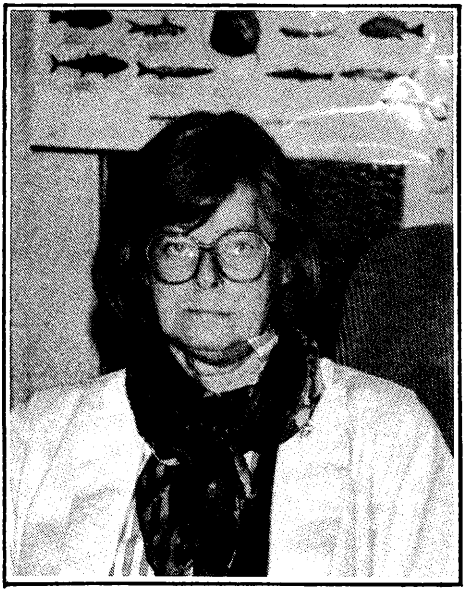

THE KEEPING AND WORSHIPPING OF BABOONS DURING THE LATER PHASE IN ANCIENT EGYPT

Angela von den Driesch

Introduction

Baboons resort under the well-researched and understood animal group in today's scientific world. The medical science has drawn a great deal of attention to the baboon as test object. In the United States e.g., a two-volume publication appeared on the biology of baboons : "The Baboon in medical research" (Vagtborg 1965, 1967). The behaviourists also showed keen interest in this animal. It is on the latter type of research that Prof. Dr. Kummer concentrates. He, together with his working group for Ethology and Game-Research from the Zoological Institute, University of Zürich, focuses on the behaviour of primates in the wild (Kummer 1968, Abeggten 1976).

Nowadays visitors to a zoo, take it for granted to encounter a troop of baboons. The baboon, specifically the hamadryas (sacred) baboon, *Papio hamadryas*, classifies under the higher primates and is regarded as a rather common zoo animal. It is hard to believe that the fate of this animal, as zoo-captive, goes back 5000 years (Vandier d'Abbadie 1964-1966).

Archaeological bone finds from baboons and various other apes, have been recovered at the Thot sanctuary in Tuna el-Gebel, central Egypt. This serves as undeniable proof for the keeping and possible breeding of baboons in captivity in ancient Egypt. The Institute for Egyptology (University of Munich) has been conducting research at this underground animal cemetery since 1983 under the direction of Prof. Dr. Dieter Kessler. The task of our Institute was to investigate the remains of

the baboons, ibises and other sacred animals that were mummified by the priests.

These subterranean galleries, where our finds originate from, were built during Ptolemaic times, during the reign of Ptolemaios I and II (Kessler 1987, 34 ff.). This puts it well back into the last 5 centuries B.C. Before I carry on in detail about our project, I would like to clarify the importance of baboons in ancient Egyptian religion and belief-systems.

The Baboon in the religion of ancient Egypt

It is a known fact that the Egyptians worshipped the baboon as sacred animal since early times. "When the sun rises in the east over the god-given land and chases away the dark, all living beings rejoice. According to ancient belief the baboons, animals belonging to the god Thot, greet the uprising of the merciful star with raised hands" (Erman & Ranke 1923, 459). It is with these words that the Egyptologists interpreted a stone relief, dating from the Old Kingdom (fig. 1). This describes the baboons in pecular posture, warming their tummies in an crouched position in the rays of an upcoming sun after a cool night.

The god Thot, master of knowledge, hieroglyphs and the secret science, also seen as the writer for the gods and the guardian of the educated, was always symbolized by the ibis, *Threskiornis aethiopicus*, and the baboon. Thot is interchangeably portrayed ibis-headed and sometimes as baboon-headed.

The animal cult really expanded in a very wide sense in the religious life after 600 B.C. during the Later phase. According to religious customs and concepts, the range of sacred animals to which cats, dogs, ibises, baboons, falcons, crocodiles, cattle and fish belonged, only entered status after being mummified. These animals were afterwards deposited in a cemetry from where they acted as resting, though votive gods during ritual fests. They assumed roles as guardians over the community and participants in the fest. The animal god image also served

as guarantee for the continuation of the kingship.

