queen Tiyi*, came out in 1910.

Edward Ayrton was a young, although seasoned, archaeologist, having worked with Petrie at Abydos, with Loat at Gurob and Naville and Hall at Deir el-Bahri.<sup>11</sup> He had been recommended to Davis by Weigall, who "...insisted that Mr. Davis should employ a proper archaeologist to conduct the work, under my supervision..."<sup>12</sup> However, Ayrton soon found himself under Davis' thumb. His unhappiness with the situation is mirrored in letters and other accounts.<sup>13</sup>

## The Discovery of the Tomb and Subsequent Events

Ayrton probably began working for Davis during the winter of 1905-1906 and continued until 1908.<sup>14</sup> It was on January 4th, when he was probing the mounds of debris left behind by the cutting of the tomb of Ramesses VI piled on the east side of the royal wadi, that he came upon KV 55<sup>15</sup> (pl. I). It was found to contain gilded parts from a sarcophagus shrine, a gilded and inlaid coffin, human remains and a set of canopic jars, which, along



PLATE I: 1993 photo showing the location of tomb 55 in the Valley of the Kings, between the new shelter and the tomb of Ramesses IX.

with other funerary paraphernalia, comprised a fragmentary burial dating to the Amarna period.<sup>16</sup>

The most important objects were taken out of the tomb within weeks of the discovery<sup>17</sup> but the shrine was left in the tomb for over a year.<sup>18</sup> Holes in the doorjamb show that the entrance had been fitted with a door (Davis refers to a “key”).<sup>19</sup> By 1908, everything had been removed to Cairo and the tomb was closed.<sup>20</sup>

In 1923 photographer Harry Burton, who had been photographing the tomb of Seti I for the Metropolitan Museum of Art, took over KV 55 as his darkroom and studio to photograph the objects from the tomb of Tutankhamun.<sup>21</sup> Sometime thereafter the door was removed and the entrance blocked-up with stones. By 1944 this had fallen in, allowing modern debris to enter. (A film box bearing a 1944 date was discovered at the very bottom of the debris during the subsequent clearance.) In 1959 Elizabeth Thomas, in preparation for her *Necropoleis of Thebes*, drew a plan of the tomb and published it in the *Journal of Egyptian Archaeology*.<sup>22</sup>

Although numerous scholarly articles were subsequently written debating the issues raised by the discovery, no one ever applied to actually look at the tomb until 1993.

### **The Dilemma**

The events surrounding the disposition of the burial have been obscured by the lack of records and contradictory report<sup>23</sup> of those purportedly in attendance at the tomb opening, among them, Gaston Maspero, Arthur Weigall and his wife Corinna, Davis and Ayrton. Also present were the artist Joseph Lindon-Smith, his wife, and Davis’ cousins and his companion, Mrs. Emma Andrews. Both Smith and Andrews kept diaries<sup>24</sup> and because of Andrews’ presumed impartiality<sup>25</sup> her journal has frequently been relied upon for an accurate account of events. There have been suggestions that Ayrton’s report was heavily edited

by Davis, that Weigall's was based upon second-hand information and Smith's reminiscences altered, apparently so as not to conflict with those already published.<sup>26</sup>

### The Final Clearance of KV 55

Most scholars have been operating on the assumption that Davis had completely cleared KV 55, but this turned out not to be the case. I had ascertained on visits in 1991 and 1992, authorized by the Egyptian Antiquities Organization, that the tomb still contained salvageable material, hence in 1993 I applied for and subsequently received permission to do a final clearance.<sup>27</sup>

The results of my investigation suggest there is still much to be gleaned from this monument which, when combined with a review of original sources, provides clues to the arrangement of objects found in the tomb, the form of the original door blocking, the entrance of rainwater, the changes made to the tomb during construction, and a possible reinterpretation of the excavators' accounts. Details of the actual clearance and a list of the finds will be published elsewhere.<sup>28</sup>

### The Discovery of Ayrton's "Room"

In the winter of 1906-1907 Ayrton began removing the mountains of limestone chips south of the tomb of Ramesses IX, just across the path from what would eventually become known as the tomb of Tutankhamun; soon he reported:

*After sinking deep pits and trenches down the side of the rock face, we had almost given up hope when we came across several large jars of the XXth Dynasty type lying together in what appeared to be a recess in the rock. On digging deeper we came to a cut face with squared corners on either side, showing that a tomb had at least been begun at this spot.*<sup>29</sup>

A modern shelter and stone foundation now cover the area where this recess—now designated KVC—was found, but early photos (by A. Paul<sup>30</sup>) taken in front of KV 55 suggest it could have been just above and to the south of the entrance rather than "immediately above" as Reeves has interpreted.<sup>31</sup> From a 1920 photo showing the area,<sup>32</sup> Ayrton must have worked his way from south to north<sup>33</sup> plumbing the deepest material first (hence his comment, "...we had almost given up hope..."<sup>34</sup> before coming upon tomb 55.

It seems most likely the vessels he found (now housed in the Oriental Institute Museum<sup>35</sup>) were associated with the tomb of Ramesses IX, which lies just to the north, probably containers for embalming materials similar to the cache found outside the tomb of Merenptah by Carter in 1920.<sup>36</sup> It is also remotely possible another tomb may lie in the environs; it appears now that the whole area where the new tourist shelter stands has never been thoroughly investigated.<sup>37</sup>

During the course of Ayrton's preliminary *sondages*, Davis visited the site from time to time.<sup>38</sup> In between he was kept posted by notes sent to his *dahabiya*, the *Bedawin*.<sup>39</sup>

From Andrews' diary, January fourth;

*Mr. Ayrton wrote a note this morning to Theo saying he had found a tomb. Theo had intended going over today, so when he returned he reported that it promised something—but was still uncertain.*

January 5th

*Another note from Mr. Ayrton saying the tomb was not a tomb!*

January 7th

*Theodore went over to the Valley this morning...and when he got back quite late, told us that Ayrton had this time found a whole tomb.*

January 8th

*All of us went over to the Valley this morning—found M. Ayrton had cleared enough to show a small chamber which he thought was the whole tomb.*

Thomas<sup>40</sup> assumed this note referred to the niche containing the storage jars, but Ayrton's puzzling statements may be clarified by some recent observations in KV 55. There is a water line running along the south wall of the stairwell from the 11th step from the top<sup>41</sup> to just above the tomb doorway (a length of approximately three meters). In 1993 a small deposit of mud still remained on the step, which, when investigated, contained no modern debris but only clean, muddy fill. Could this represent the last bit of chips "...cemented together by the action of water" which first appeared to Ayrton to be a solid floor?<sup>42</sup> If this was the "floor," then he had cleared what could be described as a "room." The rock-cut roof of such a "room" would extend from a height of approximately two meters at the front tapering to one and one-half meters at the back, the width of the "room" being about two meters. Did this constitute the "small chamber"<sup>43</sup> Ayrton first thought was a tomb?

Mrs. Andrews next wrote;

*But after lunch it was found that a doorway which had been sealed up as that in the Tomb of Touy<sup>44</sup> and Iulia led to a corridor.<sup>45</sup> In removing some of the blocks of stone which hindered progress, a fine broken alabaster vase, and some bits of gold foil were found: So the work for the day was stopped, as it was too late to open it, the guards and police were sent for...<sup>46</sup>*

### **The Puzzle of the Blocking**

What Ayrton had now come upon was "...a loosely-built wall of limestone fragments, resting not on the rock beneath, but on the loose rubbish which had filled the stairway."<sup>47</sup> This was apparently a unique construction which should at least have been drawn, if not photographed.<sup>48</sup> Weigall later wrote that Ayrton broke through the blocking without waiting for the photographer,<sup>49</sup> but Smith said it *was* actually photographed: "After the seals had been photographed, they were removed with great care, and then the wall was taken down."<sup>50</sup> However it seems the photographer, A. Paul, only came from Cairo some four days later.<sup>51</sup> Indeed it may be *his* notebook that can be seen lying in the front of the niche in one of Paul's photographs<sup>52</sup> and not necessarily a book belonging to Ayrton, as Martin<sup>53</sup> and Reeves<sup>54</sup> have assumed.

Since part of the blocking was stamped with seals, the issue of its destruction is not a trivial one, nor in fact simple to sort out; hence it is worth discussing in some detail. The various reports suggest either two<sup>55</sup> or even three<sup>56</sup> levels of blocking. No clues now remain of the blocking that would have filled the *interior* of the doorway, but the extent of the *exterior* blocking can still be seen, easily detected by the line of brownish mortar that extends down each side of the jamb from just above the door to just above ground level. The construction could not have been "...a loosely-built wall of limestone fragments..." since it obviously contained some mortar. This same mortar<sup>57</sup> can also be seen elsewhere in the tomb, filling cracks in the walls and the ceilings of the corridor and canopic niche.



PLATE II: Possible fragment of ancient seal impressed in cement.

According to the excavators, once the first blocking was removed, another immediately became apparent. The remains were about one meter high, and stamped with the seals of the necropolis.<sup>58</sup> But this was not the *original* blocking because Weigall reports, albeit four years later, finding a fragment<sup>59</sup> of mortar impressed with the seals of Tutankhamun,<sup>60</sup> presumably inside the tomb.

Why was Weigall the only one to mention a seal of Tutankhamun? The explanation may lie in correspondence between Davis and Maspero<sup>61</sup> confirming that parts of the shrine were left in the tomb for a year.<sup>62</sup> Andrews had noted that the door of the shrine was left shored-up in the corridor,<sup>63</sup> and this may be the spot where Weigall eventually found the seal—when he removed the last of the rubble supporting it.<sup>64</sup> This chain of events also links together what may have happened in ancient times.

### **Towards A Reconstruction of Historical Events**

From this evidence it appears that, during the reign of Tutankhamun, the remains of at least one of the desecrated burials at Amarna<sup>65</sup> were gathered up, brought to Thebes, stored in KV 55 and sealed with the seal of Tutankhamun. Rubble was inserted in the corridor the first time the entrance to the tomb was breached,<sup>66</sup> then it was resealed (and stamped) by the necropolis officials.<sup>67</sup>

This second layer of blocking Ayrton described as “...rough blocks of limestone cemented together and coated on the outside with cement of so hard a quality that a knife could scarcely scratch it.”<sup>68</sup> Among the remains of rubble that still existed in KV 55 I came across what may be a piece of this blocking (see pl. II), and although the seal impression is indistinct, the cement is of the described consistency.<sup>69</sup>

The procedure of inserting fill was evidently also followed by the official Maya when he resealed the tombs of Tutankhamun<sup>70</sup> and Thutmosis IV.<sup>71</sup> Hence it seems possible that KV 55 was restored by Maya and his officials in Year eight of Horemheb,<sup>72</sup> as were the two other tombs. Either the entrance to the burial chamber was *not* resealed at this time (there is some evidence that plaster sealing was once in place),<sup>73</sup> and the rubble flowed through into the room as the corridor was being filled, or the resealed door broke down under pressure from the fill. The pile of large chips just to the right and below the entrance in Paul's photo could constitute the remains of this blocking.<sup>74</sup> Whatever occurred, when the tomb was entered for the third time, purportedly by workmen engaged in cutting the tomb of Ramesses IX,<sup>75</sup> the doorjambs must have been still intact, because fragments of them can be seen lying *atop* part of the shrine in one of Paul's photographs.<sup>76</sup>

While the "workmen" theory is reasonable, it seems much more likely that the tomb was entered by the priests of the XXIst Dynasty engaged in the re-burial program that concluded with caches DB320 and KV 35.<sup>77</sup> Faced with the difficulty of removing the shrine, they abandoned it and decided to leave the burial intact. They then blocked up the entrance and covered it with debris. Was the third layer of blocking intact when it was discovered in modern times as Davis,<sup>78</sup> Weigall<sup>79</sup> and Smith<sup>80</sup> have claimed?<sup>81</sup> The presence of sand<sup>82</sup> and water<sup>83</sup> in the tomb seem to obtain against it.

### **The Events of January 7-9th, 1907**

Who was actually present, when the tomb was opened on January 9th? Andrews says the Weigalls, Davis' cousins, and the Smiths had all camped out at the tomb overnight.<sup>84</sup> The next day, according to her diary, Davis, Ayrton and Weigall were first to enter while Smith remained outside.<sup>85</sup>

*Ayrton, Weigall and Theo scrambled along the corridor over the stones and made a very difficult entrance...we women, with Mr. E., Mrs. Weigall, and Joe and his wife, sat about on the rocks above...*<sup>86</sup>

Yet Smith says Ayrton arrived on the scene later, *after* he himself had been ordered in by Maspero and also after Weigall and most of the others had come, by 9:00.<sup>87</sup> (He also says the company present that morning included Howard Carter, who is not mentioned at all by Andrews.) Smith claims Maspero told him to go in first, since the shrine parts left little room to maneuver and he was the most svelte of the group, but according to Andrews, Maspero did not actually arrive *until four days later*.<sup>88</sup>

All this casts doubt on Smith's veracity. Yet there is some evidence to support his story of pre-empting Ayrton. He recalls seeing the gesso fall from the shrine part,<sup>89</sup> but in Ayrton's report, the gesso had *already* fallen when he went in.<sup>90</sup> As for Maspero, if he was not on hand at the opening, then who, if anyone, would have ordered Smith to go inside? Smith was staying at Weigall's house<sup>91</sup> and he implies they were good friends. It is possible that during their overnight stay at the tomb, they decided to have a "preview". This was strictly against Davis' contract with the Antiquities Service, which stipulated he had first right of entry.<sup>92</sup> Weigall, too, would surely have wanted to avoid the censorship of Maspero, his immediate superior, and the Antiquities Service as well. Thus Smith and Weigall may have prevaricated to cover their tracks.

### **Revelations of the Tomb**

Aldred remarked that "...it is extremely doubtful whether a totally reliable account can be elicited of what was originally discovered in the tomb and the state in which it was

found.”<sup>93</sup> Yet by coupling information gained from original sources with the evidence extracted from the 1993 clearance it is possible to extrapolate what probably happened in KV 55 during the discovery and perhaps in ancient times as well.

Examination of the tomb now cleared of debris, for instance, provides many clues to the objects’ original location:

A water-line can be seen quite clearly staining either side of the corridor. It slopes rapidly down towards the east end (pl. III). This marks the level of the water-soaked debris. The level intimates that water never flowed into the tomb until after the *third* entry<sup>94</sup> if at that time the debris was shifted to allow for the removal of the gilded shrine, as Reeves has theorized.<sup>95</sup>

Small reddish-brown scrape marks can be detected on the ceiling of the corridor 4.98 meters from the entrance to the burial chamber. These marks color-match those in the chamber where the shrine parts leaned against the wall and probably indicate where the parts found lying in the corridor scraped when persons in ancient or modern times struggled to move them. Where water dripped from a crack in the ceiling a large fragment of stone is missing. This is no doubt the stone Ayrton mentions obscuring the cartouche of Queen Tiye.<sup>96</sup> By comparing the features of the corridor to the photo taken by Paul,<sup>97</sup> the location of the shrine is confirmed at four meters from the entrance. This differs from Reeves’ (close to the burial chamber)<sup>98</sup> or Bell’s (close to the tomb doorway)<sup>99</sup> or even Andrews’ (adjacent to the tomb doorway).<sup>100</sup> It also suggests where Weigall may have found the seal of Tutankhamun.

It is also possible to speculate about the original location of the coffin in the Burial Chamber. A shallow depression about 2.10 meters long mars the rocky surface of the floor in front of the canopic niche. This is probably where the water Smith mentions had pooled under the coffin.<sup>101</sup> The water also seems to have caused the stone to spall because the same result is visible just below the entrance to the burial chamber.<sup>102</sup> The position of the coffin relative to the south wall can be determined by comparing the actual wall to Paul’s photograph.<sup>103</sup> The small rectangular cut in the wall (possibly originally meant to hold one of the magic bricks) just below and east of the niche seems to line up with the bend in the elbow on the anthropoid lid. If this *is* the original location of the coffin, the head would be approximately 55 cm. from the east wall and 1.72 meters from the south wall, further away from the niche than the aforementioned authors have proposed.<sup>104</sup>



PLATE III: Water-marks staining south wall of entrance and corridor from water-soaked debris placed in the tomb in ancient times.

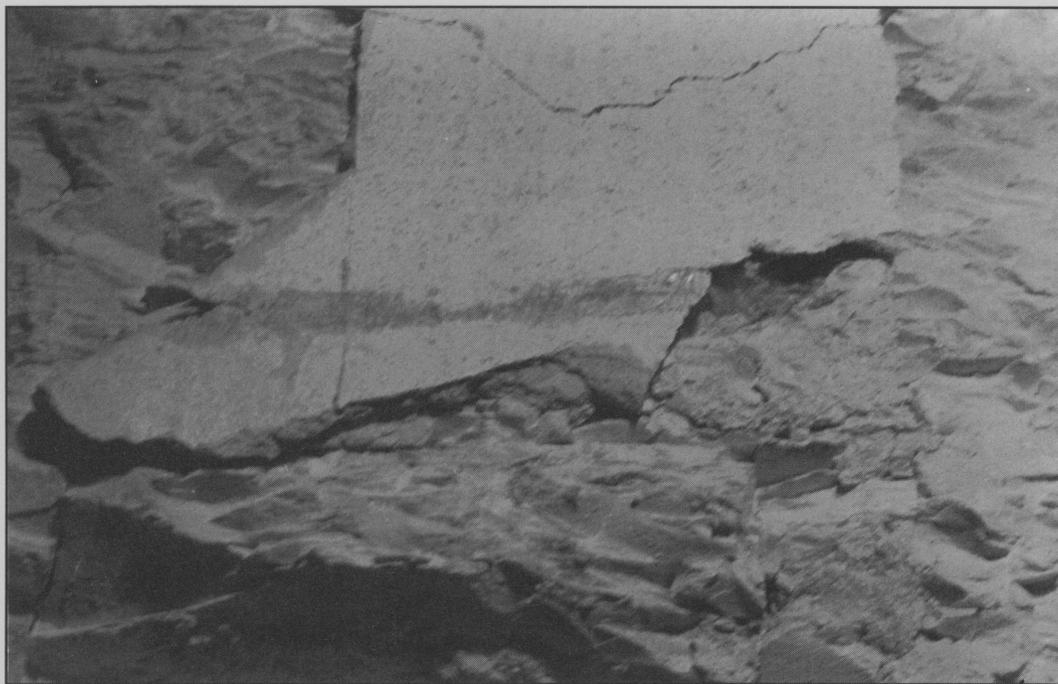


PLATE IV: Brown stain flecked with gold leaf denting plaster high up on east wall of KV 55.

On the east wall of the burial chamber at the south end, about 10 cms. above the floor, I detected a line of stucco imbedded with bits of gold leaf. The “roof” of the shrine, with part of its lintel still attached,<sup>105</sup> must have been free-standing and was set flat against this wall. At the other end of the same wall, 1.96 meters from the floor, is a brown-stained *indentation* in the plaster flecked with gold leaf (pl. IV). This is where Bell locates one side of the shrine.<sup>106</sup> All this evidence suggests the shrine was placed there shortly after the room was plastered or re-plastered and hints at the possibility it was never erected.

There are also signs of replastering around the canopic niche (which, *contra* Bell was only plastered inside the top of the opening) and just below the entrance to the burial chamber. An alternative explanation is that the niche was cut and the entrance cut lower (or the floor lowered) sometime after the tomb was first plastered, calling for plaster repairs.

Fallen plaster has revealed long black masons’ marks on the east and west walls of the burial chamber approximately a cubit apart, similar to those used in the tombs of Ramesses VI and Ramesses IX, evidently as reference marks for the cutting of columns.<sup>107</sup> There are various red masons’ marks inside and outside the tomb, presumably to mark the locations for widening the entrance. A large red mark underneath the plaster immediately opposite the entrance to the burial chamber may indicate the proposed location of another room, comparable to the annex in Tutankhamun.<sup>108</sup> There are also at least two types of mortar repairs in the burial chamber; one apparently earlier than the other. The second type matches that delineating the limestone door-blocking.

The final, but not the least important, clue to what happened in this tomb in ancient times is the fragment of a tomb plan which was found amidst rubble at the back of the canopic niche by Earl Ertman.<sup>109</sup> It is painted in red and black, using the same paint as for the mason's marks. Unfortunately breakage on two sides makes its meaning difficult to decipher.

As for clues to what occurred in the tomb in modern times, we can refer to Burton's visit to explain the bits of blackout paper and glue still adhering to the doorjamb on the entrance to the burial chamber. Burton also inadvertently left behind three gold beads from the unconserved earrings of Tutankhamun<sup>110</sup> and two broken photographic plates, one showing a relief from Seti I<sup>111</sup> and the other Tutankhamun's bow case.<sup>112</sup> All of these objects were later found amidst the debris remaining in the tomb.

## Conclusions

We have taken some of the witnesses' accounts of the discovery of KV 55 as fact without considering they may have been presented merely for the sake of form or reputation. It seems certain that Davis' attitude encouraged prevarication. It evolves that the story of KV 55 is essentially a detective story—the amassing of small clues in order to reenact the events that occurred in and around the tomb in both ancient and modern times. The clues have always been there; it has only been a matter of searching for them.

### NOTES:

1 Hereafter called Kings' Valley tomb number 55 (KV 55). Tombs were numbered in order of discovery.

2 For particularly scathing comments, see C. Aldred, "Tomb No. 55 in the Valley of the Kings," in *Akhenaten, King of Egypt* (London, 1988), p. 195. Also see below, J.A. Wilson, "Mrs. Andrews and the Tomb of Queen Tiye," in *Papers in Honor of George R. Hughes* (Chicago, 1976), p. 273 (all subsequent diary entries of Mrs. Andrews are quoted from this article); and C.N. Reeves, "The Archaeological Analysis of KV 55, 1907-1990," in T. Davis *et al.*, *The Tomb of Queen Tiye* (hereafter abbreviated *TOQT*), reprinted from the 1910 publication by KMT Publications (San Francisco, 1990), pp. iv-xiv.

3 With apologies to John Larson: "Bashing Theodore Davis has become a popular indoor sport among professional Egyptologists." "Theodore M. Davis and the So-Called Tomb of Queen Tiye," *KMT, A Modern Journal of Ancient Egypt* 1 (Spring, 1990), part 1 of 2, 45.

4 See Reeves, *TOQT*; also following comment by Weigall, and Aldred, *op. cit.*, p. 196. Cf. Sir Alan Gardiner, "The So-Called Tomb of Queen Tiye," *JEA* 43 (1957), 10 wherein he damns with faint praise.

5 Larson, *op. cit.*, p. 50.

6 C. N. Reeves, *Valley of the Kings* (hereafter called *Valley*) (London, 1990), p. 330.

7 T. Davis, "The Finding of the Tomb of Queen Tiye," *TOQT*, p. 13; "Possibly it may interest the reader to know that the most difficult, delaying, and expensive work is the finding of a place where the debris can be dumped. Generally, it has to be moved two or three times, as the first dumping-ground may probably cover some tomb, therefore the debris must be returned to the original spot, in case no tomb is found."

8 E.R. Ayrton, "The Tomb of Thyi," *PSBA* (Nov. 13, 1907), 277.

9 A. Weigall, "The Mummy of Akhenaten," *JEA* 8 (1922), 193.

10 *Op. cit.*, p. 194.

11 H.R. Hall, "Edward Ayrton," *JEA*, Vol. II, Part II (1915), 21.

12 Weigall, *op. cit.*, p. 26.

13 Reeves, *Valley*, p. 337; (accused of misplacing ostraca): H. A. Winlock, "Materials Used at the Embalming of King Tutankhamun," in *Metropolitan Museum of Art Papers*, No. 10 (New York, 1941), p. 5; ("..sick and tired after the undeserved tongue-lashing.."): Hall, *op. cit.*, p. 22 ("..his long report on the tomb of Tutankhamun was omitted by Davis.")

14 Hall, *op. cit.*, p. 21.

15 E. R. Ayrton, "The Excavation of the Tomb of Queen Tiyi," in *TOQT*, pp. 18-21.

16 The primary account of the discovery is considered to be *TOQT*. Ayrton's account (*ibid.*) included therein was originally published in *PSBA*. Weigall's reminiscences are in "The Tomb of Tiyi and Akhenaten," in *The Glory of the Pharaohs* (London, 1936), pp. 132-36.

17 January 28th, notation of Mrs. Andrews.

18 Reeves, *Valley*, p. 335.

19 Reeves, *Valley*, p. 336.

20 *Ibid.*

21 H. Carter and A.C. Mace, *The Tomb of Tut-Ankh-Amun*, Vol. I (New York, 1963), pp. 108, 127.

22 E. Thomas, "The Plan of Tomb 55 in the Valley of the Kings," *JEA* 47 (1961), 24.

23 "Where they do correspond, it is to be suspected that the authors have merely cribbed from each other's reports." Aldred, *op. cit.*, p. 195.

24 A copy of Andrews' diary, "A Journey on the Bedawin," was deposited with the Egyptian Department of the Metropolitan Museum of Art in 1919 (Wilson, *op. cit.*, p. 274.). My thanks go to Dorothea Arnold and Marsha Hill for the opportunity to read it. Some excerpts have been also been published by G.T. Martin: "Notes on a Canopic Jar from Kings' Valley Tomb 55," in *Melanges Gamal Eddin Mokhtar*, Vol. II (Cairo, 1985), pp. 111-124.

For Smith's account of the discovery, see "The Discovery of the Tomb of Queen Tiyi," in his autobiography, *Tombs, Temples and Ancient Art* (Norman, 1956), pp. 54-68.

25 Aldred, *op. cit.*, p. 196.

26 Aldred's observation (n. 23) has in effect been confirmed by Larson; "Charlie (Nims) had the distinct impression that uncle Joe's old notebooks were being 'corrected,' so as not to appear to contradict versions that had already appeared in print." Larson, *op. cit.*, (Summer 1990), part 2, p. 45.

27 For this privilege I would like to thank the Permanent Committee of the Supreme Council of Antiquities, and for their help, my teammates, Edwin Brock and Earl Ertman. I also acknowledge the considerable contribution of Otto Schaden, Director of the Amenmesse Project, for the provision of manpower and materials, Kent Weeks of the Theban Mapping Project for plans of KV 55 and KV 46, and Marsha Hill and Catharine Roehrig of the Metropolitan Museum for background information.

28 Forthcoming, *Denkschrift* for Martha Bell, edited by J. Phillips, to be published by ARCE.

29 Ayrton, *TOQT*, p. 18.

30 Davis, *TOQT*, p. 51, pl. I.

31 Reeves, *TOQT*, p. v.

32 C.N. Reeves and J. Taylor, *Howard Carter Before Tutankhamun* (London, 1992), p. 138.

33 *Contra* J. Romer, *Valley of the Kings* (New York, 1981), p. 211.

34 Ayrton, *TOQT*, p. 18.

35 Sincere thanks to the Oriental Institute for granting the author permission to publish these vessels in a forthcoming article which will include the pottery recovered from the tomb during the clearance.

36 Carter MSS, I.J.386-7, nos. 227-75 held at the Griffiths Institute, Oxford. Also see Reeves and Taylor, *op. cit.*, photo p. 136.

37 Especially compare photos pp. 138 and 140, Reeves and Taylor, *op. cit.*, which show the mounds of debris south of 55 virtually untouched by the time the tomb of Tutankhamun was found. Howard Carter, who had been investigating this part of the Valley, seems to have gone for the shallowest debris layers first. Cf. Reeves, *Valley*, p. 60, n. 184, who also makes the same inference, but seems to be referring to a pathway directly in front of the tomb of Ramesses VI.

38 Wilson, *op. cit.*, p. 274.

39 *Ibid.*

40 E. Thomas, *The Royal Necropoleis of Thebes* (Princeton, 1966), p. 149.

41 There are 19 or 20, depending upon whether you count the first step, which is made of stone blocks.

42 "On digging deeper we came to a cut face with squared corners on either side, showing that a tomb had at least been begun at this spot. We then sunk a pit straight down through the chippings, which at this depth were cemented together by the action of water, until we came to a layer of clean dry limestone fragments which led us to hope that the tomb might have escaped the fate of that of Siphah which we had found so damaged by the entrance of water." Ayrton, *TOQT*, p. 18.

43 Wilson, *op. cit.*, p. 275.

44 Mrs. Andrews seems to be referring to the doorway to the burial chamber in Iouiya and Touiyou, which Davis described as: "...closed with stones set in Nile mud plaster, with an opening at the top of about the same size as was found in the first doorway...The face of the wall was plastered with mud and stamped from top to bottom with seals..." T. Davis, *The Tomb of Iouiya and Touiyou* (London, 1907).

45 Wilson, *op. cit.*

46 *Ibid.*

47 Ayrton, *TOQT*, pp. 18-19.

48 Aldred's sentiment. *op. cit.*, p. 195.

49 Weigall, writing in 1922 after Ayrton's death: "Unfortunately Mr. Ayrton destroyed these walls without photographing them." Weigall, *op. cit.*, p. 198.

50 Smith, *op. cit.*

51 Entry in Mrs. Andrews' diary, January 10: "Tomorrow the tomb is to be given over into the hands of a skilful photographer sent for from Cairo."

52 See plate XXIX, *TOQT*.

53 Martin, *op. cit.*, pp. 111-124.

54 Reeves, *Valley*, p. 338 note 1. The idea suggested itself to me when I came across a page from a notebook, apparently from Burton's film supplier, during the clearance.

55 Ayrton, *TOQT*, pp. 18-19.

56 Weigall, *Glory*, p. 152.

57 Matched by color, no samples taken.

58 Ayrton, *TOQT*.

59 Weigall, *Glory*, p. 152: "The entrance was blocked with stones, and sealed with the seal of Tutankhamon, a fragment of which was found; and it was in this condition that it was discovered in 1907."

60 *Ibid.* and cf. Aldred, *op. cit.*, p. 196; "We are dependent upon his (i.e., Weigall's) *bona fides* for this report, though Mrs. Andrews indirectly tends to confirm it." By this Aldred must mean her reference to the tomb of Iouiya and Touiyou, however, no seals of Tutankhamun were found there.

61 Reeves, *Valley*, pp. 335-336.

62 Reeves, *Valley*, p. 336.

63 See her January 17th note, "Theo reports that they were clearing the corridor and bracing up stones which held part of wooden shrine."

64 For the evidence that Weigall was involved in this operation, see Reeves, *Valley*, p. 334.

65 Aldred, *op. cit.*, p. 205.

66 Contra Reeves, *Valley*, p. 42. He posits this happening at the time of burial.

67 *Temp.* Horemheb as below.

68 Ayrton, *TOQT*, p. 19. The only example of sealing still intact that I am aware of in the Valley of the Kings is in the newly re-opened tomb of Thutmose IV, where bits of seal impression and mortar still surround the entrance to the burial chamber. The thickness of the sealing is 23 cm. The seals are those of the priests of the necropolis, three registers of three bound prisoners below the recumbent jackal, no cartouche visible. The raised parts of the seals are painted blue, the impression 12 cm. long and 6 cm. wide. This evidence points to only one level of sealing covering this doorway, not two as Carter suggested (Griffiths Institute MSS I.A.47.1, cf. Reeves, *Valley*, p. 50 n. 6). On the ceiling of the inside of the doorway can also be seen the impressions of a wooden lintel, which is what Carter may have first thought was a door. Some parts of these lintels still remain inside the openings to the storage rooms in the burial chamber.

69 Where Davis dumped the debris from KV 55 is unknown. As he attested, it can end up being moved around many times. Carter excavated some of Davis' debris when he began to clear to the south of the tomb in 1921 (Carter *MSS*, I.G.52, Griffiths Institute).

70 H. Carter, *The Tomb of Tut.Ankh.Amun*, Vol. III (London, 1933), pp. 85-86: "It is thus possible that Maya was also responsible for the resealing of Tutankhamun's tomb, for the seals of Thutmose IV have a particular likeness to those used when Tutankhamun's tomb was reclosed."

71 T.M. Davis *et al.*, *The Tomb of Thoutmosis IV* (London, 1904), p. viii.

72 According to the graffito in Thutmose IV (*op. cit.*, p. xxxiii).

73 A small amount of mortar still adheres to the bottom of the northern reveal.

74 Davis, *TOQT*, pl. xxvi.

75 See Aldred, "The Tomb of Akhenaten at Thebes," *JEA* 47 (1961), wherein he has the workmen entering for the purpose of making alterations to the names on the objects. Cf. Reeves, *Valley*, p. 44; "...probable that the tomb was stumbled upon by workmen employed upon the excavation of KV 6..." and p. 276: "When a tomb was stumbled upon only accidentally by the necropolis workforce, any breach made in the blockings of the tomb to establish its content was either left or else reclosed with a dry stone build."

76 Close inspection of the actual door jambs demonstrates that the fragments in the photograph must have come from there.

77 Reeves, *Valley*, p. 191.

78 Davis, *TOQT*, p. 14.

79 Weigall, *Glory*, p. 136.

80 Smith, *op. cit.*, p. 55.

81 Davis, *TOQT*, p. 13, also Maspero, "Le Tombeau de la Reine Tiye," *Causeries d'Egypte* (Paris, n.d.), p. 347; "...sur le sol la couche de sable rituelle." This could also be sand which had drifted in.

82 Davis, *TOQT*, p. 14.

83 *Op. cit.*, p. 15.

84 Mrs. Andrews' diary entry of January 8th.

85 Mrs. Andrews' diary entry of January 9th.

86 Mrs. Andrews' diary entry of January 9th.

87 Smith, *op. cit.*, p. 58: "I had hardly joined the others before Ayrton showed up. He was a good sport about Maspero and Davis' not having waited for him for the 'opening'."

88 *Viz.* Mrs. Andrews' diary entry of Jan. 14: "The Maspero's boat arrived this morning."

89 Wilson, *op. cit.*, p. 57.

90 Ayrton, *TOQT*, p. 19.

91 Smith, *op. cit.*, p. 54.

92 Reeves, *Valley*, p. 332, Antiquities Service contract between Maspero and Davis dated Nov. 1, 1905: "Mr. Davis aura le privilege d'ouvrir lui meme le tombeau ou le monument decouverte, et d'y penetrer le premier."

93 Aldred, *op. cit.*, p. 196.

94 Proposed order of events: First entry; deposition of fragmentary Amarna burial, sealed by Tutankhamun. Second entry, robbery, insertion of rubble; Maya reseals. Third entry, attempted removal of shrine by necropolis officials for reburial. Resealed with blocking.

95 Reeves, *Valley*, pp. 42, 44. But note there is no evidence the debris ever "...filled the corridor to the roof.." nor indeed that it was ever shifted to allow for the attempted removal of the shrine.

96 Ayrton, *PSBA*, Nov. 13, p. 278; Davis, *TOQT*, p. 19.

97 Davis, *TOQT*, pl. XXVI.

98 C.N. Reeves, "A Reappraisal of Tomb 55 in the Valley of the Kings," *JEA* 67 (1981), 48-55, fig. 1.

99 Bell, *op. cit.*, fig. 5.

100 See Andrews' sketch-map in the postscript to Gardiner, *op. cit.*, pp. 10-25.

101 Smith, *op. cit.*, p. 65.

102 Confirmed by observations after the November, 1994 flooding in the Valley.

103 Davis, *TOQT*, pl. XXXII.

104 See previously-mentioned figs. in Bell and Reeves ("A Reappraisal..."). Reeves used Thomas' plan, which is inaccurate. The canopic niche is actually further west.

105 Bell, *op. cit.*, fig. 8, "roof."

106 Bell, *op. cit.*, fig. 5.

107 I say "evidently" because they line-up with the columns. I can find no reference to such lines in the literature on masons' marks.

108 My fuller study of the tomb's architecture will be published elsewhere.

109 Giving new meaning to the expression, "...to leave no stone unturned."

110 Probably the earring containing the same type of beads in the lower left of Burton's photograph (plate XVIII), Carter and Mace, *op. cit.*

111 See plate XX in B. Lefebure, *Les Hypogees Royal de Thebes*, Vol. I, Le Tombeau de Seti 1er. *Annales du Musee Guimet* 9 (Paris, 1886).

112 See Burton's plates numbers XXVIII, XXIX, Carter and Mace, *op. cit.*

# The Clearance of the Tomb of Ramesses VII<sup>1</sup>

*Edwin C. Brock*

## Introduction

The tomb of Ramesses VII (KV 1) is located at the end of a *wadi* running north-west from the main Valley of the Kings just south of the formerly constricted entrance to the area and the modern location of the ticket booth. The monumental entrance is carved into the base of a hill jutting from the cliff face at the head of this branch valley. The tomb appears to have been accessible since antiquity, judging by the *graffiti* that cover all wall surfaces.<sup>2</sup> In more recent times, the tomb attracted limited attention from scholars of the late 18th, 19th and 20th centuries. *Savants* accompanying Napoleon's 1799 Expedition visited it and produced a plan.<sup>3</sup> Champollion copied some inscriptions.<sup>4</sup> Robert Hay noted the presence of walls around the entrance, apparently built to prevent the intrusion of flood waters.<sup>5</sup> Lepsius published details of some of the wall decoration and texts from the granite sarcophagus/cover.<sup>6</sup> Lefébure published a description and sketches of some of the decoration in 1889.<sup>7</sup> It has been suggested that Theodore Davis and Edward Ayrton worked in the area of the tomb in 1905-06.<sup>8</sup> Much of the decoration of the tomb walls was published in photographs by Piankoff in 1958.<sup>9</sup> Thomas briefly described the tomb and its history in 1966.<sup>10</sup> The most complete publication of the tomb was by Hornung in 1990.<sup>11</sup>

## Description of the Tomb

The tomb's entry consists of an open-air ramp cut into the hillside, descending at a shallow angle to the first doorway, which is protected by a deep overhang. This doorway, like the two further in, was once closed with double doors (as shown by the presence of pivot holes at the outer corners of the inner soffit and narrow trenches cut in the floor at either interior end of the threshold). The succeeding corridor, vaulted burial chamber and rear room gave little space for more than excerpts from the same repertoire of funerary compositions found in the tomb of Ramesses VI (KV 9).<sup>12</sup>

Comparison of this tomb's plan with more fully developed tombs of the 20th Dynasty suggests that its present form represents hasty alterations of the original plan. The burial chamber, with its barrel-vaulted ceiling and rough rectangular pit in the middle of the floor, was originally intended to be a second corridor.<sup>13</sup> This can be surmised from such evidence as the smoother finish of the central floor surface as compared to the rougher floor within a meter of the side walls. The point of transition between smoother and rougher finish is

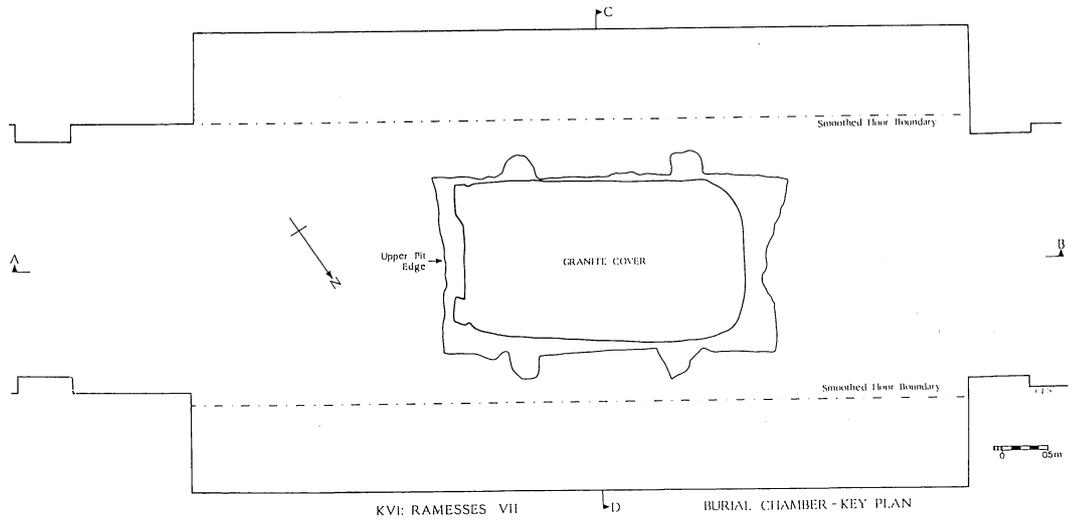


FIGURE 1: Key Plan KV 1 Burial Chamber (from Theban Mapping Project).  
 Drawn by C. L. Shartzer.

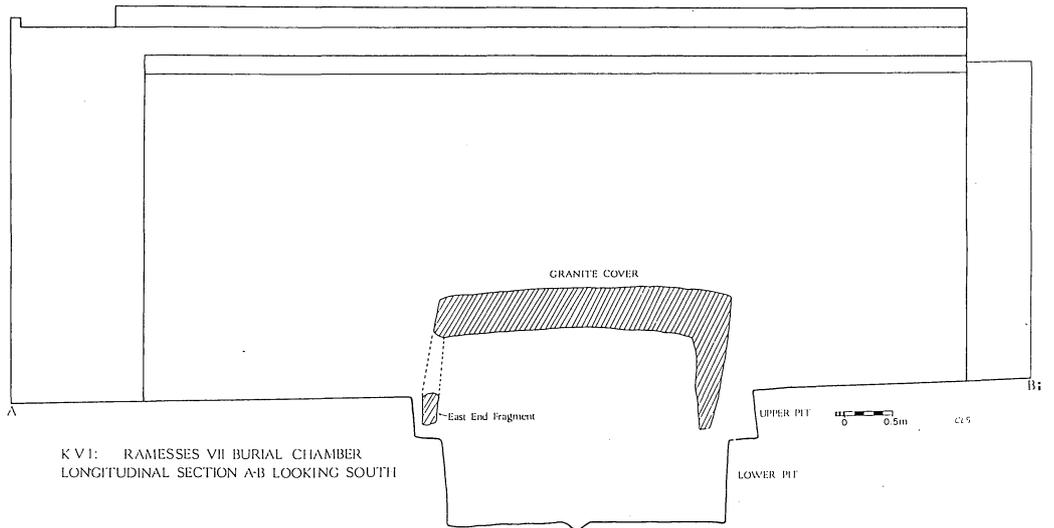


FIGURE 2: Longitudinal Section KV 1 Burial Chamber (from Theban Mapping Project). Drawn by C. L. Shartzer.

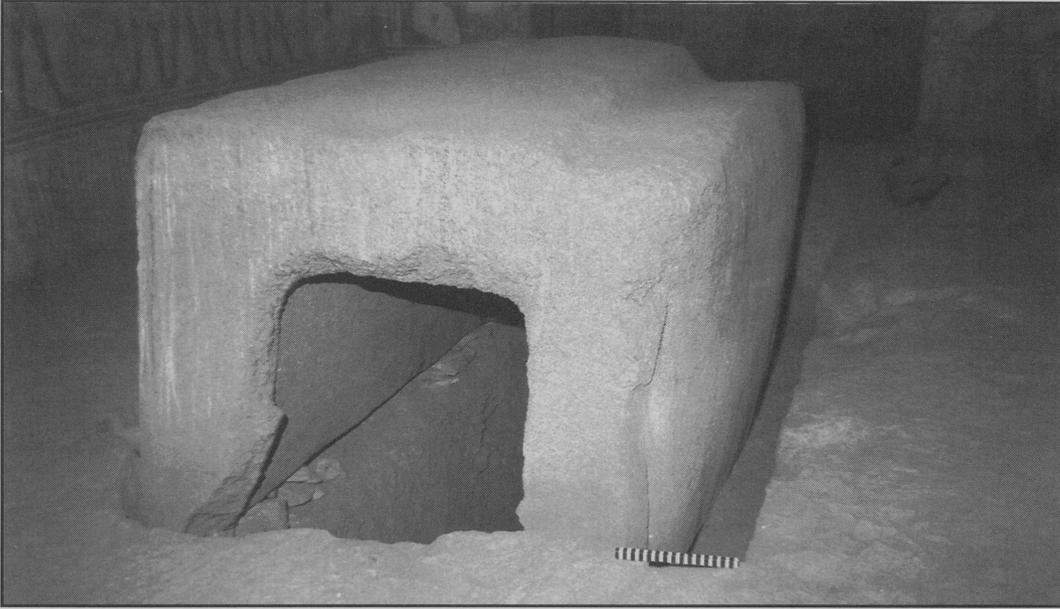
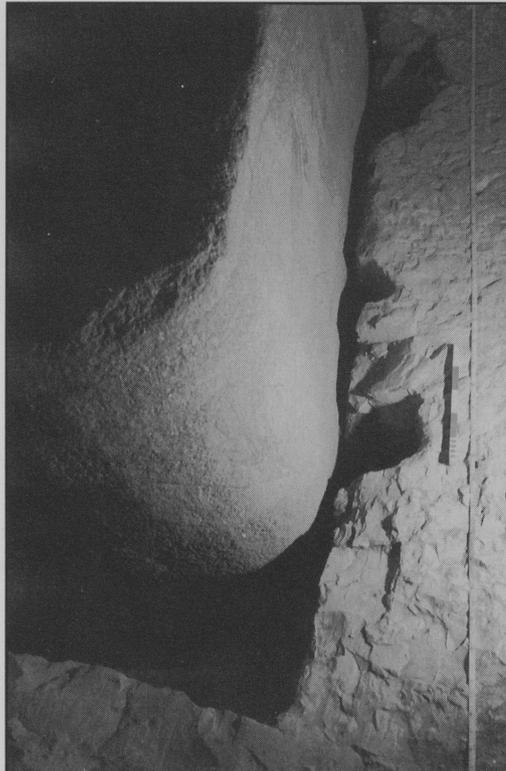
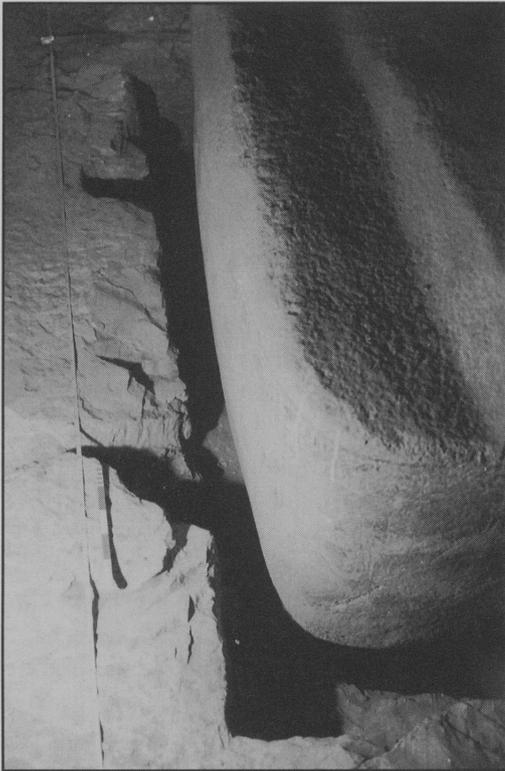


PLATE I: KV1 Burial Chamber with granite cover and 1984 clearance floor pit, looking west.

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PLATES IIA, IIB: KV 1 clearance floor pit showing pairs of niches, looking east.

