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## REMARKS ON THE REPTILE SIGNS DEPICTED IN THE WHITE CHAPEL OF SESOSTRIS I AT KARNAK\*

Nathalie BEAUX and S. M. GOODMAN

The White Chapel was built at Karnak during the XIIth dynasty by Sesostris I. It was constructed out of limestone and the walls have been carved with remarkably fine and accurate reliefs. P. Lacau and H. Chevrier have dedicated a substantial part of their publication on this monument to a paleographical study<sup>1</sup>. We would like to add here a few notes on the identification of the reptile signs: I 1 , I 9 , I 10 , and I 12 .

### I 1

Three finely rendered examples of this sign appear in carved raised relief at the White Chapel (Fig. 1). The animal is represented with relatively short limbs, “finger-like” phalanges, spotted upper-surface, and a tapering tail with spinose projections along the outer margin.

Lacau and Chevrier noted that «la forme des pattes se rapproche plus de celle d'un varan que de celle d'un lézard ou d'un gecko, dont elles n'ont pas les ventouses.»<sup>3</sup>. In fact, all of these characters, particularly the tail, are diagnostic of the genus *Uromastyx*. The cross-hatching pattern on the thighs and limbs is presumably meant to represent the large and coarse scales found along these surfaces in members of the genus. *Uromastyx* lizards possess five phalanges on each of the limbs, although in all of the Sesostris I examples only four are shown<sup>4</sup>. There are no poisonous lizards in Egypt.

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1. P. Lacau, H. Chevrier, *Une chapelle de Sésostris I à Karnak*, Le Caire, vol. I 1956, vol. II 1969; see specifically vol. I, p. 253-280; vol. II, “Épigraphie et détails”, pl. I-XXXVII.

2. References to Gardiner's sign list, *Egyptian Grammar*, 3rd ed., Oxford, 1976, p. 475 sq.

3. Lacau, Chevrier, *o.c.*, vol. I., p. 265 commenting on pl. XIII sc. 4.

4. There is in fact variation in the rendering of the number of toes, see C. Traunecker, F. Le Saout, O. Masson, *La Chapelle d'Achôris à Karnak*, Paris, 1981, p. 172.