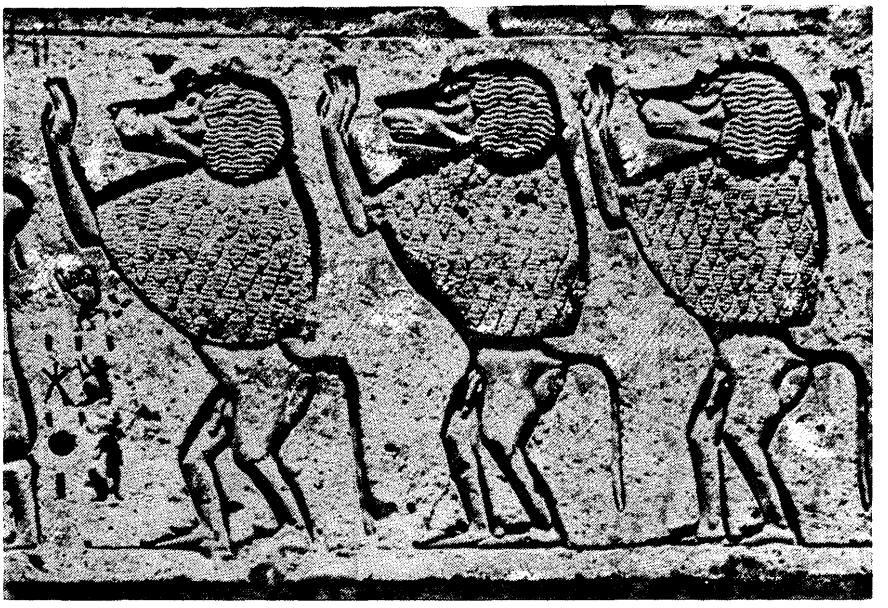

Fig. 1 : Hamadryas baboons "greeting" the sun. Theben, New Kingdom. After Boessneck 1988, fig. 230a.

The sacred animals being kept alive in close proximity of the idol god, were, during the fest ceremonies of the city gods, led around the temple and then ritually killed, sacrificed or like the birds "sent out into the heaven."

The masses of state protected "crowning" and "proclamation" birds, e.g. ibises and falcons, were held in enclosed breeding colonies. Separate rearing places were known also to exist for sacred dogs and cats (Kessler 1986, 23).

The baboon types playing a role in the cult

From the literature, very little is known about the breeding of apes in Egypt. The ancient Egyptians held and worshipped, in close linkage with the cults of both the sun and the god Thot, two kinds of baboons, namely the hamadryas, *Papio hamadryas* (Linné, 1758), and the Anubis or Atbara baboon, also known as the olive baboon, *Papio cynocephalus anubis* (Lesson 1827). The latter was earlier recognized as a separate species - today it is classified under the steppe or yellow baboon, *Papio cynocephalus* (Boessneck & von den Driesch 1987, 160).

Papio hamadryas is a savanna adapted species, also thriving under semi-desert conditions and dry rocky areas. Rocks and steep cliffs are needed for safe overnight sheltering (Haltenorth & Diller 1977, 266). The anubis baboon in comparison, prefers an open landscape with trees, although a relative thick riverside forest and a deeply fissured terrain would prove an optimal habitat.

It poses no big problem to distinguish between the males of both species and both can be easily recognized on ancient Egyptian representations and murals. It is however easier to recognize *Papio hamadryas* on the very characteristic mane. It can be altogether risky to make positive identification purely based on drawings and representations (Vandier d'Abbadie 1964, 150 f.)

Baboons, as wild animals do no longer occur in Egypt. An exception might be the anubis baboon, which might have been present in the upper Egypt regions during early historical times. The mountain ranges of the Red Sea and adjacent foothills to the west, could have hosted the hamadryas baboon, but the Nile valley was never considered to be a habitat for this species. The hamadryas was imported into the Nile valley and this fact can be traced back in the ancient literature (Störk 1982, 915 ff.). Here it is obvious that baboons were imported from the south since the existence of the Old Kingdom (Vandier d'Abbadie 1964, 149). It was surely easier in the beginning to obtain anubis baboons, because of their more favourable distribution, than P. hamadryas (fig. 2).

In Saqqara, a find of old inscriptions has been made and this leaves no doubt that baboons were definitely imported into Egypt. "From the inscriptions we learn that the baboons were brought from the south or from Alexandria; as presumably they must all have been imported from equatorial Africa, these phrases probably reflect the route taken, the former being brought down the Nile itself, the latter being brought by the Red Sea route to the Mediterranean and disembarked at Alexandria" (Smith 1974, 42).