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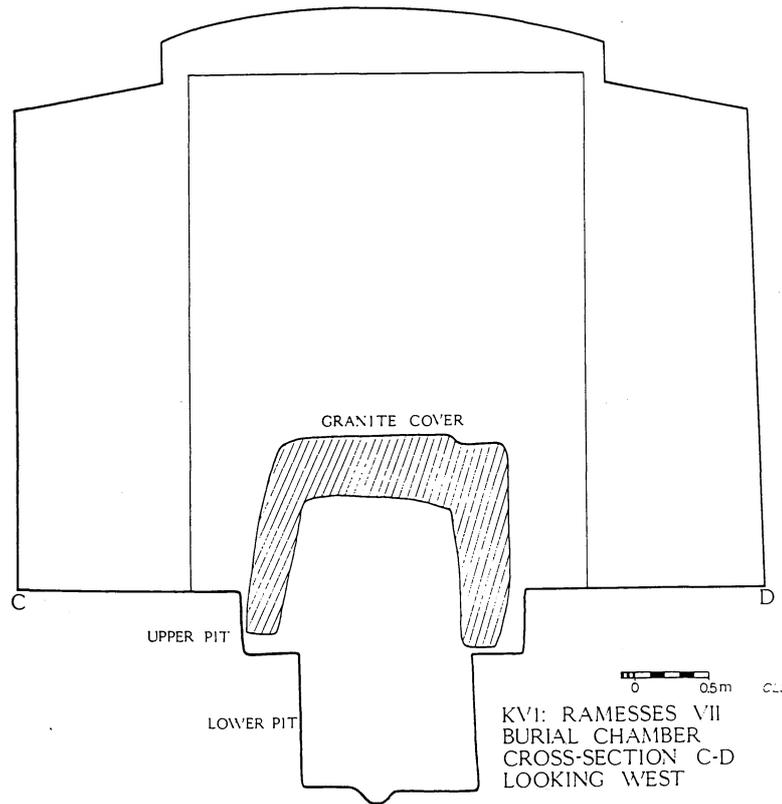


FIGURE 3: Cross-section KV 1 Burial Chamber (from Theban Mapping Project). Drawn by C. L. Shartzer.

along the lines formed by the hypothetical extension rearward of the line of the walls of the preceding corridor. Unfortunately, the recent installation of a wooden floor has covered this evidence over. Similarly the rearmost room might have been intended as a third corridor that was only begun when the plan was altered. It is not possible to determine if the niche in the center of the rear wall is the result of finishing-off the incomplete working face of the tomb or if it was cut as part of the final design.

Prior to the recent Supreme Council of Antiquities restoration work in the tomb, it was possible to see a deep horizontal groove cut into the south wall of the rear room as well as traces of a rectangular hole in the north wall beneath the painted plaster.<sup>14</sup> From the evidence of the latter, it seems likely that the south groove was also filled-in and plastered-over as well, with the central portion of the offering scene at one time intact. It is likely that this groove and the corresponding hole served as the temporary emplacements for a large wooden beam that would have been used as a primitive “pulley” for hauling the granite sarcophagus/cover into the tomb.<sup>15</sup>

## The 1983/1984 Investigation

In the winter of 1983 and the summer of 1984, as part of a larger project to study the extant royal sarcophagi in the Valley of the Kings, the writer began a detailed study of the so-called "sarcophagus" in KV 1.<sup>16</sup> This investigation led to the clearance of the rectangular pit in the floor of the burial chamber (figs. 1-4, pl. I) into which this box/cover had been set.<sup>17</sup> A construction detail discovered during the clearing and not shown in the earlier plans was the presence of two pairs of semi-circular niches cut into the long sides of the widening of the upper third of the pit as a shelf upon which the cover rests (fig. 4, pl. IIA, IIB). It seems probable that these pairs of niches were intended as receptacles for the now-missing canopic jars, a hypothesis strengthened by the proximity of the depiction of the Four Sons of Horus on each side of the cover, deities associated with the canopic jars.<sup>18</sup> Mixed with the debris filling the pit to floor level consisting of dirt, and limestone fragments of various sizes, were many artifacts. The latter included remains of the original tomb furnishings, particularly pottery fragments and *shabtis* of wood, faience and calcite, fragments of granite from the sarcophagus, and limestone ostraca with artists' sketches including studies for actual scenes in the tomb. The ceramics can be divided into two major groups consisting of characteristic types consistent with a Dynasty 20 date and vessels of various Romano-Byzantine forms. In addition, numerous fragments of wood, cloth, cordage and bone were collected as well as many mud bricks, some of which were intact.<sup>19</sup>

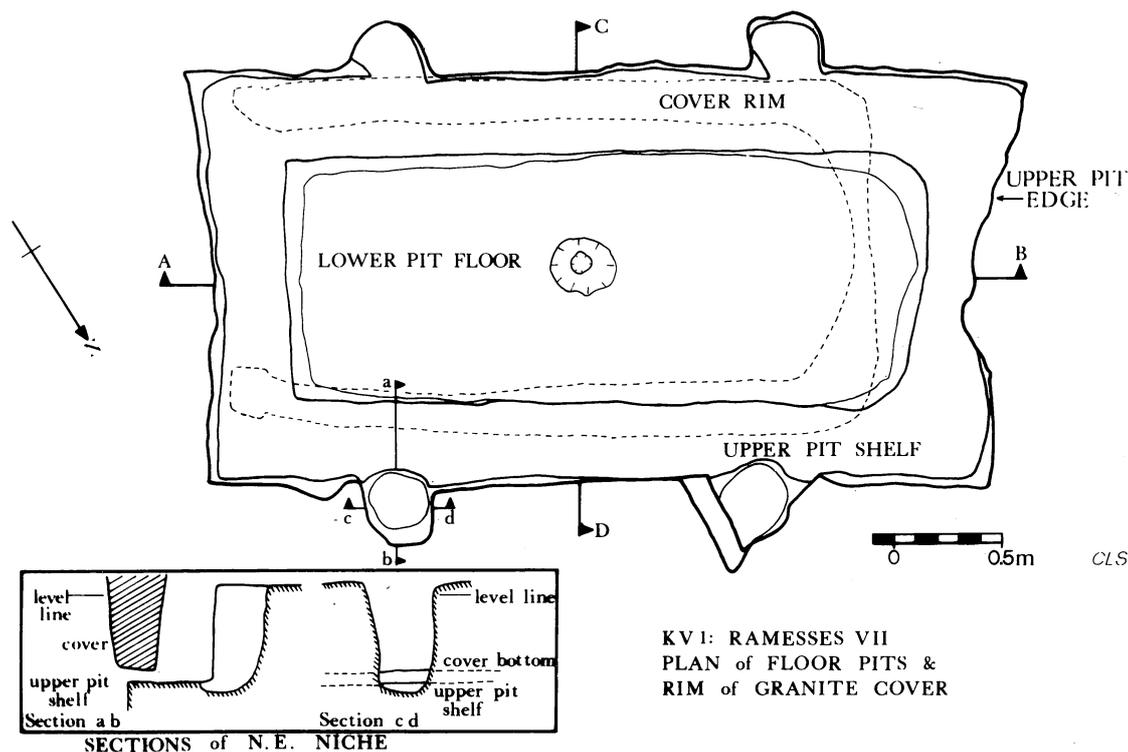


FIGURE 4: Plan of floor pit in KV 1 Burial Chamber (from Theban Mapping Project).  
Drawn by C. L. Shartzter



PLATE III: KV 1 entry in 1990, looking northwest. Note traces of sondage in center foreground.

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PLATE IV: KV 1 entry in 1990, looking north. Dump in center foreground bounded by pair of vertical ridges.

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## Investigation of the Dump

At some time prior to my investigation of the material remaining in the burial chamber, a clearance of debris in the tomb had been carried out. Although no published record of this activity is known to me, examination of the dump from this clearance revealed bits of newspaper dating to a period following the 1952 revolution.<sup>20</sup> This dump had been deposited south of the tomb entrance,<sup>21</sup> in a small water channel cut by some past flood through the limestone chips deposited on the *wadi* floor during the construction of the tomb (pl. IV). This dump's present location presented a potential hazard to the tomb in the event of floods, as it formed a barrier against water passing down this channel which might be diverted into the tomb rather than passing down the *wadi*.

From an initial examination of the dump's composition it also became apparent that a significant amount of artifactual material had been deposited, particularly potsherds, both of New Kingdom and Romano-Byzantine date. In May 1990, again with the permission of the SCA, I carried out an examination of the material in this dump. This effort produced another large sample of pottery dating to both the burial and the later Christian use of the tomb. In addition many artifacts were found including hieroglyphic texts and more artists' sketches on limestone flakes, hieratic inscriptions on pottery (as well as a drawing that seems to be a caricature), fragments of

*shabti* figures in calcite (e.g., fig. 8) and faience, pieces of basketry (pl. V), fragments of wood, pieces of cloth, bone fragments (both animal and human) and even intact parts of a floral garland (pl. VI). Many small fragments of the granite cover were found, as well as plaster fragments, some of which were painted. Pieces of baked silt tiles, more fragments of bricks, and even fragments of 19th century ceramic pipe bowls also were recovered. A final examination of dump deposits outside the tomb entrance was made in June and July 1994. This effort was spurred by the SCA's plans to prepare the tomb for tourism in the coming fall, which would have resulted in disturbance of the dump site.<sup>22</sup>

The results of this final investigation included similar categories of artifacts, including *shabti* fragments of calcite, faience (fig. 9) and wood (fig. 10). Additional figured limestone ostraca were found, including at least one with another sketch for the decoration of

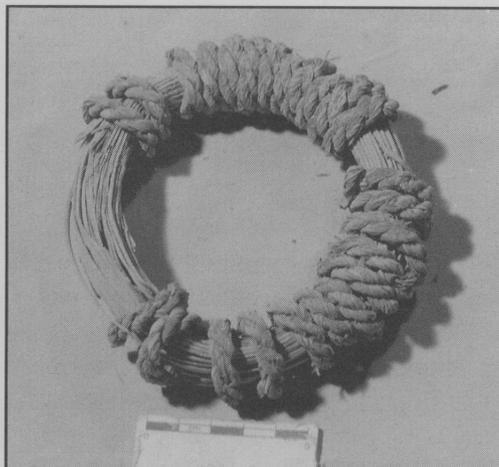


PLATE V: Basketry jar stand from 1990 dump investigation.



PLATE VI: Floral garland fragments from 1990 dump investigation.

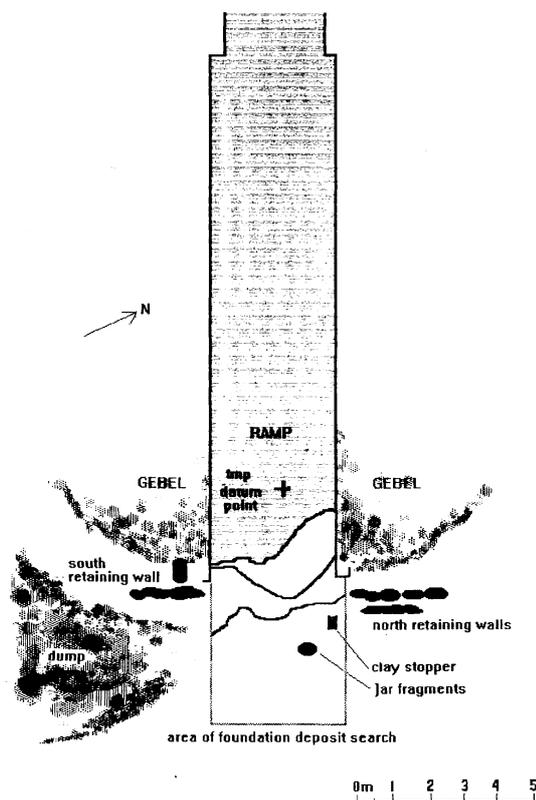


FIGURE 5: Plan of KV 1 entrance showing areas of investigation (from Theban Mapping Project). Drawn by L. P. Brock.

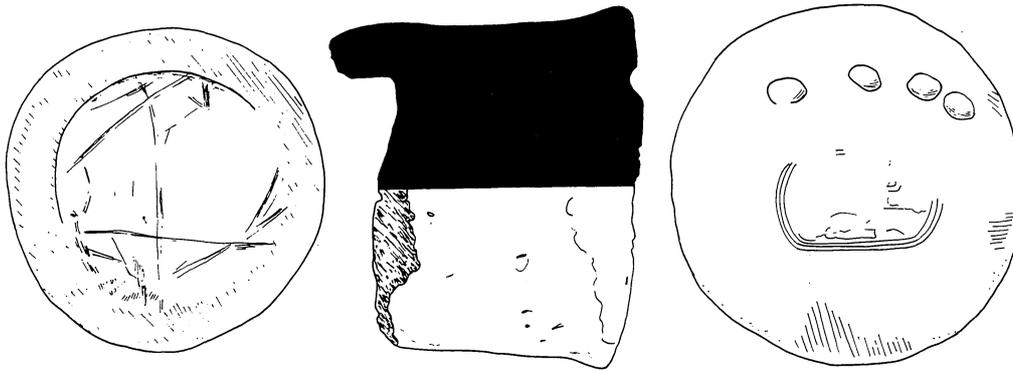
the tomb and one with a few hieroglyphs. The ceramic material included more examples of the types previously discovered, as well as fragments of shallow bowls containing deposits of red and yellow ochre pigments. Other finds included more cloth, wood fragments, cordage and bone, and a brush fashioned of bound grass tufts (fig. 11).<sup>23</sup>

The activities outside the entrance in preparing the tomb for visitors included the construction of a low wall around the entry cut in the hillside and the excavation of a new and wider approach path from the main valley. This latter was accomplished by pulling down the ancient deposits of tomb construction debris to raise the level of the water-cut channel that had later been cut through them. Prior to this work, an early sondage was visible on the south side of this channel approximately a third of the way down the *wadi* from the tomb entrance (pl. III).<sup>24</sup> Traces of a rubble wall running east-west are visible beneath the ancient fill on the north side of the old channel beginning approximately 40 meters from the tomb's outer door and running nearly 20 meters eastward.<sup>25</sup>

## Foundation Deposit Search

In June, 1994, with the permission of the Luxor Antiquities Inspectorate, I took the opportunity to search the area in front of the tomb's approach ramp for foundation deposits (fig. 5). Only a few tombs have these deposits preserved and no previous record exists of earlier search attempts at KV 1.<sup>26</sup> Five deposits had been discovered in front of the nearby tomb of Ramesses IV (KV 2) in 1920 by Howard Carter, with two pairs of pits cut into the stony debris on either side of the entrance ramp and a fifth deposit farther away on the central axis of the tomb. These earlier deposits consisted of food offerings, pottery, models of tools and other materials, often wood and faience, as well as plaques bearing the names of the king responsible for the tomb's construction.

The cut stone surface at the east end of the approach ramp was found to be greatly damaged. There was evidence of ancient repairs, mainly a fill of fine limestone chips mixed with plaster.<sup>27</sup> The Theban Mapping Project had incised a datum point in the form of a cross (+) on the surface of the approach ramp 12.4 meters from the outer face of the doorway offset 10.75 cm to the north of the longitudinal axis of the tomb.<sup>28</sup> This point served as a reference for measurements during my investigations outside the tomb entrance. Two other reference points used were a pair of red x's, one on each side of the lower front ends



FIGURES 6A, 6B, 6C: Clay jar stoppers R7F94-1 from foundation deposit search.  
 Drawn by L. P. Brock

of the retaining walls that flank the ramp. That on the south was 13.6 meters from the outer face of the door, while that on the north was 14.14 meters from the door.<sup>29</sup>

The area to the east was excavated to bedrock for a distance of 6.67 m from the TMP datum mark, with a maximum north-south width at the east end of *ca.* 4 m. At the eastern end of the excavation the original bedrock of the valley floor was reached at a depth of *ca.* 1 m. below the level of the new approach path and *ca.* 2.4 meters below the original level of tomb construction debris remaining to the north of the approach path.

The ensuing excavation revealed that two-thirds of the eastern edge of this ramp ran at north-south orientation and was not parallel to the entrance facade. The surface of the hillside below the southern third of the ramp edge had been cut to a nearly vertical face, for a depth of 70 cm to the more gradual slope of the original valley floor. This step continued to the north as a sloping surface to the ramp edge and a second step below and to the east created a two-tiered emplacement for a rough rubble wall of limestone and flint boulders set against the ramp edge by the ancient tomb builders. The lower bedrock slope had been covered with more boulders and overlaid with layers of fine limestone chips and plaster in an attempt to raise the level of the approach and decrease its angle of slope.

### Objects Recovered from the Excavation

A cylindrical clay jar stopper was located 2.45 m. east of the TMP datum point (fig. 6). It lay 50 cm. below the extant surface of the rock fill against the east face of the rough wall formed of flint boulders and limestone blocks along the east edge of the entry ramp. The stopper was double-stamped with a cartouche-shaped impression on its top, but the traces of hieroglyphs were difficult to decipher due to the eroded nature of the surface. The stopper is 11.5 cm high and has a slightly constricted waist, 10.5 cm in diameter, with a maximum diameter of 13 cm at the top and 11 cm at the bottom. A circular depression of 3.5 cm maximum depth in the bottom retains the linear impressions of some organic packing material that capped the actual opening of the vessel. A consolidant consisting of dilute white glue was applied to all surfaces to retard further deterioration.

The base and sides of a pottery jar were found lying on the original rock and *tafl* covering of the bedrock at a distance of *ca.* 2.30 meters from the east face of the ramp edge.

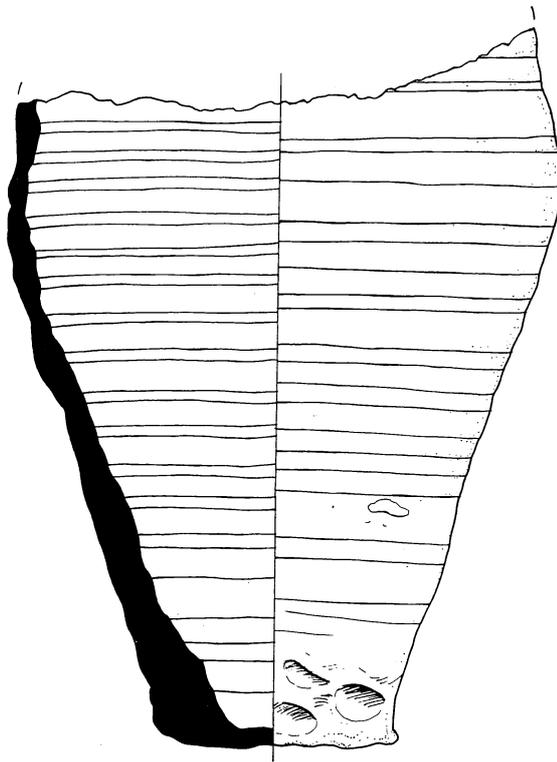


FIGURE 7: Reconstructed jar R7F94-2 from foundation deposit search. Drawn by L. P. Brock.

to both the north and south, the lower courses of two rubble walls were found, running perpendicular to the axis of the entry (pls. VIII, IX). These may have been constructed by the tomb builders as retaining walls to hold back the deposits of stone chips piled up to either side of the entrance. They were not intended as any sort of monumental or decorative element of the entrance as they were buried beneath additional layers of stone chips from the construction. It does not seem likely that these two walls are the same as the ones noted by Hay, since they appeared to be buried beneath undisturbed layers of the original construction debris.

From the results of the test excavation to try and locate the foundation deposit, it could be seen that the material from the tomb's construction consisting of layers of limestone chips and blocks were deposited as a pair of "wings" or level terraces, one on either side of the entrance, with the remainder of the construction debris filling the floor of the small *wadi* leading from the main valley, to a depth of at least two meters or more and forming a level approach to the tomb. This was later cut into by flood waters channelled from either side of the hill containing the tomb. Fortunately, the surface of the eastern end of the entry ramp was built up high enough above the area through which the floods came to prevent the waters from entering the tomb. It might be that the "terraced walls" near the entrance noted by Hay were either these two terraces of construction debris flanking the approach or the

They were in a matrix of fine stone chips resting on the flat bedrock surface to the east of the rubble wall along the east edge of the ramp. Three large fragments of the base were found first farther down-slope to the east and then the remainder of the fragments were discovered nearby. They were lying on the top of a depression filled with sandy dirt containing many large chert fragments. This find spot was located between 4.40 m and 4.60 m from the TMP datum point and between 0.60 m and 0.90 m from the north edge of the cut. Reconstruction of the fragments yielded a silt "beer jar" of a type common in the New Kingdom (fig. 7). Unfortunately, sherds belonging to the neck or rim were absent.

### Ancient Supplementary Construction Features

No other artifacts were discovered in any part of the area examined. The only untested part of the site remained under the east ends of the rubble walls that bordered the entry ramp on the north and south. In front of these walls



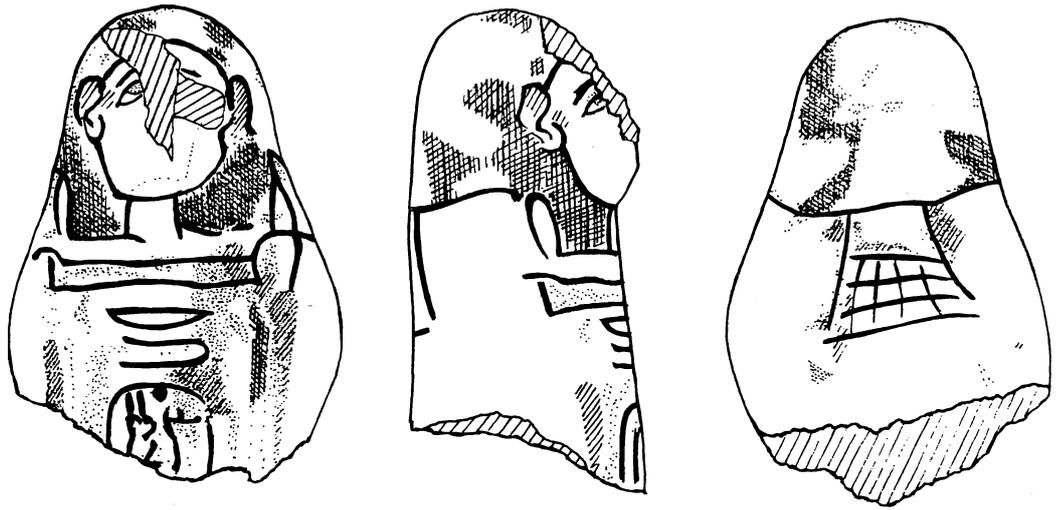
PLATE VII: KV 1 entrance looking north. 1994 foundation deposit search.

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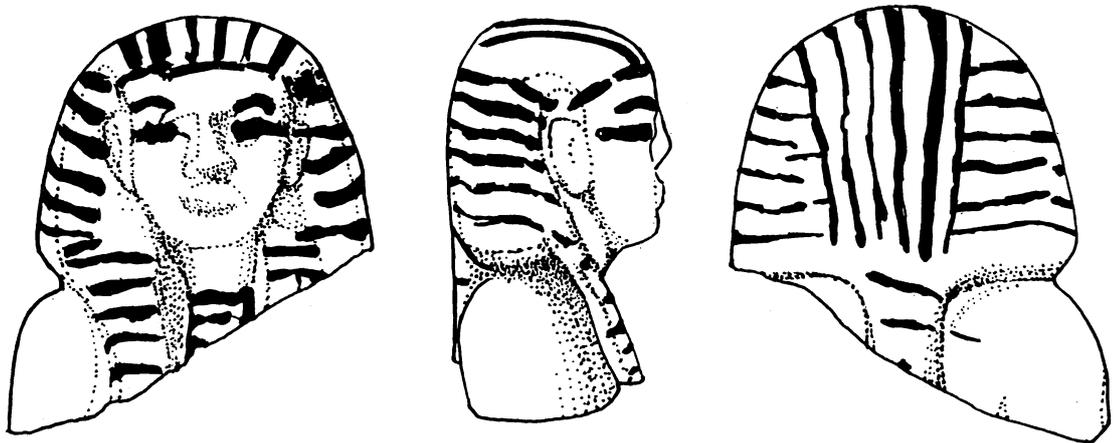
PLATE VIII: KV 1 entry looking north. 1994 foundation deposit search, north retaining walls exposed.

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FIGURES 8A, 8B, 8C: Calcite *shabti* head R70D90-2, A) front, B) side, C) back.  
 Drawn by L. P. Brock.

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FIGURES 9A, 9B, 9C: Faience *shabti* head R7D94-6, A) front, B) side, C) back.  
 Drawn by L. P. Brock.

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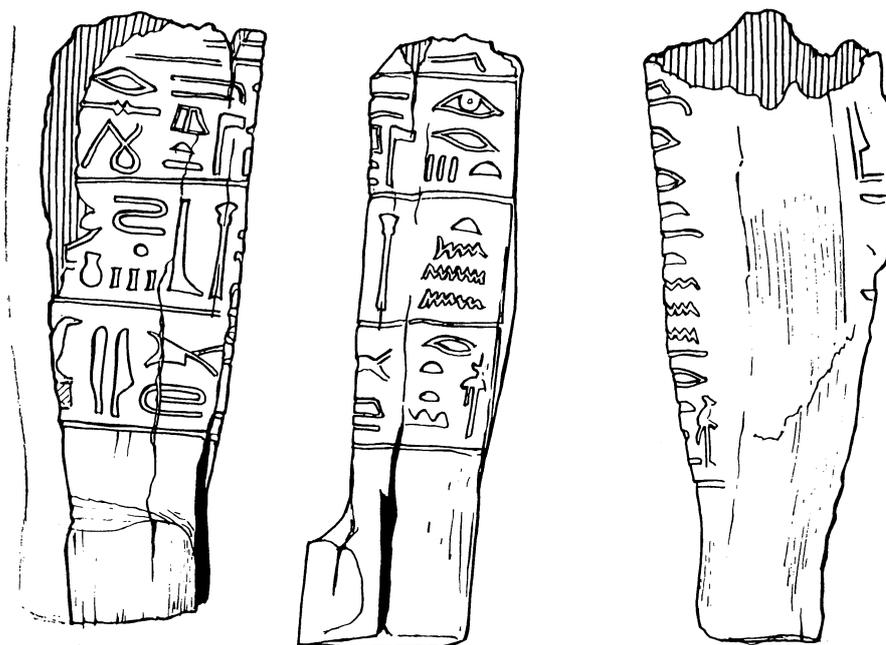


PLATE IX: KV 1 entry looking west. 1994 foundation deposit search, south retaining wall exposed.

dry rock wall extensions of the sides of the ramp cutting and that the one in the doorway was the remains of the rubble levelling-wall at the eastern edge of the ramp cutting. No other constructions that would have been visible to Hay were found in the area.

In the process of moving the dump material, the remaining debris from the dump was redeposited above the old water channel on the lower south flank of the hill, held back by a rubble wall, and on the upper surface of the remaining level of ancient construction material northeast of the tomb, beyond the northern channel. Unfortunately, the final stages of preparations for the tomb opening included the construction of a large roofed kiosk of cement and stone to the south of the tomb entrance and in the mouth of the channel on the south side of the hill, while the mouth of the north channel was filled-in and a stone retaining wall constructed across it as part of the lining of the new approach road.

Until the recent work to prepare the tomb for access by tourists, the *wadi* in which it is located remained relatively untouched by past archaeological exploration and the site retained much the same appearance that it probably had since antiquity. By older criteria, the results of the investigation described above might seem to have yielded little of intrinsic or artistic value. Nevertheless, the work demonstrates the relatively plentiful amount of data that can be gleaned from careful examination of even tombs long considered to be completely plundered. Similar findings have been made by recent work by other projects working in the Valley in the past two decades. It is also likely that future investigations will produce more data to further our understanding of the archaeological history of this site.



FIGURES 10A, 10B, 10C: Wood *shabti* (legs and feet), inscribed, R7D94-4, A) front, B) side, C) back. Drawn by L. P. Brock.

## Objects Recovered from the Pit Clearance and Dump

The following is a brief description by type of the numerous artifacts found in the debris from the burial pit as well as those previously removed and deposited outside the tomb to either side of the entry-way.

### 1. *Shabtis*

Calcite—1 complete, 11 fragmentary *shabtis* of the “lost contour” type,<sup>30</sup> distinguished by a rudimentary sculptural treatment of the mummiform figure with facial features, hands, and wig summarily defined in black paint with blue wax to cover the wig area, and a short vertical inscription in black below the hands giving the names and titles of the king,<sup>31</sup> sometimes accompanied by the phrase *shd Wsir*,<sup>32</sup> bordered by vertical black stripes often within vertical red wax stripes. Additionally, in some instances, a waxy green wash was applied over most of the front surface. Red wax also was applied to the area of the ears. In some examples the hands hold hoes and a bag is suspended at the back. Several examples are in the Egyptian Museum, Cairo, one in the Luxor Museum and one in the Michaelides collection.<sup>33</sup>

Faience—9 fragmentary, including 1 of head and shoulder, 2 of lower legs and 6 of feet. These pieces are comparable to a complete example, as well as fragments, in the Egyptian Museum, Cairo.<sup>34</sup> The eyes and brows as well as the stripes of the *nemes* head-dress are delineated in black as are the inscriptions. Two uninscribed fragments of the

bottom of the legs and feet of two figures of much smaller scale are unusual examples from a royal context. Their surfaces have a matte finish and the interior core visible at the break shows a red ceramic color and texture.

Wood—3 fragmentary, 1 found in the pit debris and 2 in the dump. The one found in the pit is uninscribed and preserves the right half, split vertically, with traces of a black resinous coating. Only the lower torso of the second figure remains, fashioned from a finer wood, perhaps acacia, and is inscribed with four horizontal lines of text, unfortunately without the name of the owner.<sup>35</sup> The third wooden fragment is really only a thin vertical slice of the upper torso, preserving the contour of the bent arm and the body below from either the left or right side. No traces of inscription or of black covering are preserved.

## 2. Ostraca<sup>36</sup>

Ten limestone flakes with drawings or inscriptions were discovered. At least four of the six figured ostraca are trial pieces for scenes in the tomb itself. Among these is one in red showing a king wearing a cap crown and an elaborate gown offering incense and libation. Although the red-filled cartouches before his head are blank, it closely resembles the figure of Ramesses VII offering to Osiris on the southern wall of the rear room of the tomb.<sup>37</sup> Two other figured ostraca drawn in red are both sketches for the same detail from the lower register of the north wall of the burial chamber.<sup>38</sup> They depict a figure bending forward to bind the arms of a pinioned, kneeling captive. A fourth drawing, this time in black, represents the legs and lower torso of a figure apparently clad in the skin of a feline as shown by the paws at the corners of the garment. This is likely meant to depict the *Iwn-mwt.f* priest shown at the ends of the north and south walls of the first corridor, purifying the king in his guise as Osiris. Since the figure is shown facing the viewer's right, it would thus be a representation of the figure on the south wall.<sup>39</sup> Of the ostraca not associated with the decoration of the tomb is one magnificent piece in red and yellow depicting a standing lion with one forelimb raised. Above the figure a group of hieroglyphs are painted facing to the viewer's right. Although appearing to be read as *iw m3* with the animal skin determinative at the left end,<sup>40</sup> it may be understood more readily as the word for lion, *m3iw* written in retrograde groups, admittedly an unusual occurrence. The last figured ostrakon shows a fragmentary figure delineated in heavy black lines, without the head, apparently nude, showing one arm, the torso and the legs.

Two hieroglyphic ostraca certainly not associated with the decoration of the tomb show the cartouches of Ramesses IX. One of these presents the complete prenomen on one side and the nomen on the other, while the second has part of the prenomen preserved faintly in black over a yellow background. The discovery of such artifacts in this location seems unlikely to have been a result of intrusion from the area of KV 6 and raises a query about why it should be found here. Two ostraca bear only a few cursive hieroglyphs, reminiscent of more complete versions from other sites which also bear horizontal rows of hieroglyphs that seem enigmatic and do not appear to be intended to be read as recognizable inscriptions.<sup>41</sup>

In addition to ostraca on limestone flakes, several examples of fragmentary hieratic ostraca were found inscribed on pottery sherds, possibly as docketts. One example, however, has a text of at least five lines, with a the drawing on the inner surface, apparently a caricature of a small man with primate features offering to a large standing figure. At least two fragmentary inscriptions of only a few letters written in Coptic were found on potsherds.

### 3. Ceramic Material<sup>42</sup>

Numerous examples of amphorae, apparently part of the offerings for the burial<sup>43</sup> and typical Ramesside 20th dynasty marl wares, were located both in the dump and during the clearance of the burial pit. At least one silt amphora was noted as well as a “sausage-shaped” silt hole-mouthed storage jar and numerous silt bowls or dishes. One Canaanite amphora of imported ware was found. Several of these vessels, particularly the amphora and large storage jars have been partially reconstructed by Barbara and David Aston.<sup>44</sup> Over 20 plaster amphora stoppers<sup>45</sup> were found, ranging in diameter from 10.5 to 13 cm.<sup>46</sup> One intact example was only 8 cm. in diameter which seems to match the interior diameter of the Canaanite amphora. Most of the undersides of these stoppers have plant stem (chaff/grass) inclusions and/or impressions, some have finger impressions on the upper surface, and one has a piece of very fine linen partially imbedded in its underside.

A quantity of Romano-Byzantine pottery was also found, both in the sarcophagus-pit fill and in the debris in the modern dump outside the tomb. This material, like the numerous Coptic graffiti in this tomb and those of Ramesses IV, Ramesses VI and Ramesses IX, among others, may date to the fourth and fifth centuries when the Valley was apparently inhabited by Coptic monks. Much of the material from Ramesses VII is in the form of M3 silt amphorae with characteristic double-handled narrow neck, flat shoulder, long tapering body and spike base with “corrugated” or ridged surface treatment. Numerous fragments of silt vessel were encountered, including pieces with painted floral and cruciform decoration. Fragments of several baked silt tiles were found of which a few could be joined sufficiently to give approximate dimensions of 30 x 18 x 4 cm. Similar tiles were noted by Ayrton during the work of the Davis expedition outside Ramesses IV.<sup>47</sup> Fragments of at least three clay pipe bowls were found, perhaps of early 19th century date, and of the general type that were attached to one end of a long reed or tube. Some are red burnished ware and all have incised and/or punctate linear designs.

### 4. Wood

Numerous fragments of wooden objects were found, fashioned of different kinds of wood, yet to be identified. The sizes and condition vary, although few are greater than 25-30 cm in length. Many of those fragments with recognizable worked surfaces appear to have been parts of coffins. This is suggested by the presence of traces of painted plaster and



FIGURE 11: Whisk broom R7D94-13. Drawn by L. P. Brock.

blackened resin adhering to their surfaces. In addition, some pieces are distinctly curved as if from the head ends of anthropoid coffins while others have circular and rectangular holes carved in them for joining by dowel and tenon. In fact it was possible to identify several dowels and tenons, many of the latter also pierced by dowel holes.<sup>48</sup> The majority of the material, however, is in the form of splinters and chips, and many of the fragments show traces of burning. Nothing remains to indicate that any of this material may have been part of the original burial equipment of this tomb, and the possibility must be entertained that this wood could have been collected from many sources for use as fuel, perhaps as early as the Coptic occupation.<sup>49</sup>

### **5. Cloth**

A significant quantity of cloth fragments, apparently linen, were collected from the debris in the burial pit and from the dump. This material also awaits specialized analysis. From the observations of this writer, however, a wide range of variation in quality is readily apparent. It is possible that some of this material was used in wrapping bodies for burial. Nothing has been noted that appears to be part of a recognizable garment.

### **6. Cordage and Plant Materials**

Many pieces of cordage of different materials, thicknesses and lengths were found, and await specialized study. Artifacts of plant materials include fragments of a floral garland (pl. VI), a ring-shaped basketry jar stand and a brush or hand broom. Numerous pieces of reed, palm rib, and *halfa*-grass were collected as well as several *dom* nuts and date pits. It is not presently possible to ascertain how much of this material is ancient.

### **7. Bone**

Some human remains, or fragments thereof, were discovered, including part of at least one skull. There is as yet no evidence available to indicate that any of this material belongs to the original burial. Faunal material was also collected, species yet to be identified. Again, it is not certain how much, if any, of this material belongs to offerings associated with the original burial. It awaits specialists' studies.

### **8. Miscellaneous Glass and Faience**

Several thin fragments of blue glazed ware, some with straight edges, were collected, which may have been inlays. A fragment of a blue glazed ware vessel rim was also found, bearing traces in black of a vertical line, perhaps part of an inscription. Four small tubular faience beads were recovered from the dump debris as well as one disk bead and one red glass spherical bead.

— Egyptian Department, Royal Ontario Museum

## NOTES:

- 1 This clearance is part of my ongoing Royal Sarcophagi Study Project which encompasses the post-Amarna monuments. For the permission to carry out this work I would like to thank the Permanent Committee of the Supreme Council of Antiquities (formerly the Egyptian Antiquities Organization) and its current chairman, Dr. Muhammad Abd el-Halim Nur el-Din, the Director General of Upper Egyptian Antiquities Dr. Muhammad el-Sughayer, Dr. Muhammad Nasr and Sabry Abd el-Azziz of the Qurna Inspectorate and his staff for their help. I wish to express my appreciation for secretarial and logistical assistance provided by the Canadian Institute in Egypt. Funding for part of the earlier phases of this study were derived from an ARCE fellowship supported by PL480 Funds. In addition some financial assistance was obtained from the Amenmesse Tomb Project and the Bio-Anthropology Foundation. My gratitude to Barbara and David Aston for their invaluable help in dealing with the pottery and to Lyla Pinch Brock, Mary Jane Leimert, and Cynthia Shartzter for their excellent drawings.
- 2 E. Hornung, *Zwei Ramessidische Königsgräber: Rameses IV. und Ramses VII.* (Mainz am Rhein, 1990), pp. 132, 134, 137; J. Baillet, *Inscriptions grecques et latines des tombeaux des rois ou syringes a Thèbes (MIFAO 42)* (Cairo, 1926), pp. 5-33, pl. 1-3, I-V nos. 1-132.
- 3 Commission des Monuments d'Égypte, *La Description de l'Égypte, Planches*, T. II, pl. 79.
- 4 J.-F. Champollion, *Notices descriptives*, I, pp. 442-46, 803-806; *Monuments de l'Égypte et de la Nubie*, pl. 269.1, 273.3.
- 5 R. Hay, ms. BM 29819,7; ref. in E. Thomas, *Royal Necropoleis of Thebes* (Princeton, 1966), p. 131. My thanks to Dr. Kent Weeks for drawing my attention to this reference. It was not possible to examine the actual ms. entry at the time of writing. Hay noted two "terraced walls" near the entrance and another "in the doorway."
- 6 C.R. Lepsius, *Denkmäler aus Ägypten und Äthiopien* (Berlin, 1849-58), Folioband III, Abb.233a,b,c; Textband III, pp. 194 f.
- 7 E. Lefébure, *Les Hypogées royaux de Thèbes, pt II., Notices des hypogées (MMAF III.1)* (Cairo, 1889), pp. 1-8, pl. 2-3.
- 8 As interpreted by Thomas, *op. cit.*; see also C.N. Reeves, *Valley of the Kings* (London, 1990), pp. 119, 125 n. 47 with reference to contrary opinion of A. Weigall, *Guide to the Antiquities of Upper Egypt* (London, 1910), p. 195 who states that it had not been cleared and had no door. Thomas based her opinion on a photograph published by Theodore Davis in *The Tombs of Harmhabi and Touatankhamanou* (London, 1912), pl. 4. This photograph is captioned, "Two Ramses tombs to the right of the entrance. Opened in 1905-1906." However, in Davis's *The Tomb of Siphthah* (London, 1908), pp. 6-7, Ayrton's description of the work that season in this area is clearly involved only with the excavations in front of the entrance to Ramesses IV.
- 9 A. Piankoff, "Vallée des Rois à Thèbes-Ouest. - La tombe no. 1," *ASAE*, LV (1958), 145-56, pl. I-IX.
- 10 E. Thomas, *op.cit.*, pp. 130-31.
- 11 E. Hornung, *op.cit.*, pp. 5-6, 52-76, 128-31, pl. 6-12, 15, 97-132. A preliminary report of this work appeared in 1984, cf. E. Hornung, "Zum Grab Ramses' VII.," *SAK* 11 (1984), 419-24. The reader should consult the first publication for the details of decoration briefly described *infra*.
- 12 A. Piankoff and N. Rambova, *The Tomb of Ramesses VI* (Princeton, 1954).
- 13 This would correspond to the corridor (C) containing the two rectangular niches found in other 20th Dynasty royal tombs, e.g., KV 2 (Ramesses IV), KV 9 (Ramesses VI), KV 6 (Ramesses IX) and KV 4 (Ramesses XI). See Thomas, *op.cit.*, pp. 274-75, 278 on the development of these niches from an 18th Dynasty prototype of a room (C) with a stairway in its floor. Although absent from KV 1, this feature is also found in KV 19 at the beginning of its unfinished second corridor, later converted into a burial

chamber by the expedient of a rectangular pit carved in the floor. Thomas (*op.cit.*, pp. 131, 152, 234, 235) suggested that this tomb might have been started for Ramesses VIII and then usurped and decorated for Prince Ramesses Montuherkhepeshef, a son of Ramesses IX. In fact, traces of the alteration of names of the tomb owner near the bottom exterior of the entry jambs show the squatting figure of the Set-animal partially erased and surcharged with the seated figure of Montu. These inscriptions originally stated that this tomb was made as a royal gift for a Prince Ramesses Setherkhepeshef. He is known from the Medinet Habu list of princes (cf. K. Seele, "Ramesses VI and the Medinet Habu Procession of Princes," *JNES*, XIX.3 [July 1960], 184-204) to have become Ramesses VIII who apparently ruled less than a year and whose royal tomb has never been identified.

14 Hornung, *op.cit.*, pl. 126, 127.

15 Similar sets of beam slots are known from the corridors above the burial chambers of several royal tombs, e.g., KV 7, KV 8, KV 9, KV 11, KV 13, KV 14, KV 16, KV 17, KV 20, KV 23, KV 47. Unlike all other examples, in KV 1 the beam emplacement would counter outward-directed forces so that the ropes could be pulled from the front to draw the sarcophagus inward. Romer, *op.cit.*, pp. 103-104, notes that James Burton first recognized the purpose of these features, perhaps while investigating KV 20. Descriptions of similar methods of lowering and maneuvering heavy objects in limited spaces are offered by D. Arnold, *Building in Ancient Egypt* (N.Y., Oxford, 1991), pp. 73-79.

16 Although it has the form of a roughly finished cartouche-shaped red granite box, its function was to serve as a cover, resulting in it being inverted and placed over the floor pit. The sides and ends were decorated in its inverted position (cf. Hornung, *op.cit.*, pp. 130-31, pls. 130-32). The raised section on the upper surface is unusual and may represent the unfinished original bottom of the box. There are no obvious traces of any attempt to sculpt a figure here (*pace* Hornung, *op. cit.*, p.128), although it cannot be ruled out as an uncompleted intention.

17 This feature first appears in the tomb of Ramesses VI (KV 9), although not used to hold the actual burial. The pit comes to be larger but shallower in the tomb of Ramesses IX, and in KV 4 (Ramesses XI) took the form of a deep shaft. The depiction of the KV 1 pit in the tomb plan published in the *Description*, *op. cit.*, showing the approximate true depth in the sectional view, suggests that the debris cleared in 1983-84 may have intruded, at least in part, since the time of the Napoleonic expedition. The apparently ancient break through the foot end of the cover (facing the tomb entrance) would have provided point of access for this material. Although Hay's drawing of this end of the cover (Hornung, *op.cit.*, pl. 130, upper) seems to show it as intact, a closer examination suggests that the lower central portion, lacking the indication of detailed dimensions such as are shown to the left, may be a reconstruction. The sectional view provided by the Napoleonic expedition would likely have been possible only if the break in the end of the cover already existed

18 See my contribution in A. Dodson, *The Canopic Equipment of the Kings of Egypt* (London, 1994), pp.75-76; also Hornung, *op.cit.*, pp. 130-31, pls. 131-32.

19 These bricks await further study. It may be that they formed a partial secondary blocking of the tomb entrance. Traces of this can be plainly seen on the undecorated north and south surfaces of the first corridor just inside the entrance in the form of linear mud stains on the plaster; cf. Hornung, *op. cit.*, pl. 99.

20 As shown by the post-1952 emblem of the eagle. Perhaps clearance was undertaken at the time of Alexandre Piankoff's photographic recording of the tomb's decoration, published in 1958; A. Piankoff, *op.cit.* Erik Hornung, who investigated the tomb in March 1983, reports that the tomb was already cleared at that time (personal communication, October 1994).

21 A second and smaller modern dump was also investigated in the mouth of a second water channel along the north face of the hill to the east of the north-east end of the entry ramp.

22 In fact it seems that deposits once piled outside the entry ramp, either part of the dump or belonging to the original construction debris, were removed in the levelling process for the new path prior to my arrival on site at the end of May.

23 Similar brushes are known from various museum collections, e.g., Cairo 16-4-26-37; cf. A. Eggebrecht, *Ägyptens Aufstieg zur Weltmacht* (Mainz am Rhein, 1987), p. 272, no. 217 (Hildesheim no. 1688); J. Tyldesley, *Daughters of Isis* (London, 1994), pl. 11 (Liverpool University); H. E. Winlock, *Materials Used in the Embalming of King Tut-'ankh-Amun* (Metropolitan Museum of Art, Papers No. 10) (New York, 1941), p. 18.

24 No record is known to me of this sondage, apparently to the level of the original *wadi* floor. Although Thomas' tentative idea that Ayrton and Davis may have worked in this area has little evidence to support it, it might be related to this sondage, although it could have been the unrecorded investigation of many other earlier investigators as well. Unfortunately, all traces were obliterated in the recent construction of the new approach road. A roughly square area to the north of the tomb entrance is still visible, but appears to resemble clearing a level place for a tent rather than a sondage.

25 Although its distance and position with relation to the tomb entrance would seem to preclude it, might this be one of the rubble walls mentioned by Hay intended to protect against floods? As will be seen below, walls actually found closer to the entrance would not have been visible in the 19th century.

26 Cf. J. Weinstein, *Foundation Deposits in Ancient Egypt* (Ann Arbor, 1983), p. xxviii, *passim*; Thomas, *op.cit.*, pp. 72 (KV 38), 75 (KV 20), 79 (KV 42), 81 (KV 43), 83, 101 (KV 22), 128 (KV 2); cf. also pp. 85-86, fig. 9, 10, and p. 119, fig. 13 for plans showing locations of deposits found *in situ*. Recent work by Waseda University at the tomb of Amenhotep III (KV 22) revealed another foundation deposit; see J. Kondo, "Preliminary Report on the Re-clearance of the Tomb of Amenophis III (WV 22)" in *After Tutankhamun*, ed. C.N. Reeves (London, 1990), pp. 45-46, 49 (Pl. X).

27 This repair filling at one time raised the surface of the ramp here some 10 cm. Traces of the original plaster surface were visible against the bottoms of the plastered faces of the rock-cut walls along the south and north sides of the ramp near its east end.

28 This datum point is at a differential elevation of 171.219 m above sea level with the Theban Mapping Project grid reference N99,804.4790 E94,006.2958. See K. Weeks, *The Berkeley Map of the Theban Necropolis, Report of the Third Season, 1980*, p.15. On the surveying methodology and the grid reference system used by the project, cf. Weeks, *The Berkeley Map of the Theban Necropolis, Preliminary Report, 1978*.

29 The age and purpose of these two marks are not yet known. A second "x", in black, was found beneath the plaster coating of the rubble extension of the north face of the ramp wall, to the east and below the red "x". While the sides of the cut for the approach ramp were mainly the rock of the hill itself, the upper edges and eastern ends were augmented with courses of local boulders and limestone blocks, with the exterior surface coated with plaster. The total extant length of the side walls from the outer door were 14.75m on the north and 13.8 m on the south.