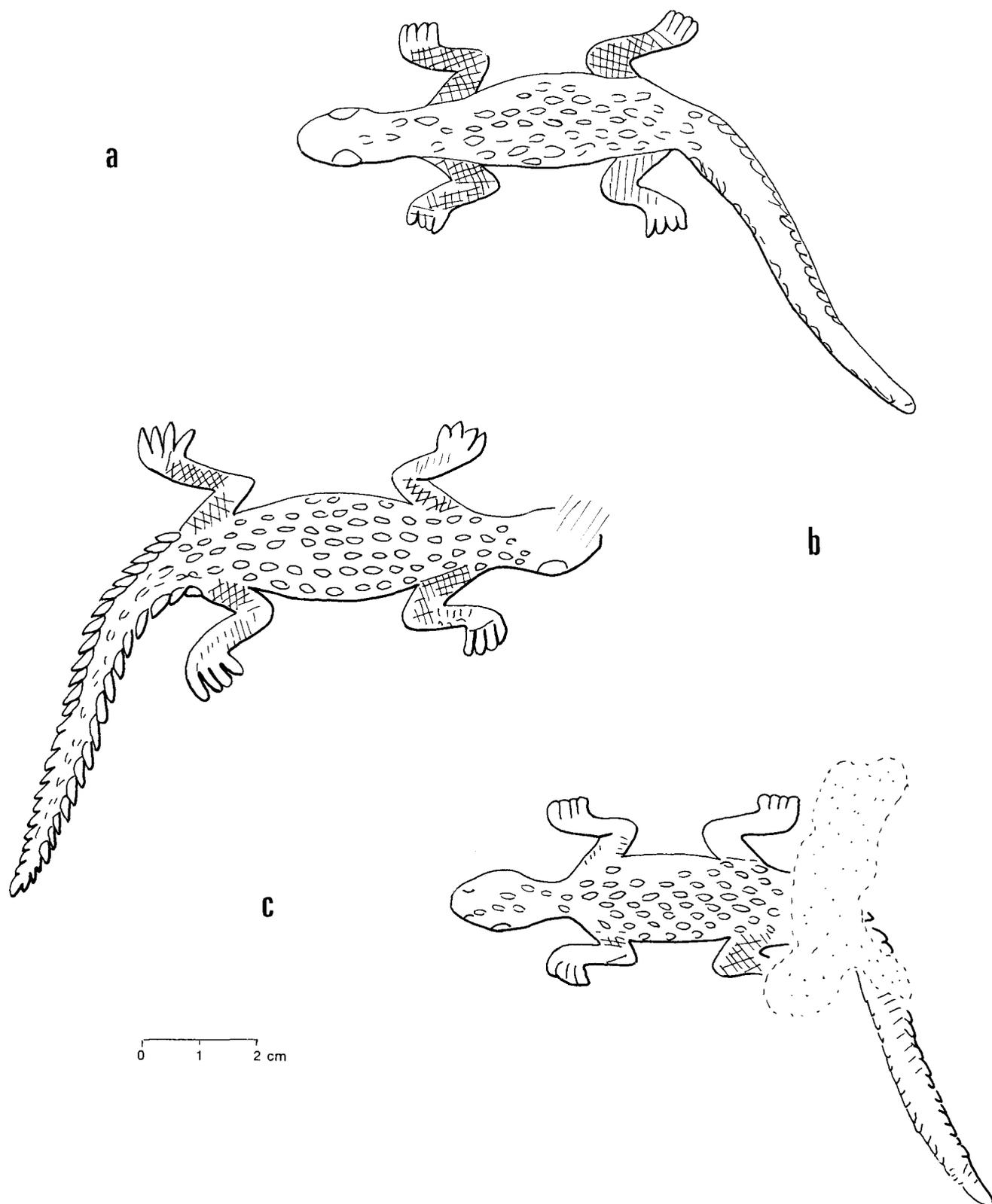


Fig. 1. — Representations of *Uromastyx* sp. as the I I lizard sign, copied from the White Chapel by N. Beaux. For the precise location of the signs see:  
 a. Lacau, Chevrier, *o.c.*, vol. I, p. 14, fig. 2, sc. 15.  
 b. *Ibid.*, fig. 2, sc. 4.  
 c. *Ibid.*, fig. 2, sc. 3.



Fig. 2. — Illustration of *Uromastix aegyptius* from Anderson, *o.c.*, pl. XIV.

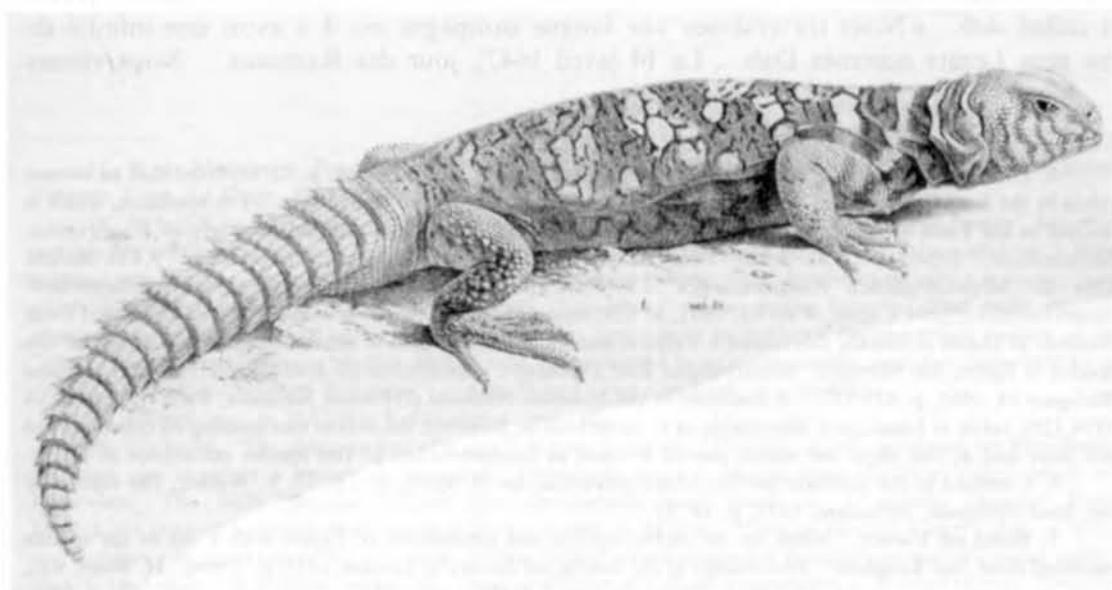


Fig. 3. — Illustration of *Uromastix ocellatus* from Steindachner, *o.c.*, pl. I, fig. 1.

The identity of the species which provided the model for these representations is difficult to determine. However, since there is no definitive evidence that *U. acanthinurus* has actually been recorded in the country<sup>5</sup>, and since *U. ornatus* is only known from the Sinai Peninsula<sup>6</sup>, it is presumed that *U. aegyptius* (Fig. 2) and/or *U. ocellatus* (Fig. 3) were the forms familiar to the artist. In modern Egypt *U. aegyptius* is locally common in the area along the Cairo-Suez road south to at least the southern limit of Wadi Qena. It also occurs in various areas of Sinai<sup>7</sup>. *U. ocellatus* is known in modern Egypt from the southern portion of the Eastern Desert — most records are south of the Qift-Qusseir road<sup>8</sup>. Although both of these species occur in wadis, *ocellatus* lives in rocky areas with relatively dense vegetation, whereas *aegyptius* prefers sandy or gravel areas with sparse vegetation<sup>9</sup>.

This sign has often been associated with another family of lizards, the geckos. These generally nocturnal animals have prominent eyes, relatively long tails, generally smooth bodies, and often large pads at the ends of the toes. In several species these pads terminate as large “suction-cups” which enable the animal to walk upside-down and on vertical surfaces.

Davies identified a hieroglyph with these characters as a particular type of gecko, and given the details provided, she was almost certainly referring to the Fan-footed Gecko *Ptyodactylus hasselquistii* or the White-spotted Gecko *Tarentola annularis*<sup>10</sup>. If one compares the gecko-like configurations of this hieroglyph<sup>11</sup> to those at the White Chapel representing a *Uromastyx* lizard, it is clear that this sign was not intended to represent a single kind of lizard but rather several species and presumably some intermediate and stylized forms.