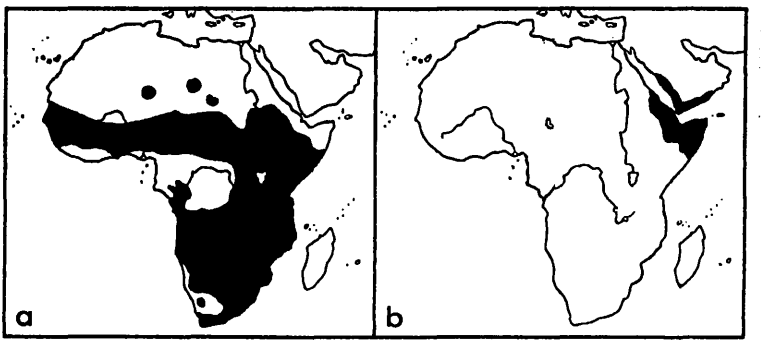

Fig. 2 : Zoogeographical distribution of a) *Papio cynocephalus* and b) *Papio hamadryas*.

The second suggested import route proves to be of interest, because it describes an existing channelway between the Red Sea and the Mediterranean. A nice example proving the import of hamadryas baboons from the kingdom of Punt, is supported by wallpaintings from the temple of Deir al Bahari (Naville 1898, Plate LXXIV). These examples emphasize the fact that the imported baboons at Tuna el-Gebel, were held in captivity. It is not totally excluded that the animals could have bred further under these conditions.

The species identification of these baboons, based on postcranial skeletal elements, proves to be a very difficult task, bordering on the impossible. The postcranial material reveals no notable differences, but the cranial remains have a few clues to offer. The skull of the anubis

baboon is longer, narrower and more slender than the skull of hamadryas. This creates the impression of a longer face (fig. 3). A noticeable difference lies in the degree of the transition between the cranial and facial skull. Hamadryas skulls possess a rectangular curve, building a tangent (when placed on the orbit) with the horizontal part of the maxilla. This forms an almost 90° degree angle.

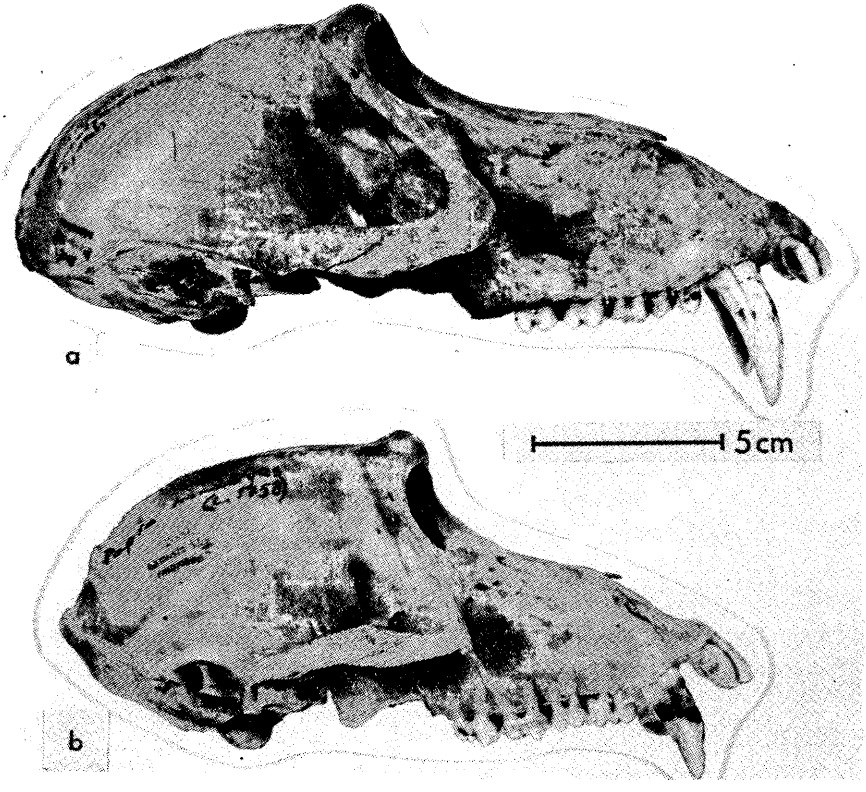

Fig. 3 : Skulls of recent a) *Papio cynocephalus* and b) *Papio hamadryas*. Lateral view. After Boessneck and von den Driesch 1987, fig. 60.