30 M. Ciccarello, *Five Late-Ramesside Lost-contour Alabaster Ushebtis in the Tomb of Ramesses XI* (The Brooklyn Museum Theban Expedition. Theban Royal Tomb Project), (San Francisco, 1979), pp. 1-7. The term for this type of *shabti* derives from description by R. Weill, "Quelques types de figurines funéraires des XIXe et XXe dynasties," *Mon. Piot* (1921-22), 419-438. See also H. Schneider, *Shabtis, Part I* (Leiden, 1977), pp. 205-206 (type V.G), 234; J.F. Aubert and L. Aubert, *Statuettes Égyptiennes: Chouabtis, Ouchebtis* (Paris, 1974), pp. 117-20.

31 In most examples the two cartouches containing the prenomen and nomen follow each other in a vertical column preceded by the *nb t3wy* title. On the sole complete example the cartouches appear side by side.

32 On possible interpretations of this phrase see Schneider, *op.cit.*, pp. 131-33.

33 Ciccarello, *op. cit.*, pp. 2, 6-7.

34 Complete figure Cairo Museum, JdE47165.

35 Comparison with the types catalogued by H. Schneider, *op. cit.*, Pt I, pp. 105-107 (variant VA.), Pt III, fig. 5 variant V.2,4; fig. 18: text position (TP) 1c. The closest chronological variant cited dates to Ramesses IV. Similar wooden *shabtis* are known for Ramesses VI, e.g., Cairo CCG48415, and BM 29998, 29999 (cf. Ciccarello, *op. cit.*, p. 9. The writer has also found wooden fragments of similar *shabtis* in the debris filling the burial chamber floor pit of Ramesses VI.

36 A fuller treatment of these artifacts is planned for later publication in the *Journal of the American Research Center in Egypt*.

37 Cf. Hornung, *Zwei Ramessidische Königsgräber*, pp. 74-74, pl. 126 (erroneously captioned "Maat-opfer an Osiris"). That these trial pieces were not rigidly followed in the final execution can be seen in the differences in the position of the hands and the instruments of purification involved.

38 Cf. *op. cit.*, p. 70 ("14. Szene"), pl. 118.

39 *Op. cit.*, pp. 58-59, pl. 104 (upper right).

40 A.H. Gardiner, *Egyptian Grammar* (Oxford 1957), p. 464 (*Sign-List*: F27).

41 Other examples come from the early excavations of the tomb of Amenhotep II (Daressy, *Fouilles de la Vallée des Rois* (Cairo, 1902), pp. 64-65, pl XVIII: CG24105-24108) and others have been found by the expeditions of Pacific Lutheran University and Waseda University (personal communications).

42 A thorough treatment of the corpora of pottery found in the Valley of the Kings is planned by the writer with Barbara and David Aston.

43 There is no possibility of designating the original location for the placement of these vessels at present. The hypothesis might be offered, however, that these vessels containing various food offerings could have been placed on the floor of the rear-most chamber which has representations of various animal offerings painted on the rear wall beneath the niche. Cf. E. Hornung, *Zwei Ramessidische Königsgräber*, tafl. 128 (lower).

44 Cf. Barbara and David Aston, *Bulletin de Liaison*, XII (1987), 27-28.

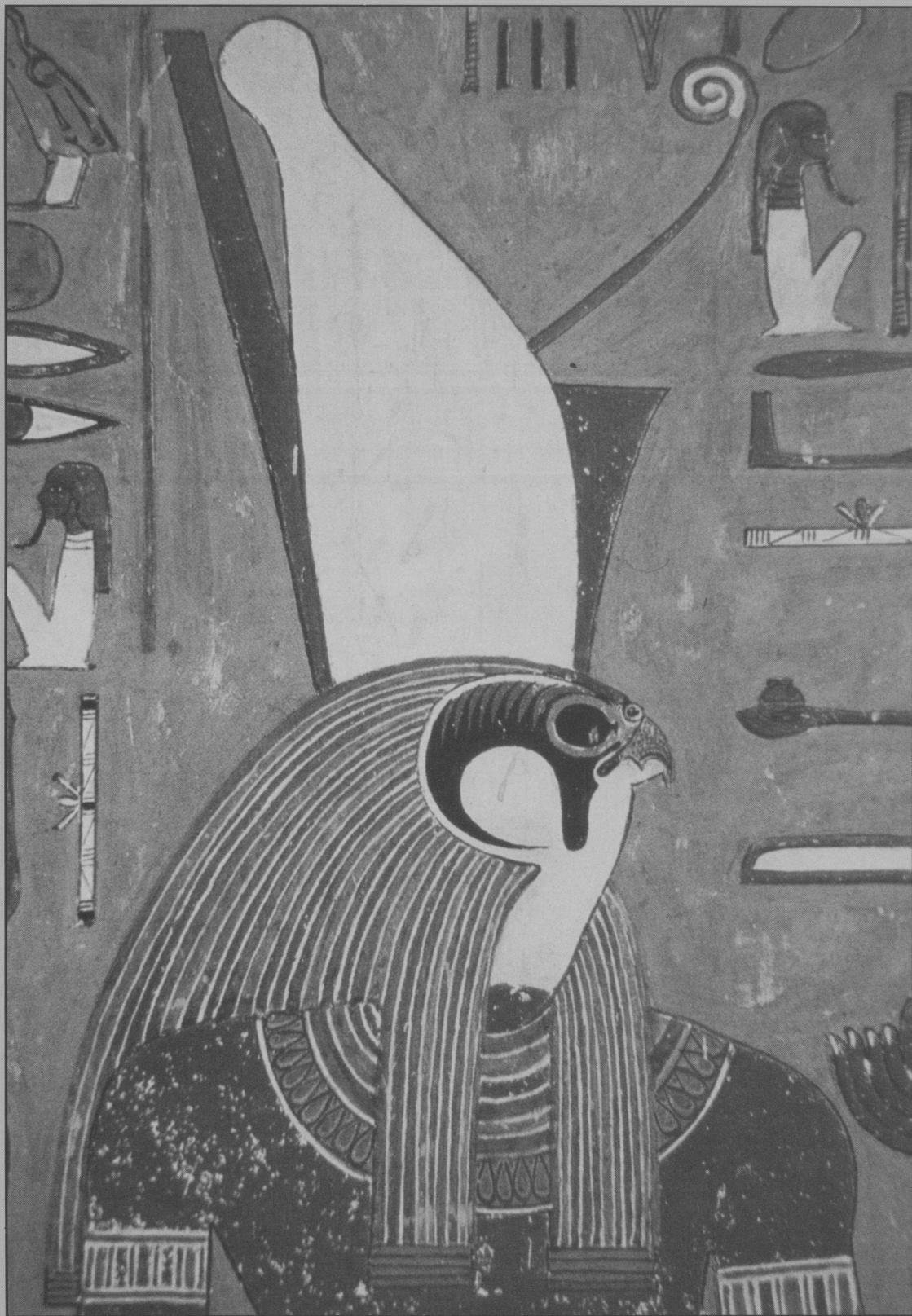
45 The diameters cited tally closely with the interior diameters of the rims of the amphorae that have been reconstructible.

46 Similar groups have been found by the writer in clearing the sarcophagus pit fill in the tomb of Ramesses VI and on the surface of the partly-filled well shaft in the tomb of Ramesses III.

47 Davis, *Siptah*, p. 7.

48 For coffin construction, see A. Niwinski, *21st Dynasty Coffins from Thebes, Chronological and Typological Studies (Theban Bd. 5)* (Mainz am Rhein, 1988), pp. 57-60.

49 It is possible of course that some of this material coming from coffins belonged to Third Intermediate burials in this tomb or nearby. On re-use of the Valley as a non-royal burial ground in the Third Intermediate Period, see J. Taylor, "Aspects of the History of the Valley of the Kings in the Third Intermediate Period," in *After Tut'ankhamun*, ed. C.N. Reeves (London, 1990), pp. 186-206. A similar body of material was collected by this writer in clearing debris from the sarcophagus pit in the tomb of Ramesses VI.



PART TWO

**TREASURES OF DARKNESS:  
Art and Artifacts**

“We perceived that the paintings became more perfect as we advanced further into the interior... But the description of what we found in the center of the saloon, and which I have reserved till this place, merits the most particular attention, not having its equal in the world, and being such as we had no idea could exist.”

(Giovanni Belzoni, 1822)

Although they were among the first things to be commented upon by the earliest travellers and explorers in the Valley of the Kings, the artworks which fill the royal tombs may be among the last aspects to be fully understood. Egyptian art utilized a broad symbolic repertoire based upon a religious mythology which was as complex as it was rich and varied. The fascinating complexity of the Egyptians' symbolic concerns is seen in Erik Hornung's ongoing study of the tomb of Seti I which opens our understanding in a number of areas. A specific aspect of this symbolism which has only begun to be systematically explored in the last few years is the location and alignment of the symbolic images and motifs found in the tombs. Richard Wilkinson's study aims to show that important meaning and significance may be found in the location chosen for many of these representations.

Likewise, many of the individual architectural features of the tombs have so far received little attention, and Catharine Roehrig's study of the evidence for the doors of the royal monuments—none of which has survived—is an excellent example of the kind of precise reconstructive work which is now beginning to be done in order to ascertain the original appearance of the royal tombs.

Careful examination and study of the artifacts which have come to light in the Valley of the Kings—ranging from the nearly complete treasures of Tutankhamun to isolated and sometimes fragmentary remains from other burials—also continue to shed new light on the history of the royal necropolis and the lives of the kings buried there. Sometimes, ongoing study leads to new interpretations of these objects based on the even the smallest, previously unnoticed details, as may be seen in Earl Ertman's close look at the canopic jar and coffin mask portraits found in the mysterious tomb 55.

# Studies on the Decoration of the Tomb of Seti I

*Erik Hornung*

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The meeting at Highclere Castle in June 1990 gave me the opportunity to demonstrate how Seti's tomb could be reconstructed using the copies done in the 19th century, and collecting all the scattered fragments from the wall and ceiling decoration. This reconstruction has been accomplished, though "only" at the desk, not in the field. The recovery of lost fragments is a never-ending process, since new fragments are continually turning up, hidden in the reserves of museums all over the world. But the ancient copies preserved allow us to reconstruct practically all parts which are now destroyed and thus make an analysis possible.<sup>1</sup>

The greatest importance of Seti's tomb lies in the fact that it is the first and only royal tomb using a complete program of decoration, since in all the older tombs, starting with the pyramid of Unas, only certain parts were decorated, never all the corridors and side rooms as Seti did. And since the following tombs of the 19th and 20th Dynasties are destroyed or incomplete, the unique position of KV 17 is stressed even more. One analogy, however, is offered by the tomb of Nefertari, the only tomb of a queen with a complete program of decoration which can be compared with the royal canon, though in both cases the lack of burial furniture, apart from the sarcophagus and *shabtis*, sets a limit to the investigation. Missing parts of the program (like the last hour of Seti's Amduat) could have been present on some item of this equipment, like the many religious texts and representations in the treasure of Tutankhamun.

Friedrich Abitz has stressed that each royal tomb of the New Kingdom has two similar halves, each with a very similar sequence of elements, ending in a pillared hall, and several formal analogies to the other part. Thus, only the second corridors in the upper as well as in the lower half of Seti's tomb show divided walls, which have a different decoration in the upper part compared to that in the lower; and only these corridors have the same text twice, on opposite walls, with a third version in the adjoining corridor. This text is the final text of the third hour of the Amduat in corridors B and C, and the Offering Litany in corridors G and H.<sup>2</sup>

Moreover, an identical line stating that the dead king will appear on the Horus-throne of the living precedes the decoration in corridors A (to the right of the entrance, preserved only in the end) and G (left wall, copied by Belzoni and Hay), and the entrance scene showing Seti in front of the Sun God is repeated in the burial chamber K, before the beginning of the Amduat. One can even suspect a certain analogy between the 75 invocations addressed to Re in the Great Litany of corridor A (illustrated in corridor B), and the 75 scenes in the Ritual of the Opening of the Mouth in corridors G and H, although several of

the scenes are omitted by Seti, so that the coincidence is not perfect.

Another analogy is the deliberate change in the orientation of Amduat hours in rooms C and N, with the fifth and seventh hours (respectively) to the left, and the fourth and sixth hours (respectively) to the right, since usually the decoration of a room starts to the left of the entrance. The reason for this change in C remains doubtful,<sup>3</sup> but the reason in N could be seen in the aim to show the union of Re with his body in the “ideal west,” and the punishment of Apophis and his followers in the “ideal east.” Such deliberate orientations play an important role in tomb decoration.

Staying in room N, the shrine-like socle running along three of the four walls is remarkable for its representation of funerary beds and other burial equipment. Nefertari possesses a similar socle in her first room, but without the beds,<sup>4</sup> and with different wishes in the text-line below the cavetto cornice, without any “royal” connotations (such as the throne of Atum, sceptre and flagellum in the text of Seti).

The program for the pillar faces in this room is very homogeneous, all faces concerned with Osiris or with the deceased pharaoh as Osiris. In the two scenes facing the entrance, the king was shown in ritual: to the right offering cloth, to the left running with a rudder. The running scene is quite exceptional for a royal tomb, belonging rather to the decoration of temples; it is probably to be connected here with the idea of endless Sed-festivals celebrated by the pharaoh beyond death—fitting for a room where the burial and renewal of the sun is represented in the sixth and seventh hour of the Amduat. Sadly, the scene was broken when Champollion and Rosellini tried to remove it for Bonomi to take it off to the British Museum;<sup>5</sup> it seems that no fragments are left, but copies made by Belzoni, Ricci, and Hay preserve it for a reconstruction.

The decoration program of the six pillars in room J is peculiar, too, in avoiding any goddess. This marks a sharp contrast to the four pillars in E, representing Hathor, Isis, Nephthys, Neith, and Selkis (together with Hathor and Maat in room F). I tend to compare this different distribution in the upper and lower pillared hall with scenes of the daily course of the sun<sup>6</sup> showing a male pair of arms at the bottom, and a female pair (with breasts) on top. For the ancient Egyptians, the profound depth of the world is always male, whether seen as Osiris, Nun, Tatenen, Geb, or Aker, whereas the sky (Nut, or the cow Mehet-weret) is conceived as female. This does not mean that goddesses are totally absent from the burial chamber; we can see a winged Maat over the entrance to J, and Isis and Nephthys, also with wings, on the side walls of K, protecting the sarcophagus. On the other hand, Osiris is conspicuously absent from the pillars in E, but shown in the central scene of the rear wall.

Some more interesting details are to be noted. On one pillar face (Bb) in room J, Anubis is depicted with a ram's head; today only one horn is still visible, the other is kept in the Museum of Fine Arts in Boston (coming from the collection of Hay). This is very unusual, but parallels do exist in the tomb of Ramesses I, in the Valley of the Queens (Nos. 68, 71, and 80), and in TT 335. It seems that Anubis is included here in the identification with the nocturnal sun god, parallel to the ram-headed Osiris we know from the tomb of Merneptah and from the figure of the “United One” in the tomb of Nefertari, as well as in other tombs of the 19th Dynasty.

This identification of Osiris and the nocturnal aspect of Re is perhaps involved in the scene on the rear wall of E where Hathor as Lady of the West stands behind the enthroned Osiris—in a place where one would normally expect Isis, Hathor being rather the companion of Re. Similarly, Isis and Nephthys adoring the sun disk over the entrance of the following royal tombs indicate the presence of Osiris to whom they belong.

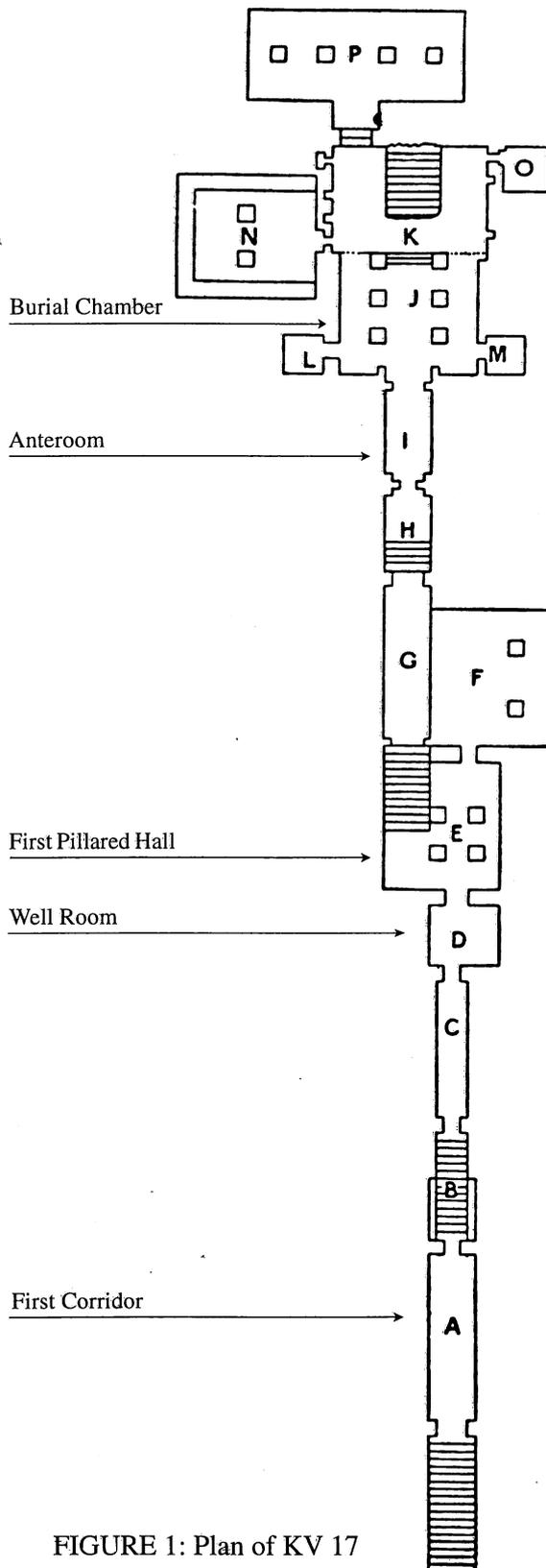


FIGURE 1: Plan of KV 17

The shrine of Osiris is protected by a frieze of uraeus-serpents which seemingly are looking all in the same direction (to the right); Rosellini, Lefébure and others have copied them accordingly, but in reality, the last uraeus to the left is looking in the opposite direction, thus completing a universal protection in all directions.<sup>7</sup>

In the upper pillared hall, the program starts with Ptah on the first pillar to the left, where the god holds the sign of life (*ankh*) to the nose of the king. In all the other scenes, the pharaoh carries the *ankh* in his hand, being already provided with life in the realm of the dead.

The passages of the tomb are now almost totally destroyed, some rests remaining in the entrance to the burial chamber J, and larger fragments being kept in Florence and London. But thanks again to copies made by Belzoni and Hay when the passages were still intact, we know that the entrances to I and J were dominated by a standing figure of Maat, greeting the deceased and combined with the plants and tutelary deities of Upper and Lower Egypt. Already Horemheb put a standing figure of Maat on both door reveals in the entrance of his burial chamber, and Ramesses II and his successors depict Maat in the entrance to the tomb. This prominence of Maat in the royal tomb corresponds to her prominence in the titulary of almost all Ramesside kings.

In the passage to room N, we find in the place of Maat the goddess Hathor as Lady of the West, again combined with the plants and tutelary deities, so clearly replacing Maat. It is a kind of pictorial syncretism of the two goddesses who wear the feather on their heads. Other passages are not decorated at all (as those from C to D, and from D to E), or continue the decoration of the preceding room (those from A to B with texts of the Litany of Re, and from B to C with the Sons of Horus belonging to Book of the Dead spell 151).

Seti I is an ideal place to study framing elements which have been totally neglected till now. The Amduat is surrounded by a strip of desert painted pink, whereas the Book of Gates is put into a shrine; the Litany of Re and the Book of the Divine Cow are provided with an ornamental band using different colors. An important element is the yellow fond dominating not only the burial chamber (as the "house of gold"), but also found in certain central scenes, as the entrance scene in A, the shrine of Osiris in E, and the Hathor pilasters before G.

Finally, it is possible in this tomb to study all sorts of destruction and deterioration that are typical for the tombs in general. A major factor is doubtless the geology of the Valley, and here are reasons to be found for recent damage done to the astronomical ceiling in the burial chamber. But the main factors during the 19th century were the removing and hacking out of whole scenes or small fragments; especially the royal cartouches distributed over texts and representations of the Ritual of the Opening of the Mouth were a target for treasure hunters. In addition, the wet squeezes applied by early visitors proved fatal for the colors of the relief, taking them away totally or at least distorting them severely.

In our century, the factors are mainly humidity, dust, and mechanical influence (touching the walls), introduced by the crowds of visitors. In any case, deterioration is steadily proceeding, and measures must be taken to stop this process.

— University of Basel

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NOTES:

1 As a basis for the following observations, cf. my edition of the Burton photographs: E. Hornung, *The Tomb of Pharaoh Seti I / Das Grab Sethos' I.*, Photos H. Burton (Zurich and Munich, 1991, text English/German), and for a choice of the ancient copies the catalogue of the exhibition "Sethos — ein Pharaonengrab" (Basel, 1991/92).

2 Their importance lies in the formal declaration of intent by Re in the Amduat, resp. in the wish to get all material supply necessary in the hereafter. But already Ramesses II abandons the multiple use and records each text only once.

3 It may be seen in the "astronomical" motifs of the lower register of Amduat V which, as part of the celestial beyond, belong to an "ideal north" (in reality, the wall is oriented to the northwest).

4 In the Queen's Valley, they are represented only in Nos. 40 and 75.

5 See the letter from Bonomi to James Burton quoted by St. Mayes, *The Great Belzoni* (London, 1959), p. 319 n. 37, speaking about cutting a relief from "one of the two pilasters in the chamber of the Divan;" the commentary by Mayes is misleading, since BM 568 (855) with Osiris comes from the pillar in J which had collapsed, not from N where no pillar has "collapsed."

6 For these, cf. my "Die Tragweite der Bilder," *Yearbook Eranos* 48 (1979), 183-237, and "Szenen des Sonnenlaufes," *Sesto Congresso Internazionale di Egittologia, Atti*, Vol. I (Turin, 1992), pp. 317-23.

7 The same phenomenon is shown by the shrine of Osiris in the tomb of Merneptah, see F. Abitz, *König und Gott* (Wiesbaden, 1984), p. 9; other examples can be found in temple decoration.

# Symbolic Orientation and Alignment in New Kingdom Royal Tombs

*Richard H. Wilkinson*

## I. Introduction

Despite the ancient Egyptians' preoccupation with the cardinal directions in their temple and pyramid architecture, it has long been clear that most of the royal tombs in the Valley of the Kings appear to be situated according to the local topography and ostensibly, at least, do not appear to be aligned to the cardinal points.<sup>1</sup> This is not to say, however, that the Egyptians did not carry over their interest in cardinal symbolism to the planning and decoration of their New Kingdom royal tombs. Certain representations were clearly oriented so as to place locationally specific objects such as the red and white crowns toward their associated cardinal points.<sup>2</sup>

This kind of alignment is almost certainly not coincidental, and as Erik Hornung has written, "The documents of the draftsmen usually noted that certain divisions of the Books of the Netherworld should be oriented according to predefined cardinal directions."<sup>3</sup> For example, the cavern of Sokar in the fifth hour of the Amduat and the throne of Osiris in the sixth hour of the Book of Gates are both often positioned so as to be situated on the northern side of the early tombs—in the direction ascribed to these locales in Egyptian mythology. This same orientational concern underlies the specific directional notations which appear in several tombs such as that of Horemheb, and it is evident that orientation and alignment did play an important, though not always fully understood, role in the symbolism of the royal necropolis. In 1993, therefore, The University of Arizona Egyptian Expedition initiated a Motif Alignment Project to specifically study this aspect of the Valley of the Kings. The following sections summarize this project's initial work and findings.

## II. Tomb Orientation and Design

Our understanding of the orientation of the New Kingdom royal tombs and their representations is complicated by the design of many of the tombs themselves, as orientation might be judged by the alignment of the entrance to a tomb, its passages before or after the bend in axis where this is present, the orientation of the burial chamber, or even that of the sarcophagus itself. There is also the added difficulty in that we often do not know whether the Egyptians based their orientations on the true cardinal points using solar or stellar observation or an approximation based on the Nile which flows at an angle of almost thirty degrees east of true north in the region of Thebes.<sup>4</sup> A number of Egyptologists have considered the orientation of specific tombs using one or more of these criteria of alignment, but the search for consistent orientation toward the cardinal points or other external features

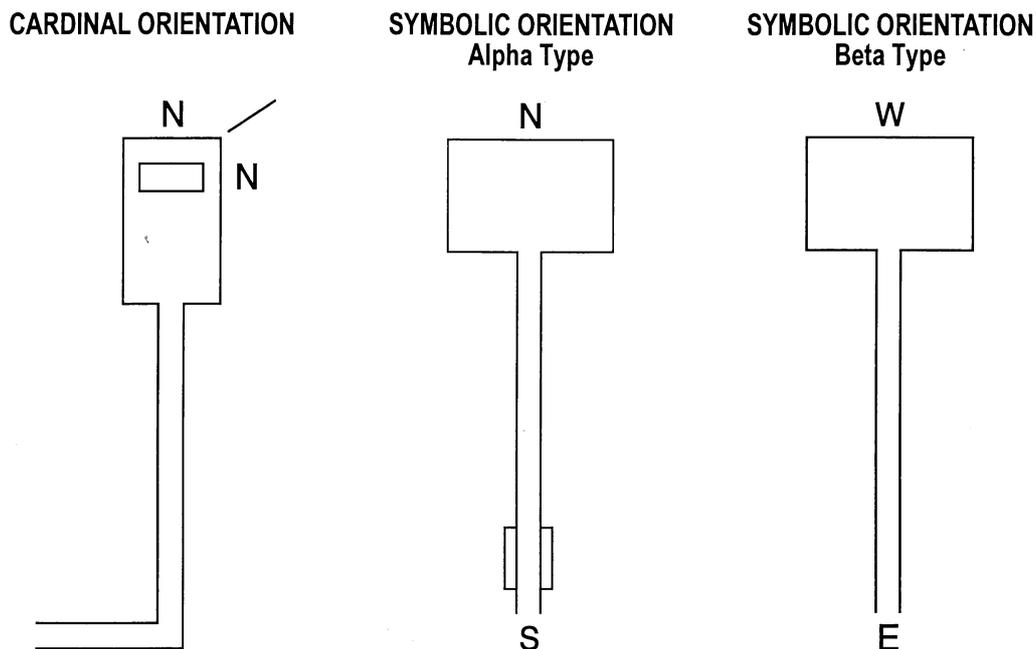


FIGURE 1: Types of tomb orientation: A, Cardinal (18th Dynasty); B, Symbolic S-N (19th Dynasty on); C, Symbolic E-W (19th Dynasty on).

has not been successful. The entrance to the tomb of Horemheb, for example, is oriented fairly precisely on a true north-south axis, while that of Thutmose IV seems to be aligned just as precisely with local north.

The entrances to many other tombs are, of course, not anywhere close to north, or even to any other cardinal direction. In the case of KV 20, Hatshepsut's tomb in the royal valley, the tomb entrance does aim approximately toward the queen's mortuary temple at Deir el-Bahri, but this case appears to be exceptional; and if this type of alignment was intended, then it is limited to only the earliest part of the 18th Dynasty. Most scholars have concluded, therefore, that the alignment of tomb entrances and passages follows no consistent pattern, except that the entrance is almost always cut at 90 degrees to the cliff face which is to be penetrated in the construction of the tomb.<sup>5</sup>

Nevertheless, it is possible that some kind of pattern may occur in the alignment of New Kingdom sarcophagus chambers, though the only pattern that our own research has been able to determine is that most 18th Dynasty tombs were constructed with either the burial chamber or the head of the sarcophagus aligned toward the north (fig. 1A)—by north, I mean somewhere in the directional range between true and local north.<sup>6</sup>

### III. Symbolic Orientation

In the 19th and 20th Dynasty tombs, the actual orientation of the burial chamber shows no such tendency—though regardless of actual orientation, by this time the entrance to each tomb was already regarded as being symbolically in the south and the burial chamber in the north<sup>7</sup> (fig. 1b). This is because the nocturnal path of the sun was regarded as having

its zenith in the north, just as the daytime sun is at its highest in the south each day. The niches cut into the sides of the entrance passages were thus named for the gods of the east and west, as is well known.

In our own research, we have called this symbolic south-to-north alignment the *alpha* orientation type<sup>8</sup> (fig. 1c), and although it could have provided an internal orientation for the distribution of various iconographic motifs, it seems that the *alpha* orientation was never fully developed in this way. Beginning in the 19th Dynasty, however, and continuing throughout the 20th, we find the development of what appears to be a second symbolic orientation based upon a different view of the path of the sun, and one which was much more frequently and consistently applied. In this new orientational scheme—which we have called the *beta* alignment type—the major axis of the tomb seems to have been viewed not as running south-north, but as representing the sun’s east-west (and its returning west-east) journey.

This pattern is seen in a number of solar-related iconographic images which appear or are repositioned at this time, and although these images have often been viewed as merely decorative elements, they are discrete iconographic devices not found in the traditional Netherworld Books and seem to have functioned as markers showing symbolic alignment. The most obvious of these is the solar disk containing the images of Khepri and Atum which appears for the first time above the entrance to the tomb of Ramesses II and was then routinely placed in this location in each subsequent tomb. Here, outside the tomb, as has often been noted, the disk is invariably painted yellow, the color of the daytime sun, whereas within the tomb the same image is painted red, indicating the sun’s evening and nighttime appearance and thus reinforcing the idea of its progression along the tomb’s axis.

While various solar-related images follow this east-to-west path, other iconographic elements stress the north-south orientation of the side walls. From the first occurrence of the sun disk in this way, the goddesses Isis and Nephthys, who were symbolically associated with the south and north respectively, were shown flanking the disk as though indicating the intersecting south-north axis at the sides of the sun as it passes from east to west. These two goddesses are also shown at points along the entrance passages, Isis on the left (or symbolic south) and Nephthys on the right (or symbolic north) walls—as in the tomb of Seti I where they appear on their respective sides of the entrance corridors and even dominate the symbolic north and south sides of that king’s burial chamber. At the entrance to Seti’s sarcophagus hall the deities Nekhbet and Wadjet are also depicted in serpent guise above the lily and the papyrus—the heraldic plants of Upper and Lower Egypt—on their respective (left and right) sides of the doors.<sup>9</sup>

Beginning with the tomb of Ramesses II, yet another device of this kind is found in the two opposing figures of the seated goddess Maat<sup>10</sup> which were carved and painted on the jambs of the tomb entrance, and supported on the left (or symbolic south) wall by a large lily plant and on the right (or symbolic north) by a large papyrus clump. This device became standard in succeeding monuments (pl. I), and in the tomb of Tausert and Sethnakht it is also repeated along the sides of the passages at further threshold points within the tomb. Thus, while the path of the sun is more clearly delineated on the lintels and ceilings of the Ramesside tombs than had ever been done in the 18th Dynasty, the side walls are repeatedly given iconographic elements with obvious connotations of north and south so that a clear fourfold symbolic orientation of east/west and north/south is set up within the tomb regardless of its actual cardinal alignment.

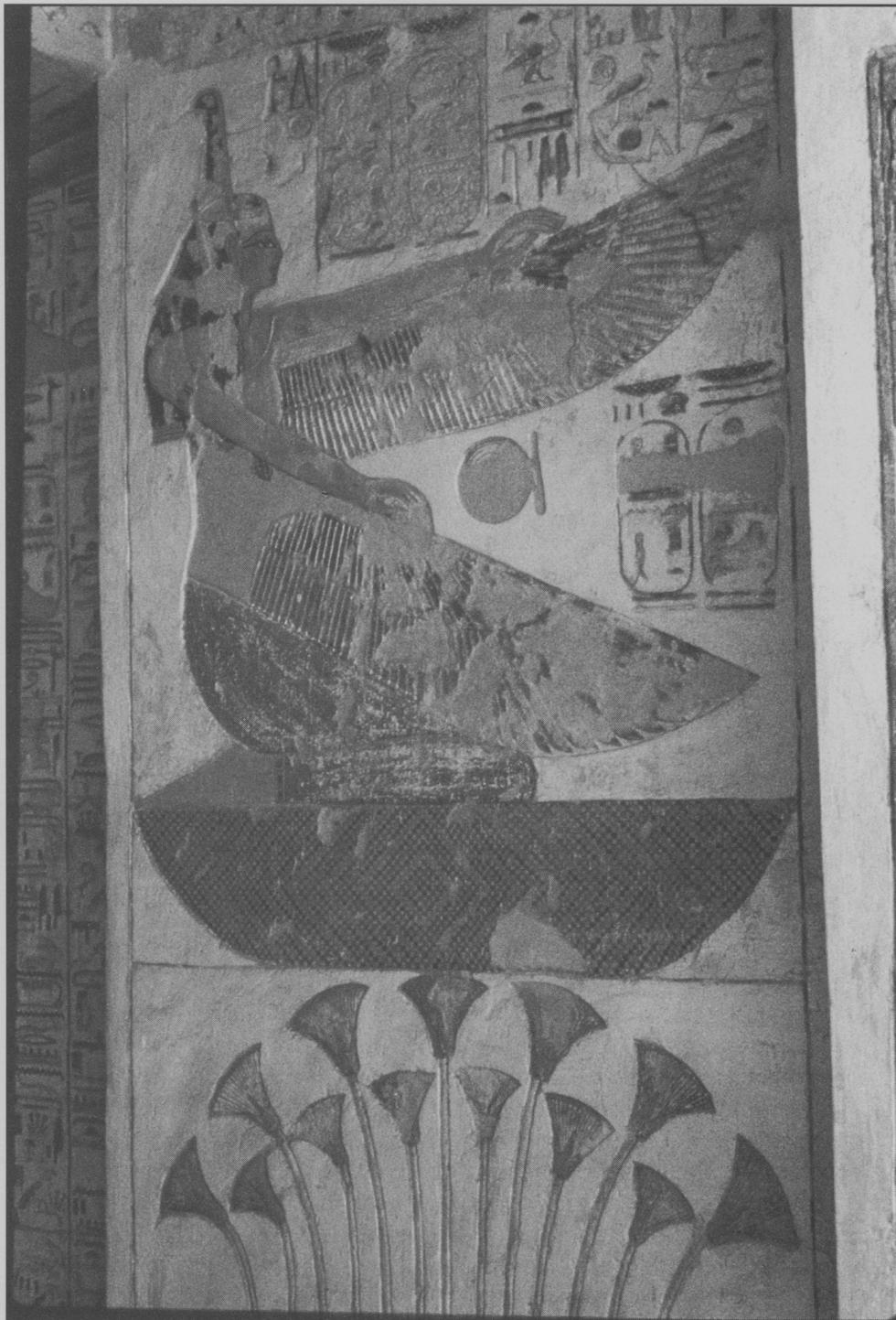


PLATE I: Kneeling figure of the Goddess Maat above papyrus clump on right hand jamb of entrance to tomb of Siptah. (Photo by R. Wilkinson).

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PLATE II: Double Osiris Shrine in the Tomb of Ramesses III (Photo by George B. Johnson).

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PLATE III: Decoration showing the king in the evening and morning barques of the sun god. Burial Chamber, Tomb of Ramesses IX (Photo by George B. Johnson).

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#### IV. Decorative Duality: The Upper and Lower Tomb

Another aspect of the symbolic reorientation of the tomb which seems to have taken place in the 19th Dynasty is the logical division of the tomb into a front, entrance, half (symbolically to the east) and the back half (symbolically to the west), giving precedence to the sun god Re in the front half and to Osiris, "Foremost of the Westerners," in the back. This conscious division may be clearly seen in the fact that from the time of Seti I, the king is shown at the entrance to the royal tomb greeting the sun god Re-Horakhti as a frontispiece to the "Litany of Re," which was now moved from the depths of the tomb where it was originally painted, and placed in the first corridors. At precisely the same time that the Litany of Re was moved to the front of the tomb, the large so-called "Osiris shrine" with its opposed images of the underworld god was also placed at the dividing halfway point of the tomb—on the far wall of the first pillared hall, directly above the steps into the lower reaches (pl. II). In this lower, back half of the tomb the sun god continues to appear, of course, but his images are usually much smaller than those of Osiris and other chthonic deities. Both Friedrich Abitz and Erik Hornung have stressed this division of the tomb into two halves, and Hornung has noted the precedence given to female deities in the upper half of the tomb and male deities in the lower half.<sup>11</sup> This realization in no way contradicts the respective stress on Re and Osiris in the two halves of the tomb, however, as the female deities are all essentially sky- and sun-related goddesses and the male deities chthonic ones, so that the two explanations are actually complementary.

In the 20th Dynasty, however, we see a strengthening, throughout the tomb, of the direct association of the deceased king with the sun god. In the tomb of Ramesses IV, for instance, the king's cartouches are inscribed along the ceilings of the halls leading into the burial chamber, surrounded by the stars of the heavens. Thus the king's names follow the path of the sun and clearly identify him with the solar journey, with the cartouches containing the king's names being the equivalent of the solar disks also found on the tomb ceilings and on the architraves of the Egyptian temple. The journey to and from the west is also reflected in the late Ramesside motif in which the king is shown, facing opposite directions, in the juxtaposed evening and morning barques of the sun god. Although the two barques appear randomly on the side walls of earlier tombs, they are now centrally positioned along the tomb's axis—as in the tomb of Ramesses VI, and that of Ramesses IX where the motif appears at the center or visual turning point of the rear wall of the sarcophagus hall (pl. III).

#### V. The Burial Chamber and Sarcophagus

To a certain extent, the burial chamber tends to function as an independent microcosm within the New Kingdom royal tomb, yet details of the decorative programs employed in certain burial halls indicate the same east-to-west, day-to-night orientation being utilized in this location also. For example, the alignment of the Nut ceiling in the burial chamber of Ramesses VI places the Books of the Day toward the tomb entrance and the Books of the Night toward the rear of the chamber in agreement with this principle, though other tombs exhibit variation in this regard.<sup>12</sup>

It may not be coincidental, therefore, that beginning with the 20th Dynasty we find the reorientation of the royal sarcophagus along the lines of the main axis of the tomb rather than at right angles to the axis as in earlier tombs. The sarcophagus (or the pit which

eventually replaces it) was consistently positioned from this time with the head to the tomb's far end, so that the king's head was now always symbolically aligned to the west, with the monarch looking toward the east, according to the symbolic east-west or *beta* orientation of the tomb which was clearly primary by this time, as seen in the sarcophagus chamber of Ramesses IV. It should be noted that this change also had the general effect of repositioning the representations of Isis and Nephthys which had been placed on the royal sarcophagus since the early 18th Dynasty. These images first begin to flank the figure of the king on the sarcophagus lid in the 19th Dynasty, and with the realignment of the sarcophagus which took place in the 20th Dynasty, the two images were now brought into alignment with the overall east-to-west symbolic orientation of the tomb.<sup>13</sup>

## VI. Alignment of the Royal Image

With this basic framework established, we have been able to begin to look at some of the less obvious details of this symbolism of alignment in the royal tombs. One such area is the alignment of the image of the king in the later Ramesside monuments. This is something which Friedrich Abitz had begun to investigate; and in a paper given at the Highclere conference<sup>14</sup> on the Valley of the Kings, Abitz commented that certain images—such as those of Ramesses IX in the third hour of Amduat in that king's tomb—seemed to show the king turned back toward the entrance of the tomb because in that tomb the entrance is in the actual west. Our own study indicates that these and other retrograde images of the king in the later Ramesside tombs are all cases associating the king directly with either the sun god or the god Osiris. Because the retrograde images face back toward the tomb entrance—from west to east symbolically—they thus associate the king with the rising sun or with the resurrected Osiris. Interestingly, those cases where the king is associated with the sun god usually show the association quite overtly, while those in which he is associated with Osiris are often much more subtle and almost covert in their association, though this is perhaps in line with the preeminently solar theme of the later Ramesside decorative program.

## VII. Conclusion

These, then, are some of the aspects of the decorative programs of the royal tombs which are now being examined in The University of Arizona's Motif Alignment Project. While the Project is certainly producing almost as many questions as answers, it is nevertheless already proving profitable in the quest to come to see the decorations of the royal tombs in a manner closer to the way in which the ancient Egyptians saw them.

Future work will continue the study of significant orientational details such as the alignment of the king's image and will also aim to fully map the development of the various orientational motifs used in the New Kingdom royal tombs. Further in-depth study must be conducted in all the early tombs of the 19th Dynasty when most of the motifs were established, and special attention must be given to tombs having transitional decorative programs in which the motifs are sometimes reformulated before appearing again in subsequent monuments in new, yet just as meaningful ways.

— The University of Arizona

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NOTES:

1 On the Egyptians' interest in cardinal alignment, see for example, R. Wilkinson, *Symbol and Magic in Egyptian Art* (London, New York, 1994), pp. 60-81. For the apparent non-cardinal alignment of the royal tombs, see F. Abitz, "Die Entwicklung der Grabachsen in den Königsgräbern im Tal der Könige," *MDAIK* 45 (1989), 1-25.

2 So, for example, the alignment of the Four Sons of Horus represented in the burial chamber of WV-23, the tomb of Ay. The orientation of individual representations has been discussed by several scholars—most notably E. Hornung—in studies of specific tombs, though little synthetic work has previously been attempted on the orientational use of motifs found in more than one monument.

3 E. Hornung, *The Valley of the Kings* (New York, 1990), p. 41.

4 The Theban Mapping Project has established a reading of 27° 02'23" east of true north based on the Karnak Temple grid. There are also other possibilities for the establishment of cardinal directions such as the direction of prevailing winds (see for example, J. Neumann, "The Winds in the World of the Ancient Mesopotamian Civilizations," *Bulletin of the American Meteorological Society* 58:10 [1977], 1050-1055), though stellar (including solar) and riverine determination of direction seem to have been the only forms used by the Egyptians for architectural alignment.

5 This was the conclusion of Abitz, *op. cit.*

6 See R. Wilkinson, "Symbolic Location and Alignment in New Kingdom Royal Tombs and their Decoration," *JARCE* XXXI (1994), 79-86.

7 J. V. Cerny, *The Valley of the Kings* (Cairo, 1973), pp. 28-31.

8 R. Wilkinson, "Symbolic Location...," pp. 82-83.

9 At the entrance to room N, to the left of the burial chamber, in the tomb of Seti I this orientation is apparently reversed with Wadjet being shown on the left side of the entrance and Nekhbet on the right, though this may be due to the fact that the Egyptians sometimes tended to view the decoration of side rooms off the tomb's main axis from the perspective of *leaving* these rooms.

10 Standing figures of Maat appear on either side of the entrance to the burial chamber of Horemheb, and the juxtaposed heraldic plants are found in the tomb of Seti I. But it is with Ramesses II that the motif of goddesses seated above the heraldic plants is set.

11 See the previous chapter by Professor Hornung in the present volume.

12 R. Wilkinson, "Symbolic Location...," p. 86.

13 The development of the symbolic east-west axis of the royal tomb may also explain a number of otherwise anomalous aspects of the later Ramesside monuments (for example, the *rsy*, found to the left behind the burial chamber in the tomb of Ramesses IV), as I have pointed out elsewhere (R. Wilkinson, "Symbolic Location...," p. 86).

14 F. Abitz, "Decorations in the Tombs of Ramesses IX," in C. N. Reeves, ed., *After Tut'ankhamun: Research and Excavations in the Royal Necropolis at Thebes* (London, 1992), pp. 165-85.

# Gates to the Underworld: The Appearance of Wooden Doors in the Royal Tombs in the Valley of the Kings<sup>1</sup>

*Catharine H. Roehrig*

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## Introduction

In June of 1994, I spent several weeks in the Valley of the Kings with the Theban Mapping Project, making additions and corrections to plans that are currently being prepared for publication.<sup>2</sup> Among other things, I was checking for the presence of door pivot sockets that appear to be ubiquitous in the Ramesside tombs. In my search for these seemingly minor details, I noticed a number of features around the entrance of the tomb of Ramesses II (KV 7) that led me to believe that this king was the first of the New Kingdom pharaohs to install a door on the entrance to his tomb. Time did not permit me to verify this theory in the field, so I continued looking into the subject after returning to New York. The following paper presents the results of this study: the evidence for the installation of doors in the royal tombs in the Valley of the Kings, from the reign of Tuthmosis III (KV 34) to the reign of Merneptah (KV 8). Since my research is based on published and archival material, and I have not yet been able to verify my findings in the tombs themselves, this paper should be seen as a preliminary presentation of the material.

A brief description of the sources is necessary, because some of them proved to be far less useful than I had hoped. Among the published sources on the royal tombs of the 18th and early 19th Dynasties, few authors have noted with any care the existence or location of doors. A notable exception is Howard Carter who excavated, at least in part, several of the tombs that predate Ramesses II. Carter seems to have taken an interest in all methods of blocking the doorways within the tombs and notes quite carefully the evidence for door installation.<sup>3</sup> More recent studies by John Romer and Friedrich Abitz, though not specifically dealing with doors, nonetheless include careful descriptions of door installations in a number of tombs. Unfortunately, the lack of detailed drawings and photographs sometimes makes it difficult to place accurately on a tomb plan the features described.

Among the unpublished sources, I had great hopes for the photographs taken by Harry Burton and other early photographers that are housed in the archives of the Egyptian Department of the Metropolitan Museum of Art. Unfortunately, for the purposes of this study, these were often disappointing. Most of the photographs were taken with a view to recording only the decoration in a tomb. The architecture, and the way the texts and scenes are integrated into the spaces created by this architecture, often were completely ignored. As a result, the few photographs that record evidence for the installation of doors do so by accident rather than design.<sup>4</sup>

Through my long association with the Theban Mapping Project (TMP), I also had access to the field notes and preliminary drawings of plans and elevations of the royal tombs.<sup>5</sup> It was the goal of the TMP to include all visible architectural details. As a result, I was able to verify the existence of most of the door installations that have been noted previously, and to identify several that, I believe, have not. However, as I mentioned above, the plans are currently being checked for details. Unfortunately for my study, the tomb of Ramesses II was not among the first tombs to be checked (last June, I was merely able to look into the first corridor through the modern metal gate), and I have several questions that the plans and field notes could not answer.

## Types of Evidence for Doors

In the following text, I have chosen to refer to the passageways between chambers as portals rather than doorways. This is done to avoid confusion, since the word “doorway” seems to imply the presence of a door. As will be seen, during the 18th Dynasty most of the “doorways” in a royal tomb were never intended to have doors. I will also identify the various chambers and corridors of each tomb using letter designations based on those established by Elizabeth Thomas in *The Royal Necropoleis of Thebes*.

Although no actual doors have been found in any of the royal tombs in the Valley of the Kings, several different types of evidence indicate that they were quite common, at least in the later tombs. Grooves, slots, and cylindrical sockets cut into the bedrock indicate the intended locations of doors and the methods of installation. In a number of tombs, doors were hung with the aid of a wooden beam set across either the ceiling or lintel, depending on the design of the portal. Only one of these beams was found *in situ*, but numerous others are attested by the slots and holes into which they were set. A more common method of installation was to drill simple sockets for the door pivots. Once again, depending upon the architectural design, these were carved either into the lintel and sill of the portal or into the ceiling and floor of the following corridor. The upper socket is always cylindrical and frequently quite deep, while the lower socket is often lengthened by a channel or groove that would have allowed the lower pivot to slip into place more easily when the door was being hung.<sup>6</sup> Such pivot sockets abound, especially in the later Ramesside tombs, but it is not always clear whether they actually were used for the installation of functional doors, as will be seen below.