Let us, however, consider another aspect of the I I sign in the White Chapel. Members of the genus *Uromastyx*, particularly *aegyptius*, are colonial, and in some areas of their range the ground surface is spotted with numerous burrow entrances and the animal is relatively common<sup>12</sup>. Monsieur B. de Monconys, who travelled in the south-central mountains of Sinai in the 17th-century describes this lizard, which in Arabic is called *dab*. «Nous traversâmes une longue campagne où il y avoit une infinité de ces gros Lezars nommés Dab... Le 14 [avril 1647], jour des Rameaux... Nous vismes

5. H. Marx, *Checklist of the reptiles and amphibians of Egypt*, Cairo, 1968, p. 12, reported that an animal taken in the Suez Governorate, along the Cairo-Suez road, is referable to this species. The specimen, which is housed in the Field Museum of Natural History, Chicago, has been examined and is clearly of *U. aegyptius*. Steindachner, “Expedition S.M. Schiff “Pola” in das Rothe Meer. Zoologischen Ergebnisse. XVII. Bericht über die herpetologischen Ausammlungen”, *Denkschriften Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Classe, Wien* 69, 1901, p. 328, reported that a live *U. acanthinurus* was purchased from Bedouin at Sharm el-Sheikh; this record is dubious and should not be used to substantiate the occurrence of this species in Egypt, *vide* Mertens, “Bemerkungen über *Uromastyx acanthinurus* als Rassenkreis”, *Senckenbergiana Biologica* 14, 1965, p. 425-532. A specimen in the Muséum National d’Histoire Naturelle, Paris (registered as 1974.328), taken at Ismailiya is identifiable as *U. acanthinurus*; however, the details surrounding its collection are not clear and at this point the record cannot be used as documentation of this species occurrence in Egypt.

6. Confined to the southern portion of the peninsula, see H. Marx, *o.c.*, p. 13; Y. Werner, *The reptiles of the Sinai Peninsula*, Jerusalem, 1973, p. 18, 35.

7. Based on Flower, “Notes on the recent reptiles and amphibians of Egypt, with a list of the species recorded from that Kingdom”, *Proceedings of the Zoological Society of London*, 1933, p. 779 sq.; H. Marx, *o.c.*, p. 13; Y. Werner, *o.c.*, p. 18, 35; and S. Goodman and J. Hobbs, pers. obs.

8. Based on Flower, *o.c.*, p. 777 sq.; H. Marx, *o.c.*, p. 13; specimens in University of Michigan Museum of Zoology, Ann Arbor; S. Goodman and J. Hobbs, pers. obs.

9. Based on Anderson, *Zoology of Egypt. Vol. 1. Reptilia and Batrachia*, London, 1898, p. 130; S. Goodman and J. Hobbs, pers. obs.

10. Davies, *Picture writing in ancient Egypt*, London, 1958, p. 30.

11. C. Traunecker, F. Le Saout, O. Masson, *o.c.*, fig. 721-729.

12. S. Goodman and J. Hobbs, pers. obs.

ce jour là, quelques gros Lezars roux et gris, que les Francs nomment mal, Salamandre, & les Arabes Dab ;... ils ont la queue fort belle escaillée et se cachent dans de gros trous, qu'ils font dans le milieu de la campagne»<sup>13</sup>. The interesting fact about this passage is that the writer emphasized the large numbers of *dab* he observed.

Since the lizard sign I 1, read as 𐩛𐩣, means “many, numerous”, one might wonder if the choice of representing the *Uromastix* is not a hint of its profusion; therefore turning the hieroglyph into a metaphoric as well as a phonetic device<sup>14</sup>. The same would apply to other occurrences of this sign in the form of a gecko. Several species of geckos are common in the Nile Valley; for example, in rock crevices and tombs, and as commensals in houses<sup>15</sup>.

## I 9

Numerous well executed and preserved examples of this sign are carved into the walls of the White Chapel. In Fig. 4 we present seven of the finer examples. In all of these cases the animal has a distinctive stout body, short tail, clear delineation between the belly scales and the sides of the body, varying upper-surface patterns from spotting to mottling, and unmistakable outward protruding “horns”. On the basis of these characters they are clearly intended to represent the Horned Viper, *Cerastes cerastes*<sup>16</sup>.

Many individuals of this venomous, desert-adapted species have a pair of “horn-like” appendages protruding from behind the eye (Fig. 5). Within a population there is considerable variation in the “horns”, from being completely absent to well developed. At the latter extreme they often stand erect and have a distinct vertical furrow along the inner margin, a feature that has been quite accurately rendered twice in the hieroglyphs of the White Chapel (Fig. 4c and 4d)<sup>17</sup>. The upper-surface is often

13. B. de Monconys, *Voyage en Égypte de Balthasar de Monconys, 1646-1647*. Présentation et notes d'Henry Amer, Le Caire, 1973, p. 206 sq, 212.

14. In fact it is not known if the homophony of 𐩛𐩣 meaning “lizard” and 𐩛𐩣 meaning “many” has any metaphoric origin whatsoever. However, numerous cases are known of ancient Egyptians making a pun between two words. These puns often go much beyond homophony, they sometimes include a semantic link which is understandable at a metaphorical level. Something similar might have occurred here; careful observations from the natural world gave the scribe the opportunity to reinforce the phonetical reading of 𐩛𐩣 “many” with the metaphorical reading of the lizard, characterized by its commonality, a reading supported by a case of homophony between 𐩛𐩣 “many” and 𐩛𐩣 “lizard” (see Gardiner, *o.c.*, p. 475).