With the anubis baboon, this region builds a much wider angle, implying that the two axes of the cranial and facial skull are more opened

up, creating a less steeper facial curve. The orbits and the brow-bulges tend to be more to the back of the head (fig. 3). The edges on the side of the little bones of the nosebridge are exceptionally prominent in the oral region of the anubis baboon. Whereas in the hamadryas baboon these bones cross over, with no clear distinction, into the side of the maxilla.

The characteristics were already noted by Lortet and Gaillard (1905, 208 ff.). Although it functions well for the males, these criteria are not applicable for the females of both species. The most reliable judgement could be made on the bones of the nose.

Other apes that were frequently mummified, although not so often in comparison to the above mentioned baboons, were the grass monkey, *Cercopithecus aethiops*. This widely distributed ape, surely does not belong to the fauna-spectrum of ancient Egypt, if we judge this from its present distribution area (see Haltenorth and Diller 1977, 292). This has to be another definite import from the south, where it originates from. These grass monkeys were primarily held as pets. The numerous depictions of the animals sitting underneath chairs or being led with dogs, stress their roles as valued pets. They compare well to the New Kingdom cats, that were meant merely as toys for the ladies. A lot of men, however, have depictions on their gravestones, portraying animal and owner (Erman & Ranke 1923, 276). To conclude with, these little apes led a pretty domestic life, at least some of them, because it's not impossible that these apes were held in cages near the sanctuaries.

A rare and interesting find was the skull of a barbary ape, *Maccaca sylvanus* (see Haltenorth and Diller 1977, 267). It initially only occurred in Marocco but was later introduced to the cliffs of Gibraltar. That these apes were also imported for the animal cult in Egypt, was not previously known. This serves yet as another example of how big the demand for apes really was.

Before discussing the mummified baboons at Tuna el-Gebel, I would like to sketch some background information concerning the site itself.

The animal cemetry at Tuna el-Gebel

The modern village of Tuna el-Gebel is situated in central Egypt, between Minia and Mallaui, west of Hermopolis magna (Eschmunên) bordering on to the cultivated stretch of the Western desert. From here, approximately 5 km desertinward, one can find the temple of the Osiris baboon (fig. 4) or rather the ruins of it. Underneath this temple, a corridor, about 1 km in length, branches off in numerous side corridors and niches to form the so called galleries of Tuna el-Gebel. This animal cemetry, apart from the one at Saqqara, is the second biggest one known in Egypt. The subterranean passages are also connected with stairs, creating several levels. All these were manually cut through the brittle limestone. These galleries served as burial grounds for the mummified baboons, apes and ibises. The passages were absolutely filled with clay pots, closely stocked on top of each other. Some pots contained as much as 7 mummified birds. The niches inbetween were reserved for the sarcophagi of the baboons (fig. 5). Baboon-mummies were also presented in crouched positions (fig. 6), while some were placed in wooden coffins.

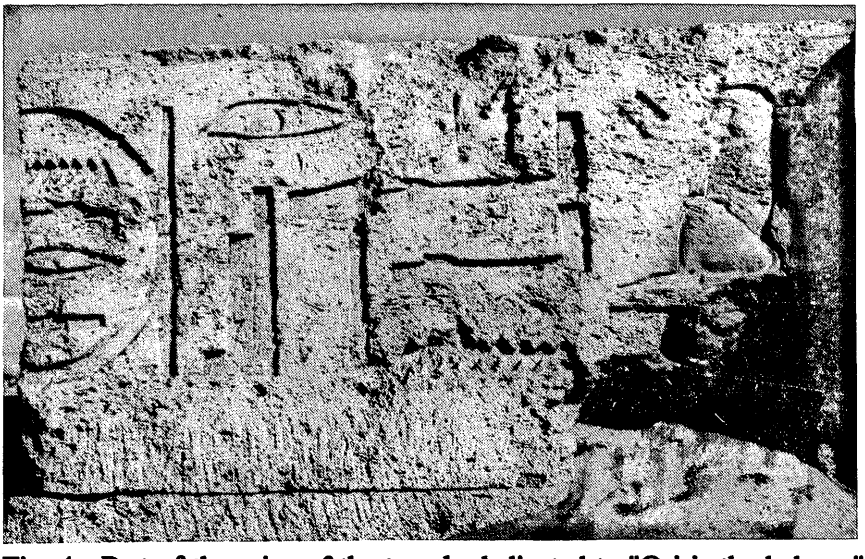

Fig. 4 : Part of the ruins of the temple dedicated to "Osiris the baboon" in Tuna el-Gebel, Central Egypt. Photo by A. von den Driesch.