Another, more indirect type of evidence for doors in the royal tombs is found in several ancient tomb plans of the Ramesside period. One of these is preserved on an ostrakon in the Egyptian Museum, Cairo (CG 25184).<sup>7</sup> This was found in debris associated with the tomb of Ramesses IX (KV 6), and the plan probably represents this tomb. Each of the portals along the tomb’s axis is shown to be closed with a wooden door. Another ostrakon, found near the tomb of Ramesses IV (KV 2), and probably representing this tomb, depicts the entrance of a Ramesside tomb closed with a double-leafed door that is secured with two bolts.<sup>8</sup>

By far the most famous and most detailed ancient plan is preserved on a papyrus in Turin.<sup>9</sup> This fragmentary document shows the second half of the tomb of Ramesses IV (KV 2) from corridor (D) to the end of the tomb. Physical evidence in the tomb itself suggests that the designer(s) intended to install double-leafed doors at each of the portals leading to the burial chamber. However, the plan of the tomb was modified, and the addition of a ramp leading from the middle of corridor (D), through chamber (E), and into the burial chamber

makes it doubtful that doors were ever installed in the last two portals.<sup>10</sup> The Turin papyrus shows the actual plan of the tomb, including the ramp that cuts through chamber (E). Nonetheless, it also shows double-leafed wooden doors blocking each of the portals along the tomb's axis. These doors are secured with double bolts, and the hieratic inscription above each of the axial portals reads "its door is fastened."

The information in these ancient tomb plans suggests that, at least by the mid-20th Dynasty, the perception was that the entrance and each of the axial portals of a royal tomb were secured by double-leafed doors, whether or not there were actually functional doors in place.

### Eighteenth Dynasty Tombs

Although doors were common in the later Ramesside tombs, the preferred method of blocking the entrance and several of the interior portals of 18th Dynasty tombs was to wall them up with stones.<sup>11</sup> In some cases, the walled-up portal was then covered with plaster and decorated to resemble the surrounding wall of the chamber, thus hiding the existence of the passageway.<sup>12</sup> The difference in concept between the walled-up, hidden portals of the 18th Dynasty and the 19th Dynasty doors that could be opened and closed, seems striking until one realizes that, even in the 18th Dynasty tombs, some portals were blocked with doors.

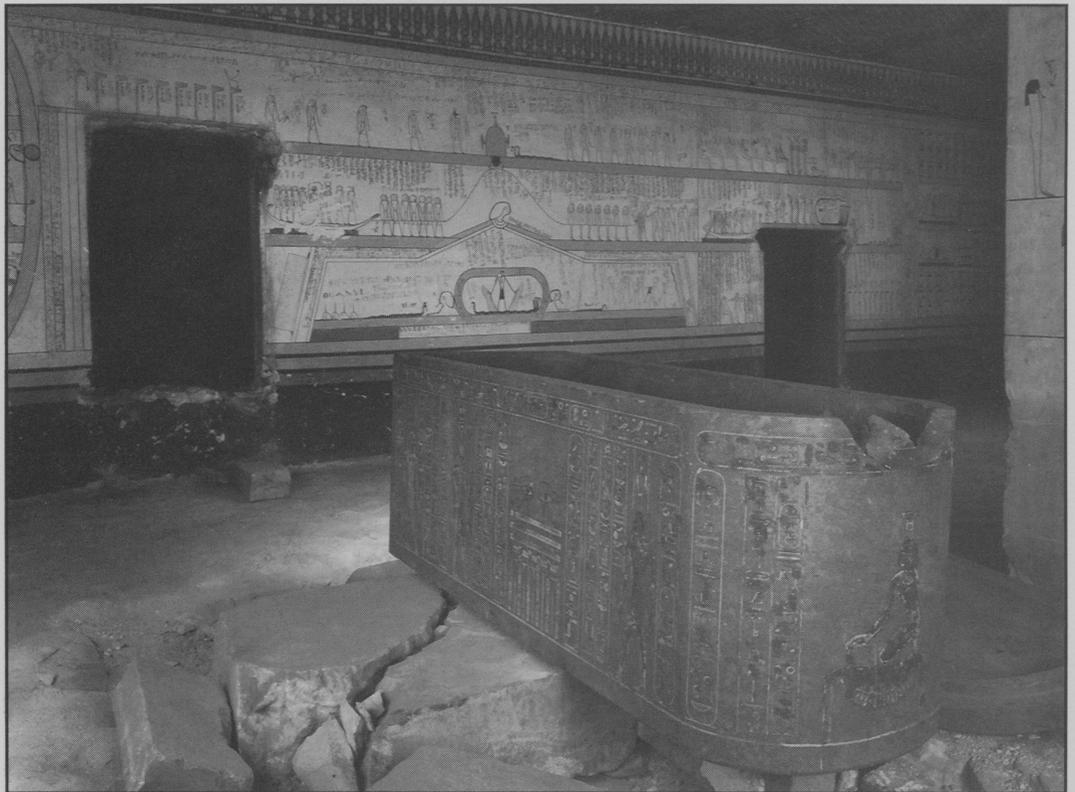


PLATE I: Photograph by Harry Burton, taken in 1928-29, showing the southeast wall of the burial chamber (J) in the tomb of Tuthmosis III (KV 34).

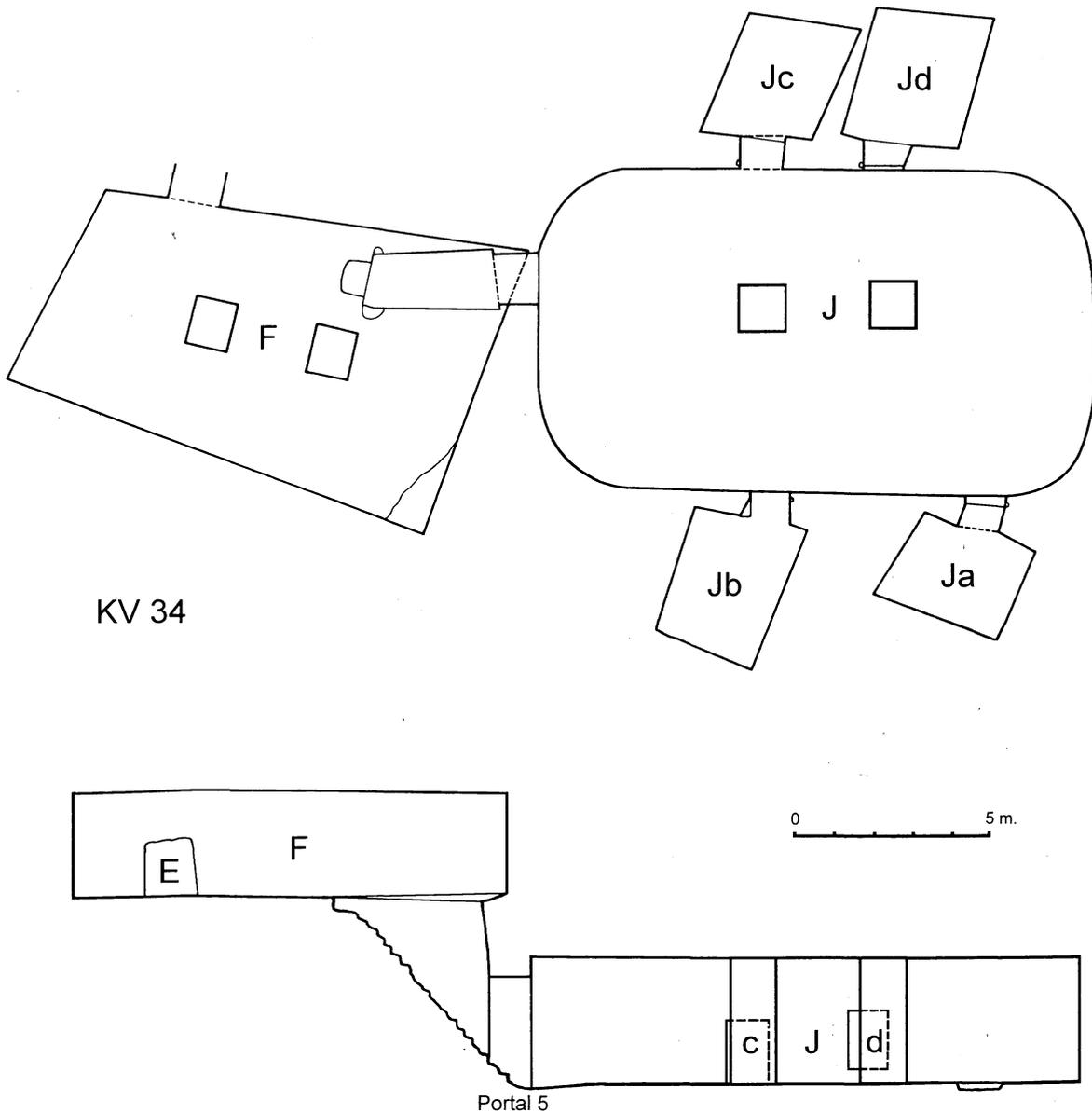


FIGURE 1: Plan and section of chambers F & J in the tomb of Tuthmosis III (KV 34).

The earliest evidence for the use of doors in the Valley of the Kings is found in the tomb of Tuthmosis III (KV 34, see fig. 1), where each of the four small rooms off burial chamber (J) was once blocked with a single-leafed wooden door.<sup>13</sup> The doors were hung with the aid of narrow strips of wood fixed at the outer edge of the soffit and sill of each portal; and a lip of plaster, against which the door could be closed, was built up along the reveals of the jambs. The wooden strip in each soffit was originally hidden by the plaster and decoration on the burial chamber walls, but this was damaged when the wood was torn out by ancient vandals (pl. I).<sup>14</sup> There is no evidence that doors were installed on any of the

axial portals in this tomb or in either of the other royal tombs in the Valley of the Kings that are usually attributed to this reign.<sup>15</sup>

The first time a door is used to block a portal along the axis of a royal tomb is in the next reign, in KV 35, the tomb of Amenhotep II. Not surprisingly, it was installed on the portal leading into burial chamber (J) from the preceding corridor (in this tomb, corridor (G), see fig. 2). The physical evidence suggests that a single-leafed door, hung at the left, was placed in front of the portal at the end of corridor (G), and was hung with the aid of a wooden beam. To install this beam, a rectangular hole was cut into the wall at ceiling level on either side of the corridor—a narrower one at the left, and a wider one at the right which allowed the beam to be slipped into place. Another rectangular hole, perhaps for a bolt, was cut about half way up the right wall, near the portal (this is not shown in fig. 2). The floor of (G) has a gentle downward slope, but, near the end of the corridor, the floor has been levelled in an area forming a somewhat irregular arc which would have allowed the door to swing open against the left wall.

As will be seen below, the fact that this door opens towards a person entering the tomb and is hung at the left makes it something of an anomaly. After KV 35, doors installed along the main axis of a tomb always open in, making progress into the tomb more convenient.<sup>16</sup> For as long as single-leafed doors continue to be used, they always are hung at the right, not at the left as here. Considering these later preferences, it seems likely that the decision to add the door in KV 35 was made after most of the work of excavating the tomb had been completed. In this case, its odd positioning was probably dictated by the existing architecture. In order for the door to open in, it would have had to be installed on the (J) side of portal 7. This would have been an awkward installation due to the height of the ceiling and the depth of the step from the doorsill to the floor.<sup>17</sup> Placing the door at the end of corridor (G) would have been much easier, although the sloping floor of the chamber had to be levelled.<sup>18</sup>

In the tomb of Tuthmosis IV (KV 43), the next in the sequence of royal tombs, doors were installed in the same locations as in KV 35 (see fig. 3). Each of the four subsidiary chambers off burial chamber (J) was provided with a single-leafed door which was hung at the right and, when closed, could be bolted into a hole in the left jamb.<sup>19</sup> The doors were hung with the aid of a wooden beam set across the inner edge of the soffit of each portal. One of these beams was found in situ when the tomb was uncovered in 1903.<sup>20</sup>

There was also a door blocking the portal leading into burial chamber (J) of this tomb, but the design and method of its installation was an improvement over the corresponding door in KV 35. As in all royal tombs of the 18th and early 19th Dynasties, the portals along the axis of KV 43 are quite thick from beginning to end, the reveals sometimes measuring more than a meter in length. However, portal 9 in this tomb, the one between antechamber (I) and burial chamber (J), is exceptionally long and has two levels of jambs and lintels. This is the first occurrence, in the Valley of the Kings, of a type of portal in which the first lintel and pair of jambs act as a kind of stone door frame against which the door may be closed.<sup>21</sup> This architectural feature, in a somewhat modified form, becomes quite common in later tombs, although the simpler type of portal, with its single pair of very thick jambs, continues into the early 19th Dynasty as the dominant type.<sup>22</sup> For lack of a better term, I will refer to the more complicated variety as a compound portal.

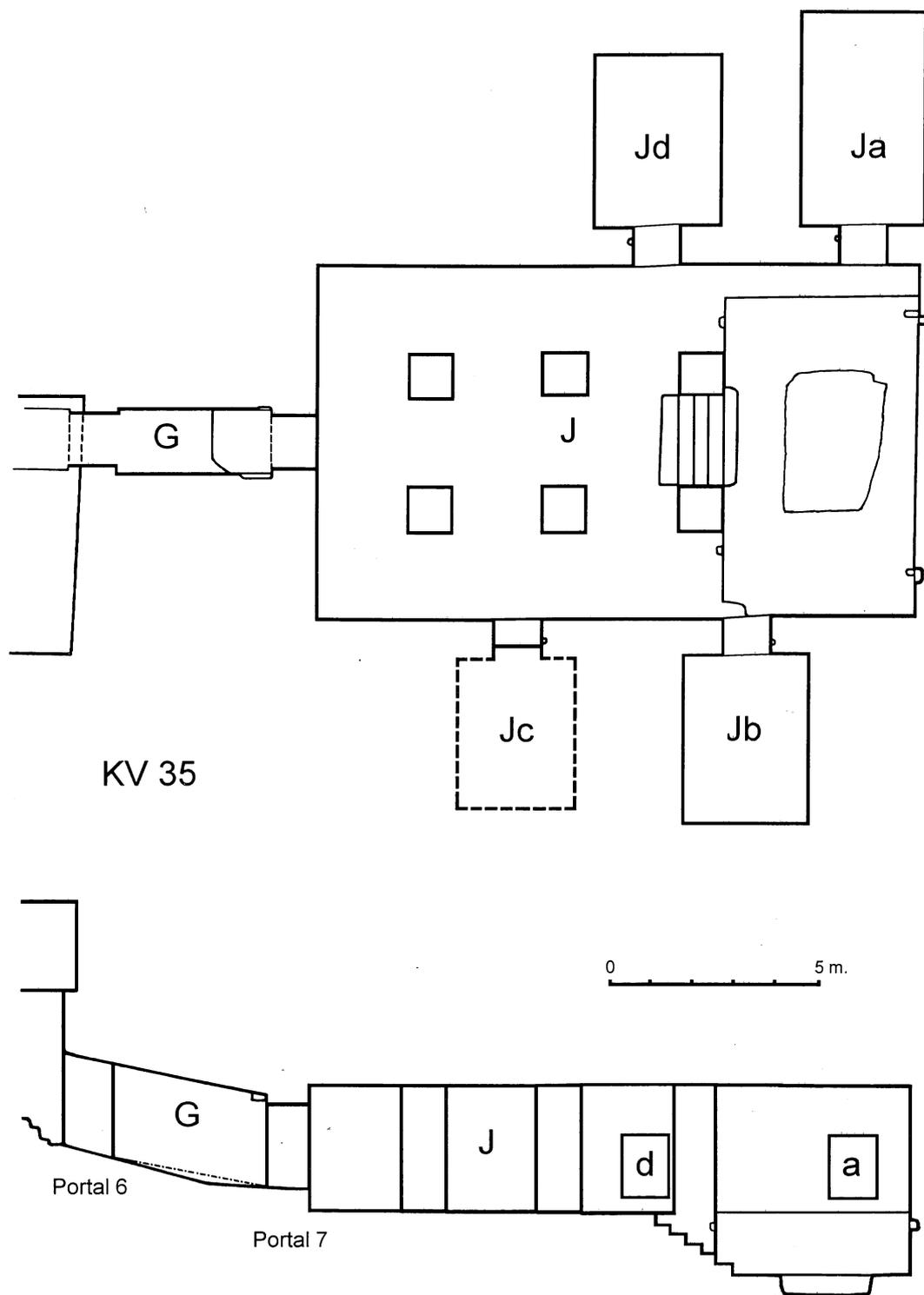
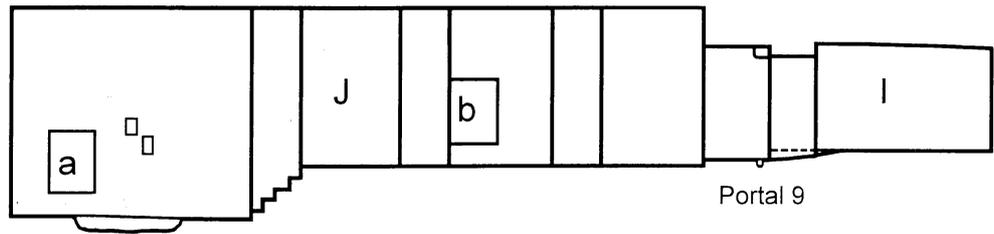


FIGURE 2: Plan and section of chambers G & J in the tomb of Amenhotep II (KV 35).



KV 43

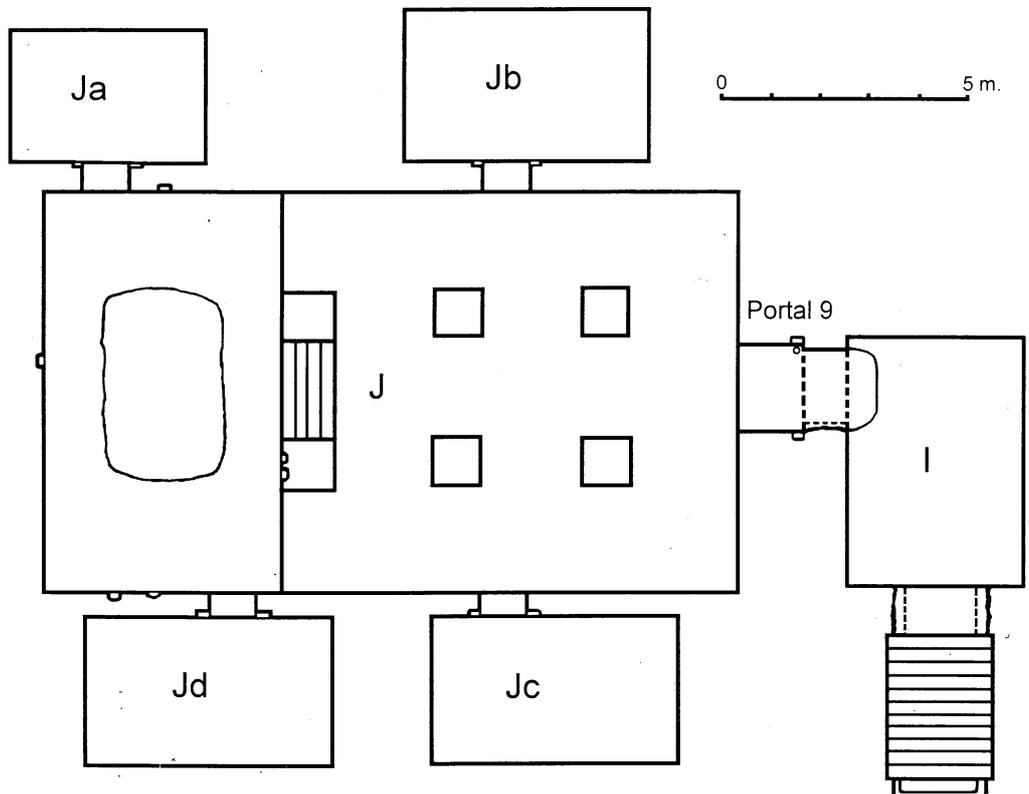


FIGURE 3: Plan and section of chambers H-J of the tomb of Tuthmosis IV (KV 43).

In KV 43, the door in portal 9 is again hung with the aid of a wooden beam. Just beyond the first pair of jambs as one enters the portal, a hole has been cut into the second reveal on either side near the soffit, and a socket for the lower door pivot has been cut into the right corner of the sill. Because of the unusual length of this section of portal 9, the open door would have rested against the right reveal without jutting out into the burial chamber. In this way, the door, when open, would not have impeded any official activity within the tomb. The ability to hide the open door inside the portal itself, an eminently practical aspect of this design, was not repeated in the succeeding 18th Dynasty tombs, although it reappears later in some of the Ramesside tombs, beginning with KV 8, the tomb of Merneptah.

At this point, it is interesting to note the progressive adaptations in the installation of doors as they are incorporated into the design of the royal tomb. In the tomb of Amenhotep II (KV 35), the addition of the door at the end of corridor (G) is somewhat awkward, opening, as it does, into the face of someone entering the burial chamber. In fact, the striking difference between the location and orientation of this door and those that follow seem to indicate that its installation in KV 35 was not part of the original plan. By the next reign, in the tomb of Tuthmosis IV (KV 43), the installation of the door has been more carefully thought out and has become an integral part of the design of the tomb. The doors on the four subsidiary chambers off (J) show even more of a change from the first, rather shoddy, installation of subsidiary doors seen in the tomb of Tuthmosis III (KV 34)<sup>23</sup> to the much more sophisticated method evident in the tomb of his grandson, Tuthmosis IV (KV 43).

The next royal tomb, WV 22, was excavated in the Western Valley of the Kings, hence the designation WV. The foundation deposits are inscribed with the name of Tuthmosis IV, but the only name that appears in the tomb's decoration is that of his son, Amenhotep III. As in the previous two royal tombs, a door was installed at the entrance to the burial chamber of WV 22. Once again, it was a single-leafed door that opened to the right and was hung inside a compound portal with the aid of a wooden beam. In this tomb, however, the door would have protruded somewhat into burial chamber (J) when it was opened. Neither of the

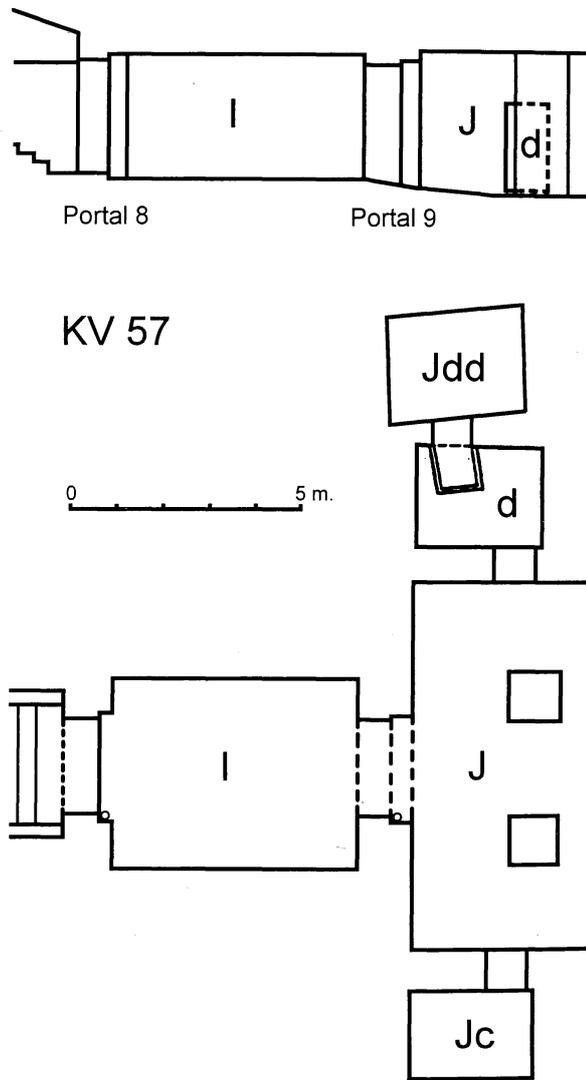


FIGURE 4: Plan and section of chambers H-J of the tomb of Horemheb (KV 57).

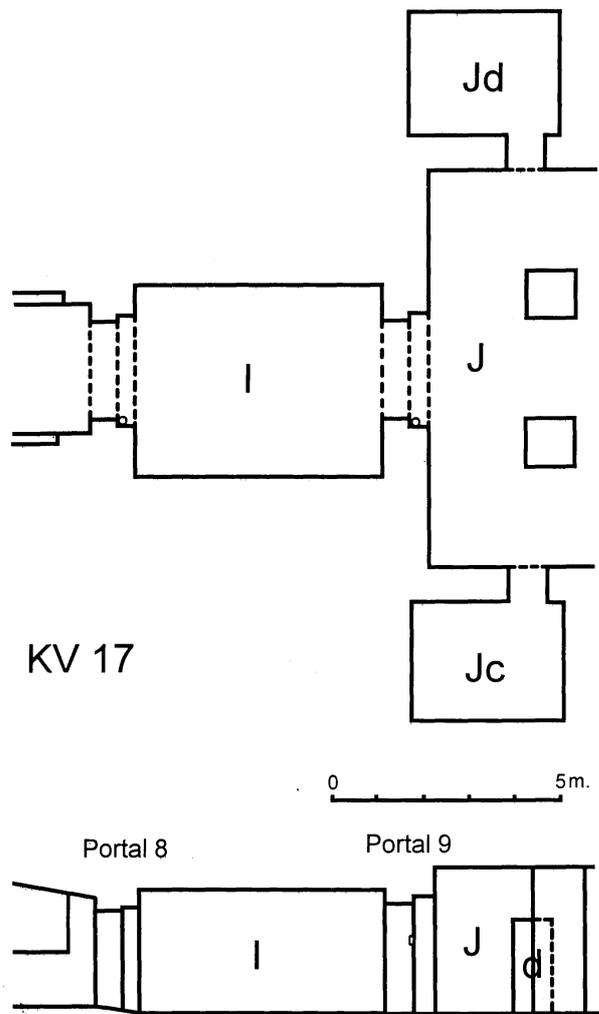


FIGURE 5: Plan and section of chambers H-J in the tomb of Seti I (KV 17).

steeply sloping corridors and long portals, indicates that the designer(s) did not intend to install other doors along the axis. However, there is evidence that another door eventually was installed.

If one examines the entrance of KV 17, it is clear that, at some time after the tomb's completion, a double-leafed door was hung just beyond the first portal (see fig. 6). The various sockets and channels cut around the inner face of portal 1 suggest that the door leaves were installed in a rather makeshift fashion. To allow the leaves to swing inward without hitting the sloping ceiling, they had to be hung quite low, leaving a fairly large opening between the top of the closed door and the soffit of portal 1. In order to close this gap, an irregular horizontal channel was cut into the decorated surface of the inner face of each jamb near the ceiling so that a piece of wood could be installed (see pl. II). This is the first time that a double-leafed door is used in a royal tomb in the Valley of the Kings. The choice of this type of door is not surprising under the circumstances. It would have been

Theban royal tombs immediately following WV 22 seems to have had any doors.<sup>24</sup> However, since KV 62 (Tutankhamun) was not designed as a royal tomb and WV 23 (Ay) has an abbreviated plan, this is not surprising.

In the last royal tomb of the 18th Dynasty, that of Horemheb (KV 57), a second door is added along the axis (fig. 4). At the end of the tomb, a single-leafed door was placed on the entrance to antechamber (I) as well as on the entrance to burial chamber (J). As one would expect, both doors were installed within compound portals and both opened in and to the right. In contrast to the earlier tombs, however, the designer of KV 57 dispensed with the use of wooden beams to hang the doors, and this practice does not reappear until several generations later, in the tomb of Ramesses II (KV 7).

### Early Nineteenth Dynasty Tombs

The founder of the 19th Dynasty, Ramesses I, began a typical royal tomb in the central part of the Valley of the Kings. However, the plan was cut short, and there is no evidence of doors. Ramesses' son, Seti I, built a fully developed royal tomb, KV 17. It is quite similar to Horemheb's tomb (KV 57), and doors were installed in the same two axial portals, those leading into (I) and (J) (fig. 5). Both doors open in and to the right. The plan of the tomb, with its

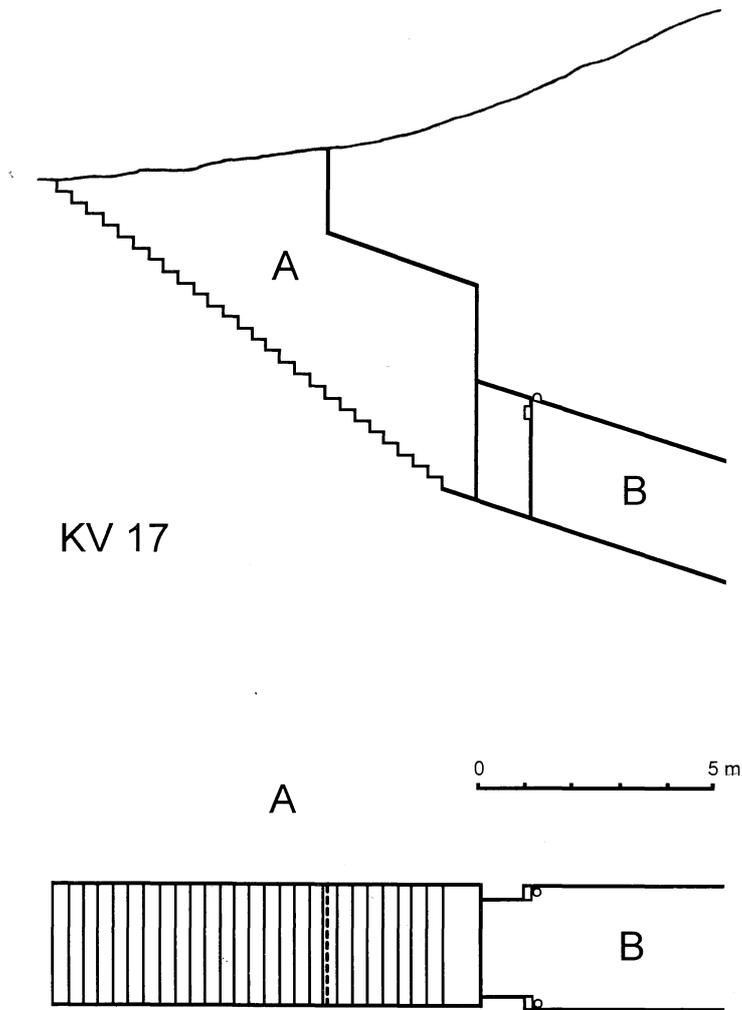


FIGURE 6: Plan and section of corridors A-B in the tomb of Seti I (KV 17).

impossible to install a single-leaf door in this position without cutting out a large portion of the ceiling, a task that would have required a great deal more effort.

The reason for the seemingly last-minute installation of a door in this position is by no means clear. Seti's tomb contains a number of well designed additions to the royal tomb plan, including the beautifully vaulted ceiling of the crypt, with its exquisite astronomical decoration. This is also the first tomb in which every chamber along the axis is decorated, from the burial chamber through corridor (B) and including the inner face of portal 1 which was damaged by the addition of the doors.<sup>25</sup> The awkward installation of the door leaves suggests that they were not put in place at the request of Seti I, whose tomb designer might be expected to have found a more graceful solution to the challenge of placing a door where no door was meant to be.

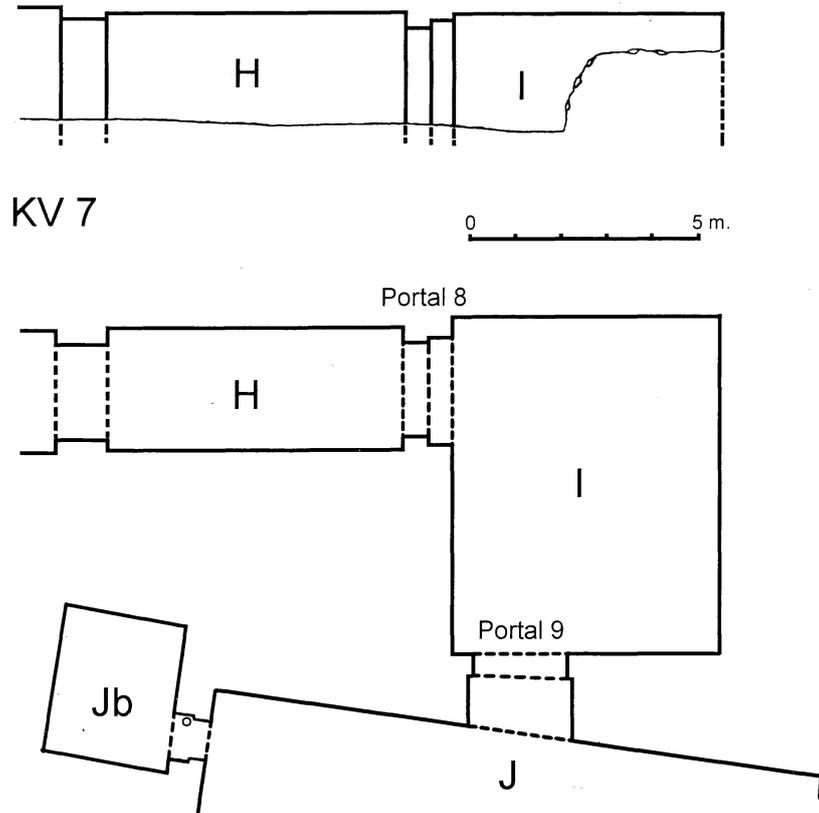


FIGURE 7: Plan and section of chambers H-J in the tomb of Ramesses II (KV 7).

It seems more likely that the doors were installed sometime after Seti's death by Ramesses II. This may have been done in order to provide some temporary measure of security while the tomb was being provisioned between Seti's death and his funeral. However, since the tomb was decorated all the way to the entrance with funerary texts, this door may have been intended to protect an area that had been ritually purified. Or, again because of the presence of funerary texts immediately inside portal 1, the doors may have been deemed necessary to close off the very entrance to the netherworld until the king was buried, the tomb was permanently sealed, and the entrance hidden. Whatever motivated the addition of double doors to the entrance of KV 17, it was probably at this time that Ramesses and his designer(s) began planning a number of alterations to the royal tomb plan that are evident in Ramesses' tomb (KV 7).

As one would expect by this time, in KV 7, the portals leading into antechamber (I) and into burial chamber (J) both have been designed with compound jambs and lintels, suggesting that they were fitted with doors (fig. 7). No pivot sockets were recorded on the TMP plan or in the field notes, but both portals are damaged and the upper pivot sockets may have disappeared.<sup>26</sup> One would expect to find the pivot holes at the right side of each soffit,

but it is possible that KV 7 deviates from the norm in these two locations. The plan of this tomb is unusual in that its axis turns 90 degrees to the right, instead of to the left, as in all earlier tombs that make a single right angle turn. At the entrance into antechamber (I), the Egyptian builders might have hung the door on the left so that it would have opened against the left wall rather than into the center of the chamber. Owing to what appears to be a miscalculation on the part of the builders, burial chamber (J) is slightly off-axis with the result that the left jamb of portal 9 is longer than the right jamb. Having a door hung at the left and open against this jamb would have been more practical. Further examination of these two portals is obviously required and might produce some interesting information.<sup>27</sup>

Farther inside the tomb, there is a proliferation of subsidiary chambers, each fitted with a compound portal and a single-leafed door hung at the right. This is the first time that the more elaborate compound portal is used on every subsidiary chamber off (J), but this is a relatively minor innovation in the overall development of the royal tomb plan.<sup>28</sup> The truly significant changes made by Ramesses II and his tomb designer(s) occur at the entrance to the tomb (fig. 8), where the portal leading into corridor (B) is provided with a door and the first element of the tomb, (A), has been substantially redesigned.

These two innovations will be dealt with separately, beginning with the door on portal 1. None of the royal tombs that precede KV 7 were designed with the intention of using a door to block the first portal. In every tomb from KV 34 (Tuthmosis III) through KV 17 (Seti I), the soffit of portal 1 slopes. Inside the tomb, the ceiling of corridor (B) continues on the same sloping plane as the soffit of the preceding portal with no lintel separating the two (see fig. 9). This design precludes the use of a door which, depending on where it was hung, would be prevented from opening in by the sloping ceiling of (B) or out by the sloping stairway of (A).

The same design has been used in KV 7 (fig. 8), but a new feature has been added. A section of the ceiling at the beginning of corridor (B) has been cut away, creating a level area long enough to allow a very large single-leafed door to be opened into the corridor. Rectangular holes also have been cut into the corridor walls at ceiling height to secure a wooden beam used in hanging the door. This is the first use of a wooden beam since the time of



PLATE II: Photograph by Harry Burton of the inside of the left jamb of gate 1 in the tomb of Seti I (KV 17)

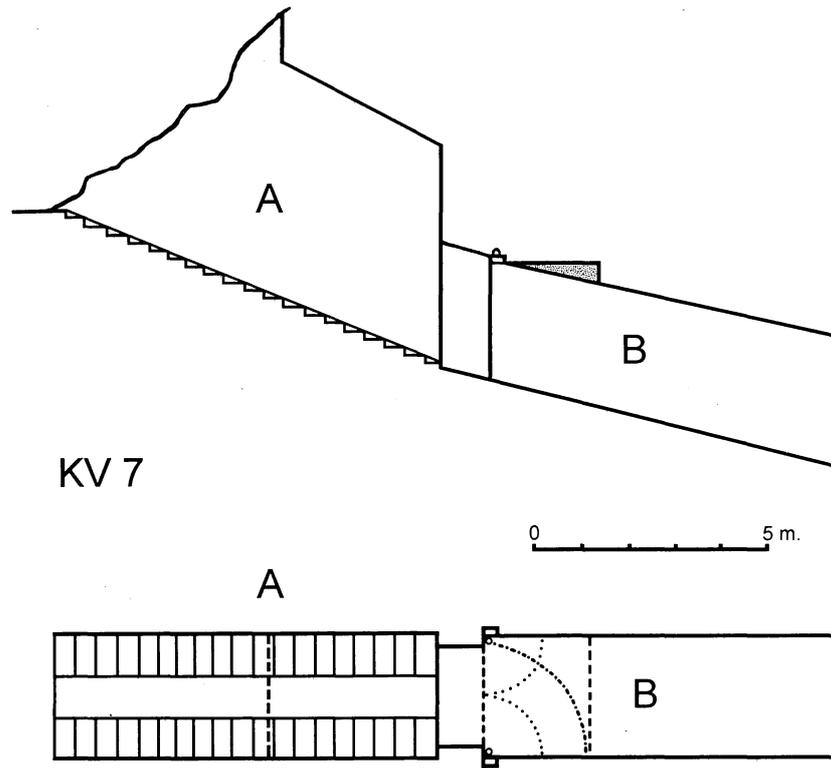


FIGURE 8: Plan and section of corridors A-B in the tomb of Ramesses II (KV 7).

Amenhotep III. The size of this portal would have required a huge single-leafed door to cover the opening, and it is possible that the beam was thought necessary to provide a more secure anchor for the upper pivot. As will be seen below, the builders changed their minds about using a single-leafed door.

The levelled section of the ceiling is frequently incorporated into the design of later royal tombs, both in corridor (B) and in other places where a door must open into a sloping corridor. But in the tomb of Ramesses II, this feature seems to have been added after the majority of the work on the tomb was completed. To see this, one only has to look at the layout of the decoration on the left wall just inside corridor (B). The scene of the king facing Ra-Horakhti is a close copy of one found in the same position in KV 17 (fig. 10), the tomb of Seti I. In the earlier tomb, the triangular space above the heads of the two standing figures has been filled with a winged cobra whose shape conforms to the slope of the ceiling (fig. 10a). The same winged cobra may be seen in KV 7, indicating that the decoration was designed to accommodate another sloping ceiling (fig. 10b). The triangular area above the snake's back, created when the ceiling was levelled for the installation of the door, has been left slightly rough and undecorated, suggesting that this was done after the scene was laid out, or even after it was completed. A similar rough triangle may be seen above the text on the opposite wall.

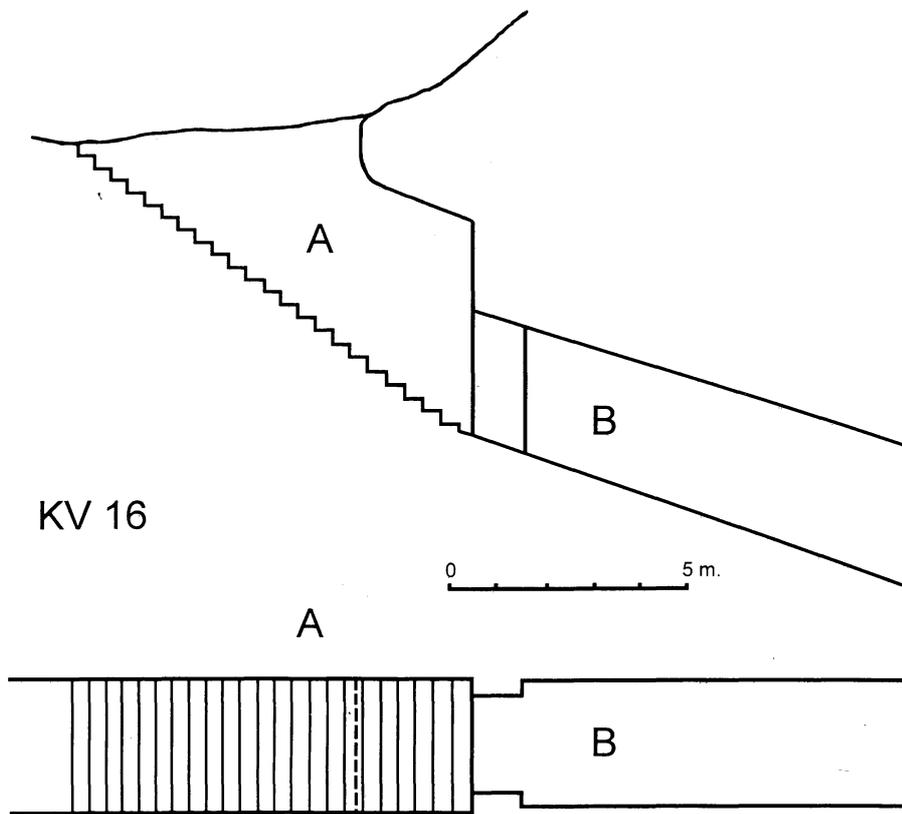


FIGURE 9: Plan and section of corridors A-B in the tomb of Ramesses I (KV 16).

Another feature of the entrance also suggests that the work of excavating the tomb was completed before the problems of installing a door at this location had been solved. In KV 7, as in earlier tombs, the floor around the entrance slopes sharply. This would have left the end of an open single-leafed door hanging up to 60 cm. above the surface, and would have forced a person entering the tomb into the awkward task of opening the door while walking down a sloping floor. In later tombs, the surface beneath the arc of an opening door is always level (see, for example, the entrance of KV 8, fig. 14). Evidently, the builders also found this installation awkward; or, perhaps, they found that a single-leafed door of the size required was too heavy. In the end, a double-leafed door was installed instead, as may be seen from the presence of pivot sockets on both sides of the corridor.

Besides being the first New Kingdom king to install a door on portal 1 of his tomb, Ramesses made other significant alterations in the royal tomb plan. All of the previous kings' tombs in the Valley of the Kings, including those of Ramesses I and Seti I, were excavated in such a way that their entrances could be hidden from view after the burial of the king. In these tombs, the initial architectural element, (A), is invariably a steep stairway. In the earlier tombs, (A) is an open stairway leading directly to the first portal which

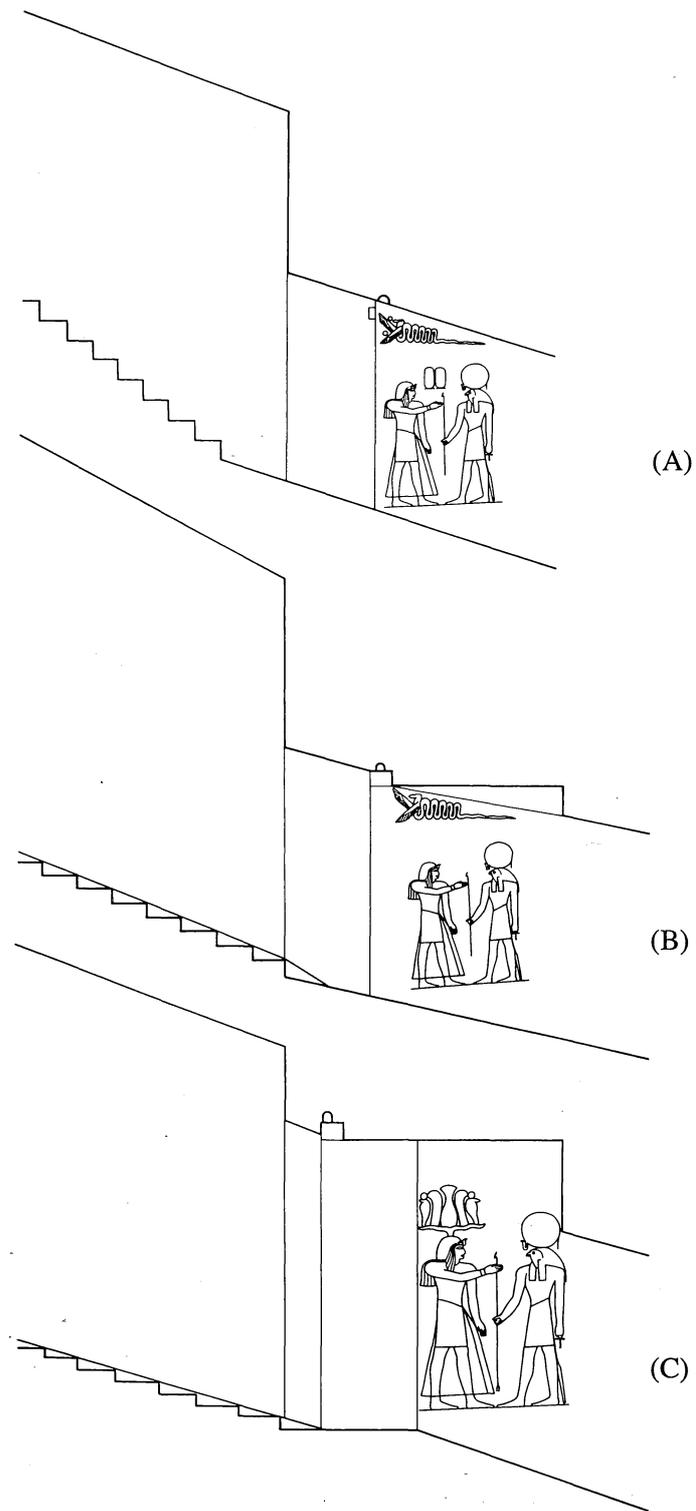


FIGURE 10: Comparison of the decoration on the left wall of corridor (B) in the tombs of Seti I, Ramesses II, and Merneptah. (Drawings by B. Girsh).