15. Flower, *o.c.*, p. 764, 767; S. Goodman, pers. obs.

16. Cockerell, “The oldest record of a slug”. *Nature* (London) 125, 1930, p. 745, presented the hypothesis that this sign depicted a species of land-snail, *Veronicella nilotica*, known from the Nile Valley south of Khartoum. The main premise behind this identification was based on a painted example from Karnak. Cockerell's identification was quickly countered by Murray, “Slug or Horned Viper?” *ibid.*, p. 975, and Robson, “Slug or Horned Viper?”, *ibid.*, p. 893, both of whom contended that the sign was of a snake rather than a land-snail. The latter author also suggested that the figure represented a Horned Viper, *Cerastes coronatus* [= *cerastes*]. Subsequently, most workers have maintained that this sign depicts a Horned Viper (e.g. Newberry, “Fy ‘cerastes’”, *JEA* 34, 1948, p. 118; Davies *o.c.*, p. 32; Posener, *Dictionary of Egyptian Civilization*, New York, 1959, p. 257; Störk, “Schlange”, *Lexikon der Ägyptologie* V, 1984, p. 647). For an ancient Egyptian description of *C. cerastes*, see Sauneron, *Un traité égyptien d'Ophologie - Papyrus du Brooklyn Museum n. 47.218.48 et 85, Bibliothèque générale* XI, IFAO, Le Caire, 1989, § 28, p. 25 sq, 156 sq.

17. The same feature is often rendered in the Old Kingdom by a “loop-like” horn, see for example the offering niche of Khai-Bau-Sokar, in Cairo Museum, CGC 1385.

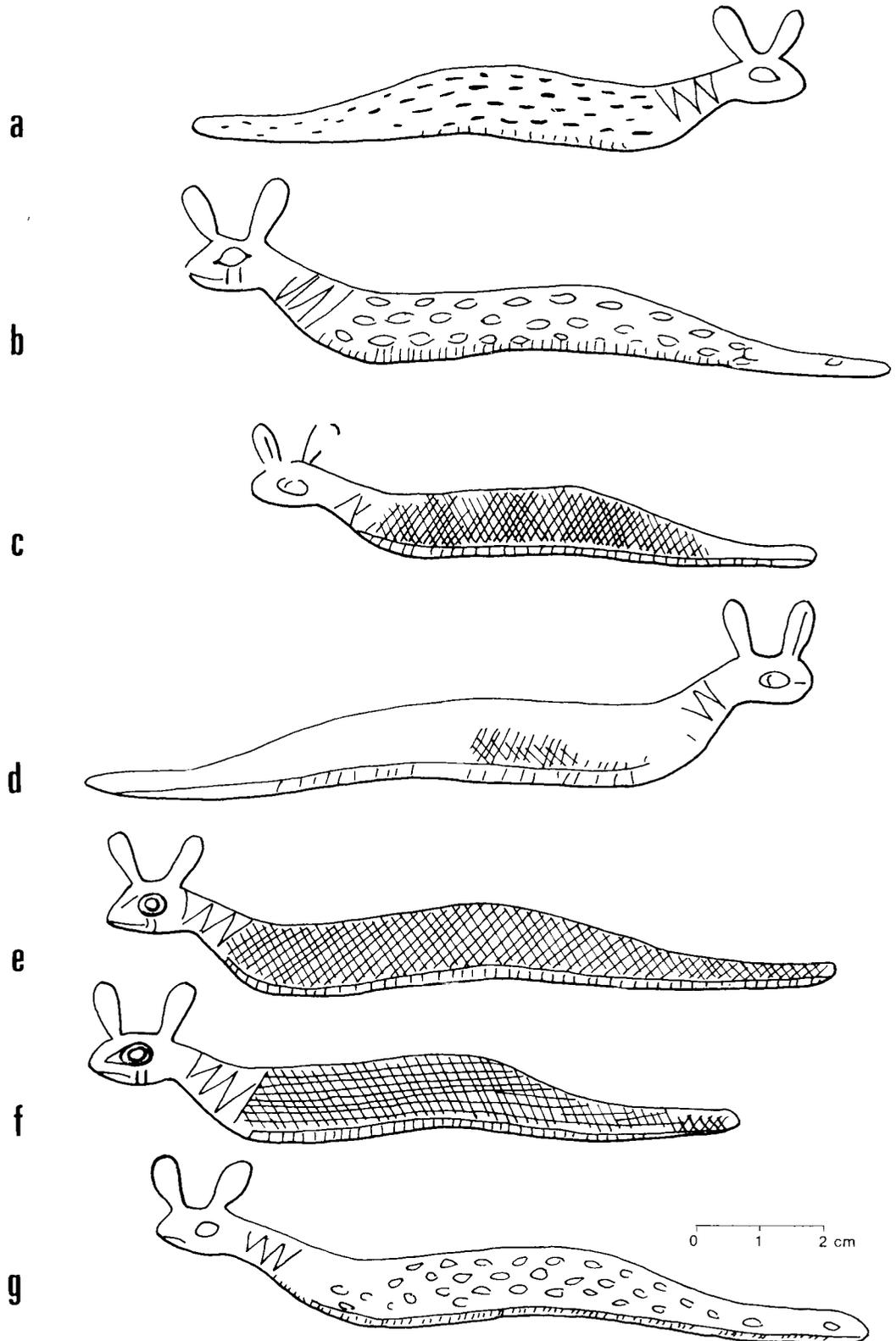


Fig. 4. — Representations of *Cerastes cerastes* as the I 9 viper sign, copied from the White Chapel by N. Beaux. For precise location of the signs see:  
**a.** Lacau, Chevrier, *o.c.*, vol. I, p. 14, fig. 2, sc. 6. **b.** *Ibid.*, fig. 2, sc. 19. **c.** *Ibid.*, fig. 2, sc. 4. **d.** *Ibid.*, fig. 2, sc. 20. **e.** *Ibid.*, fig. 2, sc. 4. **f.** *Ibid.*, fig. 2, sc. 4. **g.** *Ibid.*, fig. 2, sc. 17.