Fig. 5 : Corridor of the B Gallery in Tuna el-Gebel. The niches contain the sarcophagi for the baboons. Photo by H.U. Onasch.

Fig. 6 : Mummy of *Papio hamadryas* from Theben. After Lortet and Gaillard 1909, fig. 4.

Very little of this subterranean empire exists today and one can only specualte about the tremendous numbers of mummified animals that were originally present. The destruction of the clay pots by graverobbers in their search for bronze statues and papyrus scrolls proved devastating for the mummies which were housed in such pots. A couple of passages did not withstand the onslaught of time and collapsed under the pressure of the desert sand. The baboon-mummies were generally destroyed and scattered. The early Christians found this animal of the Egyptians so repulsive, that they set fire to the galleries, burning the bones beyond recognition, thus totally ruining the in situ state of these galleries.

The results of the investigations on the baboon mummies

On occasion of two long working campaigns (1983, 1990) did we, Joachim Boessneck and I, investigate the mummified remains of approximately 82 baboon individuals. The sex ratio proved unfortunate, when keeping the identification problem in mind and contained more ♂♂ (34) than ♀♀ (28). Twenty specimens were unidentifiable, because of an extremely high degree of damage (table 1). The phenomena, males over females, cannot be considered as a preference factor in the cult.

According to the previously described criteria for distinguishing between the species of baboon present at Tuna el-Gebel, the male skulls show the required features to be categorized as anubis baboons. Only one skull, belonging to a male, has a relatively short muzzle or snout and the narrowness on the side that resembles a hamadryas baboon (see fig. 68 in Boessneck and von den Driesch 1987). The skulls of the females too, fit better with the description of the anubis baboons. Even considering that there might be some more skulls of hamadryas baboons between the fragmentary remains, which could not be optimally studied as a consequence thereoff, the anubis baboon played the prominent role in the cult of the god Thot in Tuna el-Gebel.

If one looks at the age distribution for further probable patterning based on the wear and eruption of teeth, it is well worth noticing that no

evidence exists for infants. Skulls belonging to two-year old individuals, complete the evidence for the youngest present in the sample. This could imply that infants were not mummified, because they simply haven't reached a holy status, or it could mean that breeding did not take place in captivity. The latter remains doubtful, because evidence for newly born and infantile individuals do exist amongst the scattered postcranial elements.

Teeth	Sex	Age in years[1)]
Id present, M^1 eruptioning	5 sex ?	2
I eruptioning, M^1 present, M^2 still absent	2♀♀, 3 sex ?	2 3/4 - 3 1/4
I shedded, M^2 eruptioning	1♀, 7 sex ?	4 - 4 1/2
M^2 present, M^3 still absent, P^4 eruptioning, Cd present	5♀♀, 5♂♂, 5 sex ?	4 1/2
M^3 shortly before eruption, C shedded	4♂♂	5 1/2 - 5 3/4
M^3 eruptioning	5♀♀, 4♂♂	6 - 6 1/4
M^3 erupted, no wear	8♀♀, 4♂♂	7
M^3 slightly worn, roots closed	5♀♀, 8♂♂	older than 7 but not older than 10
M^3 medium worn	2♀♀, 6♂♂	older than 10
M^3 heavily worn	3♂♂	older than 10
Total	82	

1) According to Reed (1965, 1967), and Snow (1967)

Table 1 : Age distribution of baboon skulls at Tuna el-Gebel (1983, 1990)

Most of the skulls that we observed, derived from subadults and adults that died in the prime of their lives, between 4 1/2 to 10 years (n=53, table 1). Babbons are considered sexually mature between 4 to 4 1/2 years. At the age of 7 years, the baboon has developed all 32 of the permanent teeth. Olive baboons may live as long as 30 and even 45 years in captivity, providing that they receive good care and living conditions. Hamadryas baboons can reach ages up to 33 years (Haltenorth & Diller 1977, 266 f.). For the apes of Tuna el-Gebel, the conditions must have been truly unfavourable, leading to an early death for most. The numerous pathological deformations on the teeth, vertebrae and extremities, underlie this statement.

Disease-related bone deformation

Out of the 82 individuals studied, a total of 38 revealed various forms of pathological changes (table 2).

Evidence for caries, characterized by hollowed-out molars, occurs twice, while the presence of paradontosis with the typical regression of the tooth socket, sums up the general stand for dentition-related diseases.