PLATE III: Photograph by Harry Burton of the decoration on the left wall just inside gate 1 (corridor B) in the tomb of Seti I (KV 17).

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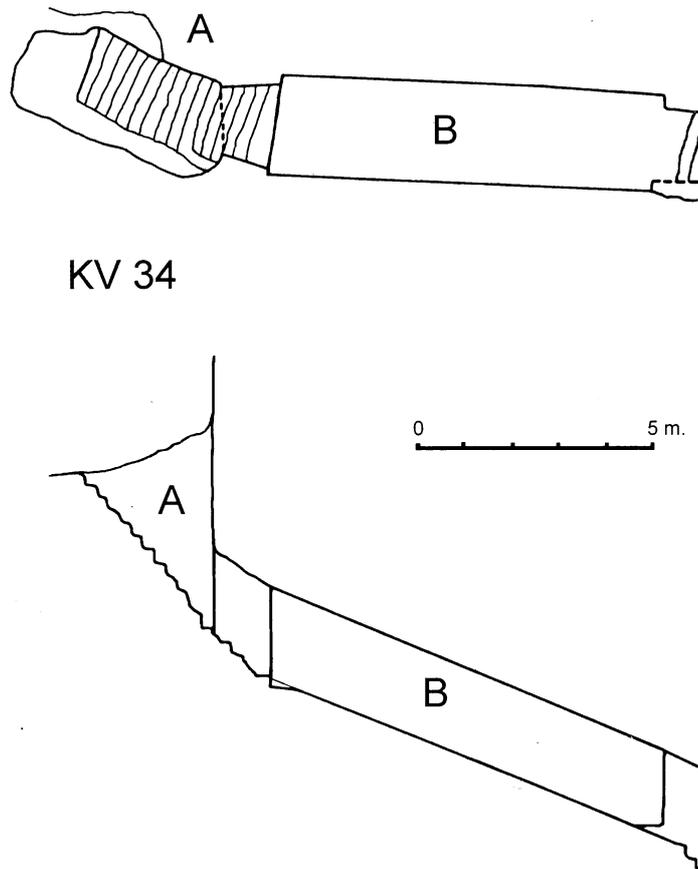


FIGURE 11: Plan and section of corridors A-B in the tomb of Tuthmosis III (KV 34).

is carved into the same vertical plane as the cliff face above (see the entrance of KV 34, the tomb of Tuthmosis III, fig. 11). In the later tombs, especially those of Horemheb, Ramesses I and Seti I, stairway (A) tunnels more directly into the hillside or cliff, creating an overhang of bedrock that sometimes covers as much as half of the stairway and constricts the opening to the surface.<sup>29</sup> In all of these tombs, when the time came to hide the entrance, the first portal was blocked with stones and sealed with mud plaster, stairway (A) was then filled with excavation debris and rubble, and the location of the tomb was camouflaged to resemble the surrounding landscape.

Unlike his predecessors, Ramesses II seems to have been much less concerned with hiding the entrance to his tomb. He had stairway (A) redesigned to be more open (compare figs. 10A & 10B). The overhang was raised, letting in more light. The steep staircase that, in the tomb of Seti I, had a slope of approximately 35 degrees, became a ramp flanked by shallow stairs with a slope of about 20 degrees.<sup>30</sup> Although his father was the first king to decorate all of the chambers inside a royal tomb, Ramesses was the first king to decorate the outside of his tomb and the reveals of the jambs of the first portal. These alterations to

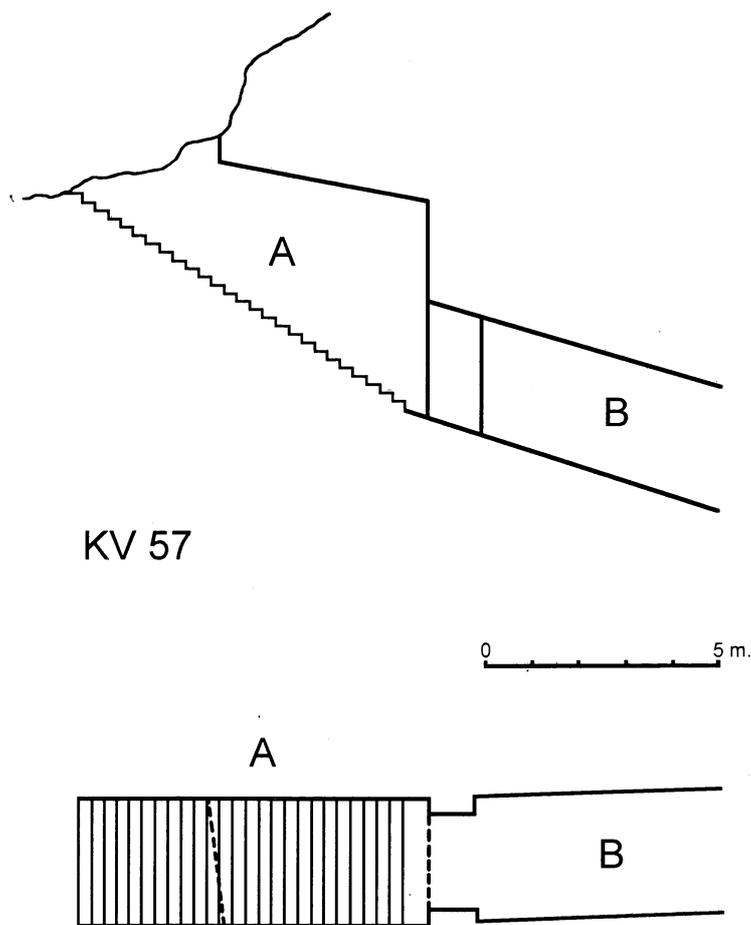


FIGURE 12: Plan and section of corridors A-B in the tomb of Horemheb (KV 57).

(A) and the installation of a door on portal 1 suggest that Ramesses did not intend to hide the entrance to his tomb, and may even have expected it to be re-entered after his funeral.

Assuming that Ramesses intended to have KV 7 re-entered after his death, two more alterations inside the tomb needed to be accomplished. As has been mentioned above, in the completed royal tombs of the 18th Dynasty, and in the tomb of Seti I, as well, portals 4 and 5 on either side of well chamber (E) generally show evidence of having been blocked with stones, and it seems likely that these two portals, along with the entrance to the tomb, were always blocked immediately after the burial of the king. In KV 7, portals 4 and 5 were designed with the same simple, thick jambs found in these portals in all previous tombs. Clearly, there was no intention, when the tomb was planned and excavated, of placing doors on, or in, either of these portals. However, during his research for a monograph on the significance of chamber (E) in the royal tombs, Friedrich Abitz found one preserved pivot hole indicating that a door had been hung on the (F) side of portal 5.<sup>31</sup>

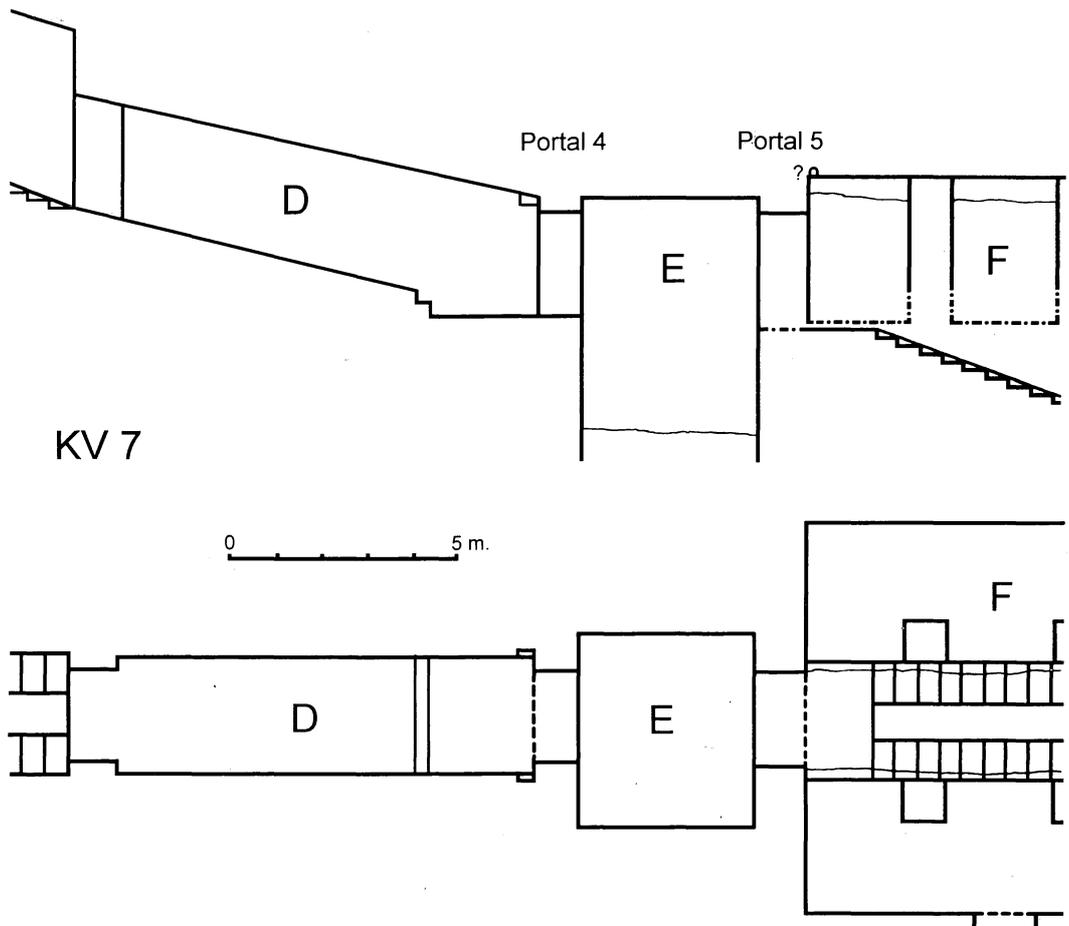


FIGURE 13: Plan and section of chambers D-F in the tomb of Ramesses II (KV 7).

Abitz also found evidence that a door had been hung on the (D) side of portal 4 using a door beam set across the corridor at ceiling level (see fig. 13). A door hung in this position, in front of a portal at the end of a corridor, would have opened into the face of someone entering the tomb; a circumstance that had been studiously avoided in the Valley of the Kings since it occurred in KV 35, when the first door was hung on an axial portal of a royal tomb. This does not indicate a change of preference on the part of Ramesses II and his builder(s). Rather, it indicates a change in plan that occurred after the tomb had been excavated.<sup>32</sup> This interpretation is supported by another feature of corridor (D) that is recorded in the TMP drawings. It is clear from the section drawing in fig. 14 that the floor was intended to have a uniform slope from the beginning of portal 3 to the beginning of portal 4. However, about two-thirds of the way along corridor (D), there is a steep drop where a large section of floor has been levelled to allow the door to open back into the corridor. As was true at the entrance to the tomb, where the ceiling had to be cut away, the levelled

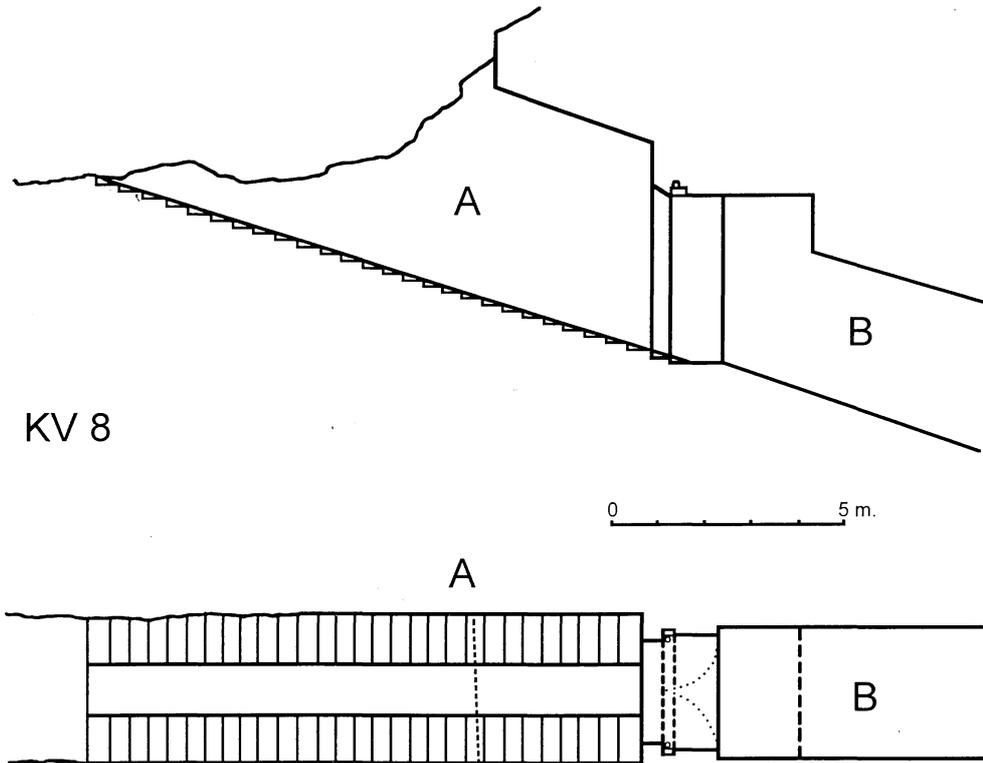


FIGURE 14: Plan and section of corridors A-B of the tomb of Merneptah (KV 8).

section of floor in corridor (D) is large enough to have accommodated a single-leafed door, though it seems more likely that a double-leafed door was eventually installed.<sup>33</sup>

By the reign of his successor, Merneptah, the alterations Ramesses II made to the entrance of KV 7 had been fully integrated into the royal tomb plan. Although one would not know it from the modern lay of the land, the design of the entrance of Merneptah's tomb, KV 8 (fig. 14), is very similar to that of his father. Like KV 7, it begins with an entryway consisting of a central ramp flanked by broad, shallow, slightly sloping stairs, and leading to a decorated facade.<sup>34</sup> If one examines portal 1, it is clear that, from the outset, the door was an integral part of the plan. Like his father, Merneptah used a double-leafed door, which was subsequently the only type installed along the axis of a royal tomb. Unlike KV 7, the first portal of Merneptah's tomb has compound jambs and these are made long enough to hold the open door leaves (the first time this has happened since it occurred in the tomb of Tuthmosis IV, when the compound portal was introduced into the Valley of the Kings). In spite of this,<sup>35</sup> the builders unnecessarily, and extravagantly, levelled off the ceiling at the beginning of corridor (B), creating more wall space for decoration, and leaving an overhanging panel more than a meter deep across the width of the corridor. The texts and decorative elements used in the two previous tombs were redesigned in a grand manner to fill the larger wall space (see fig. 10c), and the overhanging panel was decorated as well.<sup>36</sup>

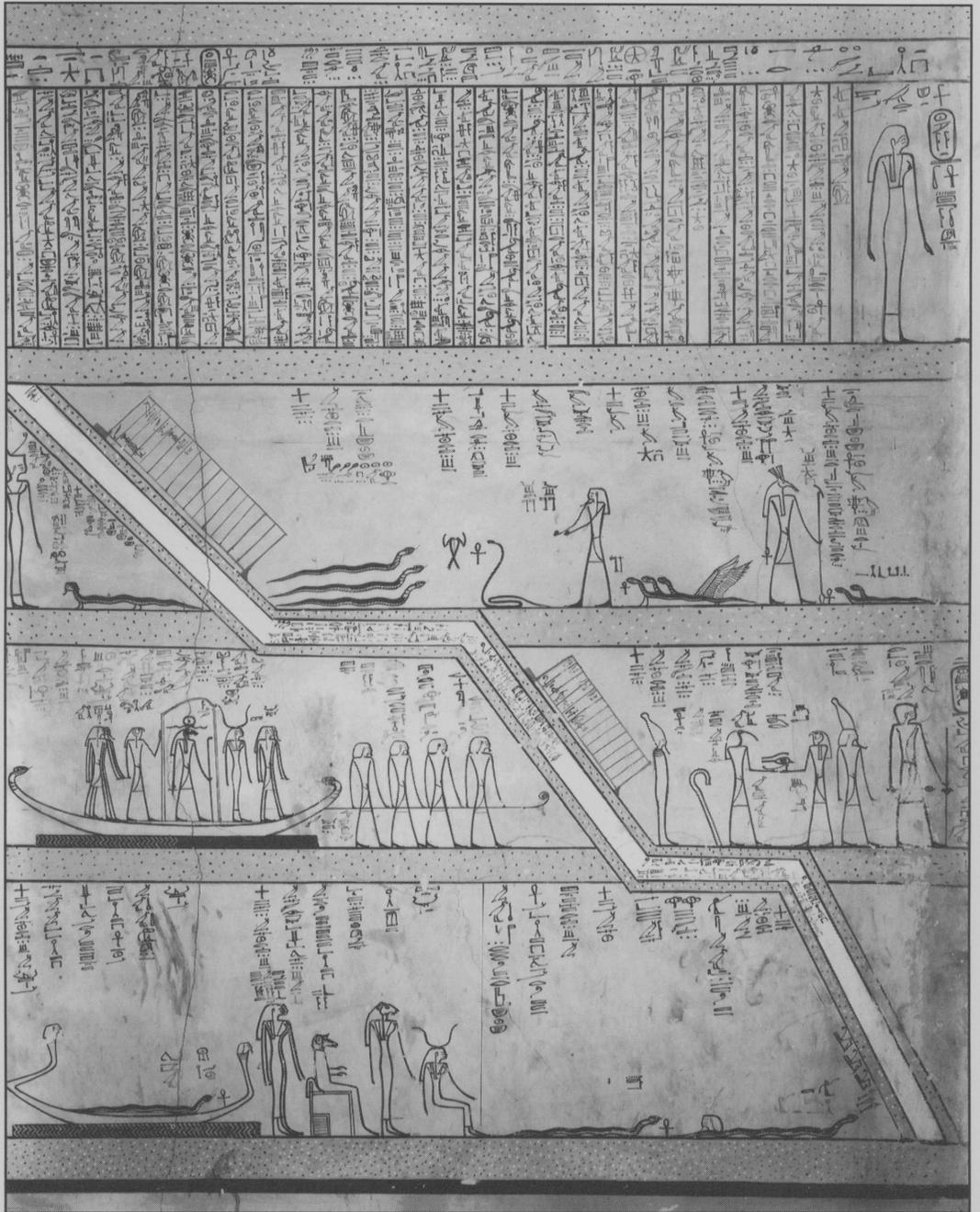


PLATE IV: Photograph by Harry Burton of the west wall of the burial chamber in the tomb of Tutmosis III (KV 34).

Merneptah's tomb faces almost due east and, assuming that the doors were ever opened, the configuration of portal 1 and the beginning of Corridor (B) would have made the entrance of KV 8 quite spectacular with the rising sun shining on the decorated panel above the portal and bright light pouring through the open door, illuminating the decoration on the walls and the overhang just inside the corridor.

## Conclusions

It is clear that by the end of the 18th Dynasty wooden doors had become an accepted, and, perhaps, even a necessary component in the design of the rooms closely connected to the burial chamber of a king's tomb. However, in this period, doors never were used to replace or even to reinforce the stone blocking commonly found at the tomb entrance and on either side of well chamber (E). If the Egyptians were not using doors as a replacement for stone blocking, what was the purpose of the doors?

From his careful observation of the architecture inside the tomb of Tuthmosis III (KV 34), John Romer suggests, convincingly, that the doors in this tomb were used to secure the subsidiary chambers after they had been filled with funerary goods, but before the decoration of the burial chamber had been completed. In this case, the tomb would have been stocked and the chambers sealed sometime before the actual funeral of the king. While this may be the reason for the use of the rather insubstantial and very awkwardly installed doors on the subsidiary chambers in KV 34, other explanations also come to mind for the subsidiary doors and, especially, for the door at the entrance to the burial chamber.

For example, it is possible that the subsidiary chambers in the 18th Dynasty royal tombs not only contained provisions and funerary furniture, but also were sometimes used for the burials of members of the king's immediate family who died during his reign: his mother, his wives, his infant and adolescent children. If this were the case, the doors on the side chambers off the burial chamber might have served as a way to secure the lower section of the tomb temporarily without seriously impeding later official access. Or, these doors might have acted as a method of sealing off an area of the tomb that had been ritually purified and was already serving as part of the Netherworld.

During the first few reigns of the 18th Dynasty, queens seem to have been buried either in deep shaft tombs, or in cliff tombs. During the reign of Tuthmosis III, however, there is a change. Although this king buried three of his foreign wives in a remote cliff tomb, the name of his chief wife, Meretre Hatshepsut, was found on the foundation deposits of KV 42, a tomb with a modified royal plan that is located just below his own at the southern end of the valley. KV 42 was never used for a royal burial, and the ultimate resting place of this queen is not known. In fact, no separate tomb has as yet been identified for any of the later 18th Dynasty queens.<sup>37</sup>

The mummies of a number of unidentified women and children, presumably members of the royal family, were found in the two royal caches in the Valley of the Kings (KV 35) and Deir el-Bahri (TT 320). In support of their having been buried initially in one or another of the royal tombs, there is evidence suggesting that one of the suites of subsidiary chambers off (J) in the tomb of Amenhotep III (WV 22) was intended for the use of his chief wife, Queen Tiye.<sup>38</sup> Suites of rooms connected to the burial chamber show up for the first time in this tomb, but Amenhotep III may just have been architecturally providing for a practice that had been occurring for several generations.

In the 18th Dynasty, the door that appears on the portal leading into the burial chamber may have had a more symbolic function than those on the subsidiary chambers. From the time of Tuthmosis III, door leaves are shown blocking the passage to the Netherworld in the representations of the Amduat that are painted on the walls of the burial chamber (see pl. IV). Although the entire tomb was probably associated with the passage to the Netherworld, the burial chamber was undoubtedly more closely associated with this realm. When the first axial door was installed on the entrance to (J) in the tomb of Amenhotep II, it may have been viewed as closing off the actual entrance to the Netherworld, symbolized by the texts on the walls of the chamber beyond, and later, by the presence of the king's mummy.

In the early Ramesside tombs, when the funerary texts are extended all the way to the entrance of the tomb, a door is placed on the first portal, which perhaps is now more closely associated with the actual entrance to the Netherworld. By the reign of Ramesses II, the tradition of hiding the tomb entrance is abandoned, and the outside of the first portal is even decorated. In some respects, the decorated portal, with its bolted double door, is vaguely reminiscent of the traditional false door.<sup>39</sup> However, these doors could have opened, unlike false doors, and unlike the stone and rubble blocking of earlier New Kingdom royal tombs. From the time of Ramesses II, the stone blocking on either side of well chamber (E) is also abandoned in favor of doors, suggesting that there may have been some sort of ceremonial use of this and later royal tombs either during the king's life, or after his death.

Ramesses' successor, Merneptah, chose a location that allowed his tomb to face almost due east, making the tomb's entrance more truly a gate to the West. The axis of KV 8 is straight for the first time, and its stairways and corridors have a nearly uniform slope. Although this slope is interrupted twice, by chambers (E) and (H), neither of which has a stairway cut into its floor, when one is standing in the burial chamber, a substantial amount of light filters down from the entrance, even in the afternoon. At dawn, though the rays of the sun itself may not ever penetrate into chamber (J), a great deal of bright light would have flooded into the tomb and one is tempted by the image of the sun god, passing through the gates of the Netherworld, to bring about the momentary rebirth of the king below. This image cannot have been lost on the Egyptians. Although it is very doubtful that the doors along the axis of the tomb were opened at dawn each day, it is at least possible that some kind of ritual rejuvenation of the royal spirit took place at least once after the death of the king.

— Metropolitan Museum of Art

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NOTES:

1 I would like to thank Dr. Ann Macy Roth of Howard University, and my colleagues in the Department of Egyptian Art, Dr. Dorothea Arnold, Dr. Dieter Arnold, and Ms. Marsha Hill for their helpful comments on the subject of doors in general and on this manuscript in particular.

2 In the last few years, a number of tombs have been opened to tourists for the first time in decades. In the process, their entrances have been cleared and features are visible now that could not be recorded when the measurements were taken and the plans drawn.

3 See especially Carter's own description in T.M. Davis, *The Tomb of Tuthmosis IV* (London, 1904); reference to his notes in the Griffith Institute by E. Thomas, *The Royal Necropoleis of Thebes* (Princeton, 1966), p. 83.

4 I would like to thank Dr. Dorothea Arnold, Lila Acheson Curator in Charge of the Department of Egyptian Art, for permission to publish several of these photographs.

5 I would like to thank Prof. Kent R. Weeks for permission to use this material. The preliminary drawings were done in the field by Richard Smith and Bruce Lightbody. The plans used to illustrate this paper are based on the TMP field drawings, but are not exact copies. In an attempt to show the original architect, I have omitted modern features such as metal doors at the tomb entrances and wood, metal, or concrete stairs and doorsills. I have also restored door jambs that were removed in ancient times, usually to allow passage of a sarcophagus into the tomb. My special thanks go to Dr. James P. Allen and Mr. Barry Girsh, both of the Metropolitan Museum's Egyptian Department, who helped me with the computer drawing program that produced the plans.

6 Beginning in the early 20th century, the construction of wood or metal staircases, the introduction of electricity, and the levelling of floor surfaces in order to facilitate access to tourists has often covered up the evidence of the lower pivot sockets and/or grooves. Sockets in the lintel soffits and ceilings, though less apt to have been covered up, sometimes also have been sacrificed to necessary security measures or consolidation work.

7 Published by G. Daressy, *Ostraca* (1901), p. 35, pl. XXXII.

8 This was discovered by T.M. Davis in 1905 and is noted in *The Tomb of Siptah* (London, 1908), p. 7.

9 The most easily accessible reproduction of this papyrus is in *Journal of Egyptian Archaeology* IV (1917), pl. 30.

10 In both places, pivot sockets may be found in the ceilings and in what are now ledges on either side of the ramp. These ledges probably represent the original floor level before the ramp was excavated. No new sockets were ever drilled into the ceilings, nor are any evident in the ramp. If doors were installed in either position, they must have remained open, for neither set of doors could have been closed without leaving a gap of a meter or more from the bottom of the door to the surface of the ramp.

11 In completed royal tombs of this dynasty, some evidence of stone blocking almost always has been found in portals 4 and 5, those on either side of chamber (E), the well.

12 Portal 5, the passage from chamber (E) into the rest of the tomb, is treated in this fashion in every 18th Dynasty tomb in which (E) has an excavated well. The portal leading from the decorated antechamber to the burial chamber is also camouflaged in this way in KV 43 and WV 22 (Tuthmosis IV and Amenhotep III).

13 For a more complete discussion of the doors see J. Romer, "The Tomb of Tuthmosis III," *MDAIK* 31 (1975), 329-31. As will be seen below, a number of later 18th Dynasty royal tombs continued to use single-leafed doors to close the small storage rooms off of the burial chamber. It is also possible that the subsidiary chambers in an earlier royal tomb, KV 20 (Hatshepsut), were provided with doors, but no door sockets were noted by the Theban Mapping Project and the stone is so poor that such evidence may no longer exist.

14 Necessary consolidation work done since Burton photographed the tomb has made this damage less obvious, although it is still possible to detect.

15 These are the other two tombs with oval burial chambers: KV 38, used by Tuthmosis III for the reburial of his grandfather, Tuthmosis I; and KV 42, begun but never used for the burial of Queen Meretre-Hatshepsut, principal wife of Tuthmosis III.

16 There is one exception to this general preference which occurs in the tomb of Ramesses II. But the door in question was added after the tomb had been excavated, and its position was probably dictated by necessity, as is the case here in KV 35. As far as I know, except in KV 35, where the doors on the subsidiary chambers seem to have opened out into the burial chamber, all of the doors on subsidiary chambers also opened in as one entered each chamber. However, I would need to check this in the tombs themselves to be certain.

17 A door in this position also would have swung 180 degrees before it was stopped by the burial chamber wall. The positioning of doors in later tombs suggests that the Egyptians preferred to have the door swing no more than 90 degrees when opened.

18 A careful examination of the floor from the beginning of portal 6 through the end of corridor (G) might yield some interesting information regarding at what stage the door was installed. Looking at the TMP plan, it seems possible that the entire floor of corridor (G) was recarved to accommodate the door (the dotted line on my elevation drawing indicates the possible slope of an earlier floor level). The installation seems to have been carefully executed, suggesting that the door was not just a quick, last-minute addition.

19 In KV 35, each of the portals into the four subsidiary chambers also has a hole in the left jamb, suggesting that these had doors as well. However, pivot sockets were noted by the TMP, and the chambers need to be checked.

20 This was in the portal leading into (Jc).

21 This type of portal is used from the Old Kingdom onward, more often in built stone architecture such as temples and *mastaba* tombs, but also in rock-cut tombs. In most domestic architecture, one would expect to find the door frames added separately.

22 It should be noted here that axial doors are only hung inside *compound* portals, never inside simple portals. When a door is associated with a simple portal, the door is hung beyond the portal, just inside the following corridor. Also, after the tomb of Amenhotep II, when the entrance to a chamber is closed with a door, the chamber is always preceded by a compound portal inside which the door may be hung.

23 Described in detail by Romer, *op. cit.*

24 I have not considered the tomb of Akhenaten at Amarna in this paper.

25 In previous fully developed tombs, only burial chamber (J), well chamber (E), and (beginning with Tuthmosis IV) antechamber (I) were decorated.

26 Since the floor in this part of the tomb is buried beneath a thick layer of waterborne debris, there is obviously no visible evidence for the lower sockets.

27 It is always possible that there were double doors on these portals, or that no doors were ever installed. However, at this period, one would expect to find single-leafed doors in these positions, and one would expect to find the pivot sockets whether or not the doors were ever installed.

28 As noted above, the addition of subsidiary chambers begins several generations earlier in the reign of Amenhotep III and is continued in the tombs of Horemheb and Seti I. But only three of these chambers, one in KV 57 and two in KV 17, are designed with compound portals.

29 Judging from the TMP plans, a very slight overhang may occur for the first time in the tomb of Tuthmosis IV (KV 43), but the entrance is quite rough and it is difficult to tell from the plan whether the overhang was man-made or natural. In the tomb of Amenhotep III (WV 22), the overhang is more clearly defined, and it continues to be a feature of royal tombs through the next two dynasties. It is also found on some, but not all, non-royal tombs from the late 18th Dynasty onward.

30 In tombs earlier than Seti I, the slope can be more than 40 degrees. In tombs later than Ramesses II, it steadily becomes less and less until it is almost unnoticeable in the tombs of Ramesses IX (KV 6) and Ramesses XI (KV 4).

31 F. Abitz, *Die Religiöse Bedeutung der sogenannten Grabräuberschächte in den ägyptischen Königsgräbern der 18. bis 20. Dynastie*, Ägyptologische Abhandlungen 26 (Wiesbaden, 1974), p. 33.

32 In KV 7, the door could not have been hung on the (E) side of portal 4 because (E) in this tomb was an excavated well. The length of portal 4, from (D) to (E), is not enough for it to be redesigned into a compound portal in which the door could be hung. A door jutting into (E) would probably have interfered with whatever kind of bridge was used to pass over the well.

33 On p. 39 of ÄA 26, Abitz states that double-leafed doors were used on both portals from the time of Ramesses II on, but the evidence he cites for KV 7 does not clearly indicate which type of door was installed in either place.

34 At certain times of day, when the light is right, the outline of this stairway may be seen on the bedrock wall along the left side of the modern pathway.

35 And perhaps because the feature had been used in the previous tomb.

36 It is interesting to note that, in his version of the scene, Merneptah wears an elaborate *atef* crown which extends somewhat higher than the large sun disk on the head of Ra-Horakhti, thus making the image of the king more imposing than that of the god.

37 Although the body discovered in KV 55 has sometimes been identified as that of Queen Tiye, this tomb was certainly not originally constructed for her, and probably not for any other royal personage. Horemheb's wife, Mutemwiya, seems to have been buried at Saqqara, in the tomb he was preparing for himself before he became king. From the time of Ramesses I, many royal women and children were buried in the Valley of the Queens.

38 *Shabtis* and other objects with Tiye's name were found in the tomb. See Jiro Kondo's paper in this volume for further discussion on the use of the subsidiary rooms off of (J) in WV 22.

39 It would be interesting to know which direction the false door was thought to open. In many detailed renderings, the door pivots are shown, giving the impression that the door is hung on the outside of the portal and opens out. But the representation of the pivots may just be an artistic convention that requires the entire door to be shown.

## Evidence of the Alterations to the Canopic Jar Portraits and Coffin Mask from KV 55<sup>1</sup>

*Earl L. Ertman*

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Much controversy surrounds the so-called tomb of Queen Tiy, KV 55, and the burial in it.<sup>2</sup> The end of the analysis and rebuttals is nowhere in sight. There are now several variants to the spelling of the Queen's name in use (Tiyi, Tiy, Tyi, Tiye) and as many theories as to the identity of the body in the coffin found there. It has also been theorized that more than one burial took place in that tomb.

Many suggestions have been put forth as to who was originally represented by the canopic lid portraits and whether in fact the present lids were made for the jars they cap.<sup>3</sup> Several early theories proposed Akhenaten's portrait<sup>4</sup> and later Nefertiti<sup>5</sup> as the person depicted on the tops of these funerary containers. However, neither of these individuals could have been the original subject as the lids were carved for someone who was not a king or chief queen since separate uraei and other modifications had to be added later for these objects to be suitable for a royal burial. While the range of possible candidates has narrowed, some differences of opinion still exist as to who was initially portrayed.<sup>6</sup> That the lids and jars were made for Kiya appears to be the case.<sup>7</sup>

My inquiry will review and interpret the visual evidence of the lid portraits and the coffin mask. Following my analysis, some information from the physical inspection of the three canopic jars and lids in the Cairo Museum on 23 October 1994 by Ted and Lyla Brock will be forwarded.

The remains of inscriptions on the body of these jars are most important and have been discussed by Krauss and Martin. An initial step in making these canopic jars usable for the burial found in KV 55 was the cutting away of the inscriptions from the bodies of the jars.<sup>8</sup> Dodson indicates that the inscriptions were possibly removed in two stages, first Kia's name and titles, then the double cartouches of Akhenaten and the Aten.<sup>9</sup>

In their original form the head on each lid bore an unadorned Nubian wig.<sup>10</sup> Many individuals, both male and female, and of various ranks and positions, are shown during the reign of Amenhotep IV/Akhenaten wearing this type of wig.<sup>11</sup> Kings and the chief queen normally wore a uraeus or uraei when they wore this wig. For the burial or reburial of a king or chief queen this royal cobra insignia had to be added to each portrait head since it was not initially present. A hole was drilled into each of the foreheads and a separate hood and head of the protective cobra was affixed. When viewing the canopic lids in their museum cases, where material remains in the drilled uraei holes, this material appears to be of a different type than that which was used for the lids. To create individual bodies for each of these uraei, strands of hair were reworked and combined. Krauss in his article on

these canopic stoppers illustrated the top of one of the heads which shows how the uraeus body was formed.<sup>12</sup> In combining hair strands to form the serpent's body, one groove was eliminated which previously divided and separated these strands of hair.<sup>13</sup> In places a portion of the original groove remains since they were carved too deeply to be totally masked by the reduction and merging of the strands of hair. This can be verified by looking at the lowest row of curls under the drilled hole.<sup>14</sup> Here the individual grooves remain, but there is no corresponding groove above the hole. Aldred indicated that he and Guy Burton had both noted that the cobra bodies had been created by cutting into the hair strands of the wig.<sup>15</sup>

Perepelkin believed that the wigs of the stoppers underwent two transformations, "Hence, originally there had been no royal uraei on the heads belonging to the jars . . . They were added later, but still later they were hacked out—possibly, when the inscriptions were being effaced."<sup>16</sup> Besides the addition of individual uraei to the brows of all four of these portrait heads, another change was needed before these stoppers could fulfill their intended purpose. This was the re-working of the Nubian wigs at the brow on all four heads, a fact which seems to have gone unnoticed or was thought to be of no importance since it does not appear in commentaries on this burial equipment, as far as this writer has been able to determine.

In a close-up profile view of the canopic jar stopper in the Metropolitan Museum of Art (no. 30.8.54),<sup>17</sup> one can detect the re-cutting over the brow and see that this newly carved arc is not parallel to any of the original layers created by the overlapping rows of curls. Catharine Roehrig has been kind enough to inspect the canopic lid in the Metropolitan Museum and she confirms my belief indicating in a letter that, "The canopic jar lid . . . has certainly been recarved at the brow where the lower layers of curls have been cut back in an arc." I gratefully acknowledge her assistance. A look at the Nubian wig in representations of male and female heads, both private and royal, during the Amarna period, reveals that the curls of the wig generally come down all the way to the brow over the forehead, and with the side curls frame the face.<sup>18</sup> This is not the case with the wigs on the canopic jar stoppers. There must be a reason for this deviation.

Why would this re-cutting have been necessary? During the latter part of Dynasty XVIII, the addition of a uraeus to the original wig was not all that was required for the proper representation of a king (and probably not for a "great royal wife"/"chief queen" either).

A gold temple or browband was also needed on their representations. This gold band has been discussed by me in one article with another one forthcoming.<sup>19</sup> The representation of gold browbands is not widely recognized or understood. The gold browband is not obvious on images which have lost their color, nor to most viewers when a king wore the *nemes* or other royal head-covering which included a gold browband. Further, where a royal representation is created in gold, the browband is not as noticeable since it does not stand out by a change in color or value. I am not aware of any documentable representation of Hatshepsut or Tuthmosis III wearing the gold browband with a wig. The earliest sure evidence of this combination, known to me, is from the reign of Amenhotep II.<sup>20</sup> Further study may prove its use as early as the reign of Amenhotep I,<sup>21</sup> even if it was not immediately continued in subsequent reigns. The gold browband is more frequently seen on representations of Tuthmosis IV and Amenhotep III and became quite common as later New Kingdom rulers were more often pictured in wigs and without crowns.<sup>22</sup> Both King

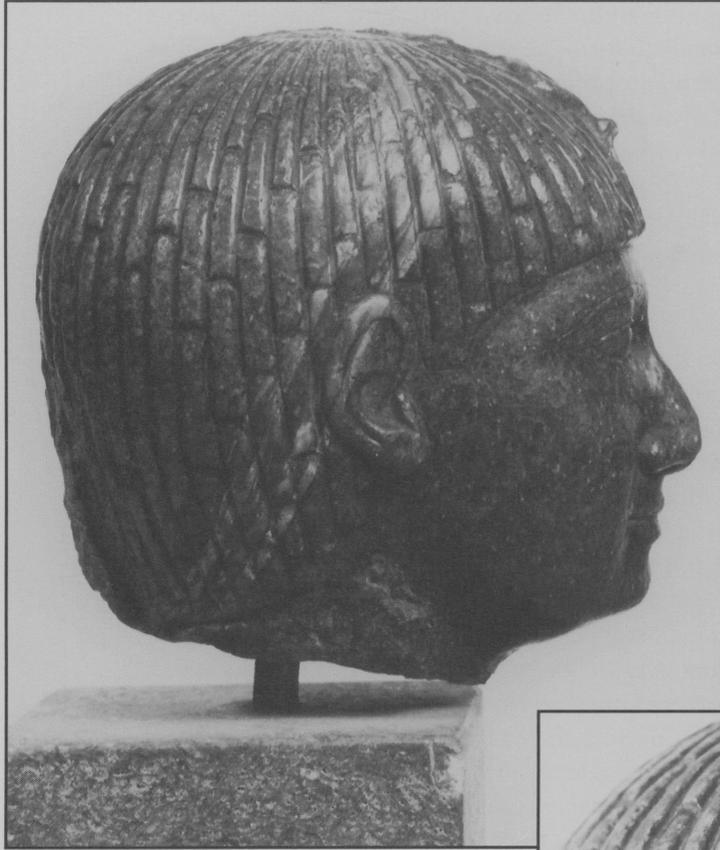


PLATE I: Late Period Head, perhaps of Nectanebo. Photo: Staatliche Sammlung Ägyptischer Kunst, München. AS 5550

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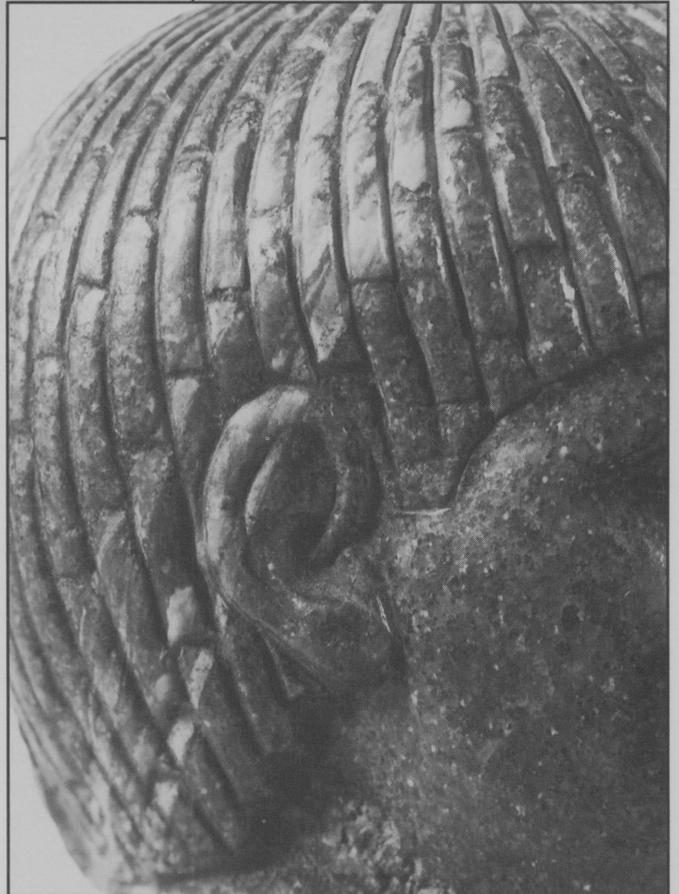


PLATE II: Detail of Plate I.

Amenhotep III and Queen Tiy wore the gold temple-band under wigs as many examples indicate.<sup>23</sup> A detail of the portrait of Queen Tiy from the wooden shrine in KV-55 clearly delineates this gold band at the brow of her tripartite wig.<sup>24</sup>

The use of this gold browband under wigs continued in the following reign. Not all representations of Nefertiti portray her with this gold band, but a goodly number exist, indicating that this combination was common during the reign of Amenhotep IV. Only occasionally is Amenhotep IV/Akhenaten shown wearing the Nubian wig or for that matter any wig, since he seemed to prefer crowns. He wore the Nubian wig with a browband in a relief from the Haifa Collection of Dr. Reuben Hecht.<sup>25</sup> The king's browband is clearly differentiated from the wig in this representation as the former has no vertical indentations indicating rows of hair.

These gold bands are shown on the lid of an ivory box from Tutankhamun's tomb (Cairo 61477) where Queen Ankhesenamun hands bouquets of flowers to her husband.<sup>26</sup> Much of the gold foil remains from the king's browband; it is not as easily seen on the forehead of the queen in some photographs, but it is present. Any good color photograph of the famous throne of King Tutankhamun (Cairo 62028) will also illustrate the use of gold temple-band on the brow, under the base of the queen's wig. A line is present under the king's wig which undoubtedly marks the lowest edge of the band which was originally applied in gold foil, now lost. Ted Brock pointed out to me Claude Vandersleyen's discussion at Highclere Castle that other gold details are missing from Tutankhamun's throne.<sup>27</sup> The missing foil from the king's brow, under his wig, was not mentioned, but at that time no one was aware that this element was significant. Vandersleyen cited Marianne Eaton-Krauss' study, which suggests that extended use of the throne was a factor in the loss of part of the surface decoration.<sup>28</sup>

The head cloth worn on the mummy of Tutankhamun was held in place by a gold browband as Carter indicates, "Around the forehead ... was a broad temple-band of burnished gold ... This band held in place ... a fine cambric-like linen *Khat* head-dress ..." <sup>29</sup> This band is evident on the painted image of Tutankhamun's mummy on the east wall of his tomb and on his image as a living king facing the goddess Nut on the north wall.<sup>30</sup> More importantly for comparison are two images of Osiris.<sup>31</sup> On the left in the scene from the north wall, Tutankhamun embraces Osiris whose crown is plain, without a gold browband, while further to the right on this same wall, Tutankhamun's image as Osiris includes the gold browband since this figure represents the boy-king in the trappings of this deity. It is clear at least for Tutankhamun that the gold browband was worn in life and in death. Many of Tutankhamun's wooden shabtis which wear wigs are provided with gold browbands.<sup>32</sup> It is not surprising that later kings wore this gold browband with wigs, as King Siptah does in a scene from in his tomb.<sup>33</sup> The browband is also found on some ostraca, especially of Ramesside date, indicating that artists were well aware of its presence and often portrayed it.<sup>34</sup> Nefertari is shown wearing this gold browband in her tomb paintings under a wig.<sup>35</sup> During the Late Period, kings continued to wear the gold browband under wigs. An example is Munich ÄS 5550 possibly depicting Nectanebo<sup>36</sup> (pls. I-II). In a front view the browband is not visible, but in profile it is shown on the temple in front of the ear and under the curls of the wig where the wig locks do not overlap and cover this gold band.

Returning to the canopic portraits, the addition of browbands to the heads of these canopic jar lids from KV 55 may have included gold foil applications over this recut area. The gold, if present on the newly cut bands, could have easily been removed when the uraei



PLATE III: Face and gold mask of coffin from KV 55, Egyptian Museum, Cairo (J 39627). Photo by George B. Johnson.

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were snapped off. The mere carving of them may have sufficed in times of urgency to have had them function as desired.

Martha Bell posed the question in regard to the damage to the head of the mummy from tomb 55 by saying, "... it seems unimaginable that the mummy did not originally have a mask or some more elaborate headgear than the vulture pectoral. At least some of the damage to the head could have occurred when a mask or other Atenist regalia was removed."<sup>37</sup>

Dodson in a *GM* article indicates, "It is likely that the mummy had originally been equipped with a helmet-mask, of the kind found on all high-status corpses of the Eighteenth Dynasty."<sup>38</sup>

It does indeed appear strange that the mummy from KV 55 did not have a gold face mask, since later kings from Tanis and even a general named Wen-djeba-en-djed buried in a chamber of the royal tomb of Psusennes possessed a gold face mask.<sup>39</sup> Let me hasten to point out that the face mask of the general, who was a commoner, had no browband as these were reserved for the king and chief queen. At the minimum, one would expect that the body from KV 55 possessed a gold temple-band, similar to those worn on Tutankhamun's mummy. Although it has yet to be firmly established what association these gold browbands may have had with a specific deity, gold was thought to be the "...flesh of the sun and of the gods..."<sup>40</sup>—and as such would appear to have been acceptable even to an Atenist. The lack of a gold browband on the mummy's head may be more significant in light of the re-working of the four canopic portraits to include this band by cutting down a portion of the valanced wig curls to create it.

A close look at the face and wig on the coffin lid from KV 55 (JE 39627) (pl. III-IV)<sup>41</sup> indicates that they too were altered beyond the addition of a uraeus and false beard. We must shift the course of this study briefly and attempt to determine whether the area beneath the broken face mask was created as a portrait of the individual for whom this coffin was originally intended. The surface of the wood suggests, even in its present crazed condition, that worked contours of a face may have been present. The thin bridge of the nose and cavities for inlays of the eyes would probably not have been essential if a metal mask was intended to cover them. Surely the general facial contour would have to be defined so as not to hinder the placement of the mask above it.