marked with variable patterns of dark spots, mottling, and transverse or confluent lines. The living animal does not have bold markings below the eye or on the neck as shown in several examples in the White Chapel (e.g. Fig. 4b, 4e, 4f). It is not clear if the rendering of these animals in this fashion is an exaggeration of some subtle characters, borrowed from other species of snakes, or completely imaginative.

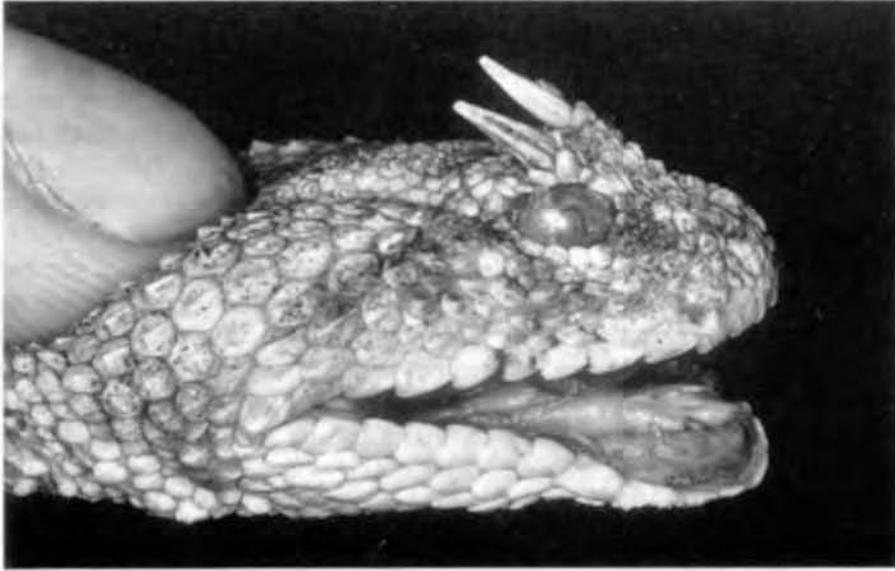


Fig. 5. — Photograph of *Cerastes cerastes* head with "horns", taken by S. M. Goodman. Note furrow along margin of "horn". Specimen collected 7 June 1984 at Bir Beida, near Qusseir.

It should be noted that if these representations lacked the diagnostic "horns" of *Cerastes cerastes* a specific identification would not be possible. If this were indeed the case, these signs could not be distinguished from other vipers occurring in the area, namely *C. vipera*, members of the genus *Echis*, *Pseudocerastes* and hornless *C. cerastes*<sup>18</sup>. These species are partially distinguished by subtle characters, and therefore cases of hieroglyphs depicting hornless vipers could essentially belong to any of them<sup>19</sup>.

It is interesting to note that the sides of the Horned Viper are lined with coarse keeled-shaped scales. When disturbed or threatened the snake arranges its body into two half circles, inflates itself, rubs the scales together, and produces a distinctive noise. This stridulation can be heard several meters away and is reminiscent of a rasping "fff", a possible explanation for the phonetic reading of the sign <sup>20</sup>.

18. For distributional information on these species in Egypt see Flower, *o.c.*, p. 830-835; H. Marx, *o.c.*, p. 41-43; Y. Werner, *o.c.*, p. 28, 44.

19. Keimer, *Études d'Égyptologie* 7, 1945, p. 5-10, identifies the hornless viper as either *Cerastes vipera* or *C. cornutus* [= *cerastes*] without horns.

20. This connection has been mentioned by earlier workers, e.g. Gardiner, *Ancient Egyptian Onomastica*, vol. 2, 1947, 69; Newberry, *o.c.*, p. 118.

I 10 

There are several excellent examples of this sign on the walls of the White Chapel. Three of the more finely executed ones are presented in Fig. 6. In all of these cases the long slender body, broad head, and three bands on the under-side at the base of the neck are diagnostic of the Spitting Cobra, *Naja mossambica*<sup>21</sup>. This poisonous species inhabits portions of the Upper Egyptian Nile Valley<sup>22</sup>.

The neck markings are variously handled. A zig-zag pattern appears on the upper portion of the neck, similar in many ways to that of the I 9 sign, and three "bands" on the under-surface are rendered differently. These correspond to the three black bands which transverse the lower neck and throat of the Spitting Cobra (Fig. 7)<sup>23</sup>. In two of these examples (Fig. 6b and 6c) the black stripe running from the base of the eye to the edge of the mouth is properly depicted.