Better evidence comes from the postcranial skeleton. Most frequently the target of rickets were the longbones, which were crookedly deformed (fig. 7). More than often only one, sometimes both sides of the body was influenced. It is, however, seldom for this disease, caused by mineralization imbalances during early childhood, to affect more than one group of longbones at a time.

Chronical degenerative changes on the articulation surfaces are represented in number, expecially on the elbow joints. Arthrosis of the hip joint, resembling hip joint displacement are easily recognized on the rim of the femurhead. Here the presence of bone proliferation in the form of circular exostosis were noticed. The head of the femur itself, also shows a degree of deformity. On one of the forearms deformed by rickets, a fracture was also observed. This fracture evidently healed

Diagnosis	Skeletal part/number/sex
Rickets n = 15	Humerus : 2♂ ad, 1♀ ad, 2♀ juv. Radius/ulna : 2♂ ad, 1♀ ad[2], 1♀ juv Femur : 2♂ ad, 1♀ juv, 2♂ juv, 1♂ juv[4]
Chronical joint deformities n = 10	Scapula : 1♂ (on the same animal also Tibia prox) Humerus : 1♂ ad, 1♀ ad Radius/Ulna prox : 1♂ ad (simultaneously healed facture)[1] 1♀ ad (sim. occuring rickets)[2] 3♂ (one of them also Tibia prox)[3] Radius dist : 1♂ ad Tibia prox : 1♂ ad
Hip joint arthrosis n = 3	Femur : 1♂ ad (sim. occurring knee joint arthrosis)[3] 1♂ juv (sim. occurring rickets)[4] Acetabulum : 1♀ ad
Vertebral disease n = 3	Thoracic and lumbar vertebrae : 2♂ ad, 1♂ juv
Osteomyelitis with periostitis n = 1	Humerus : 1♀ juv Tibia : 1♀ ad
Osteoporosis ? n = 1	Pelvis : 1♂ ad
Chondrosarcoma n = 1	Pelvis : 1♂ ad
Fractures n = 2	Mandible : 1♀ ad Radius/Ulna : 1♂ ad (sim. occurring rickets)[1]
Caries n = 2	M3 : 1♂, 1♀
Diagnosis	Skeletal part/number/sex
Paradontosis n = 1	Tooth socket of M^2/M^3 : 1♀
Others, diagnosis ?	Scapula : 1♂ ad Humerus : 1♂ ad

1) 2) 3) 4) the same animal

Table 2 : Synopsis of the bones that show pathological deformities and the fitting diagnosis.

under synostosis and simultaneously had a shortening affect on both forearmlimbs.

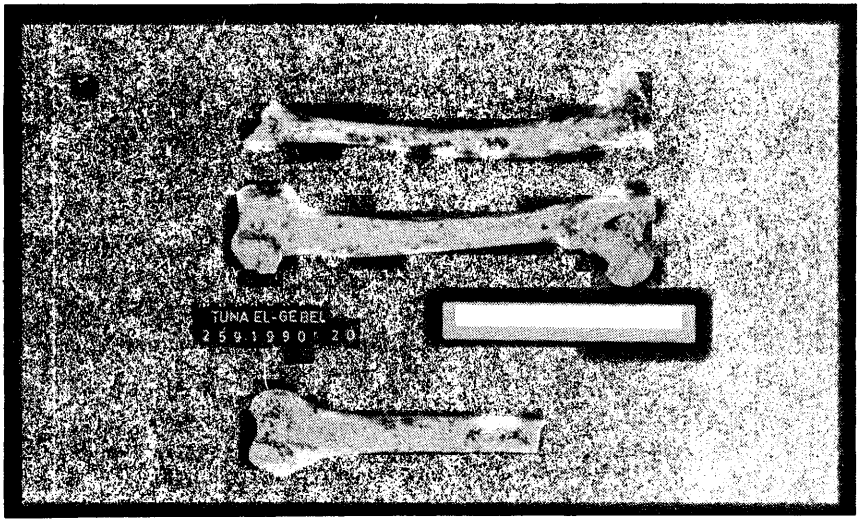

Fig. 7 : Femur and tibia deformed by rickets of a female baboon from Tuna el-Gebel (left). A distal half of a normal femur (right). Photo by H.U. Onasch.

Fig. 8 : Pelvis of a male baboon deformed by chondrosarcoma. Lateral view. Photo by H.U. Onasch.