Perepelkin indicated that agents, possibly under Horemheb, entered the tomb and:

*They expunged the king's names on the coffin and tore off a greater part of the gold mask, mainly the lower part of it, but left the forehead intact. During the previous modification the gold mask, bearing Kia's features, was sure to have been replaced by a similar mask bearing resemblance to Amenhotep IV, whose features were distinctive only below the forehead. The now exposed wooden base disclosed the features of Kia, just as did the heads on the stoppers of the canopic jars, so there was no need to destroy them.*<sup>42</sup>

This statement indicates that the wood under the mask was fashioned into a portrait of Kia. It also indicates that this coffin bore a gold mask with the features of Kia, which was replaced. There are no parallels for a queen of the late 18th Dynasty to have had a gold metal face mask (not gilded cartonnage) on her coffin, since no intact queens' burials have been found for comparison.

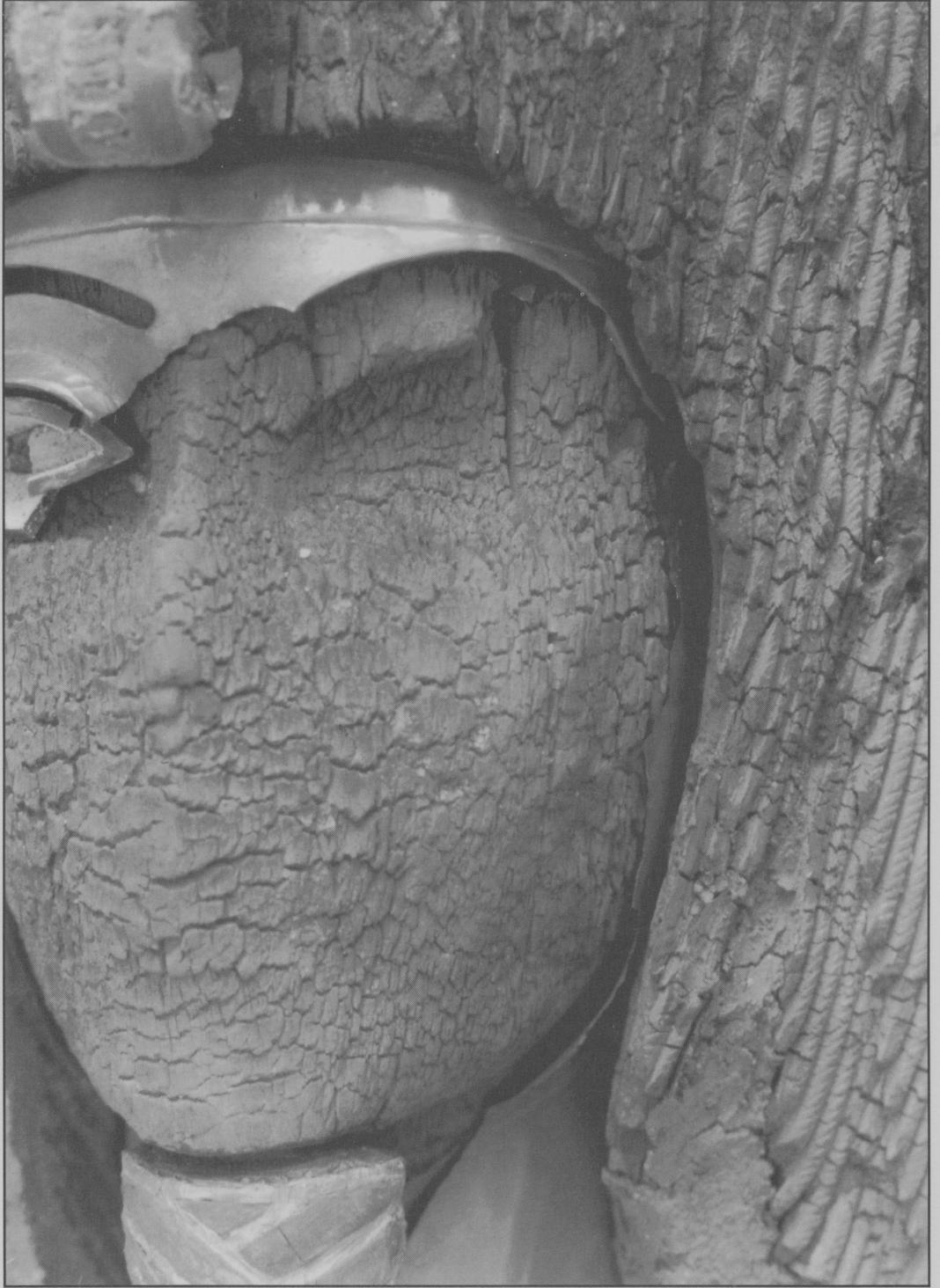


PLATE IV: Angled view of face of coffin from KV 55. Photo by George B. Johnson.

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Let us review the evidence for and against there originally being a gold mask of Kia on the coffin from KV 55. The quality of this coffin points out the very high status once accorded this queen. Kiya's title, "the favorite," cited by Frankfort, Pendlebury and Redford<sup>43</sup> which is attested in year 6 was presumably given her by Akhenaten, but the inclusion of a gold mask for its lid, although possible in the Amarna Period, would seem highly unusual. Perepelkin offers no evidence for his statement that the remains of the present gold mask replaced an earlier gold mask bearing Kia's features.

Circumstantial evidence relates to the remains of the gold mask itself. First, we must review some basic facts. The wig is of the non-royal type for a coffin of a king used during this period, judging from Tutankhamun's burial equipment and earlier and later examples. While it was made for a person of high status (not a king or chief queen), it would not originally have had a uraeus. Without a uraeus marking rank, it would not have had a gold browband either.

From photographs, and views of the coffin lid through its glass case, one can see that an incised or chased line indicating a temple-band is present on the remains of the face mask above the eyebrow (see pls. III-IV). This browband was either cut into the original mask fitted to the coffin lid or was formed on a replacement face that was added to the lid for the special individual buried therein. In view of certain evidence from this burial, it may be tempting to conclude that the coffin mask was pressed into service for another occupant by being reworked rather than adding a new gold mask to the lid of the coffin. This would indicate that a gold mask was originally present on the coffin which was then modified. In question is the line of the incised browband which may have been added to the mask while the face plate and wig were in place as a unit on the coffin lid. Evidence of this is the diminished depth of the browband line itself which seems to trail off toward the temples as it disappears beneath the wig. There would have been less room for the tool used to create this line as the face curved and sank below the wig toward the temples. Does the supposed "re-working" of this detail on the face mask of this coffin lid confirm the speed with which alterations were carried out for the re-use of this funerary equipment? The possible hasty addition of the browband to the face mask may indicate that this mask originally portrayed Kiya and had not been replaced. Had a different face plate been added to this coffin for the re-use and burial, the temple-band would be expected to have been executed more evenly and the head covering modified to reflect the ruling personage for whom this coffin was adopted. Of interest is the distance from the eyebrows to the top of the mask which is similar in proportion to the gold mask of the general (n. 39), possibly indicating that the browband line was added to an existing mask.

If the canopic portraits of a royal female were adequate for this burial, after modification to the wigs and the addition of uraei, one might assume that the modified portrait on the coffin lid would also have been adequate once a uraeus was attached to the wig, a browband incised on the gold mask and a beard added. On the other hand, we are not sure of the techniques employed in preparing the wooden area directly under the mask, which was badly deteriorated by water leaking into the tomb. We have conflicting visual evidence. Would facial features have been created in the wood beneath a gold face mask? I had always thought that the gold face mask had been added to the coffin lid for its last occupant, but the evidence of the diminished depth of the browband near its outer edges and the distance between the eyebrows and top of the mask appears to indicate otherwise. Besides

the diminished depth of this line, the limited area (from above the eyebrows to the top of this metal insert) on which to incise the browband appears smaller than the same area on Tutankhamun's helmet mask and other similar royal examples. Together the details of placement and inconsistent depth of the browband seem to militate toward a view that the gold face mask was probably original to the coffin and was altered for royal use. (Visual analysis from photographs and seeing the coffin from outside its case should be confirmed by a physical inspection of the area beneath the mask). Once the additions of the beard, uraeus and browband were in place (plus the inscriptions on the lid), this was no longer an image of Kiya, and was subsequently attacked.

The alterations to the coffin and its mask, and to the four canopic jar portraits (by cutting browbands and adding uraei), fulfilled the burial requirements necessary for the interment of a ruling member of the royal family in KV 55. In essence a headdress also worn by non-royal individuals was modified and made to appear royal. Conflicting views remain regarding the identity of the individual who was interred in the coffin in this tomb.

The physical inspection of the Cairo canopic jars and lids by Ted and Lyla Brock indicates that:

*The flow marks inside the jars may conform to the position of the canopics in the niche in tomb 55; thus, it seems they were put there while the material was still viscous or fluid. This material looks like unguent, and may have been poured over the organs interred therein. The internal marks inside the jars show that the fluid level was over 2/3 full. There may have been cartouches on the front and back of the lid collars. One of the uraei, still in its drilled recess, looks like it is made of translucent alabaster which appears pale grey in value. The interior of the lids were carved out in a "V" [shape].<sup>44</sup>*

It would be unwise to speculate on the information available from photographs and notes so recently gathered during the Cairo Museum inspection. The comments included herein will have to suffice for the present. A joint publication is planned which will enlarge the scope of this research on the canopic jars from KV 55 once we have had time to determine the significance of certain details and after the Metropolitan Museum jar and lid has been reinspected.

— University of Akron

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NOTES:

1 I thank Lyla Brock for reading an early draft of this paper and for her editorial comments and suggestions.

2 For a recent summary and bibliography see T. Davis *et. al.*, *The Tomb of Queen Tiye*, intro, and biblio. by Nicholas Reeves, 2nd. ed. (San Francisco, 1990). Referred to in the bibliography, but not published at the time is Martha Bell, "An Armchair Excavation of KV 55," *JARCE* XXVII (1990), 97-137.

3 Reeves, introduction and annotated bibliography in Davis, *op. cit.* Aidan Dodson reviewed Martin's ideas that the New York jar and lid fit poorly in *The Canopic Equipment of the Kings of Egypt* (London, 1994), p. 58 [hereafter cited as *Canopic Equipment*]. Dodson then stated, "The rework of the canopics would appear to have included the substitution of new lids, to which uraei were added ..." (p. 59).

4 Davis, *op. cit.*, n. 47, p. xviii.

5 Davis, *op. cit.*, n. 61.

6 See Dodson, n. 7 *infra*, who seems to favor one of the daughters of Akhenaten as the individual

represented by these canopic portraits. Also, *Canopic Equipment*, p. 57, "... the profile of the faces [of the canopics] being particularly reminiscent of the depiction of Ankhesenamun on the throne back of Tutankhamun." There are those who believe that this throne originally pre-dates Tutankhamun's reign and thus may not depict Ankhesenamun.

7 Nicholas Reeves summarized the information of the authors who attributed the four canopic jars to Kiya, in Davis, p. xii. Also see, L. Berman in A. Kozloff and B. Bryan, *Egypt's Dazzling Sun: Amenhotep III and His World* (Cleveland, 1992), chapter X, pp. 309, 311 and n. 21 [hereafter cited as *Egypt's Dazzling Sun*]. I. I. Perepelkin, *Taina zolotogo groba* (Moscow, 1969), (translated as G. Perepelkin, *The Secret of the Gold Coffin* [Moscow, 1978] and R. Krauss in "Kija - ursprüngliche Besitzerin der Kanopen aus KV 55," *MDAIK* 42 (1986), 67-80 are among the first to indicate that the remains of the inscriptions on the canopic jars originally belonged to Kiya. Since Reeves' publication see Aidan Dodson's remarks in "KV 55 and the End of the Reign of Akhenaten," *Sesto Congresso Internazionale Di Egittologia*, vol. 1 (Turin, 1992), pp. 135-8, and "On the Origin, Contents and Fate of Biban el-Moluk Tomb 55," *GM* 132 (1993), 21-29. In the latter he seems to regard the canopic lids as portraits of Meryetaten rather than Kiya (pp. 22-3 and n. 17).

8 Peter Dorman mentioned that the collar was re-cut and the inscription removed from the front of the Metropolitan canopic jar in *Egyptian Art*, reprinted from *BMMA* (Winter, 1983/4), 40. Undoubtedly a similar treatment of re-cutting and removal was accorded the other three canopic jars as well.

9 *Canopic Equipment*, pp. 57-8.

10 C. Aldred, "Hairstyles and History," *BMMA* 15 (February, 1957), 141-47.

11 See n. 18 *infra*.

12 Krauss, *op. cit.*, pl. 2.

13 Davis, *op. cit.*, pls. XVIII, XIX.

14 Davis, *op. cit.*, pls. XV, XVIII, XIX.

15 C. Aldred, *Akhenaten, King of Egypt* (London, 1988), p. 205. This is contrary to Geoffrey Martin who wrote in "Notes on a Canopic Jar from King's Valley Tomb 55," *Melanges Gamal Eddin Mokhtar*, vol. II (Cairo, 1985), p. 113, that the "... tail of the serpent was an integral part of the original design and not a later addition."

16 Perepelkin, *op. cit.*, p. 82.

17 Dorman, *Egyptian Art*, cover.

18 Among many examples see, C. Aldred, *Akhenaten and Nefertiti* (New York, 1973), n. 61, p. 138 (collection of Elie Borowski); n. 67, p. 143 (Brooklyn 60.197.4); n. 105, p. 177 (Metropolitan 31.114.1); n. 129, p. 196 and n. 130, p. 197 (Norbert Schimmel Collection). These are now in the Metropolitan Museum of Art, see *Ancient Art: Gifts from the Norbert Schimmel Collection* (1992), reprinted from *BMMA* 36 (Spring, 1992), n. 36, p. 57 and cover and pp. 26-7. For royal representations see Aldred, *Akhenaten and Nefertiti*, n. 23, p. 109 (Cleveland, 59.188). It is difficult to reconcile the fact that this royal head, undoubtedly of Nefertiti, has no browband visible at the base of her wig nor do two other representations of her show them, n. 18, pp. 104-5 (Brooklyn 41.82). Many examples do exist of Nefertiti wearing a wig with a browband. In contrast a representation of Akhenaten wearing this wig has a browband, n. 27, p. 113 (Collection of Dr. Reuben Hecht), as does the queen, n. 48, p. 126 (Brooklyn 35.1999). The latter is seen in a larger format and in color in E. Bille-De Mot, *The Age of Akhenaten* (London, 1966), pl. XV, where the browband is clearly differentiated from the wig as the former has no vertical indentations indicating rows of hair.

19 See my initial comments in "Another Look at a Relief of King Akhenaten from the Harer Family Trust Collection and the Use of Streamers During the Amarna Period," *JSSEA*, XX (1990), 108-112. Also, "More Comments on New Kingdom Crown Streamers and the Gold Temple-band They Held in Place, *JSSEA*, which will appear shortly. Worn with a wig or headdress, this gold temple-band was a royal requirement from at least the end of the reign of Amenhotep III into the Ramesside Period and possibly as late as Dynasty XXX.

20 See my remarks in, "More comments... Place," n. 21 where Karol Mysliwiec in *Le portrait royal*

*dans le bas-relief du Nouvel Empire* (Warsaw, 1976), pictures many relief examples including: Seti I, figs. 204-8, 211, 213, 215, 217; Ramesses II, fig. 253. For some three-dimensional examples see, J. Vandier, *Manuel d'archéologie égyptienne*, vol. III, *Les grandes époques, La statuaire* (Paris, 1958), CXXV 5, CXXVI 2, CXXVII 2, 5 CXXXI 3, CXXXVI 2, of Meryamun, daughter and wife of Ramesses II—the presence of the gold browband under her wig confirms that she is operating as the chief queen of Ramesses II. See other sources for colored photographs which verify the gold band.

21 Mysliwiec, *op. cit.*, fig. 25; D. Forbes, "Amenhotep I: Last King of the 17th Dynasty? or Fifth of the 18th?" *KMT* 5 (Summer, 1994), 22-23, top.

22 See examples n. 20 *supra*. For some representations of Amenhotep III with this temple band under/ with a wig in one source see, *Egypt's Dazzling Sun*, fig. IV. 23, p. 102 (Luxor J. 45); fig. V. 22, p. 141 (North Karnak S 6); n. 8, pp. 159-60, color pl. 9, p. 124. (Cleveland 61.417); n. 20. p. 198 (Boston 1970. 636); n. 21, p. 200 (Cairo JE 38596); n. 54, p. 288 (SMPK Berlin 14503); for Tiy: n. 26, p. 209 (SMPK Berlin 21834); n. 27 (left, of Tiy), p. 211 (Hildesheim 53); probably n. 28, p. 212 (Munich AS 5873).

23 Cf. the same figures as referred to in n. 22.

24 Davis, pl. XXX. This detail is difficult to see due to size, but it is evident in the drawing, pl. XXXIV.

25 See n. 18 *supra*.

26 I. E. S. Edwards, *Treasures of Tut'ankhamun* (New York, 1976), pl. 33.

27 C. Vandersleyen, "Royal Figures," in *After Tut'ankhamun*, C. N. Reeves, ed. (London, 1992), pp. 76-77. The missing foil from the king's brow, under his wig, was not mentioned, but at the time no one was aware that this element was significant.

28 *Ibid.*, citing Marianne Eaton-Krauss' study, n. 35, *Die Throne Tutanchamuns: Vorläufige Bemerkungen*, "GM 76 (1984), 7-10, which suggests that extended use of the throne was a factor in the loss of part of the surface decoration.

29 N. 19 *supra*, and Carter's remarks on these browbands in place: H. Carter, *The Tomb of Tutankhamen* (New York, 1972), p. 144, for illustrations, pp. 143 and 231; also, D. Forbes, "Abusing Pharaoh," *KMT* 3 (Spring, 1992), 59 and 65.

30 [D. Forbes], "KV-62: Its Architecture and Decoration," *KMT* 4 (Winter, 1993-4), 43, bottom.

31 *Op. cit.*, pp. 44-5.

32 Reeves indicates that thirty-five of Tutankhamun's *shabtis* wore the Nubian wig (*The Complete Tutankhamun* [London, 1990], pp. 138-9). Many of these are on display in the Cairo Museum with the wooden examples clearly illustrating a golden browband. In fact one figure wearing a wig is without a uraeus, but with a browband. Their numbers are not indicated in their display cases. Where a royal image is created in gold, the temple-band is not as noticeable, cf. the gold mask or coffins of Tutankhamun.

33 In black and white photographs the gold browband is not as easily distinguished. For this representation in color, even if it is a painting of the relief portrait, see *KMT* 4 (Spring, 1993), cover.

34 For some of the many examples of ostraca and trial pieces, see W. Hayes, *The Scepter of Egypt*, vol. II (Cambridge, 1959), fig. 229, p. 363; Mysliwiec, *op. cit.*, figs. 207, 274, 275, and 291.

35 Unfortunately I did not record the source of the slides used in my presentation. However, from the many examples of this browband used by Nefertari in her tomb some photographs in color should suffice to prove the point, as color examples leave no doubt that the space under the wig is not part of the wig. S. Wenig, *The Woman in Egyptian Art*, trans. B. Fischer (New York, 1969), p. 80, bottom; K. Lange and M. Hirmer, *Egypt: Architecture, Sculpture, Painting in Three Thousand Years* (London, 1968), pls. LV (of the queen, center), LVI (queen only), LVIII; Special Publication of the *Annales du Service des Antiquités de l'Égypte: Wall Paintings of the Tomb of Nefertari: Scientific Studies for their Conservation. First Progress Report* (July, 1987), p. 8, fig. 2, p. 27.

36 I thank the Staatliche Sammlung Ägyptischer Kunst and Dr. Sylvia Schoske for permission to publish a profile and detail of this head and also thank Dr. Alfred Grimm for supplying me with these photographs.

37 Bell, n. 2 *supra*, p. 133.

38 Dodson, "On the Contents...Tomb 55," p. 26 and n. 46.

39 P. Montet, *Le necropole royale de Tanis: Les constructions et le tombeau de Psousennes*, vol. II (Paris, 1951), pls. XLVII, XLVIII; more recently, W.S. Smith, rev. W.K. Simpson, *The Art and Architecture of Ancient Egypt* (New York, 1981), fig. 383, p. 389. The general's name has been written differently by several authors including Wenu-djebaw-n-djedet by Simpson (p. 389). In reference to the burial in KV-55, Dodson in *GM* 132, p. 26, indicated, "It is likely that the mummy had originally been equipped with a helmet-mask, of the kind found on all high-status corpses of the Eighteenth Dynasty." (citing examples in n. 46).

40 G. Posner, *Dictionary of Egyptian Civilization* (New York, 1959), p. 111.

41 I thank George Johnson for these photographic details and for permission to use them.

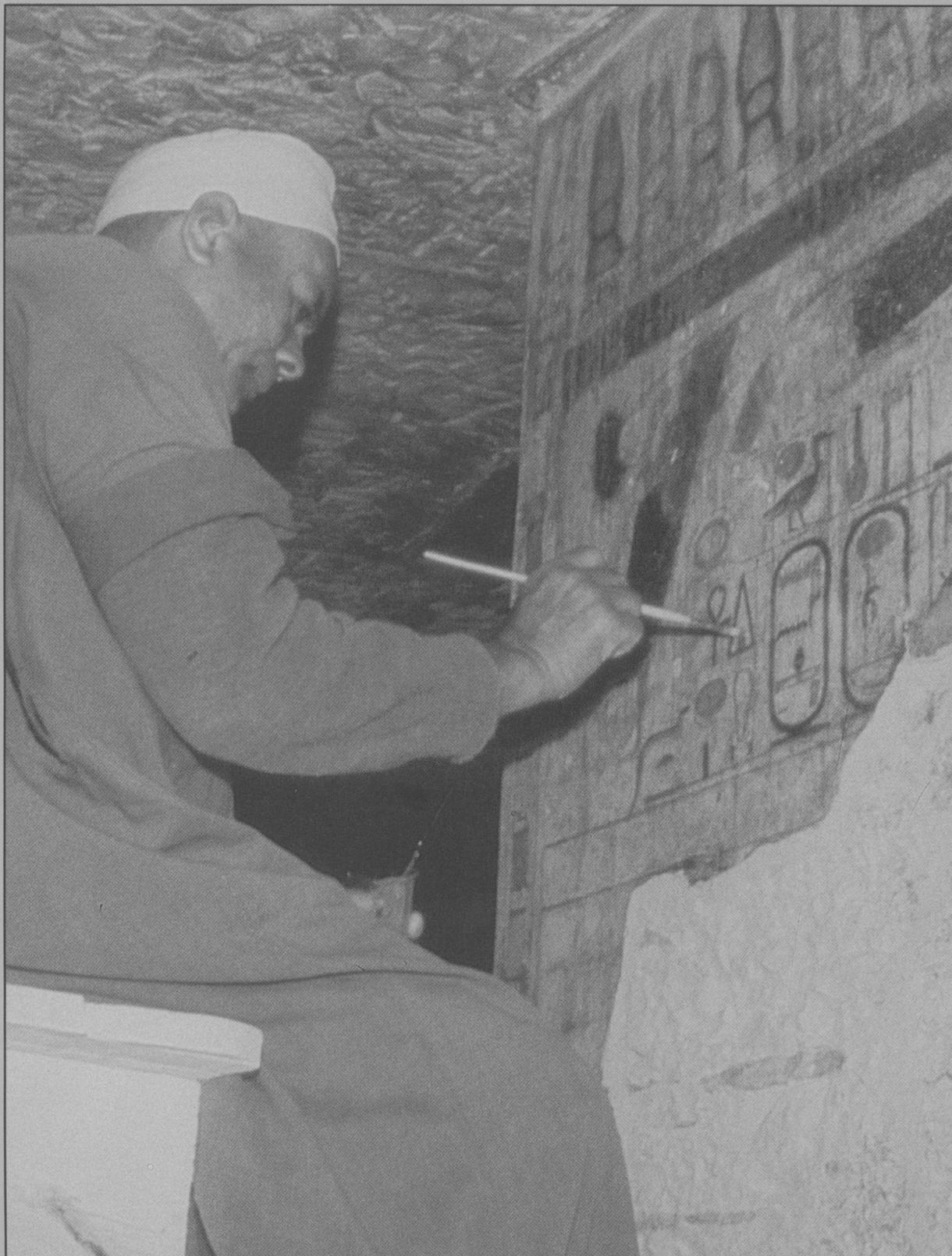
42 Perepelkin, *op. cit.*, p. 163.

43 D. Redford, *Akhenaten, The Heretic King* (Princeton, 1984), p. 187, n. 4, citing Frankfort and Pendlebury, *The City of Akhenaten*, vol. 2 (London, 1933), pl. 58:16.

44 I am grateful to Edwin "Ted" Brock for his assistance in inspecting and photographing the three canopic jars and lids from KV 55 in the Cairo Museum and to Lyla Brock for her slides, fax message and verbal communication on the appearance of details of these containers.

### **Addendum**

After the deadline for submission of manuscripts, Aidan Dodson's article "King's Valley Tomb 55 and the Fates of the Amarna Kings" was published in *Amarna Letters* 3 (1994), pp: 92-103. The proposed joint article with Ted and Lyla Brock will include some comments related to this article.



.....  
**PART THREE**  
.....

**A FRAGILE HERITAGE:  
Restoration and Conservation**

“The ... destruction of many ancient monuments that in the last few years have been devastated so utterly that not the least trace of them remains.”

(Jean-François Champollion, 1829)

Viewed from one perspective, the solid rock from which the royal tombs are cut belies the truly fragile nature of the monuments, for these masterpieces are only a few millimeters in thickness, no deeper than the decorated plaster and paint which clings to the tomb walls. Even apart from the severe and increasing pressures placed upon the monuments by the tourists which flock to visit them, other dangers threaten this fragile heritage.

Not least of these dangers are the violent floods which may rush down through the wadis without warning after rains on the surrounding high desert. Infrequent as they may be, these floods are immensely destructive and deserve the continued concern of those charged with the protection of the royal valley. One such flood occurred just days before the International Conference on the Valley of the Kings on which this volume is based and was the topic of much discussion at this meeting of Egyptologists. The flooding formed the introduction to the paper given by Kent Weeks, whose Theban Mapping Project has not only produced detailed maps and plans of the royal valley and its accessible tombs, but also is deeply involved in the mapping of watersheds and runoff patterns as well as the resultant planning of conservation measures. Geologist Garniss Curtis and engineer John Ruthford both utilize specialized professional expertise to address these problems in their respective contributions, and Donald Ryan calls for physical protective measures which would help to slow the further destruction of the tombs.

Certainly, that which remains of the royal burials must be actively preserved before much more is irretrievably lost. Despite the fact that a number of important conservation measures were announced at the Arizona conference, including Cairo ARCE Director Mark Easton's announcement of a substantial USAID grant for conservation of Egyptian monuments, much remains to be done. The danger of taking what we have for granted was well expressed by the ancient Egyptian sage who wrote, “Do not say ‘Today is like tomorrow’ ...comes tomorrow, today has vanished and the deep has become the water's edge” (Instructions of Amenemope, c. 1300 B.C.).

# The Work of the Theban Mapping Project and the Protection of the Valley of the Kings

*Kent R. Weeks*

.....

## I. Introduction

Of all the threats to the Valley of the Kings (KV)—and there are several, including vandalism, theft, tourism, pollution, and erosion—none is more serious (or more preventable) than the flooding caused by torrential rains that strike the Valley's watershed. In minutes, the flash floods these sudden cloudbursts create can wash tons of debris down the KV hillsides and into unprotected tombs. The floodwaters weaken the bedrock in which the tombs are cut, destroy their decorated walls, deposit many meters of silt and stone in their chambers, and cause dramatic and damaging changes in the humidity levels within tomb chambers.

The storms that struck Upper Egypt in October and November, 1994, did terrible damage. In upper Egypt generally, the Government reports that over 500 people were killed, 11,000 homes were destroyed, 25,000 feddans of crops ruined.<sup>1</sup> In Thebes, too, there was considerable destruction, not so much to living people as to the sources of their livelihood—the monuments that tourists come to see.<sup>2</sup> In the Valley of the Kings, the storms caused the flooding of several tombs, and the Antiquities Inspectorate was forced to requisition pumps from neighboring villagers to remove the accumulated water. KV 13, the tomb of Bay, was the most heavily hit: inspectors measured 1.40 m. of water in its lower, accessible chambers. KV 14, 15, 35, and 57, among others, received smaller amounts. During these storms, runoff from the KV watershed cut channels in the Valley floor (a deep layer of limestone chips) and damaged the asphalt road eastward from the new KV resthouse. In the West Valley (WV), one can now see channels two meters deep and three meters wide that were cut through mounds of limestone and sand, and there is plentiful evidence of stones weighing ten or fifteen kilos being rolled along the WV floor.

The floodwaters that rushed down the wadi from the KV and WV watersheds met even heavier runoff from more northerly wadis. Near the house of Howard Carter, these streams joined forces, creating a wall of water that some residents of northern Thebes claim was as much as two meters deep. This torrent rushed toward the temple of Seti I, seriously damaging the temple's enclosure wall and subsidiary buildings, turning limestone stelae and mud brick walls into mush. A few meters north, across the paved road from the temple, grave markers in a modern Moslem cemetery were demolished, and the road itself buckled. Just east of the temple, homes in a mud-brick village were reduced to piles of rubble. The whole

event took less than fifteen minutes. When it was over, several people had died, scores of homes had been destroyed, and hundreds more were damaged. (It is important to note that the pattern of flooding here at the northern end of the Necropolis in 1994 seems to have been very similar to a flash flood that struck here in 1949. This fact should be taken into account when repairs are made to the temple of Seti I).<sup>3</sup> If anything good can be said to have come from such tragic events, it is that the storms of 1994 provided information that may help us protect both ancient sites and modern villages from future storms—storms that we know will occur again.<sup>4</sup>

Slowly over the past ninety years, archaeologists have come to realize that flooding in the Theban Necropolis is a recurring event that can and must be dealt with globally if damage to the ancient monuments is to be prevented. The recent storms, and the historical pattern of storms that we are only now beginning to trace, lend a degree of urgency to this work. Much of the data about rainfall and flooding in Thebes have been available for many decades. But it was not until the late 1970s, first with the brief work of The Brooklyn Museum's Theban Royal Tomb Project (TRTP),<sup>5</sup> and then, a few years later, with the still-ongoing work of the Theban Mapping Project (TMP, now of The American University in Cairo),<sup>6</sup> that any overall plans were outlined for the protection of the Theban monuments.

Most of these plans are still in elementary stages of design, and all have concentrated on the Valley of the Kings. But although KV forms a discrete watershed, it is nonetheless just one part of a broader area—the northern sector of the Theban Necropolis—that has

## Storms with Heaviest Rainfall

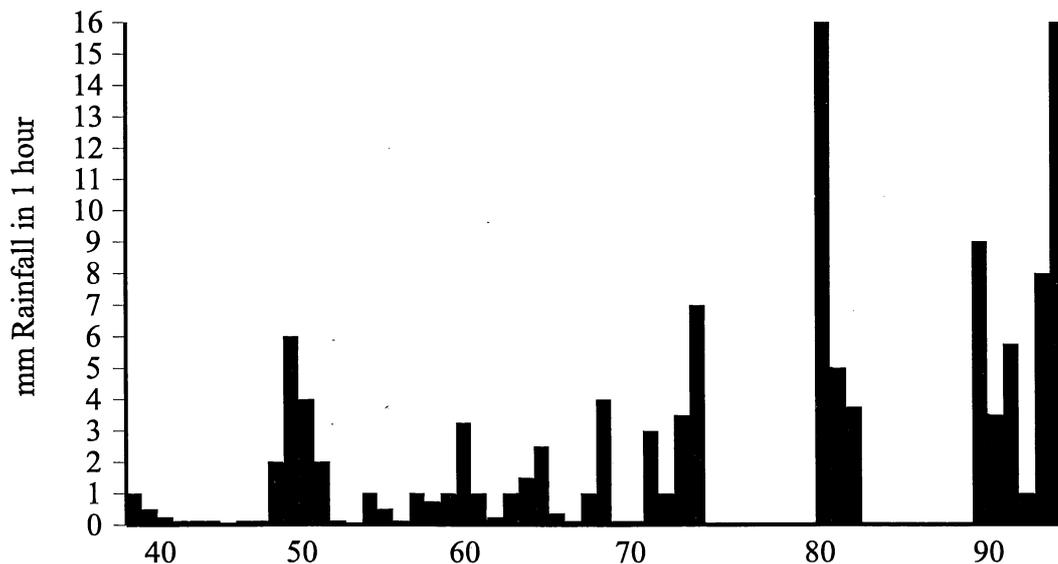


FIGURE 1

been especially subject to rainfall and flooding for at least two centuries. Although KV and the northern Necropolis can each be dealt with separately when designing flood protection systems, both should be studied if priceless archaeological monuments—and human lives—are to be saved in future.

## II. The Theban Mapping Project

The ultimate goal of the TMP (which began work in 1978) is to provide the data—topographical, archaeological, architectural, geological and hydrological—needed to establish a cultural resource management database for the Theban Necropolis and the thousands of monuments it contains. The TMP has so far established an XYZ grid reference system over Thebes, set survey monuments, prepared aerial photography, and undertaken systematic architectural studies of the tombs in KV.<sup>7</sup>

In recent years, the TMP has concentrated its work in KV. Building upon studies by the TRTP and by Elizabeth Thomas,<sup>8</sup> the TMP has undertaken a comprehensive study of each KV tomb's history, condition, and need for conservation. Work has included the preparation of 1:100 plans, elevations and sections of every accessible tomb, and the production of computer-drawn axonometric drawings of each. As an extension of this work, the TMP also has prepared (or currently is seeking funding to prepare) detailed studies of the KV watershed, more detailed maps of the KV floor and KV tomb entrances, systems for monitoring the local environment and tomb conditions, and plans for the protection of KV from future flooding.

## III. Rainfall and Flooding in KV

No one should have been surprised that heavy storms came to Thebes in 1994, or that their flood waters did damage in fairly specific, localized areas. The storms of 1994 were only the two most recent in a long history of storms many of which, directly and indirectly, have taken a heavy toll of Theban monuments. A review of the meteorological history of the West Bank (poorly-known though that history is) indicates that the location of these storms is roughly predictable and that the flooding they cause recurs in the same areas at the same intervals decade after decade. The topography of the West Bank seems virtually to dictate this pattern.

### III.1. The Regular Recurrence of Storms

The accompanying chart, based on data prepared for the TMP by Dr. Sherif el-Didy, Professor of Hydrology at Cairo University, and supplemented with information provided the TMP by the Egyptian Air Force, shows a partial history of storms in the Luxor/Thebes area since the first weather station was established in Luxor in the 1930s. Of course, these figures record data for Luxor, specifically the Luxor Airport weather station on the edge of the East Bank desert. Our interest is the West Bank of Thebes, 10 km. to the west, and especially KV, another 9 km. beyond that. But until a weather station is installed on the West Bank (something the TMP is seeking permission to do), this is the best data available. The chart shows the occurrence, each year, of the storm that dropped the greatest amount of rainfall—at least 1 mm of rainfall—in a one-hour-long period. If there were several one-hour storms in a single year, only the storm with the heaviest rainfall is charted. The maximum amount of rain that fell in one hour is shown on the vertical scale (although, of course, the storm, if it continued at reduced intensity for more than one hour, may have dropped more than the one-hour amount). Note that the most significant storms seem to come in roughly

three- or four-year clusters once every decade or so.<sup>9</sup> Regular yearly patterns of rainfall have been noted in other parts of Egypt, too, although their intervals of recurrence differ from those seen here.<sup>10</sup>

Three- or four-year storm clusters have a longer history than just the last sixty years, when the Luxor weather station began operation. This may be seen in a letter from Howard Carter, written from Thebes to his mother in October, 1918: "For three successive Octobers we have had heavy downpours, and this time a peculiar phenomenon occurred. While we were as dry as a bone, the larger valleys suddenly became seething rivers.... The Valley of the Tombs of the Kings, joined by the Great Western valley, in a few moments became little short of mountain rivers...the torrent cutting out wide furrows [sic] in the valley bed and rolling before it stones some two feet in diameter—natives returning home with their animals were unable to ford it, and thus were cut off

from their homes."<sup>11</sup> Carter wrote a nearly identical description of this storm in a letter to Lord Carnarvon, adding: "Then, later came a heavy downpour, which was the edge of the storm whose centre had been approximately ten miles back in the hills."<sup>12</sup> The storms to which Carter referred would have occurred in 1915, 1916, 1917, and 1918.

This pattern of three to four years of heavy rain per decade is not perfect, of course. But each recent major storm dropping more than 5 mm of rain in one hour (in 1949, 1975, 1976, 1979, 1980, 1989, 1991, 1993, and 1994) usually has fallen within a three- or four-year storm cluster. That a greater number of heavy storms has occurred in more recent decades than in earlier may indicate that there is also a longer-term pattern of storms. At least one hopes this is the case, and not an indication of an ominous climatological trend toward increasingly frequent and heavy rainfall.

The occurrence of major storms in Thebes roughly about once a decade was also a pattern noted by Wilkinson: "Showers fall annually at Thebes; perhaps on an average four or five in the year; and every 8 or 10 years heavy rains fill the torrent-beds (wadis) of the mountains, which run to the banks of the Nile. A storm of this kind did much damage to Belzoni's tomb [KV 17: Seti I] some years ago."<sup>13</sup>

### III. 2. The Seasonality of Storms

It is also the case that virtually all of the heavy storms at Thebes in the 20th century (or at least those for which we have records) occurred in the months of October, November, or early December.<sup>14</sup> Howard Carter commented on this fact in the letter quoted above. In the ancient Coptic calendar, the Gregorian months of October and November overlap the months of Tut, Phaophi, and Athyr (the three months of ancient *akhet*, the Egyptian season immediately following the recession of the Nile flood). In these months, the calendar warns that

<b>November 2nd:</b>	0:00
Rain:	0.5 mm
Wind:	12 knots/direction 80
<hr/>	
	6:00 p.m.
Rain:	0.5 mm
Wind:	5 knots/direction 270
<hr/>	
<b>November 3rd:</b>	6:00 p.m.
Rain:	0.5 mm
Wind:	Stable and calm
<hr/>	
<b>November 4th:</b>	
Rain and wind are	stable

FIGURE 2

the weather will be intermittently but regularly windy, rainy, and stormy.<sup>15</sup> There is a similar tradition of heavy October-November rains among the Bedouin of the Western Egyptian desert.<sup>16</sup>

### III.3. The Location of Storms

Heavy rains in the Luxor area are remarkably limited in their geographical extent. One frequently hears of rains falling heavily in one village while, only a few hundred meters away, another village remains dry.<sup>17</sup> (This, by the way, is why the Luxor Airport meteorological data is not the best indicator of West Bank weather.) Although there may be some rain falling throughout the Theban Necropolis during a storm, it is rare that the heaviest rains fall in more than a small part of it. In the 1994 storms, for example, light rain fell over the entire Necropolis, but was not serious enough to do much damage. Slightly heavier rains fell over parts of Malkata and Shaykh Abd al Qurneh (causing flooding in TT 139: Pairs). Very heavy rains fell in parts of KV, WV, and in the wadis north of these. In KV, the heaviest rains fell in those very limited areas of the watershed that drain into the southwesternmost part of the Valley—the hills above tombs KV 13, 14, 15, 31, and 32. There were only small to moderate amounts of water reported in KV 8, 35, 57, and 62. These tombs also lie below the western slopes of the Valley.

Tracing the unfortunately scarce records of rainfall and flooding in KV from references in ancient graffiti, the diaries of 19th century travelers, and the recollections of on-site inspectors and guards, this pattern seems almost always to be the case: there may be drops of rain falling throughout the Valley, but it is the western part of KV, and especially the southwestern part, that is subject to the most frequent and heaviest rainfall, and consequently that receives the greatest amount of damage. The only KV tombs outside this quadrant that offer historical evidence of serious flooding are KV 5, 10, 17, and 18. None of these seems to have been affected by the 1994 storms.<sup>18</sup>

## IV. The Future

Knowing that serious rains will fall in KV in three- to four-year periods every decade or so; knowing that these storms are most likely to come in the period from October to early December; and knowing that the most serious flooding is likely to occur in the western half of KV (and especially in its southwestern quadrant) should help make it possible to plan for the protection of Thebes and KV in a timely and cost-effective manner. The TMP currently is seeking funds to develop such specific plans, and we hope to be able to put protective measures in place in the near future.

We know that rains and floods will continue to come to KV and the Theban Necropolis generally. Let us now work to insure that, in future, they will come as the ancient Egyptians saw them in the past: as manifestations of the goodness and power of the god Hapy; and not as they come today: as catastrophes that threaten the very existence of some of humankind's greatest archaeological treasures.<sup>19</sup>

— The American University in Cairo

## NOTES:

1 According to the Egyptian press. See also E. Samaan, "And Then the Rains Came," *Egypt Today* (January, 1995), 55-56.

2 A graphic description of the damage to the village is given in: R. Johnson, "Aida, Opet, and the Great Flood of '94," *Chicago House Bulletin* 6:1 (December 15, 1994).

3 This according to various elderly local residents with whom I talked in early 1995. The similarity is alluded to in: J. Romer, "A History of Floods in the Valley of the Kings," unpublished report of the Brooklyn Museum Theban Expedition (n.p., [1979]).

4 The recurring nature of the storms was well-known to local Theban residents: "During the summer of 1916, while [Howard] Carter was in England, a most remarkable discovery was made in a remote spot at the southern end of the hilly district of the Theban Necropolis. There had been a heavy rainstorm in the hills, resulting in tumultuous floods pouring down from the western mountains to the Theban plain. On such rare occasions huge quantities of loose debris were moved about by the water, and it was not uncommon for ancient remains, or the indications of tombs, to be revealed. The professional tomb-robbers of Qurna were well aware of these periodic natural, and very effective, scourings, and following this summer downpour they discovered a tomb in the Wadi Qubbanat el-Qirud, 'Valley of the tombs of the monkeys'." T.G.H. James, *Howard Carter: The Path to Tutankhamun* (London, 1992), pp. 184-85.

5 Copies of the unpublished TRTP reports are on file: in Luxor, at Chicago House; in Cairo, at the American Research Center in Egypt and the German Institute; and in Brooklyn, at the Brooklyn Museum. Unfortunately, none of the sets in Egypt seems to be complete.

6 Annual reports of the TMP (formerly the Berkeley Theban Mapping Project) have appeared in the *Newsletter of the American Research Center in Egypt* 105 (1978), 18-50; 109 (1979), 19-45; 113 (1980), 27-50; 116 (1981), 39-56; 121 (1983), 41-58; 136/137 (1987), 1-13; and elsewhere, e.g.: C.N. Reeves (ed.), *After Tut'ankhamun: Research and Excavation in the Royal Necropolis at Thebes* (London, 1992).

7 In addition to the annual reports cited above, see also: K.R. Weeks, "A Theban Grid Network," *MDAIK* 37 (1981), 489-92.

8 Elizabeth Thomas's *The Royal Necropoleis of Thebes* (Princeton, 1966) is still the best and indispensable source for the study of KV and its tombs. An updated edition is being prepared by Dr. Catharine Roehrig (Assistant Director of the TMP, now of the Metropolitan Museum of Art, New York).

9 It should be noted that, although the October, 1994, storm on the West Bank also registered a high one-hour rainfall at Luxor Airport, the even larger November storm registered virtually none.

10 E.g., H. Kees, *Ancient Egypt: A Cultural Topography* (Chicago, 1961), 22, notes that heavy rains around Gilf Kebir recur at about 5-year intervals.

11 Quoted in T.G.H. James, *op. cit.*, p. 202.

12 Quoted in Romer, *op. cit.*, p. 10.

13 J. G. Wilkinson, *Topography of Thebes* (London, 1835).

14 Although much less frequent than in October and November, rainfall has also been seen in Luxor in other months. Villiers Stuart (*The Funerary Tent of an Egyptian Queen...* [London, 1882], pp. 146-55) noted that, between November, 1881, and March, 1882, it rained in Luxor only on 23 February, and then only a few drops. A light rain also was reported in February, 1896. If Dr. Abdel Aziz Sadek's interpretation of dates in Theban graffiti of the Ramesside period is correct, rains heavy enough to leave ponds of water in the Valley of the Kings (events unusual enough to merit visits and comments by ancient scribes who brought their children to see the phenomena) fell on 18 March 1210 B.C. (in the reign of Merenptah), and again, less dramatically, on 6 June 1150 B.C. (in the reign of Ramesses IV) (A. Sadek, "Varia Graffitica," *Varia Aegyptiaca* 6 [1990], 109-20). In the 20th century A.D., such rains are extremely rare.

15 I am indebted to Susan Weeks for this information. She is preparing a full version of these early weather calendars for publication in the near future.

16 I am indebted to Professor Donald Cole of the American University in Cairo, who has conducted extensive fieldwork among these Western Desert peoples, for this information.

17 In a letter from Carter to Lord Carnarvon (quoted by Romer, *op. cit.*, p. 10): "towards the sunset, as the desert cooled, there was a great storm in the Northwest. No rain fell in the Valley, but from all the washes that ran down from the Theban hills, including the Valley of the Kings there was a torrent which cut furrows four feet deep and rolled stones as big as two feet across. The locals were unable to ford the floods when returning from their work in the fields as the area was a vast lake. Yet no rain fell."

18 Romer (*op. cit.*, p. 5) suggests that the levels of graffiti on the walls of tombs KV 1, 2, 6, 7, 8, 9, 10, 14, and 15 indicate moderate to heavy floodborne debris in these tombs at the time the (Greek and Coptic) graffiti were written.

19 "La pluie dans le pays montagneux représenterait alors une forme d'apparition de dieu Hapy."  
D. Van der Plas, *L'Hymne a la crue du Nil* (Leiden, 1986), vol. I, p. 127.

## Deterioration of the Royal Tombs

*Garniss H. Curtis*

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My introduction to Egyptology and particularly to the Valley of the Kings was when Carter discovered the tomb of Tutankhamun. Accounts of his finds were reported daily in the *San Francisco Chronicle*, which my mother read to my sister and me, whetting our curiosity and desire to see these marvels firsthand. In my spare time in college, I read Carter's three volumes about the tomb of Tutankhamun plus Breasted and many other books about ancient Egypt. But it was not until 1958 that my wife and I made our first visit to the Valley of the Kings. It was early June and very hot, therefore sleeping on the overnight train to Luxor was out of the question. But we didn't care—at long last we would see firsthand this wondrous place: the Temples of Luxor and Karnak on the east bank of the Nile and the Valleys of the Kings and Queens on the west bank. There were only two other people staying at the Winter Palace Hotel at Luxor, the only hotel in Luxor at that time. After registering, an old man came up to us, introduced himself formally, "Muhammad Akhbar," and asked if we needed a guide. Thus began four of the most wonderful days of our lives. Muhammad Akhbar was very knowledgeable, far more informed than the guides we had at the tombs and pyramids near Cairo. There were no ferries at that time, and Muhammad rowed us across the Nile in his boat, stopping once to plunge a cup into the vile green water saying, "This is something you cannot do," as he drank it down. A horse-drawn carriage took us to the Valley. At 10 a.m. it was 104 Fahrenheit degrees and 106 F degrees when we returned late in the afternoon. The tombs were everything we hoped for and more. Seti I impressed us most; but all of those that were open to us were glorious.