The front portion of the animal is shown partially reared and with the head facing forward; almost certainly depicting the spitting posture of this species. When confronted by danger at a close range, this snake raises the front portion of the body, inflates its rudimentary hood, and often ejects a stream of venom towards the threat. It seemingly shoots the poison, sometimes several meters, at the eyes of the attacker. When accurately aimed, the poison produces an instantaneous and severe inflammation of the eyes, and in many vertebrates, including humans, if not immediately washed out it can cause permanent blindness<sup>24</sup>.



Fig. 7. — Illustration of *Naja mossambica* from Anderson, *o.c.*, pl. XLV.

21. Griffith, *A Collection of Hieroglyphs*, London, 1898, p. 24, considered it a serpent of sorts, perhaps of the genus *Echis* or some other type of viper. He also noted that this sign was distinct from I 12. Keimer, *Études d'Égyptologie* 7, 1945, p. 45, identified it simply as a resting cobra. Murray, "The serpent hieroglyph", *JEA* 34, 1948, p. 117 sq., also pointed out that this sign represented *Naja nigricollis* (= *mossambica*, as used herein, see D. Broadley, "A review of the African cobras of the genus *Naja* (Serpentes: Elapinae)", *Arnoldia* 29, 1968, p. 1-15). Gardiner, *Egyptian Grammar*, p. 476, specifically named it *Naja haje*. Based predominantly on the color of painted examples, Störk, *o.c.*, p. 646, was of the opinion that this sign could not be distinguished from either *N. haje* or *N. mossambica*. For an ancient Egyptian description of *N. mossambica*, see Sauneron, *o.c.*, § 25, p. 21.

22. Based on Flower, *o.c.*, p. 826 sq.; H. Marx, *o.c.*, p. 40.

23. See Anderson, *o.c.*, p. 323, plate XLV.

24. A. Carr, *The Reptiles*, New York, 1963, p. 70 sq. Sauneron, *o.c.*, § 67, p. 93, n. 1 and p. 154.

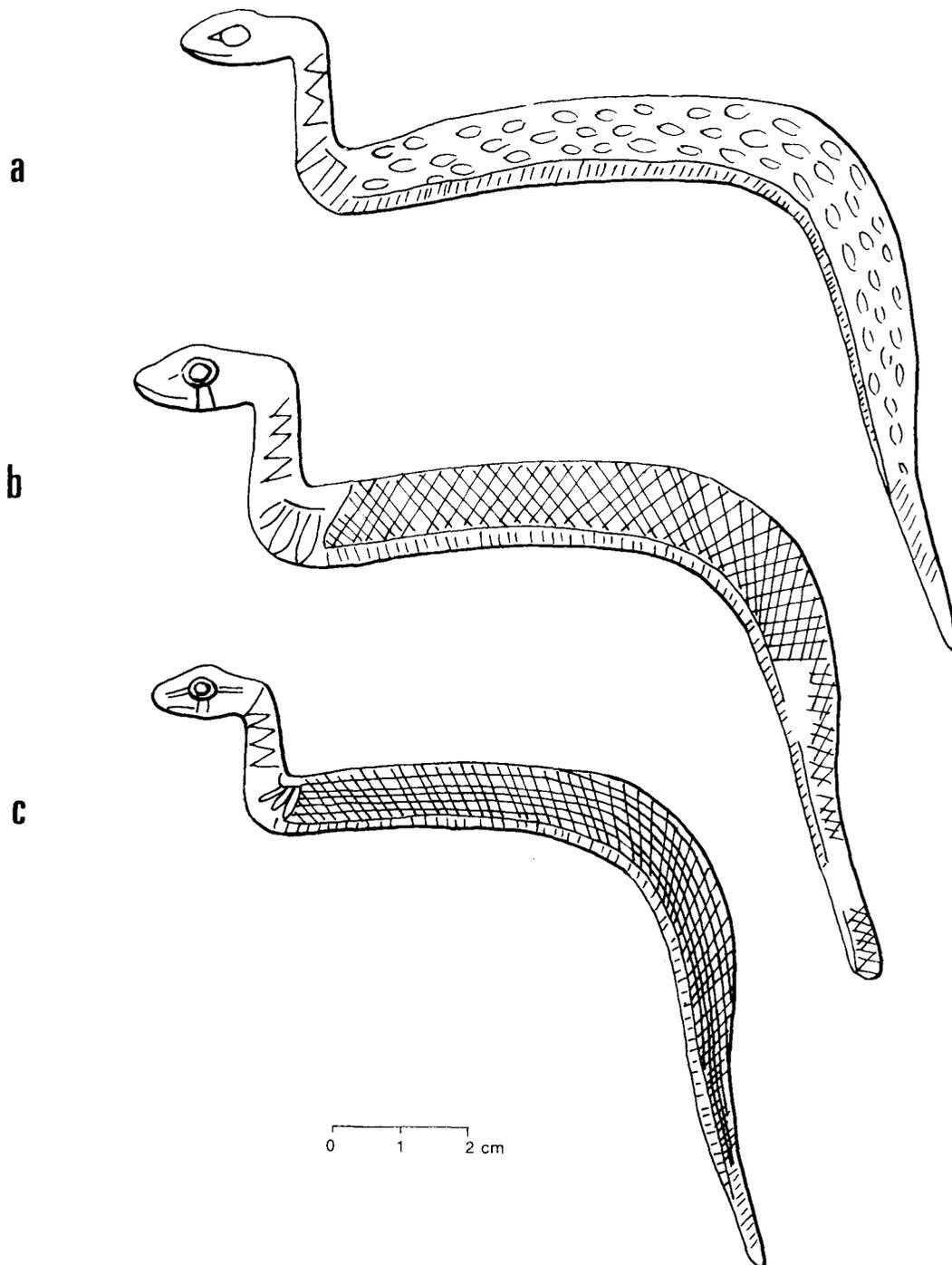


Fig. 6. — Representations of *Naja mossambica* in a reared position and ready to spit as the I 10 cobra sign, copied from the White Chapel by N. Beaux. For precise location of the signs see:

- a. Lacau, Chevrier, *o.c.*, vol. I, p. 14, fig. 2, sc. 17.
- b. *Ibid.*, fig. 2, sc. 9.
- c. *Ibid.*, fig. 2, sc. 4.