Drawing the attention, was a case of bone cancer (fig. 8). When we submitted the advanced state of an osteogenetic malignant tumor on the pelvis to x-ray examination it revealed a chondrosarcoma. The pelvis in question derives from an adult male. Both the bones of the pubis and ischium and the branch of the ilium were covered by fine exostosis. The pelvic cavitiy contained a spongy substance of bone, covering up both foramina obturata. The tract of the former rectum running through this pathological bonemass, is clearly recognizable. No doubt exists that this animal suffered a great deal of pain.

From the presentation of facts in table 2, we can gather that the most frequent changes were caused by rickets on the one hand, and on the other by joint-related diseases. When viewed causally, the manifestation of these chronical joint diseases are based on the assumption of malnutrition. In this case, essential vitamins and minerals in the diet were absent. Also to consider, are the normal age-related wear and genetically existing weaknesses in the mesenchyme (Dame & Weiss 1978, 291). As for the baboons of Tuna el-Gebel, their deformities could well be blamed on insufficient feeding and a lack of movement — in short, the non-appropriate living conditions were the main source for these diseases.

As the baboon is an omnivorous species, animals living in the wild eat a wide range of vegetable matter, insects and flesh being included in their diet. Grasses, seeds, roots, bulbs, leaves, flowers, bark and gums, mushrooms, wild fruits, pods and shoots have all been recorded in their diet. It is characteristic of areas where baboons have been feeding to find that every stone had been turned over in their search for insects, spiders, scorpions, ants and even slugs. There are many records in literature of their killing and eating the young of the smaller species of antilopes such as klipspringer, steenbok and hares. They do not particularly hunt these but will take them if they come across them as they lie hidden in the early stages of their lives (Smithers 1983, 148 ff.) When kept in captivity the food for the animal is mostly very poor and unbalanced even in our days. Consequently, animals living in zoological gardens show often the same pathological deformites as the ancient Egyptian specimens.

The apes from Tuna el-Gebel are by no means an exception in the history of ancient Egypt. Lortet and Gaillard, two well-known specialists on Egyptian mummies, recovered similar circumstancial diseases amongst the apes from Theben at the beginning of our century. The following description by these researchers show clearly the suffering of the sacred animals, being held in temple captivity. "Enfin, nous avons encore trouvé dans une tombe simienne, inviolée, le squelette à peu près complet d'un jeune Cynocephale, renfermé dans une longue cruche, à goulot très étroit, et à panse extrêment large. Toutes les grandes articulations sont entourées de végétations osseuses considérables, montrant avec évidence les caractères typiques de ce qu'on appelle en médecine : Arthrites sèches, avec formations d'exostoses circumarticulaires. Un grand nombre de vertèbres dorsales, ainsi que celles de la queue, sont entièrement soudées les unes aux autres, ce qui est une preuve de plus que, malgré la sécheresse du climat et la température élevée de la région de Luxor, le rhumatisme chronique sévissait cependant avec violence chez les singes, à cause de leur captivité dans les cours des temples, froides et sans soleil" (Lortet and Gaillard 1909, 1 f.).

Lortet and Gaillard (1909, fig. 7) published a skull of a baboon whose bones were thickened monstrously. We do not know the cause for such a severe deformation (fig. 9).

We will come to another reconstruction of the fate of a female baboon, from which an equally deformed skull was found at Tuna el-Gebel (fig. 10). The sex determination was made reasonably easy by the small skull size, the lesser developed canines as well as the underdeveloped zygomatic arch and brow thickness. Judging from the dentition, the animal was still young, although adult and sexually mature. The very deformed features of the skull made it clear that this was no short-term development. This incident involved a traumatic accident, whereby the condyle of the left jaw was fractured. With the healing of this fracture, a shortening of the joint took place and further exostosis resulted. This caused the articular process to shift orally and the whole left mandible shortened, when the fracture was healed.

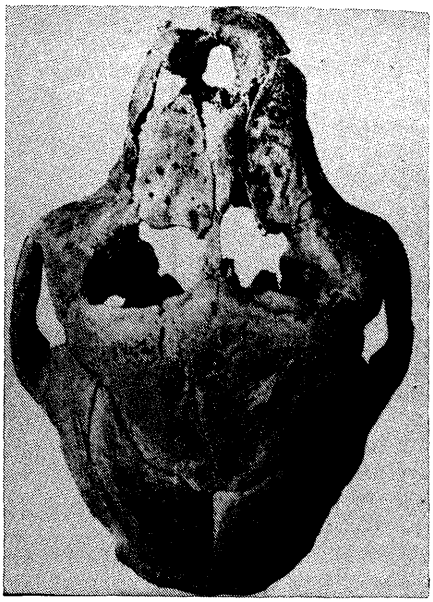

Fig. 9 : Monstrously thickened skull of a baboon from Theben. After Lortet and Gaillard 1909, fig. 7.