Twenty years later I returned to the Valley of the Kings, this time as a geologic consultant under the aegis of The Brooklyn Museum and working with John Romer, an Egyptologist, and also with John Rutherford, an engineer and amateur Egyptologist, whose goal was to make an accurate survey of all of the tombs in the Valley of the Kings after bringing an accurate survey base line across the Nile from Luxor. That season we had wonderful cooperation from the Egyptians, and were permitted to go into any tombs we wanted, even Hatshepsut's, the deepest and longest of all the tombs. My memory of the tombs of twenty years before was still fresh, and the degradations of many of them appalled me. Clearly the thousands of tourists that visited the Valley of the Kings by that time had something to do with the degradation, but what?

My commission was to study the geology of the Valley of the Kings and see what geologic factors might bear on tomb degradation. R. Said had published descriptions of the stratigraphy of the Valley of the Kings in 1960 and 1962. This made an excellent basis, and I used his classification of four members for the marine Eocene Thebes Formation, out of

## Stratigraphic Column, Valley of the Kings and el Gurn

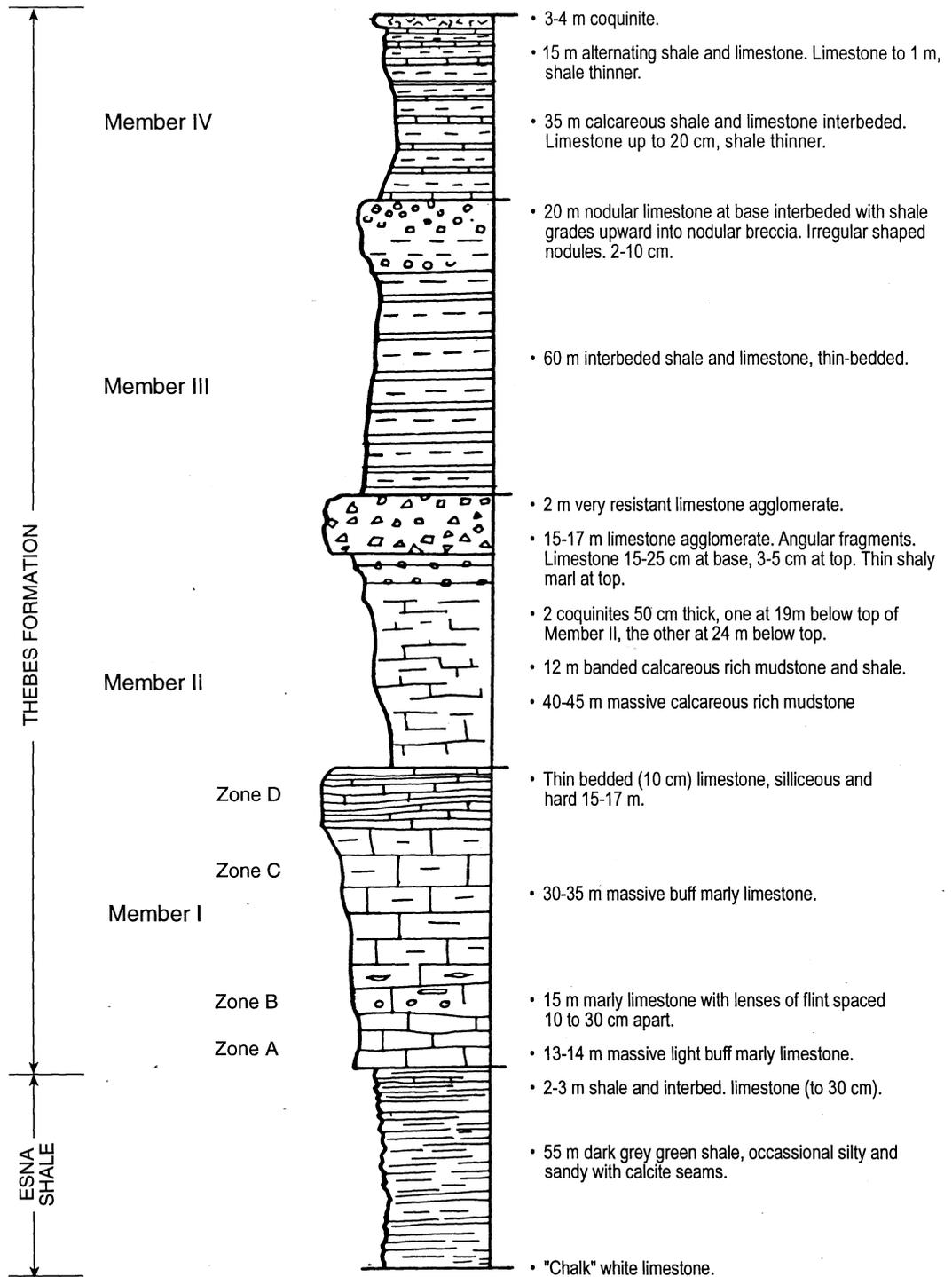


FIGURE 1

which the Valley of the Kings is largely carved, fleshing them out with a little more detail (fig. 1). The Thebes Fm. rests on 55-60 meters of shale, the Esna Shale, only a few meters of which outcrop in the Valley of the Kings. All of the entrances of the royal tombs have been cut in the lowest marly limestone beds, zones A & B of Member 1, although some of the tombs descend into the underlying Esna Shale.

Following uplift in late Tertiary time and down cutting by the Nile River, probably in the Pliocene epoch, a steep topography was developed along the banks of the Nile which led to two new types of deposits formed from these older strata, both in the Valley of the Kings and the Valley of the Queens and for many miles north of Luxor. Great blocks of Thebes Fm., some almost two km long, detached themselves, generally at the contact with the Esna Shale, but sometimes along shale partings within the overlying Thebes Fm., and slid toward the Nile, breaking into huge fragments, some a hundred or more meters in length, which rotated as they moved. Such deposits may be seen at the entrance to the Valley of the Kings and at the south end of the Valley of the Queens. Undoubtedly these gravity detachments occasionally dammed the Nile River for short periods of time.

Subsequent to this period of slide formation, possibly in early Pleistocene time, fanglomerates, conglomerates, sands, and occasionally freshwater limestones were deposited over the top of the landslide breccias to a thickness of many meters in the case of the slide at the entrance to the Valley of the Kings.

Afterwards, erosion carved the present valleys which incise both the Thebes and Esna Shale as well as the landslides and overlying fanglomerates. Clearly the climate has varied greatly from time to time, leading finally to the very arid climate of today.

The great gravity detachment landslides are all old, possibly a million or more years. None are active today. It is likely that connate water in the shales, which has long since gone by slow diffusion and evaporation, was the cause of these huge slides. However, a wetter climate at that time cannot be ruled out. Pieces of the Esna Shale and of some of the parting shales in the Thebes Fm. disaggregate almost explosively when dropped into water. Expansion of the shale upon absorption of water but without confinement is more than 50 percent.

The force of the expansion of this shale as it absorbs water when confined is well illustrated in the tomb of Ramesses II, which has been reported by Rutherford (1981). Here the force of the expanding Esna shale immediately below the tomb, as it absorbed water from flash flood debris flows pouring into the tomb through the entrance at the surface, was so great it crushed the columns holding up the ceiling of the tombs!

Fissures, as much as 50 cm in width and 50 meters long, may be seen cutting the limestone strata above many of the tombs and are largely confined to zones A and B of Member I. These are contraction joints, caused by loss of water in these marly limestones. Analyses of samples cut from these lower beds of the Thebes Fm. showed (upwards) decreasing amounts of the clay in them, decreasing porosity from as much as 28 percent in zone A to zero in zone D; and increasing specific gravity, being 2.0 in zone A and 2.75 in zone D. Carefully measured pieces cut from these marls and immersed in water for 24 hours showed greatest expansion in the lower zones, being as much as one percent in zone A and zero in zone D, the expansion being greatest perpendicular to bedding. In fact, some of these marls don't expand at all in the direction of bedding (fig. 2).

Sample No.	Wt. Dry (105° C)	Wt. Wet (24 hrs)	% Diff.	Length Dry	Length Wet	% Diff.	Comment
1 (Ram. II)	142.8 g	157.1 g	10.0	10.45 cm	10.48 cm	0.29	Sample unchanged after drying.
2 (Ram. II)	159.3 g	172.5 g	8.29	9.73 cm	9.82 cm	0.98	Sample disintegrated after wetting and drying.
Member I Thebes Fm. Zone A	142.3 g	160.9 g	13.07	19.49 cm	19.53 cm	0.20	Sample unchanged after drying.
6 m above Esna Shale	(144.9 g at 70% humidity)						
Zone A	102.0 g	111.0 g	8.82	20.64 cm	20.71 cm	0.34	Sample unchanged after drying.
12 m above Esna Shale	(103.5 g at 70% humidity)						
Zone A	42.8 g	47.4 g	10.7	7.93 cm	7.94 cm	0.16	Unchanged after drying.
Zone A	60.0 g	69.3 g	15.5	9.27 cm	9.30 cm	0.32	Unchanged after drying.
Zone C	31.1 g	35.4 g	13.8	8.06 cm	8.12 cm	0.74	Sample split parallel to bedding after drying.
Zone D	150.05 g	150.2 g	0.10	9.80 cm	9.80 cm	0.00	Unchanged after drying.
Zone A-B (Ram. XI)	342.0 g	375.6 g	9.82	6.61 cm 6.51 cm 3.77 cm	6.61 cm 6.51 cm 3.78 cm	0.00 0.00 0.26	Parallel to bedding. Parallel to bedding at rt. angle. Perpendicular to bedding.
Location Unkn. Possibly Seti I	148.3 g	165.1 g	11.3	11.45 cm	11.67 cm	1.05	Sample disintegrated after drying. Very irregular surfaces before wetting.

FIGURE 2

Many of the reasons for the degradation of the royal tombs in the Valley of the Kings are quite clearly directly related to the contraction and expansion of the marls and shales upon loss or gain of water.

During the thousands of years that the tombs were sealed, the humidity in the tombs remained almost constant. Diffusion of water still remaining in the pores of the marls to evaporate at the ground surface would, in most cases, have been too slow to affect the humidity in the tombs. With the removal of the seals and the opening of the tombs, however, and with, in recent years, the movement of thousands of visitors into and out of the tombs bringing with them dry air as they enter, and humid air out of the tombs as they leave has been an accelerated loss of pore water in the marls, consequently a marked contraction of the marls with a deleterious effect on wall paintings and carvings.

An example of what will eventually happen to all of the royal tombs when all of the moisture in the marly limestone composing their floors, walls, and ceilings is gone is afforded by the tomb of Ramesses XI, which has a very large entrance that has probably not

been sealed for more than 2,000 years. In this tomb desiccation of the limestones is complete. The columns supporting the ceiling are intensely fractured and large angular fragments of them litter the floor. Large fragments of marly limestone from the ceiling also litter the floor. The tomb appears never to have been completed and decorated, but if it had been, there would be virtually nothing left of such artwork.

These data indicate that the tombs should be kept at constant humidity in order to keep the marly limestone walls from expanding or contracting. This can only be done if doors or barriers of some kind are placed on the entrances, and if air conditioners are installed to maintain a constant humidity. The proper humidity can be determined by measuring the humidity in tombs that have been closed to the public for protracted periods and which have reasonably tight doors on their entrances. Alternatively, small cores could be taken from the walls of tombs in obscure and undecorated places and the moisture gradients measured.

Concerning abrasion of the wall paintings and bas-reliefs in the royal tombs by overcrowding with tourists carrying tote and camera bags, which brush against the decorated walls with their every turn and do irreparable harm, we suggested doing what many museums do, affixing thick (10mm) sheets of clear vinyl plastic two or three centimeters from the walls, and supported by small bolts, which can be placed so as to cause no damage to the art on the walls.

Thunderstorms bringing flash floods and debris flows to the Valley of the Kings have always been a serious threat to the royal tombs. An inspection of the tombs for this kind of damage was made by Monaghan in 1979, who found that approximately 50% of the royal tombs showed more or less damage from this source, with some, such as Ramesses II, being totally destroyed. In this respect, each tomb is a special case. As almost all of the tombs descend downward from their entrances to the decorated burial chambers at the bottom, it is usually in the burial chambers that floodwaters and debris flows collect and do the most damage. Some tombs have been penetrated by rainwater through contraction joints that reach from the surface to the tombs themselves. Others have been damaged from rivulets pouring directly into their entrances from the cliffs above.

— Berkeley Geochronology Center

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# Tentative Tomb Protection Priorities, Valley of the Kings, Egypt

*John Rutherford and Donald P. Ryan*

## Introduction

In early October, 1994, and again during the first week of November, 1994, intense rainstorms caused widespread flood damage along the middle reaches of the Nile floodplain, including the area around the modern city of Luxor. The Valley of the Kings, across the Nile from Luxor, suffered flooding from stormwater runoff collected in its small drainage basin (fig. 1). The Valley contains the tombs of the pharaohs of the 18th, 19th and 20th Dynasties of ancient Egypt and is a unique artistic, religious, and historic cultural resource.

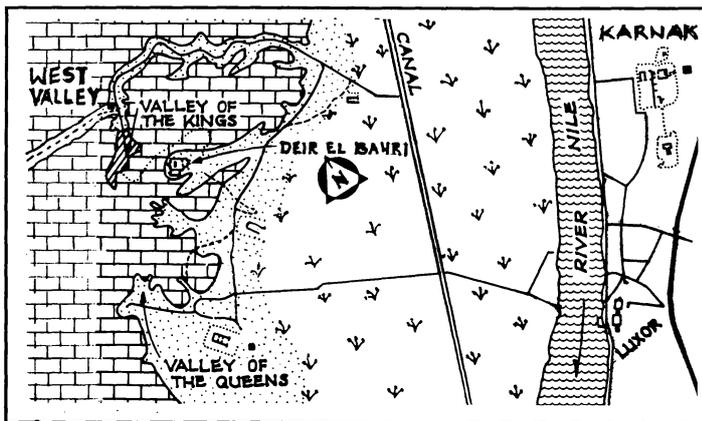


FIGURE 1: Area Map

Although the floodwater in the Valley of the Kings appears to have been less devastating than past floods, runoff and flood debris entered at least a few tombs. The immediate damage to the tombs is reported to be minor, but even a momentary entry of water into the tombs is capable of causing long-term damage for many years to come. This paper describes some of the natural and human agents of tomb destruction and discusses elements necessary to develop priorities for tomb protection and for the construction of damage mitigation measures. A draft matrix listing 62 tombs with a few of the natural hazards threatening their existence serves to il-

lustrate one possible methodology for establishing tomb protection priorities.

Even well-designed and constructed protection measures will serve only to slow the inexorable process of natural weathering which will eventually destroy the tombs. The tombs have never been cleared and recorded in a consistent and comprehensive fashion. This should be the first item of business if, indeed, the Valley of the Kings should have preference over the many other ancient sites in Egypt which are rapidly disappearing under modern development or are succumbing to the ravages of time.

## The Valley

The Valley of the Kings lies west of the Nile Valley about 520 kilometers south-south-east of Cairo and includes two desert valleys, or *wadein*. The eastern valley in this paper is referred to as the Valley of the Kings (VK), or Valley. It contains the majority of the tombs. The western valley is much greater in area than the eastern valley and is referred to as the West Valley (WV). It contains four more or less complete tombs and three possible starts of tombs. The locations of the *wadein* with relation to the Theban area are shown on fig. 1.

### Topography

The topography of the Valley of the Kings can be compared to a broad-rimmed bathtub, with a rim comprising about 32 hectares in area sloping downward into a steep-walled bottom area of about 15 hectares, as shown on fig. 2. This plan of the Valley includes all of the floor of the Valley of the Kings south of the present entrance gate and a portion of the upper or *gebel* area. The highest point in the VK drainage basin is the pyramidal-shaped north face of the peak called el Gurn towering over the south end of the Valley at an elevation of 456 meters. Most of the floor of the Valley is rimmed by steep limestone cliffs up to 20 meters high from valley floor to the edge of the *gebel*. The valley floor slopes downward from the toe of the cliffs at the south end to the entrance gate at the north end with a total vertical drop of about 20 meters.

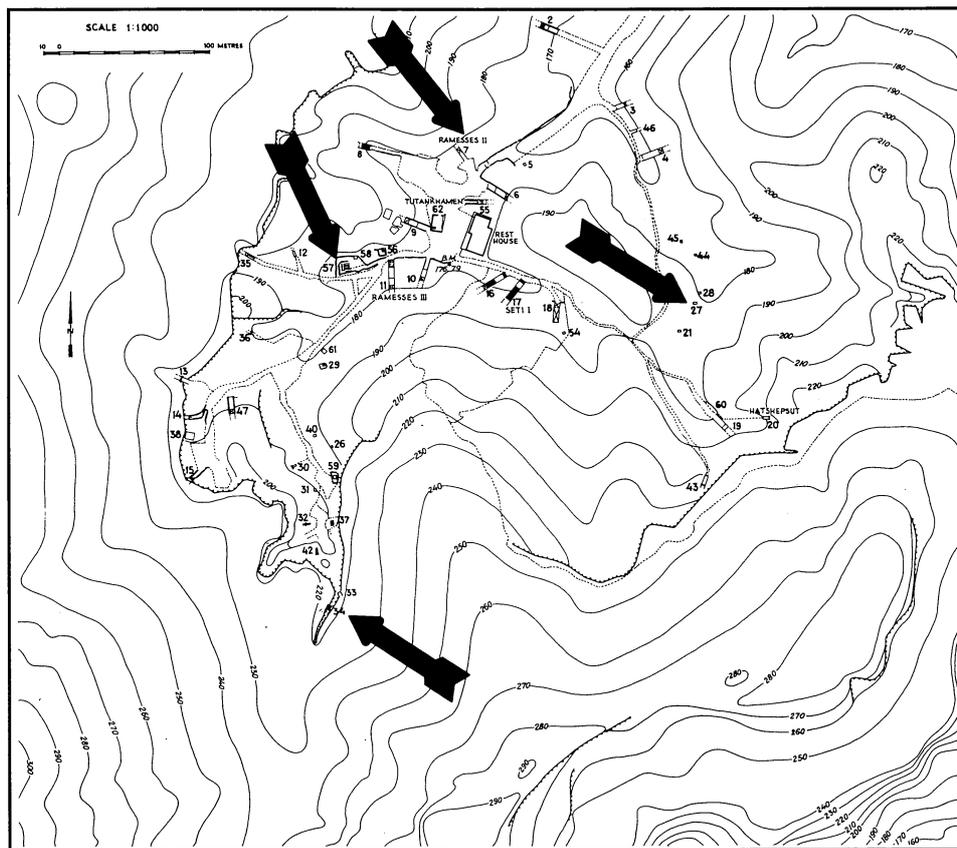


FIGURE 2: Valley of the Kings Map



A drainage basin plan, such as the one in fig. 3, shows the boundaries of an area within which each raindrop will flow toward a common flow point at the lowest end of the basin. The boundaries follow the ridge lines of the slopes surrounding the basin. The basin is comprised of a number of smaller basins which in turn are formed of even smaller subdivisions.

Fig. 3 shows only the primary drainage basins in the Valley, consisting of 1) an entrance drainage basin in which all stormwater runoff converges at the artificial barrier gate at the north end of the valley, 2) a drainage basin containing several tombs which comprises the *wadi* of Ramesses XI, and 3) the drainage basin of tombs KV 1 (Ramesses VII) and KV 2 (Ramesses IV). Flow from all the drainage basins exits through the narrow passage which in ancient times was the natural entrance to the Valley. These drainage basins are quite small. The area of the entrance gate basin is only 33 hectares, the *wadi* of Ramesses XI contains only about 9 hectares and that of KV 1 and 2 is about 5 hectares. Nevertheless, the infrequent rainstorms are so intense that several floods have already devastated the Valley and almost completely destroyed some of the tomb chambers.

## Geology

The geology of the VK has been described in detail elsewhere (Said, 1962, Curtis, 1979). We summarize here from a geotechnical point of view (Curtis and Rutherford, 1981) the geologic conditions which directly affect the tombs.

The rock strata forming the cliffs and spurs within the VK are nearly flat-lying and are composed of two rock types, marine limestone (the Theban Limestone Formation) and shale (the Esna Shale Formation); underlain by a third formation (the Dakhla Chalk). Only the two upper rock formations concern us here. Both are of lower Eocene age (Ypresian) and are shown in plan and section on fig. 4 below.

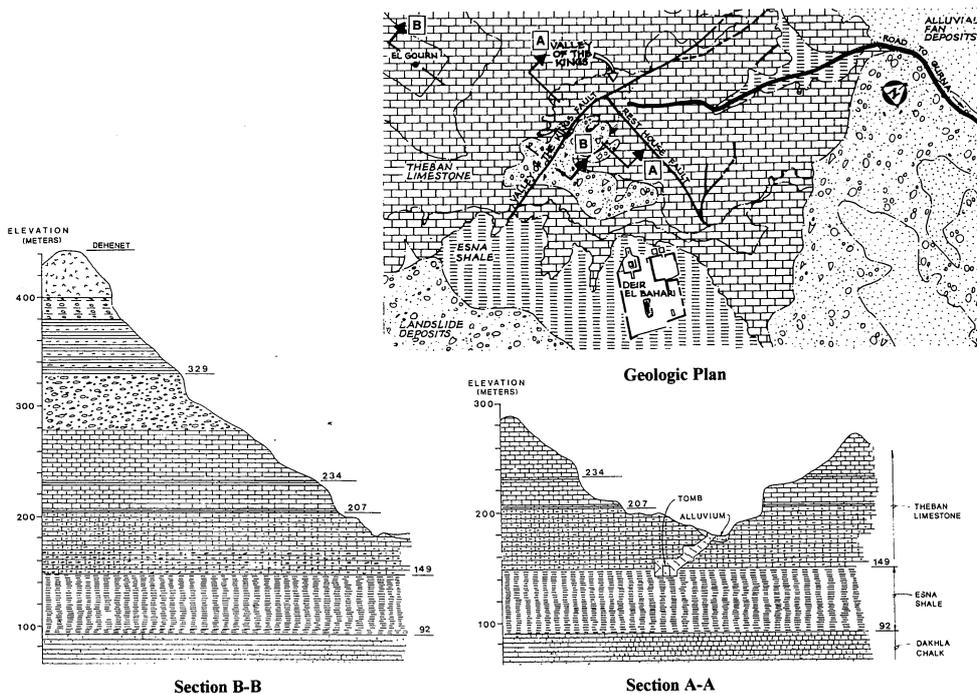


FIGURE 4

The **Geologic Plan** indicates surface exposures of four rock types: 1) the Theban Limestone exposed on the cliff faces of the VK and on the surface of the surrounding *gebel*, 2) the Esna Shale which is exposed on the surface of the Deir el-Bahri embayment, 3) landslide deposits, and 4) alluvial fan deposits consisting of flood debris washed down from the other rock units. The Esna Shale is approximately 58 m. thick at Deir el-Bahri where the upper part of the Esna and the lower members of the Theban Limestone can be seen on the cliff face above Hatshepsut's mortuary temple. The shale is essentially uniform throughout, although in its upper few meters it is interbedded with thin layers of limestone. The Theban Limestone is 300 meters thick as measured from the top of the Esna Shale to the highest beds exposed on the face of the El Gurn peak, shown in **Section B-B** above.

**Section A-A** above is cut through the Valley of the Kings in an east-west direction and shows the approximate location of a typical tomb with reference to the geologic formations. The Theban Limestone can be divided into several distinct members and beds of limestone and shaly limestone which retain their lithologic characteristics throughout the area. With few exceptions the tomb entrances have been cut into the marly limestone bed of the lowest member of the limestone formation; some of the tombs descend into the underlying Esna Shale. The basal member of the Limestone can be divided into four lithozones which grade into each other and are not sharply separable; but characteristic differences are evident that serve to identify them when exposed on the cliff faces and on the walls of the tombs. There is progressively less montmorillonitic clay upward in these lithozones; the uppermost thinly laminated zone is rich in silica and highly resistant to erosion. It forms the prominent flat-topped cliff surrounding the Valley at an elevation of about 255 meters.

Following uplift in later Tertiary time and downcutting by the Nile River, a steep topography was developed in these beds by erosional processes. These processes yielded the landslide deposits and fanglomerate deposits shown on the **Geologic Plan**. These landslide and fanglomerate deposits probably resulted from climatic changes over the past two to three million years, when the climate alternated from very wet to dry to wet to the present arid climate. The present *wadis* were cut during the wet period that preceded today's arid environment.

Landsliding on a gigantic scale produced deposits of brecciated limestone that extend outward from the steep limestone and shale cliffs north of Deir el-Bahri and the Valley of the Queens for a distance of more than a kilometer toward the Nile in some localities. The rock spurs in the Valley, into which some of the tombs were cut, are large blocks of limestone which slid down into the canyon formed during the erosional processes. Subsequent to the formation of most of these landslide deposits—possibly of early Pleistocene age—fanglomerates, conglomerates, sands, and, in some cases, freshwater limestone were deposited over the top of the landslide breccias to a thickness of about 70 m.

Several small faults cut the strata, but there is no evidence that these have been active in historic time. The largest of these faults, shown on fig. 4 above as the Valley of the Kings Fault, has a vertical displacement of 30 m. The plan also shows the Rest House Fault, named for the old Rest House which has now been removed. Vertical rock joints are prominent on the cliff faces and on the surface of the *gebel*; the ancient tomb excavators often located tomb entrances at these joints, which eased the labor of rock cutting by giving them a free rock face to break to.

The geology of the Valley provided the ancient tomb excavators an excellent rock material in which to work. The limestone is generally of good quality except in the lowermost

strata and is relatively easy to excavate, despite the presence of layers of hard chert and an occasional joint infill of hardened calcite as in KV 9 (Ramesses VI) and KV 8 (Merneptah). Unfortunately the same rock, when saturated by floodwater, is the source of the most significant tomb damage we witness today. The following sections describe the tombs and demonstrate the ways in which occasional floods have triggered the latent destructive forces in the bedrock of the Valley of the Kings.

## The Tombs

There are 83 tombs or starts of tombs within the East Valley and the West Valley, associated with the pharaohs of the 18th, 19th, and 20th Dynasties. Of this number, 20 are starts of tombs or unexplored depressions, 4 are in the West Valley, 1 (KV 41) is outside of the primary drainage basins, and 1 (AN B—proposed by some as the tomb of Amenhotep I)—is far to the south at Dra' Abu el-Naga. This leaves 57 tombs within the three primary drainage basins shown on fig. 4. Of these tombs, 20 can be considered royal tombs with a fair degree of certainty. The rest are tombs of royal relatives or public officials, or are unidentified tombs of various types and sizes. About 21 of the 57 are at least partially decorated with art ranging from the initial sketches to fully plastered, carved, and painted reliefs. One “tomb” (KV 54) is merely a leveled platform cut in the rock slope which served as the cache for embalming and other materials associated with the burial of Tutankhamun.

Despite the wide variety of types, occupancy, and location, all the tombs have one common characteristic: their entrances start at rock surface and their chambers are excavated in rock. Whether decorated or not, all the tombs contain material and markings of interest to someone, whether that someone is an Egyptologist studying the religious beliefs of ancient Egypt, or an engineer searching for clues as to how the tomb excavators—when they wished—could cut rock chambers with an accuracy difficult to obtain with our modern mining technology.

### Tomb Architectural Types

There are two basic tomb types from an architectural point of view—pit tombs and corridor tombs. Pit tombs have a more or less vertical shaft entrance chamber leading to one or more chambers at the bottom of the shaft. Corridor tombs have an entrance sloping downward from the ground surface to a series of chambers excavated into the rock. Slopes range from the gradual—KV 19 (Mentuherkhepshef)—to the very steep—KV 20 (Hatshepsut/Tuthmosis I). The entrance chamber and other chambers often consist of a flight of steps cut into the rock floor of the tomb. These two tomb types can be further subdivided into other categories, such as those with wells, those without wells, straight tombs, tombs which take a sharp turn to the left or right, tombs with stairs and tombs without stairs, and the like.

By convention and by knowledge of the tomb excavators intent through their allusions to tomb architecture, the entrance is labeled Chamber A; chambers with a specific purpose are lettered with the same letter from tomb to tomb, whether or not the tomb contains all the chambers in the ideal sequence. Thus a chamber with a well is almost always designated Chamber E, and a burial chamber is designated Chamber J. A few tombs appear to be fully excavated—KV 43 (Tuthmosis IV) and KV 7 (Ramesses II)—with a full complement of chambers, but most are incomplete. The most extensive tomb in the Valley is also the

earliest identified tomb, KV 20, which curves wormlike through the limestone and deep into the Esna Shale for a total length of 174 m. and a vertical drop of 98 m. Other tombs are spacious; KV 7 contains over 800 m<sup>2</sup> of floor area. However, from the standpoint of exposure to natural agents of destruction, the location and environment of the tombs described below are the most significant factors.

### **Tomb Location Types**

Tombs are cut in various locations, as high as KV 39 (unidentified) at elevation 250 m. and as low as KV 3 (son of Ramesses III) at elevation 167 m. Because the most destructive natural forces are water related as described below, the exposure of the tombs to water penetration is important and is presently dictated by the tomb location and environment. Tomb location types can be grouped into the following categories.

- Waterfall tombs. These are tombs such as KV 13 (Bay?) which are situated at or very close to the toe of the cliffs surrounding the Valley; if the entrance is beneath a drainage swale on the *gebel*, it is exposed to direct entry of floodwater falling from the cliff top.
- Pond tombs. Some tombs such as KV 55 (Tiye cache) have entrances deeply depressed below the adjacent ground surface, in some cases resulting from the placement of fill material on the Valley floor to provide convenient tourist paths. If the retaining walls around the entrance are breached or overtopped by floodwater, these tombs are subject to ponding of water.
- Direct entry tombs. KV 62 (Tutankhamun) is an example of a tomb whose entrance lies opposite the mouth of a *wadi* whose flowpath is aimed directly at the tomb. A torrent of floodwater from the *wadi* may overtop the low walls around the tomb entrance and flow directly into the tomb.
- Backwater tombs. KV 3 (son of Ramesses III) is an example of a tomb vulnerable to inflow of floodwaters from the *wadi* of Ramesses XI which are impounded behind the wall which has been constructed across the mouth of the gorge. The wall is noted on fig. 3.
- Crack tombs. A few tombs, including KV 55, are exposed to direct penetration of moisture traveling through widened joints in the limestone bedrock into which rainfall has entered.
- Multiple threat tombs. Several tombs, including KV 7 (Ramesses II), are exposed to two or more sources of floodwater entry.

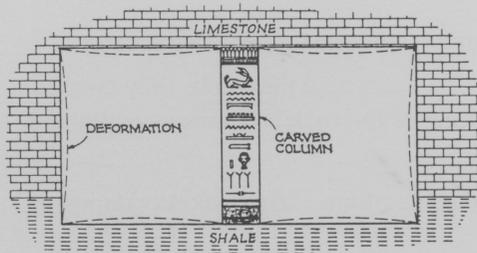
## **The Agents of Tomb Damage**

### **Human Agents**

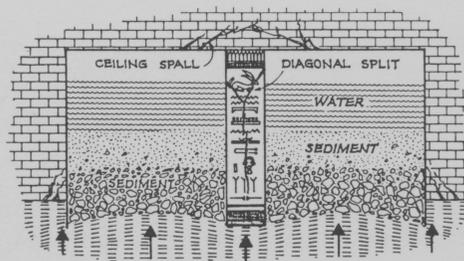
Humans have caused much of the past damage to the tombs, starting in ancient times when some tombs were used as human habitations with resulting damage from smoke, fire and abrasion. Tomb robbers who plundered the tombs relatively soon after the tombs were completed sometimes set fires to melt down the precious metals stolen from the tombs. The

list below summarizes some other sources of human damage.

- Initial excavation. When the ancient workers first excavated the tombs they created a moisture imbalance which caused minor cracking of the rock columns as explained under natural damage.
- Clearance. Careless clearance of the tombs by some of the early explorers damaged the tombs and exposed them to flooding.
- Tailings dumps. These consist of several materials from different sources, including: 1) limestone flakes from the original tomb excavation, 2) debris and flood-borne sediments removed from the tombs during clearance, 3) landslide material either lying *in situ* or placed there during clearing of the Valley, 4) colluvium and slope debris from the upper *gebel*, 5) flood debris deposited *in situ* during flood events (Monaghan, 1979). These tailings dumps are a source of flood debris during a severe flood and, where piled above tomb entrances, may slide directly into the tombs when saturated.
- Discharge of waste water into tombs. For several years overflow from the sewage tank collecting human waste from the old Rest House may have flowed into KV 5 (sons of Ramesses II).
- Use of tombs for garbage disposal. Until very recently, solid waste from the VK concessions was placed in some of the smaller pit tombs. Even now such tombs as KV 3 are used as toilets by some of the taxi and bus drivers.
- Theft. An example of this is the attempt to remove the head from one of the goddesses on the south wall of Chamber F, KV 43 (Tuthmosis IV). The relief is badly damaged as a result.
- Vandalism. Tourists dating back to early Greek and Roman times have scratched their names and comments on the tomb walls. The heights of those graffiti which are dated provide indirect evidence for whether or not the vandalized tomb contained flood debris at the time of the violation. The Hathor-as-a-cow relief on the wall of one of the chambers of KV 17 (Seti I) gleams with the oily sheen from palms of tourists who couldn't resist the urge to rub its flanks.
- Accidental abrasion. Modern tourists carrying camera cases and backpacks occasionally rub them against the wall reliefs.
- Moisture imbalance. There is evidence that sweating tourists upset the delicate balance between atmospheric moisture and rock moisture, promoting the migration of salts and the formation of salt crystals on tomb wall and ceiling surfaces.
- Construction of paths and walls. In some areas the Valley floor is now several meters higher than it was in ancient times because of the effort to provide tourist pathways. This has increased the exposure of some tombs to floodwater penetration. Some of the walls and gates built across flood paths may cause backflow into the entrances of nearby tombs.



Diagram



Diagram

Shrinkage crack



Example

Ceiling Diagonal fracture



Example

PLATE I and Diagram:  
Initial Excavation

PLATE II and Diagram:  
Flooding and Expansion

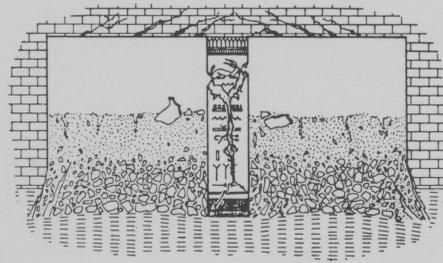
### Natural Agents

- Rock expansion. This is the single most destructive cause of tomb damage. The damage mechanism is shown by means of the diagrams and photographs.
- Initial excavation: Rock in a natural state contains water, up to 2% by weight for Theban Limestone. When the tombs were first excavated by the ancient workers, over 3000 years ago, two things happened. First, stress patterns in the bedrock changed to compensate for the loss of support. Second, free water in the rock escaped into the atmosphere and small shrinkage cracks appeared.

The photograph in pl. I, taken in Chamber J of KV 4, shows one of the effects of initial excavation. There is evidence that KV 4 never suffered flooding and the small shrinkage crack between the top of the column and the roof of the burial chamber is the result of gradual shrinkage of the column as the free water in the rock escaped through the four column faces into the atmosphere. The fact that the column no longer provides support for the roof has not caused any appreciable damage to the burial chamber ceiling.

- Flooding and expansion. When floodwaters enter a tomb chamber excavated into the Esna Shale or the lowest strata of the Theban Limestone, the clay minerals swell, up to an increase of more than 12% of the original volume under a confining pressure of 24 Pa (500 pounds per square foot) as measured by standard swell tests (Rutherford & Chekene, Romer, et al., 1977). The expanding rock exerts a large upward force against the bottom of the column or partition wall, pushing it upward against the mass of bedrock above the tomb ceiling and causing a compressive fracture.

The photograph in pl. II shows the uppermost portion of a 1 meter square column in Chamber Fa of tomb KV 7. Note that flood debris has filled the chamber to within about 25 cm of the ceiling, leaving barely enough space to crawl into the room. The clay-rich limestone beneath the chamber floor has swelled and split the column top as shown in the diagram above. pressure from the column has cracked the chamber roof adjacent to the column.



Diagram

Original Column      Flood Debris



Example

PLATE III and Diagram: Desiccation

### Desiccation

- Eventually the floodwater in the tomb dissipates and over many years the saturated flood debris in the tomb yields its moisture to the dry air in the tomb. The pressure on the fractured columns and partitions diminishes as the rock beneath the floor of the tomb slowly dries out and shrinks. At last the walls and columns are left hanging from the ceiling, but the compression fractures have weakened the tensile stress capability of the member and it fails, kept from toppling only by the flood debris surrounding it.

The burial chamber of KV 7, shown in the photograph in pl. III, originally had four columns at the face of each of the two elevated platforms within the chamber. As the flood debris on the floor of the high chamber shrank, the columns pulled away from the chamber roof and broke in two.

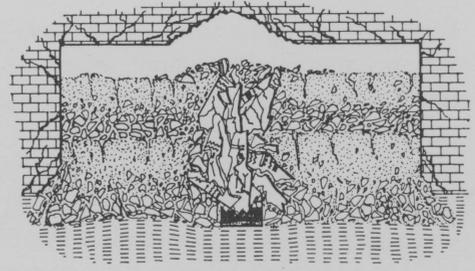
This loss of support by broken columns and partition walls is common to several tombs; except for local damage to the ceiling surface the loss of the column has not caused failure of the tomb roof structures. These are capable of spanning over an entire burial chamber without significant distress. In several tombs the burial chamber roofs are arched, giving them additional strength.

## Collapse

- After repeated cycles of flooding, saturation, swelling, drying, and shrinking, the columns and partitions are shattered into fragments which fall into the flood sediments.

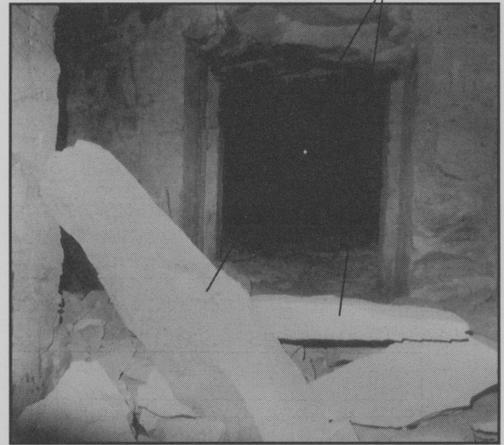
The photograph in pl. IV shows the remains of limestone wall partitions and ceiling fragments in Chamber H of KV 11 (Ramesses III). The lower chambers of this large tomb were repeatedly flooded in antiquity and today the burial chamber and lower chambers contain flood sediment about a meter deep. The surface of the sediment exhibits the polygonal shrinkage crack pattern typically associated with the desiccation of fine grained silts and clays.

- Rainfall penetration of widened rock joint cracks. A small number of tombs, including KV 55 and, possibly, KV 4 are beneath widened rock joints on the *gebel* surface and are exposed to the hazard of rainfall entering the rock joint and flowing into the tomb. Some of the rock joints are a meter or more wide, the result of alternating expansion and wedging by rock fragments which drop into the joint. A typical widened joint is shown in pl. V.
- Flood-borne debris abrasion. The floodwaters of the past have carried rock fragments 3 cm. or more in diameter into the tombs where they can be seen in undisturbed columns of flood sediments which remain inside some of the tombs, as shown on fig. 10. The debris flows triggered by floodwater have even carried rock fragments and boulders up to 20 cm in diameter into the tombs. Both the water-borne sediments and the debris flows have abraded the wall and column reliefs. The photograph show an intact column of flood deposits in Chamber E of KV 7.
- Salt crystal formation. As noted earlier, the bedrock into which the tombs are cut contains up to 2% by weight of water. As the tombs dry out, the water moves toward the surfaces of the walls and columns, carrying dissolved salts with it. The water evaporates when it reaches the rock surface, leaving a salt deposit. The process continues until the atmospheric moisture content and the rock moisture content achieve a state of equilibrium. Introduction of water into the tombs, whether by flood or by tourist sweat, upsets the moisture balance and may lead to significant deposits of salt, damaging the decorated surfaces.



Diagram

Wall and ceiling fragments



Example

PLATE IV and Diagram: Collapse

- Earthquakes. Earthquakes are relatively rare in Upper Egypt and are not a significant source of damage to the tombs.
- Landslides. As described above, debris flows triggered by floods are a significant hazard. Landslides occurring in dry weather are not likely to damage the tombs.
- Natural weathering. Even the rock into which the tombs are excavated will not last forever, and significant changes in climate, as has happened in the past, will accelerate the process of disintegration. No protective measures are capable of preserving the tombs forever.



PLATE V: Widened rock joint

## Summary of Flood Protection and Conservation Efforts

Tomb deterioration started when the first limestone flake was broken out of the rock. There is evidence that threats to the tombs were recognized by the quarry workers, masons and artisans who constructed them over 3000 years ago. Flood protection measures may have been constructed soon after the tombs were cut into the rock. Both John Romer (Romer, 1979) and Garniss Curtis (Curtis, 1979) believe that the rock stormwater diversion structure on the top of the cliff above KV 34 dates from ancient times, making it perhaps the oldest example of such a structure still in existence. Others speculate that the wells usually dug in Chamber E of many of the tombs were intended to prevent floodwaters from penetrating deeper into the tombs. We list below a few of the more recent attempts to protect the tombs.

- 1817. Belzoni correctly identifies the type of bedrock he encounters during his clearance of KV 17 (Seti I).
- 1825. James Burton attempts to divert future floodwater from KV 17.
- Howard Carter underpins the settling walls of the lowermost chamber of KV 17.
- 1975. The Brooklyn Museum examines KV 7 and correctly analyses the cause of the

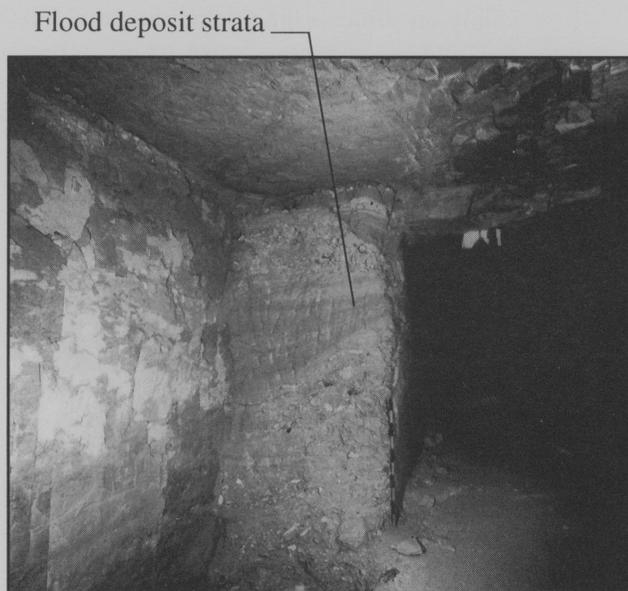


PLATE VI: Flood debris column

destruction encountered in the burial chamber (Bothmer, Hahn, and Fazzini, 1975).

- 1977. The Brooklyn Museum begins a comprehensive physical evaluation of the KV tombs and submits a report to Dr. Gamal Mokhtar of the Egyptian Organization of Antiquities (Rutherford & Chekene, Romer, et al., 1977).
- 1978-1979. With funding from the Coca Cola Corporation, the Brooklyn Museum organized the Theban Royal Tomb Project (TRTP) and began a comprehensive physical survey and evaluation of the VK tombs, submitting reports on the geology, stratigraphy, flood history and on the clearance of tomb KV 4 at the end of the 1979 season.
- 1991. The co-authors began a small scale flood study of six small tombs in the Ramesses XI *wadi* under the sponsorship of Pacific Lutheran University, and submitted a survey report to the Egyptian Organization of Antiquities (Rutherford, 1991)
- 1993. The co-authors completed a preliminary natural hazard evaluation of tombs KV 21, 27, 28, 44, 45, and 60 and submitted a report to the Egyptian Antiquities Organization (Rutherford and Ryan, 1993).

### **A Method for Evaluating the Degree of Tomb Exposure to Natural Hazards**

The three matrices at the end of this paper list 62 tombs, four of them in the West Valley, and show a tentative method of establishing priorities for tomb protection based solely on some of the principal natural hazards which threaten the tombs. We assume that the funds necessary to construct protective measures for all of the tombs will not be immediately available and a process of triage will be necessary. The method of evaluation places heavy emphasis on protecting the tombs from moisture because the agents which caused the greatest damage to the tombs in the past are all water-related, including salt crystal formation. The elements of the evaluation and the summary in the last column are placed in three categories of damage potential—very severe, moderate, and low.

Although only natural hazards are listed in the matrices, a comprehensive tomb priority list must include the exposure to human danger and, above all, must evaluate the artistic, historic, religious, and economic qualities of the tombs. For example, although KV 3 (son of Ramesses III) is evaluated as having very severe damage potential, it would be difficult to justify placing this tomb in the same overall priority group as KV 34, which is one of the most significant tombs in the Valley.

The discussion which follows lists the hierarchy of evidence for tomb flood hazard, starting with the weightiest evidence, and ending with the least reliable indicator. Four tombs in varying locations and flood exposure conditions then serve to explain the data in the evaluation matrices.

#### **Factors Considered in Evaluating the Likelihood of Tomb Flooding.**

- Water penetration and flood damage suffered in the October 1994 and November 1994 floods.
- Direct evidence, such as the remains of flood strata within a tomb and photographs
- Eyewitness accounts of past valley floods.
- Evidence of water damage within a cleared tomb.

- Excavation reports, field notes and correspondence describing evidence of flood debris or moisture within a tomb at the time of clearance.
- Reports of Antiquities employees such as Carter and Weigall describing flood damage.
- References to floods in the accounts of travelers and in literature such as old guide-books.
- The height of graffiti scratched by early tourists on the walls and columns of the tombs.

#### Four Examples of Damage Potential Analysis

- KV 34. It is one of the earliest tombs in the Valley, located on an elevated rock ledge about 15 meters above the south end of the Valley floor and about 15 meters below the top of the *gebel*. Preliminary analysis of KV 34 appears on **Matrix M2** at the end of this paper. It is a corridor tomb constructed for Tuthmosis III and is partially decorated with both painted relief and preliminary cartoons of high quality. The tomb was mapped by Loret who cleared it in 1898; it was mapped again by the Berkeley Theban Map Project in 1980. The tomb was open to tourists in 1993. There is no clear evidence that the tomb was flooded before 1994. The tomb slopes downward from the entrance stairs and is vulnerable to flooding from above but protected from floodwater in the Valley below. This tomb is the type example of a waterfall tomb. As shown on fig. 3, a subdrainage basin more than 10 hectares in area feeds a small ravine which discharges stormwater directly in front of the tomb entrance. The remains of a rock diversion structure—possibly built in ancient times—and small walls of rubble masonry within the ravine shown on pl. VII no longer serve to protect the tomb. The entrance door consists of a light gage solid steel panel about 1 meter high with spaced vertical steel bars and wire mesh above. There is no evidence of wide limestone joints above the tomb which might feed stormwater into the tomb. **Matrix M3** assigns a high degree of flood exposure to the tomb because of its location in the flowpath of a relatively large drainage area. Under “shale” the matrix gives a low exposure rating to swelling pressure



PLATE VII: KV 34

hazards because the tomb is cut in rock high above the degraded lower limestones and is over 55 m. above the surface of the Esna Shale. In the next column the tomb receives a high exposure rating to damage caused by debris slides. The lower solid steel panel of the entrance door is not adequate to resist the flow of boulders and alluvium which would result from the failure of the small check dams in the gully above the tomb during a heavy rainstorm. There is no evidence that the tomb has suffered damage in the past from differential movement of massive blocks of bedrock and it is given an appropriately low exposure rating under this heading. Summarizing the limited range of natural hazards shown in the matrix, we designate the tomb as a high hazard tomb because of its exposure to flooding.