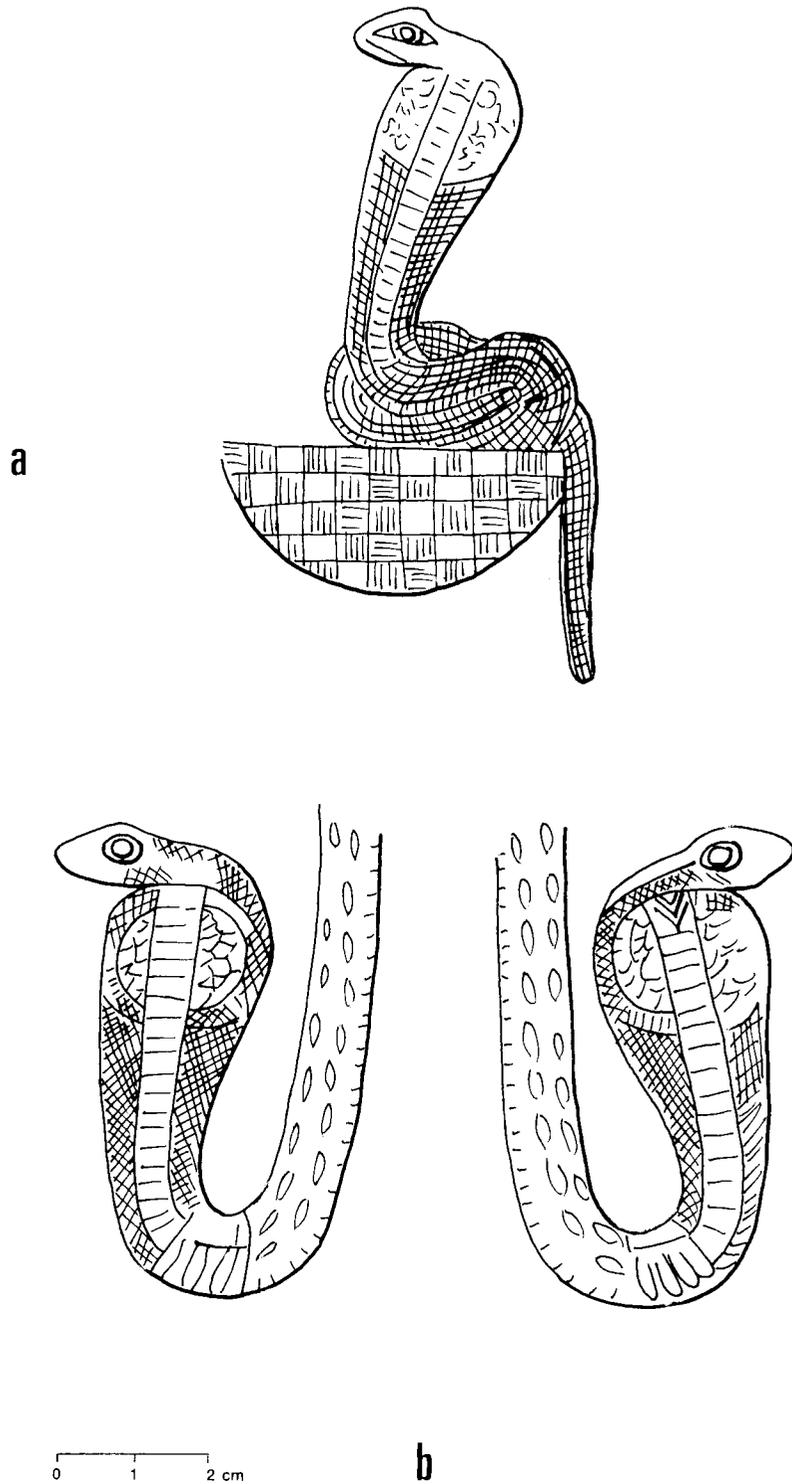


Fig. 8. — Representations of *Naja haje* in a defensive posture as the cobra of the I 12 sign, copied from the white Chapel by N. Beaux. For precise location of the signs see:

- a. Lacau, Chevrier, *o.c.*, vol. I, p. 14, fig. 2, sc. 9.
- b. *Ibid.*, fig. 2, sc. 27.
- c. *Ibid.*, fig. 2, sc. 27.

I 12 

Several finely executed examples of this sign appear at the White Chapel (Fig. 8). Considering the long slender body, broad head, and diagnostic "hood" the hieroglyph is recognizable as an Egyptian Cobra, *Naja haje*. In the living animal the lower portion of the throat is sometimes marked with a single black collar (Fig. 9), a feature that is represented at the base of the neck in examples b and c of Fig. 8. This poisonous species is at present found in portions of the western Nile Delta and the Nile Valley south to the Idfu area<sup>25</sup>.