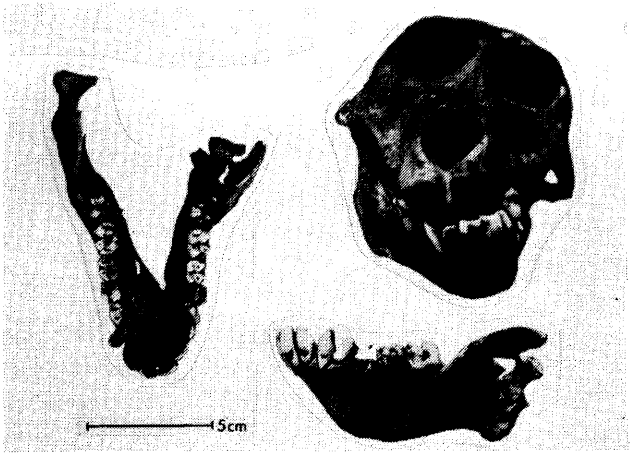

Fig. 10 : Deformed skull of a female baboon from Tuna el-Gebel. Photo by A. von den Driesch.

The jaw and facial skull compensated for this major changes. The facial muscles were forced to correspond accordingly to move these deformed parts. Because these adjustments took place during the critical growing phase of the animal, the results in turn had to have a drastical effect. The facial skull, influenced by the abnormal positioning of the left jaw and the altered muscle-projections, was forced to the upper left side of the skull. Thus creating an angular proportion from the left and basal direction of the cranial and facial skull. On trying to fit lower and upper jaw together, one gets the idea of a totally crooked muzzle (fig. 10, right).

Conclusions

We are concluding our assessment of apes in captivity in ancient Egypt, with this last, rather gruesome case. There can be no doubt that this accident must have inflicted deep external wounds and caused a raging painful experience. It was more than likely that the animal was in no position after the accident to feed normally. It was possibly fed with liquidized foodstuffs and cared for in a broader sense, otherwise survival would have been impossible. We can gather from this that sacred animals received continuous care and attention. This treatment of an animal, from our modern day perception, is totally unacceptable. We must, however, keep in mind that these systemic diseases are directly caused by biological interactions - something the ancient Egyptians knew nothing about. Sadly enough this biological interaction was forced into unbalanced states by this primitive keeping methods, thus unknowingly agitating the systemic diseases to the limits of deformity. We therefore cannot judge this as explicit animal cruelty. A misrepresentation as a result of our work, was recently published in a German environmental magazine under the headline : "Tortured Baboons" (Natur 6/86, 11).

It would not be justified to accuse the believers of the cult, a priori, of animal cruelty. These people were involved in special relationships with the sacred baboons, although in many cases purely out of religious reasons and fairly distant (fig. 11). It is only understandable for

Fig. 11 : Naos of Nectanebo (detail). The King Nectanebo I offers an image of the goddess Maat to Thot, represented in the form of an sitting baboon. 26th dynasty. Redrawn from the original housed in the Egyptian Museum Cairo.

a cult of such character to have some negative outcroppings, especially when one views the organization and structure a bit closer. As soon as there is money to be made, human nature leaves little to surprise.

The analysis of the Ptolemaic baboon chambers revealed that regular nocturnal gatherings took place underground before the start of such festival days, when the priests were called together for the night-watch. From demotic documents, we learned that single baboon chambers were simply purchased by non-prominent persons from the administration of the temple, to share in the profits of the priests. The owners of such places not only enjoyed the privilege of the official festivities, they could also address the mysterious god, as oracle, on behalf of the people. This act was naturally performed for monetary remuneration and must have been profitable. What mattered was, that the people believed and of course paid.

The boom of animal cemeteries during Ptolemaic times, are lastly the result of lucrative state measures to sell the priesthood expensively and simultaneously raising taxes from the subordinates for the keeping of sacred animals (Kessler 1986, 25). In short, this cult existed on the ground principle of commercial enterprise and exploitation, for which humans are so well know for.

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