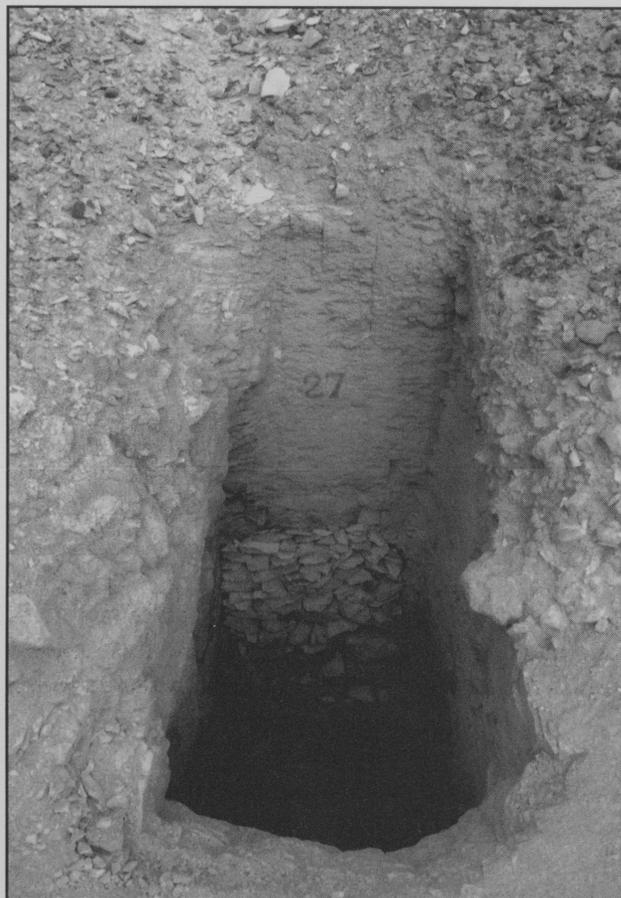


PLATE VIII: KV 27

- KV 27. This is an unidentified and undecorated pit tomb, last mapped in 1991 by the Pacific Lutheran University Valley of the Kings Project. The vertical entrance shaft leads to a 3 m by 6 m room with access to three smaller chambers. The doorway to Chamber B is presently blocked with a rubble masonry wall. As shown on fig. 3, it is located close to the flowpath of the *wadi* of Ramesses XI and because of the depressed entrance is susceptible to ponding as well as direct entry of floodwater. The presence of a stratified column of flood alluvium left standing at the right wall of Chamber B and uncleared flood debris on the floor of Chambers Ba, Bb, and Bc indicate several floods during the tombs existence. A moderately sized area of about 2 hectares contributes potential floodwaters to the entrance of KV 27 and although Chamber B has a limestone joint across the ceiling, there is no evidence that it has conducted rainwater into the tomb. All this is duly noted opposite KV 27 in **Matrix M2**. Clearly, KV 27 has a high degree of flood exposure; however, at a floor elevation which is at least 25 meters above the top of the Esna Shale there is minimal exposure to swelling rock damage. As shown on the photograph in pl. VIII, loose rock lies on the slope above the tomb shaft and there is moderate exposure to debris slides. The rock joint across the ceiling

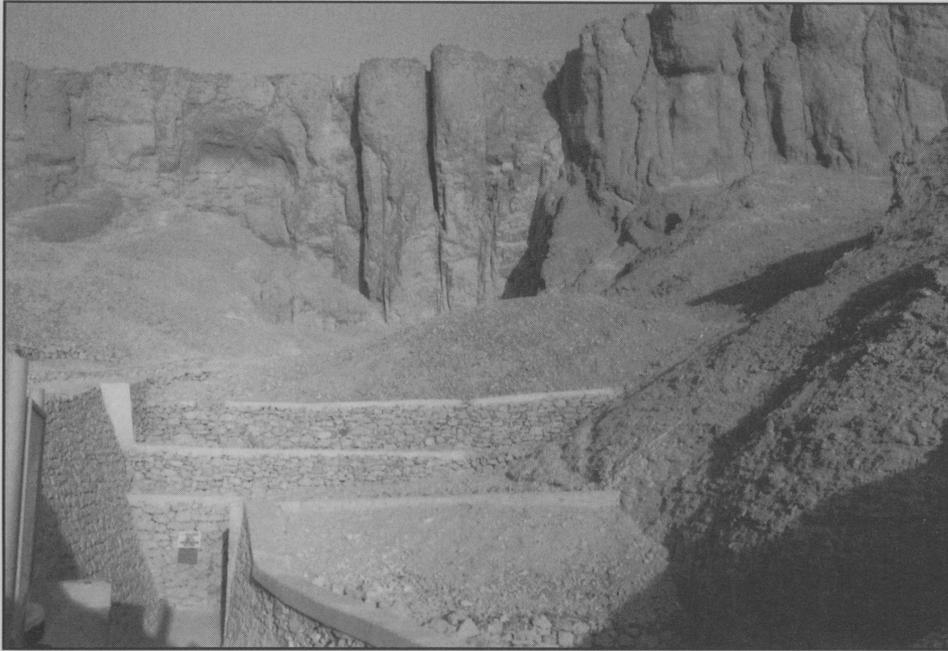
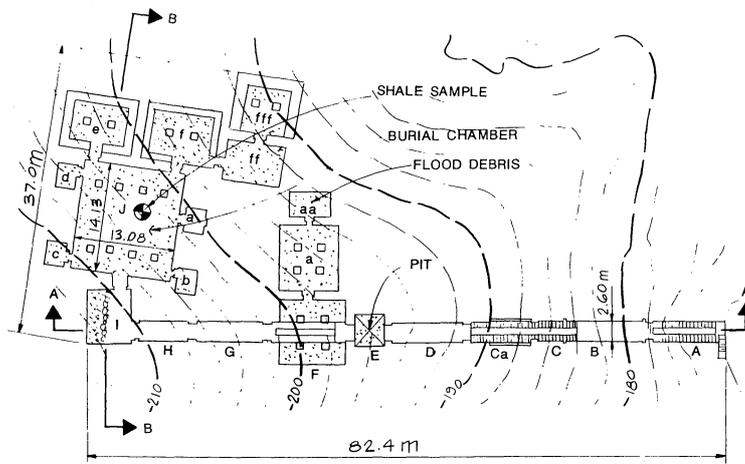


PLATE IX: KV 57

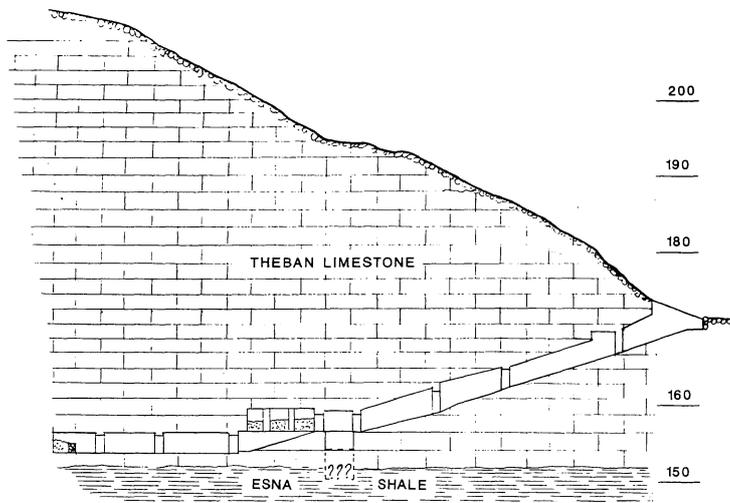
of Chamber B shows no evidence of differential rock movement since the tomb was built. The tomb owes its high hazard rating in the summary column to its proven history of past floods.

- KV 57. Horemheb's tomb is cut into the southeast corner of the downslid rock spur whose center contains KV 9. An entrance path slopes downward through a loose debris fill retained by unreinforced rubble masonry walls up to 5 meters in height. The tomb entrance stairs descend steeply from a right angle bend in the path. South of the entrance, two rubble masonry walls retain mounds of loose fill material, as shown in the photograph, pl. IX. The tomb entrance is covered with a makeshift roof. A small drainage channel partially filled with loose rock fragments discharges directly above the entrance roof. The tomb is a steeply sloping corridor tomb, almost fully decorated with painted relief, and was last mapped by the Berkeley Theban Map Project (BTMP). In 1993 it was accessible to tourists. As can be seen on the drainage basin plan, fig. 3, it lies beside the primary floodwater flowpath and because of its depressed entrance is subject to ponding as well as direct floodwater penetration. Excavation records indicate floodwater had entered the tomb at least as far as the well in Chamber E prior to clearance by Ayrton in 1908.

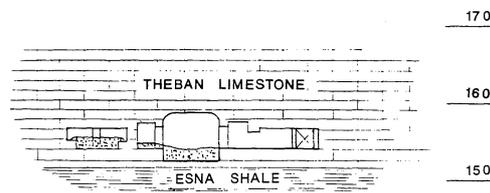
A relatively large drainage area of about 25 hectares can contribute floodwater to the tomb. The tomb door is covered with light gage steel panels and if closed at the time of flooding could provide a minimal amount of protection. The bottom of the lowest tomb chamber is above the Esna Shale. The retaining walls adjacent to the entrance



Plan



Section A-A



Section B-B

FIGURE 5: KV 7

path and the tomb entrance are not adequate to withstand a major debris slide and this poses the most critical natural hazard. There is no clear evidence of a widened rock joint above the tomb and no evidence of joint slippage since the tomb was built. The loose fill near the tomb and the exposure to flooding pose very severe damage potential to the tomb of Horemheb, as summarized on **Matrix M3**.

- KV 7. The tomb of Ramesses II has already been largely destroyed by a series of seven or more floods prior to the floods of 1994. Once one of the greatest of all the Valley tombs, almost fully decorated (even the well may have been decorated), the lower chambers lie in ruins and there is clear evidence that the tomb was filled with flood debris and water nearly to the tomb entrance (Rutherford, 1990). The tomb plan and sections, fig. 5, give some idea of the size and the present condition of this tomb. As shown on fig. 3, the tomb was cut into the center of a rock spur just south of the present entrance gate. The excavators followed the longitudinal axis of the spur for a distance of about 82 m, then turned an angle of about  $97^\circ$  to cut out the spacious 8-pillared burial chamber and the large complex of side rooms. As shown on **Section A-A**, the lowest suite of chambers descend to an elevation about 3 m. above the top surface of the Esna Shale and was excavated in limestone containing layers of expansive shale. The burial chamber shown on **Section B-B** has been partly cleared of flood debris, but the sediment in many of the side chambers and in the well has never been removed.

Following the summary on **Matrix M1**, KV 7 is a corridor tomb almost entirely decorated, first comprehensively mapped by Lepsius about 1845 and last mapped by the BTMP in 1979. It is physically accessible, but never open to tourists because of the danger posed by loose rock slabs on the tomb ceiling. A series of wood posts placed in the corridor just beyond the entrance rest on mounds of dirt and provide little support for the ceiling. The tomb is located just south of a wall and entrance gate built across the flowpath of the largest primary drainage basin shown in pl. X. A portion of the wall is shown on fig. 15 to the right. although the entrance gate is constructed with spaced steel bars, a debris flow may obstruct the passage of floodwaters and cause backup of

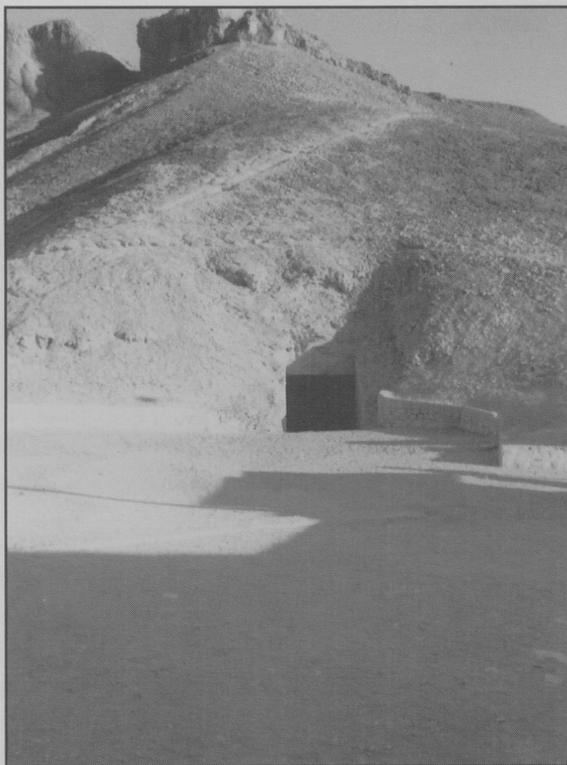


PLATE X: KV 7

water into the tomb. Water flowing down the *wadi* just south of the old Rest House site may directly enter the mouth of the tomb. Therefore the matrix assigns both sources of flooding to the tomb. The column of flood strata in Chamber E, shown on fig. 10, provides evidence that the tomb was flooded at least 7 times prior to 1994 (Monaghan, 1979). The drainage area tributary to the tomb entrance exceeds 25 hectares. The existing wood door with wire mesh affords no protection against flooding. Although the burial chamber is traversed by a fault, the crack has apparently not transmitted water to the tomb. The swelling clays in the lower limestone have broken many of the columns and shattered some of the partition walls in the lower chambers, as shown in pls. II and III. Loose tailings are piled on the slope above and to the north of the tomb entrance, posing a moderate debris slide threat. There is no evidence that bedrock movement has occurred on a massive scale since the tomb was completed.

## Solutions

This paper presents no specific solutions to the problems of protecting the tombs. The principal author has studied several proposed protection methods ranging from construction of floodwater detention and diversion structures to fitting the principal tombs with watertight doors and has concluded that no one solution is adequate for all the tombs. We understand that the American Research Center in Egypt will soon begin a comprehensive study of ways in which to mitigate the human and natural damage and prolong the lives of the tombs. We wish them success in this endeavor.

## Acknowledgments

We thank the Brooklyn Museum for permission to publish some of the material in this paper, including the photographs of KV 7, most of which were taken by John Ross. The remainder of the photographs were taken by the authors. Several people reviewed the matrices summarizing the exposure of tombs to natural hazards, including Catharine Roehrig, Richard Fazzini, Christine Lilyquist, Otto Schaden, and Erik Hornung. We have attempted to include their corrections and will incorporate their suggestions for expansion of the matrix in future revisions. Most of the section on Valley geology is adapted from Garniss Curtis's study of the Valley and John Romer's account of the flood history of the Valley provided a valuable resource for the flood history evaluations. Ted Brock and the Canadian Institute in Egypt provided essential logistical support. Lyla Brock sent a full account of the water penetration problems suffered by tomb KV 55. The team members of the Pacific Lutheran University Valley of the Kings Project and the Valley of the Kings Preservation Project during the 1991 and 1993 seasons included Barbara Aston, David Aston, Daris Swindler, Brian Holmes, and Tony Cagle, all of whom offered valuable suggestions during the field work. We thank the EAO officials for providing access to some of the tombs. Otto Schaden and Richard Wilkinson permitted us to examine their work in the Valley. We extend very special thanks to Mr. and Mrs. M. D. Schwartz who so generously supported our work in the Valley of the Kings. We could not have carried out our work without the capable assistance of our *reis*, Nubi Abd el Basit and our local workforce. Finally, we pay our respects to the late Elizabeth Thomas who with typical generosity shared her encyclopedic knowledge of the Valley with us.

— California Academy of Sciences,  
Pacific Lutheran University

EXPOSURE OF TOMBS TO NATURAL HAZARDS														Matrix		M1	
TOMB				FLOODING										DEBRIS	JOINT	COMMENTS	SUM
#	ATR	TYPE	DEC	MAP	OPEN	TYPE	FLOOD HISTORY	ELEV	AREA	ENT	CRACK	EXP	SHALE	SLIDE	SLIP		
1	R7	COR	Y	BTMP	Y	B,D	FLOODING?	○	○	B,R	○	○	○	●	○	Minor debris flow from spur possible	○
2	R4	COR	Y	BTMP	Y	D	NO FLOODING?	○	●	B	○	○	○	●	○	No significant flood threat	○
3	R3(T)	COR	N	BTMP	Y	B,D	FLOODED	●	●	B,R	?	●	○	●	○	Wall @ wadi mouth will cause flooding	●
4	R11	COR	Y	TRTP	Y	B	NO FLOODING	●	●	B,R	●	●	○	●	○	Wall @ wadi mouth may cause flooding	●
5	R2(T)	COR	Y	?	Y	D	FLOODED	●	●	S,B	●	●	●	●	?	Mouth is beneath a drainage channel	●
6	R9	COR	Y	BTMP	Y	B	PARTIALLY FLOODED?	●	●	B+W	○	●	○	○	○	VK entrance gate may back up flood	●
7	R2	COR	Y	BTMP	Y	B,D	SEVEN (?) FLOODS	●	●	W	○	●	●	●	○	Great flood and shale swell damage	●
8	Mer	COR	Y	BTMP	Y	D	FLOODED	○	○	B	○	●	○	●	○	Flood from above, possible debris slide	●
9	R6	PIT	Y	BTMP	Y	D	NO FLOODING?	○	●	B	○	●	○	●	○	Possible debris slide from above	●
10	Am	COR	Y	BTMP	Y	D	FLOODED	●	●	B	○	●	○	●	○	Possible debris slide from above	●
11	Se/R3	COR	Y	BTMP	Y	D	FLOODED	●	●	W+B	○	●	●	●	○	Great flood and shale swell damage	●
12	D18?	COR	N	BTMP	Y	D	NO FLOODING?	○	●	W	?	●	○	●	?	Severe drain channel & debris hazard	●
13	Bay?	COR	?	BTMP	Y	W	FLOODED	●	●	B,R	?	●	○	●	?	Severe drain channel & debris hazard	●
14	Ta/Se	COR	Y	BTMP	Y	W	NO FLOODING?	●	●	B	○	●	○	●	?	Drain channel & debris above	●
15	S2	COR	Y	BTMP	Y	W	NO FLOODING?	●	○	B	○	●	○	●	○	Drain channel & debris above	●
16	R1	COR	Y	BTMP	Y	D	NO FLOODING	●	●	S,B	○	●	●	●	○	Primary flood threat from wadi	●
17	S1	COR	N	BTMP	Y	D	PARTIALLY FLOODED	●	●	B	○	●	●	●	○	Lowest chambers in Esna Shale	●
18	R10	COR	Y	BTMP	Y	D	FLOODED	●	●	B	○	●	?	●	?	Under excavation by Schaden	●
19	Mont	COR	Y	BTMP	Y	W	NO FLOODING?	○	○	W	○	●	○	●	○	Drain channel & debris above	●
20	Hat	COR	N	BTMP	Y	W	FLOODED	○	○	W	○	●	●	●	○	Extends deep into Esna shale	●
21	2 fern	COR	N	VKPP	Y	D	NO FLOODING	●	●	B,W	○	●	○	●	○	Possible debris flow	●

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**AREA:** Relative size of drainage area tributary to the tomb

**LEGEND**

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**JOINT SLIP:** Relative evidence of damage caused by bedrock movement

**SUM:** Summary of total relative natural hazard damage potential

● Very severe damage potential  
 ● Moderate damage potential  
 ○ Low damage potential  
 ? Insufficient evidence

**John Rutherford**  
 Consulting Engineer  
 1141 Chestnut Street  
 San Francisco CA 94109  
 FAX (415) 563-8667

MATRIX M2

EXPOSURE OF TOMBS TO NATURAL HAZARDS														Matrix		M2	
TOMB						FLOODING						DEBRIS	JOINT	COMMENTS	SUM		
#	ATR	TYPE	DEC	MAP	OPEN	TYPE	FLOOD HISTORY	ELEV	AREA	ENT	CRACK	EXP	SHALE			SLIDE	SLIP
22	A3	COR	Y	BTMP	*	*	FLOODED	*	*	*	*	*	*	*	*	* West Valley--not analysed yet	*
23	Áy	COR	Y	BTMP	*	*	FLOODED	*	*	*	*	*	*	*	*	* West Valley--not analysed yet	*
24	D18?	PIT	?	BTMP	*	*	FLOODED	*	*	*	*	*	*	*	*	* West Valley--not analysed yet	*
25	D18?	COR	N	BTMP	*	*	FLOODED	*	*	*	*	*	*	*	*	* West Valley--not analysed yet	*
26	D18?	PIT	N	BTMP	Y	D	NO FLOODING	○	○	NO	○	○	○	●	○	Partly filled with rubbish to doortop	○
27	D18?	PIT	N	VKPP	Y	D,P	SEVERAL FLOODS	●	●	B,W	○	●	○	●	○	Subject to ponding, debris slide	●
28	D18?	PIT	N	VKPP	Y	D,P	NO FLOODING?	●	●	B	○	●	○	○	○	Subject to ponding, debris slide	●
29	D18?	PIT	?	?	N	D	NO FLOODING?	●	○	NO	○	●	○	●	○	Exposed to drainage channel above	●
30	D18?	PIT	N	BTMP	Y	W,D	PARTLY FLOODED?	●	○	NO	○	●	○	●	○	Exposed to small drainage, debris	●
31	D18?	PIT	N	?	N	W,D	PARTLY FLOODED?	●	●	NO	○	●	○	○	○	Partly filled, shallow depression	●
32	D18?	COR	N	BTMP	Y	W,D	?	●	●	W,R	○	●	○	○	○	Near base of cliff	●
33	T3(T)	COR	N	?	N	W	FLOODING?	●	●	R	○	●	○	●	○	Now covered, under bench	●
34	T3	COR	Y	BTMP	Y	W	PARTLY FLOODED?	●	●	S,B	○	●	○	●	○	Under drainage channel & loose rock	●
35	A2	COR	Y	BTMP	Y	W	NO FLOODING?	●	●	S	○	●	○	●	○	Channel above, debris & walls	●
36	Mh	PIT	N	BTMP	Y	W,P	FLOODING?	●	●	NO	○	●	○	●	○	Cut through heaps of flood debris	●
37	T3(T)	COR	N	BTMP	Y	W,P	FLOODING?	●	●	NO	○	●	○	●	○	Debris & retaining walls	●
38	T1	COR	Y	BTMP	Y	W,P	FLOODED	●	●	NO	○	●	○	●	○	Below small waterfall	●
39	A1	COR	N	BTMP	Y	W,D	FLOODING?	●	●	NO	○	●	○	●	○	Surrounded by flood debris	●
40	D18?	PIT	?	BTMP	Y	D	NO FLOODING?	●	○	NO	○	○	○	●	○	Some debris above	○
41	D18?	PIT	?	?	N	W	NO FLOODING?	●	○	NO	○	●	○	●	○	Outside VK drainage basin	●
42	?	COR	Y	BTMP	Y	W,P	FLOODED	●	●	R	○	●	○	●	○	Very severe flood exposure	●
43	T4	COR	Y	BTMP	Y	D	NO FLOODING	○	○	B	○	●	○	○	●	Evidence of joint slip @ kheker frieze	●

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EXPOSURE OF TOMBS TO NATURAL HAZARDS															Matrix		M3
TOMB					FLOODING								DEBRIS	JOINT	COMMENTS	SUM	
#	ATR	TYPE	DEC	MAP	OPEN	TYPE	FLOOD HISTORY	ELEV	AREA	ENT	CRACK	EXP	SHALE	SLIDE			SLIP
44	Anen	PIT	N	VKPP	Y	W.P	FLOODED	●	●	B	○	●	○	●	○	Debris above tomb	●
45	Uh	PIT	N	VKPP	Y	W.P	FLOODED	●	●	B	○	●	○	●	○	Debris above tomb	●
46	Y&T	COR	N	BTMP	Y	B.D	FLOODED?	●	●	R	○	●	○	●	○	Wall @ wadi mouth will cause flooding	●
47	Sipt	COR	Y	BTMP	Y	D	*FLOODED	○	●	B+W	○	●	○	●	○	* Possibly flooded from KV 32	●
48	A2(T)	PIT	N	?	N	D	NO FLOODING?	○	○	NO	○	○	○	●	○	Debris on gebel above tomb	●
49	?	COR	N	?	N	D	NO FLOODING?	●	○	NO	○	●	○	○	○	Debris above tomb	●
50	?	PIT	N	?	N	D	NO FLOODING?	○	○	NO	○	○	○	●	○	Debris on gebel above tomb	●
51	?	PIT	N	?	N	D	NO FLOODING?	○	○	NO	○	○	○	●	○	Debris on gebel above tomb	●
52	?	PIT	N	?	N	D	NO FLOODING?	○	○	NO	○	○	○	●	○	Debris on gebel above tomb	●
53	D18	PIT	N	?	N	D	NO FLOODING?	○	○	NO	○	○	○	●	○	Debris on gebel above tomb	●
54	*	CUT	N	N.A.	Y	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	○	●	○	* Embalming materials from KV 62	N.A.
55	Tiy?	COR	N	BTMP	Y	D.P	*FLOODED	●	●	R	●	●	○	●	○	Water enters through crack in ceiling	●
56	D19	PIT	N	BTMP	Y	D.P	FLOODED	●	●	NO	○	●	○	●	○	Subject to floodwater ponding	●
57	H	COR	Y	BTMP	Y	D.P	FLOODED	●	●	S	○	●	○	●	○	Subject to floodwater ponding	●
58	D18	PIT	N	?	N	D.P	FLOODED	●	●	NO	○	●	○	●	○	Subject to floodwater ponding	●
59	D18	COR	N	?	N	?	?	?	?	NO	○	?	○	?	○	?	?
60	D18	COR	N	VKPP	Y	D	NO FLOODING	○	○	B,W	○	○	○	●	○	Debris on both sides of path	○
61	D18	PIT	N	BTMP	Y	D	NO FLOODING?	●	●	NO	○	●	○	●	○	Debris on gebel above	●
62	Tut	COR	Y	BTMP	Y	D.P	NO FLOODING	●	●	B	○	●	○	●	○	Subject to floodwater backup	●

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 San Francisco CA 94109  
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# Further Observations Concerning the Valley of the Kings

*Donald P. Ryan*

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Five years ago, on the occasion of the 1990 "After Tutankhamun" conference held at Highclere Castle, I authored a paper entitled "Observations concerning undecorated tombs in the Valley of the Kings."<sup>1</sup> At that time, I was in the midst of a second field season in the Valley. With the completion of that season, and the two which followed, the 1994 International Conference on the Valley of the Kings held in Tucson offered an opportunity for retrospect on these tombs and the Valley in general. At the outset, I will admit that I did not anticipate the many surprises that the tombs would hold nor did I expect the extent of the continuing richness of research that work in the Valley holds. The brief comments below offer a few thoughts and observations inspired by our efforts.

## **Undecorated Tombs**

In 1989, the Pacific Lutheran University Valley of the Kings Project began its first field season with the goal of investigating six tombs: KV 21, KV 27, KV 28, KV 44, KV 45, and KV 60.<sup>2</sup> Lacking decoration, tombs of this sort have typically received very little attention since the time of their initial discoveries in the 19th century or the early years of the present century. All of these tombs, however, are worthy of scholarly attention. Each has a unique story to tell; certainly the ones we have dealt with have left us intrigued.

One of the more fascinating aspects of our work in these tombs has been discoveries of human remains. The wonderfully preserved female mummy found in KV 60 and the two mutilated female mummies from KV 21 were found embalmed in a special pose with their left arm bent at the elbow across the chest and with the left hand clenched, the right arm held straight at its side. If the identification of this rare pose as that belonging to royal females of the 18th Dynasty is correct,<sup>3</sup> then perhaps we have the existence of queens' tombs in the Valley of the Kings. This might provide a solution to the question of the whereabouts of the tombs of a number of the queens of that time period.<sup>4</sup>

In KV 44, which is a small 18th Dynasty shaft tomb usurped in the 22nd Dynasty, we found the remains of seven individuals from what is presumed to be the original burial. The bodies included three children, one as young as two years of age, and two young women.<sup>5</sup> Though all these individuals encountered during our work remain nameless in their undecorated tombs, they provide the knowledge that there were a greater number and variety of people buried in the Valley of the Kings than previously suspected.

## Conservation Concerns

During the summer of 1993, a conservation study season was conducted in order to further explore the physical threats to the tombs in the Valley. The "Valley of the Kings Preservation Project" updated a map of the Valley to incorporate recently exposed, added or eliminated physical features and conducted a survey to produce natural hazards assessments for each individual tomb and for the Valley as a whole. In doing so, we built upon the work of earlier projects, most notably, the reports by members of the Brooklyn Museum's Theban Royal Tombs Project of the late 1970's.<sup>6</sup>

The biggest threat, of course, is flood water penetration by flash flooding, as illustrated by the dramatic and tragic events during the Fall of 1994. Incidents of heavy rains in the Theban mountains are not unusual and have been noted from ancient times.<sup>7</sup> There are several eyewitness accounts of flooding during the last two centuries, Howard Carter having witnessed probably the hitherto last major flood event during 1918.<sup>8</sup>

Several tombs in the Valley of the Kings are completely choked or contain chambers that are thoroughly encumbered with the debris of flooding. In KV 27, for example, we noted sediment layers representing a minimum of seven separate flood events. In mapping the Valley floor, cliffs and surrounding features, we were able to determine the relative degree of threat that flooding poses to each tomb.<sup>9</sup> Although few tomb protection measures were in place during the 1994 flooding, our 1993 data should provide a "before" picture of the Valley to which the recent flood damage data can be applied for use in planning. Though unfortunate, much can be learned from the recent flooding which can assist in better remedying of future events.

In constructing schemes to prevent flood water damage to tombs in the Valley of the Kings, one can learn lessons from the history of archaeology. It is worthwhile to examine the context of those discoveries in which the contents of tombs were found dry and well preserved. A few examples will suffice. The tomb of Tutankhamun (KV 62) was found well buried with its doors sealed as were the tombs of Yuya and Thuya (KV 46) and Mahirpra (KV 36).<sup>10</sup> In 1989, our expedition rediscovered KV 60 which had been robbed in ancient times and then revisited in 1903 and 1906. Though its ancient sealings were long gone, the latest visitor had blocked the door with boulders and the tomb was subsequently reburied in Valley debris to the point of becoming "lost." We found its contents dry and splendidly preserved.

The lesson is simple. Most tombs whose doors were closed and whose entrances were buried have maintained dry and relatively stable environments within.<sup>11</sup> This, then, presents a solution for dealing with the maintenance of perhaps a third of the tombs in the Valley of the Kings: seal their doors and bury them. Shaft tombs in particular could easily be maintained this way as could those tombs whose accessibility is not a regular requirement. Markers could note their location and corners. Re-excavation by a local work crew when an inspection is desired would be a small price to pay for the preservation of these tombs.

There are several other sources of tomb damage (some related to flooding), such as rain water penetration through rock faults, rock expansion and desiccation, and damage related to tourism, and these have been noted elsewhere.<sup>12</sup> During the 1993 expedition, though, we observed two other factors that deserve attention: aeolian erosion and damage caused by bats.

*Aeolian Erosion:* High winds are not uncommon in the Theban mountains, and on more than one occasion I have been able to examine clean Valley tombs in their aftermath and found significant quantities of wind-blown sand, dust and tourist litter. Many of the tombs of the 19th and 20th Dynasties with their large openings guarded by grated doors are susceptible to this sort of abrasive erosion and such should be considered in future preservation schemes.

*Bat Damage:* Bats can also play a deleterious role in the decay of tombs all over Egypt. Stains from their excreta can be found on the ceilings and walls of tombs carved in light-colored limestone, and their dung can literally blanket a floor. KV 20 in the Valley of the Kings provides a dramatic example. Its lower chambers are foul almost to the point of being poisonous. An early remedy was to simply build a screen door at its entrance to keep the bats from coming and going. A visit to the tomb in 1993 revealed the skeletons of hundreds of bats along the tomb's corridor who were apparently trapped with the installation of such a screen door. The screen door was later demolished by vandals and the bats came back.

Merely killing the bats, however, is not a modern solution. Bats play an important role in the ecology of the area,<sup>13</sup> and exterminating them is questionable in terms of environmental ethics if not inhumane. Shutting them out during their daily nocturnal exodus is likewise unsound; they will find another roost which just might be another tomb somewhere. Though I have no firm solution to offer at this time, I believe the problem is worthy of further consideration.

What are the solutions for the preservation of the Valley of the Kings? Ancient plastering over ancient cracks provides ample evidence that the tombs were decaying even as they were being constructed.<sup>14</sup> The speed and nature of the process of decay, of course, has been different for each tomb as a result of its particular exposure to the variety of affecting variables. One thing, though, remains consistent: the tombs of the Valley of the Kings were never intended to be visited by millions of curious tourists nor were they designed to completely sustain the ravages of intrusive natural forces. Engineering solutions to protect the tombs from the latter will likely be enacted in the near future. There have also been proposed solutions to limit the impact of tourism by limiting the number of tombs accessible to tourists or rotating those tombs which are available to visitors. In seeking solutions, let us not forget that above all, the Valley of the Kings was the royal cemetery for the great kings (and a select few others) of the New Kingdom.

### **An Ultimate Solution?**

A radical, and likely unpopular, ultimate solution might be to restore the Valley of the Kings to its former dignity as a royal cemetery. Each of the tombs could be cleared, thoroughly documented, and stabilized prior to having their doors closed and rarely reopened. Visitors could pass through the Valley in quiet respect; the Valley itself possessing its own intrinsic beauty which is greatly magnified by its historical importance. As has been previously proposed, tourists could gain a sense of the interior of the royal tombs by visiting replicas. Located outside of the Valley, visitors would be able to examine several select monuments reproduced in their pristine condition.<sup>15</sup> Such an approach has proved very effective at the site of the Lascaux caves in France which contain spectacular examples of Paleolithic rock art.<sup>16</sup>

Would tourists travel to Egypt and tolerate replicas? I would guess that they would. There are many splendid relatively intact monuments outside of the Valley, and a visit to

the magnificence of a redignified royal cemetery and the beauty of Egypt and its people as a whole would continue to make a visit to Egypt a desirable and wonderful experience.

## Conclusion

In 1820, Giovanni Belzoni felt that there were no more tombs to be found in the Valley of the Kings.<sup>17</sup> Similar sentiments were put forth by Theodore Davis in 1912;<sup>18</sup> and in the aftermath of the discovery of the tomb of Tutankhamun in 1922, there have been relatively few expeditions at work in the Valley of the Kings. The likelihood of finding new tombs in the Valley of the Kings is slight. The likelihood of finding intact new tombs in the Valley of the Kings is miniscule. Recent research, though, demonstrates that there still is a wealth of knowledge to be gleaned from that site, and the Valley of the Kings will continue to present the occasional surprise. Our priorities, though, must now emphasize conservation. The immediate need of preventing further damage to these precious monuments from both natural and human forces is clear. Archaeology and conservation have not always been practiced with the same energy. In the future, perhaps the needs of the archaeologist in the Valley of the Kings will be addressed as a by-product of the pursuit of the latter.

— Pacific Lutheran University

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### NOTES:

1 Published in C.N. Reeves, ed., *After Tut'ankhamun: Research and Excavation in the Royal Necropolis at Thebes* (London, 1992), pp. 21-27.

2 For summaries of our work on undecorated tombs, see: D. Ryan, "The Pacific Lutheran University Valley of the Kings Project: A Synopsis of the First (1989) Season," *Newsletter of the American Research Center in Egypt* 146 (1989), 8-10; D. Ryan, "Who is Buried in KV 60?" *KMT* 1:1 (1990), 34-39, 58-59, 63; D. Ryan, "Return to Wadi Biban el Moluk: The Second Field Season of the Valley of the Kings Project," *KMT* 2:1 (1991), 26-31; D. Ryan, "The Valley Again," *KMT* 3:1 (1992), 44-47, 69; D. Ryan, "Exploring the Valley of the Kings," *Archaeology* 47:1 (1994), 52-59.

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3 For a discussion of a "type" model for this rare pose, see J. Harris et al., "Mummy of the 'Elder Lady' in the Tomb of Amenhotep II: Egyptian Museum Catalog 61070," *Science* 200 (1978), 1149-51.

4 Though usually surmised to be principally situated in a series of areas labeled "the Queens' cliffs" and the "Valley of the Queens" (E. Thomas, *The Royal Necropoleis of Thebes* [Princeton, 1966], pp.170-227), many of the burials of the numerous royal females of the New Kingdom are not well identified. Evidence for their existence in the Valley of the Kings is suggested by the material of Queen Tiye in the controversial KV 55, the mummy of the "Elder Lady" cited above in Note 3, and in foundation deposits belonging to Merytre associated with KV 42. (For archaeological summaries of these two tombs consult E. Thomas, *op. cit.*, and C.N. Reeves, *Valley of the Kings* [London, 1990]. KV 55: Thomas, pp.144-6; Reeves, pp.42-49. KV 42: Thomas, pp. 78-80; Reeves, pp. 24-25.)

5 Aspects of these burials are described in D. Swindler, D. Ryan and B. Rothschild, "Dental Remains from the Valley of the Kings, Luxor, Egypt," *Human Evolution*, in press.

6 The Brooklyn Museum Royal Tombs Project (1977-1979) produced several useful unpublished reports including: J. Romer and J. Rutherford, "Damage in the Royal Tombs in the Valley of the Kings at Thebes"; J. Romer, "A History of Floods in the Valley of the Kings"; G. Curtis, "The Geology of the Valley of the Kings"; M. Monaghan, "Surficial Geology of the Valley of the Kings, Luxor, Egypt"; J. Esherick, "An Environmental Master Plan for the Valley of the Kings."

7 A. Sadek, "Varia Graffitica" (pp.112-19), *Varia Aegyptiaca* 6:3 (1990), 109-20. See also: J. Romer, "A History of Floods in the Valley of the Kings," unpublished report of the Brooklyn Museum's Theban Royal Tomb Project (1989).

8 T.G.H. James, *Howard Carter: The Path to Tutankhamun* (London, 1992), p. 202. A dramatic description of an earlier storm in the Theban mountains as described by Carter can be found on p. 186.

9 See J. Rutherford and D. Ryan, this volume, "Tentative Tomb Protection Priorities, Valley of the Kings, Egypt."

10 For archaeological summaries of these tombs consult Thomas, *op. cit.*, and Reeves, *Valley of the Kings*. KV 62: Thomas, pp.89-90; Reeves, pp.61-69. KV 46: Thomas, pp.143-4; Reeves, pp.148-53. KV 36: Thomas, pp.157-8; Reeves, pp.140-7.

11 Useful tests concerning interior tomb environments (including temperature and humidity) have been conducted on the tomb of Nefertari in the Valley of the Kings (S. Maekawa, "Environmental Monitoring in the Tomb of Nefertari" in *Art and Eternity*, M. Corzo and M. Afshar, eds. [Getty Conservation Institute, 1993]; G. Burns, K.M. Wilson-Yang and J.E. Smeaton, "Archaeological Sites as Physiochemical Systems: the Tomb of Nefertari, Egypt," *Archaeological Chemistry IV, Advances in Chemistry Series No. 220* [1988], 289-310). Further studies of this sort applied in the Valley of the Kings will provide valuable information toward maintaining the long-term stability of the tombs.

12 E.g., J. Rutherford and J. Romer, "Damage in the Royal Tombs in the Valley of the Kings at Thebes," unpublished report of the Brooklyn Museum's Theban Royal Tomb Project (1977); J. Rutherford, "Physical Deterioration of the Royal Tombs in the Valley of the Kings," unpublished (1980); G. Curtis and J. Rutherford, "Expansive Shale Damage, Theban Royal Tombs, Egypt," in *Proceedings of the 10th International Congress on Soil Mechanics and Foundation Engineering* 3 (1981), pp. 71-74.

13 For an overview of the ecological role of bats: J. Hill and J.D. Smith, *Bats: A Natural History* (Dorset, 1984), especially Chapter 10. One of the beneficial roles is the consumption of pest insects such as mosquitoes.

14 In KV 21, for example, being completely undecorated and with walls not prepared for painting, extensive ancient plastering over cracks is readily observed.

15 The idea of replica tombs was presented by the "Society of Friends of the Royal Tombs of Egypt" at the "After Tutankhamun" Valley of the Kings conference held at Highclere Castle, June 15-17, 1990.

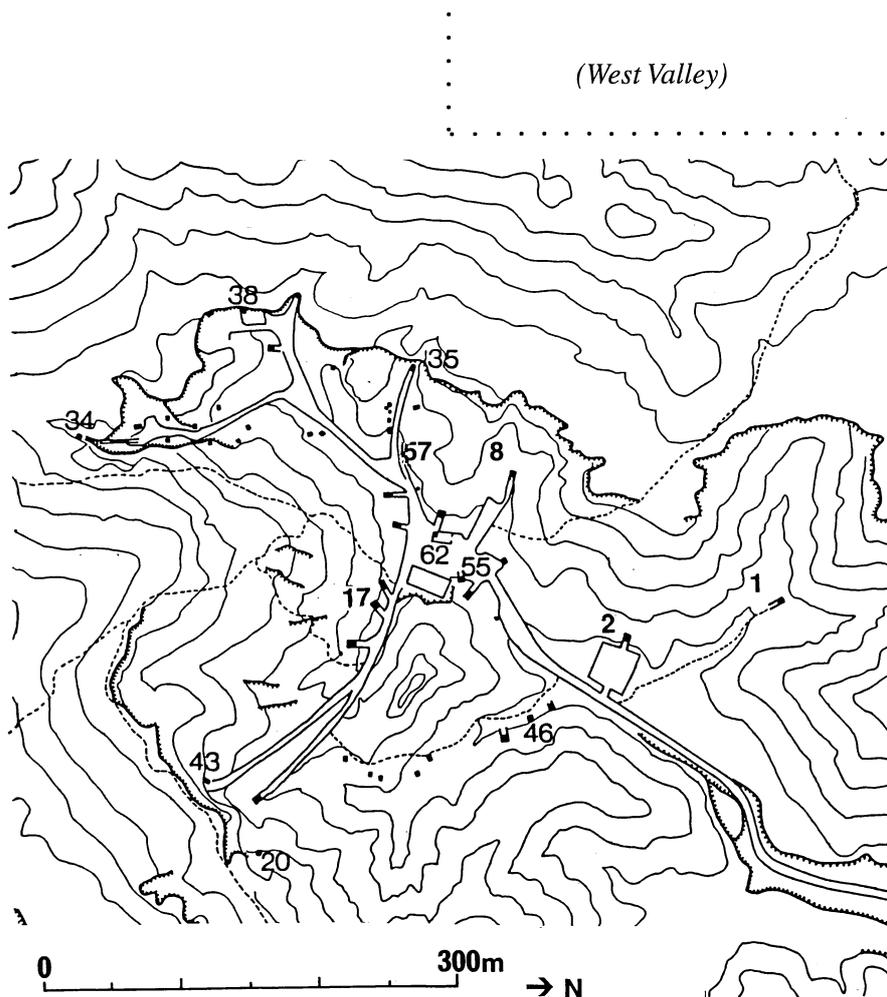
16 B. Delluc and G. Delluc (P. Bahn, trans.), "Lascaux II: A Faithful Copy," *Antiquity* 58 (1984), 194-6; J.-F. Tournepiche, "Faux Lascaux," *Natural History* 102:4 (1993), 72.

17 G. Belzoni, *Narrative of the Operations and Recent Discoveries in Egypt and Nubia* (London, 1820), p. 226. "...it is my firm opinion, that in the valley of Beban el Malook, there are no more [tombs] than are now known, in consequence of my late discoveries; for, previously to my quitting that place, I exerted all my humble abilities in endeavouring to find another tomb, but could not succeed."

18 T. Davis *et al.*, *The Tombs of Harmharbi and Touatankhamanou* (London, 1912), p. 3. "I fear that the Valley of the Tombs is now exhausted."

# The Valley of the Kings

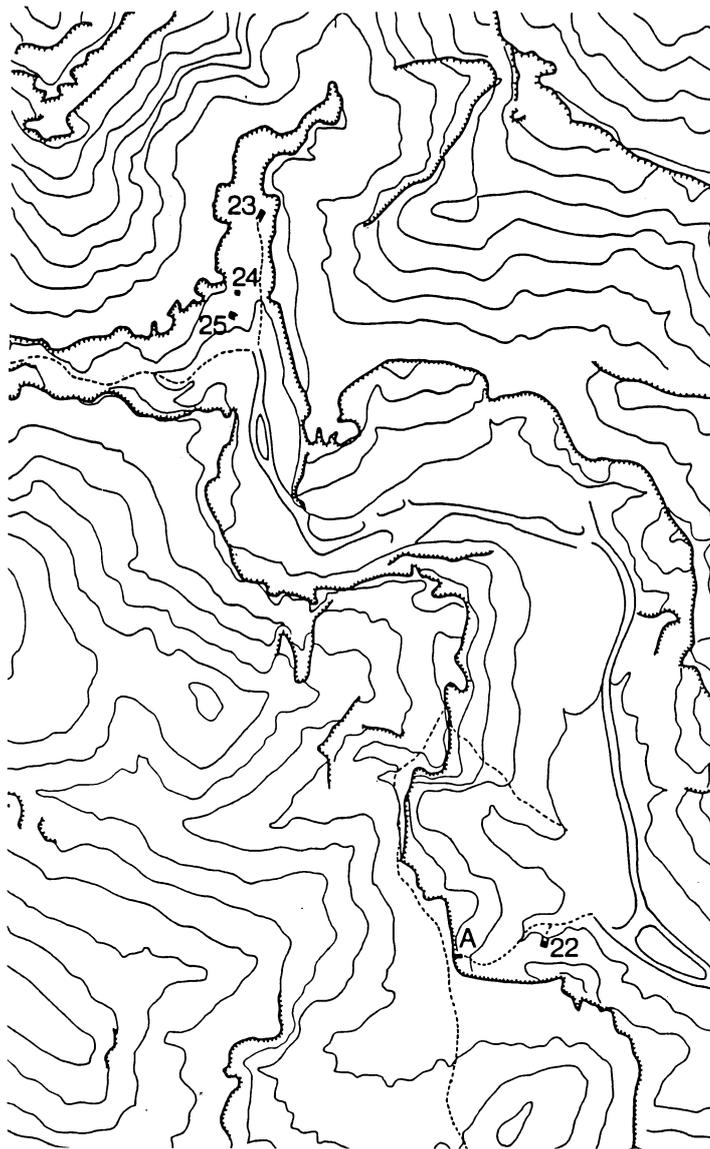
## The Eastern (Main) Valley



### Selected Royal Tombs:

1	Ramesses VII	35	Amenhotep II
2	Ramesses IV	38	Tuthmosis I
8	Merneptah	55	Tiye
17	Seti I	57	Horemheb
20	Hatshepsut	62	Tutankhamun
34	Tuthmosis III		

## The Western Valley



(East Valley)

### Selected Royal Tombs:

- 22 Amenhotep III
- 23 Ay
- 25 Akhenaten (?)

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