In all cases reproduced in Fig. 8, the animal is shown in a posture of excitement, with the front of the body raised and the "hood" broadly expanded<sup>26</sup>. *Naja haje* does not spit. This posture is used for defensive purposes and to intimidate potential enemies. *N. mossambica* is similar to *N. haje* in overall body and head shape, but tends to be shorter bodied and the throat "hood" is not nearly as well developed. Further, when in a threat or spitting posture *N. mossambica* lifts only a small portion of the head and neck off the ground and seldomly rears itself as erect as *N. haje*. These differences are readily apparent in the different cobra hieroglyphs, and thus based on posture alone I 10 represents *N. mossambica* and I 12 *N. haje*<sup>27</sup>.

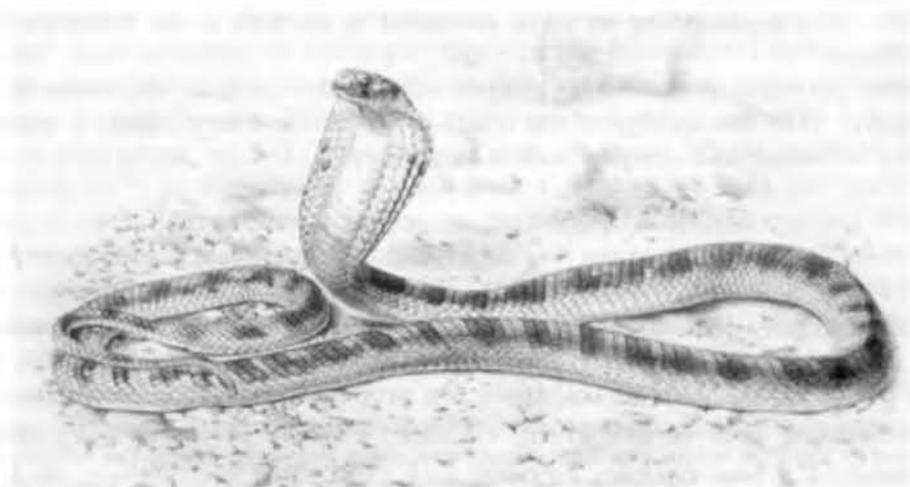


Fig. 9. — Illustration of *Naja haje* from Anderson, *o.c.*, pl. XLIV.

25. Based on Flower, *o.c.*, p. 827; H. Marx, *o.c.*, p. 39 sq.; specimens in the University of Michigan Museum of Zoology; S. Goodman, pers. obs.

26. Keimer, "Histoires de serpents dans l'Égypte ancienne et moderne", *MIE* 50, 1947, p. 4, 12.

27. Murray, *o.c.*, p. 118, was of the opinion that the I 12 sign was identifiable with *N. mossambica*. Störk, *o.c.*, p. 646, took a conservative approach to the identification. His main point was that since several species of African and Asian cobras possess hoods, the presence of this feature in ancient Egyptian representations is insufficient as a character for specific identification. However, keeping in mind that there is no evidence that several of his proposed candidates occurred in ancient Egypt, that two of the possibilities, *N. mossambica* and *N. nigricollis*, have subsequently been amalgamated into a single species (D. Broadley, *o.c.*), and that it is depicted with a broad "hood", we maintain that the zoological identification of this sign is best assigned to the Egyptian Cobra. An ancient Egyptian description of *N. haje* is given by Sauneron, *o.c.*, § 28, p. 29, 157.

### CONCLUSION

The ancient Egyptians had an extensive knowledge of natural history. They observed various animals and their habits with acumen, and regularly selected a few salient features which allowed a rich reading of their respective signs. The careful study of the different aspects of a sign not only can lead to the identification of the form intended, but also to a clearer understanding of some function of the animal in the ancient Egyptian mind.

More often than not the type of characters used in ancient Egyptian taxonomy are independent of those used by modern zoologists. A good example is the I 1 sign, which in the White Chapel is represented as a *Uromastyx* lizard, but in other cases is clearly a gecko. Thus, both animals may have been part of the same taxon in the mind of the ancient Egyptian, although they represent two very different animals as we currently recognize and categorize them. Further, any given sign may be rendered as a composite of several species as defined by the Linnaean binomial system. For such signs it is important to interpret and take into account the hybrid parts, changes in stylization, and direct cultural evolution. Thus, an analysis of an animal hieroglyph should be rooted in a zoological perspective, as well as that of paleographical, philological and historical. This is something we have attempted to do with a few examples from the White Chapel.

Herein we have presented a glimpse of a wider project, the study of reptile paleography. The fine quality of the reliefs of the White Chapel made it possible and rewarding to isolate and describe such a small corpus.

### RÉSUMÉ

L'identification des reptiles figurés sur les murs de la chapelle de Sésostris I<sup>er</sup> à Karnak se fonde sur une observation des caractéristiques morphologiques externes révélées par la paléographie de ces signes. On propose ainsi l'étude de quatre signes et leur identification pour ce monument. Ce sont : I 1  -*Uromastyx aegyptius* et/ou *U. ocellatus*; I 9  -*Cerastes cerastes*; I 10  -*Naja mossambica*; et I 12  -*Naja haje*.