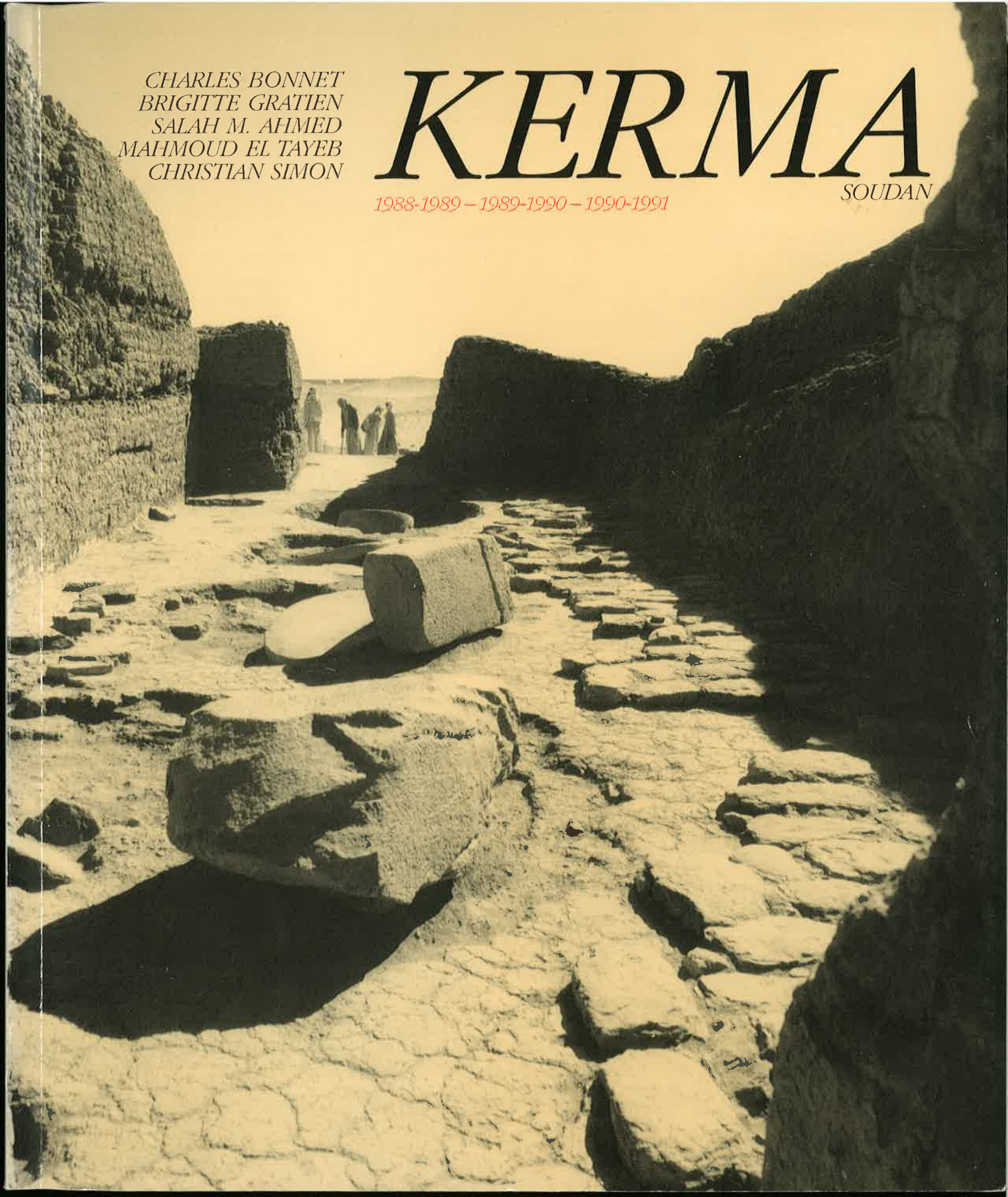


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KERMA

SOUDAN

1988-1989 - 1989-1990 - 1990-1991



The archaeological excavations at Kerma (Sudan)

By Charles BONNET

Translated by Annie Grant

Preliminary report on the 1988-1989, 1989-1990 and 1990-1991 seasons

Three new excavation campaigns¹ were undertaken at Kerma (Northern Province) by the University of Geneva Mission to the Sudan. The finds confirmed the archaeological richness of the region and their analysis will reveal extremely important information about contacts between the Sahara, the Mediterranean world and central Africa.

During the period of our campaigns, the direction of the Antiquities Service of the Sudan was successively the responsibility of MM. Ussama Abdel-Rahman El Nour, Khidir Adam Eisa, Siddig Ahmed Hamad and Professor Ahmed M. Ali Hakim, Under-Secretary of State. We are very grateful to all of them for the help that they gave us.

In 1990, the 7th International Congress for Nubian Studies was held in Geneva, and we were responsible for its organization. On this occasion, we also mounted an important exhibition on the Kerma excavations², which was held in the Museum of Art and History from 14 June to 25 November. We took the opportunity to publish, for this occasion, a book that was not only a catalogue of the exhibited objects, but also a summary of our work and the results obtained so far³. For the Congress, which was held from 3-8 September 1990, a pre-publication of the conference main papers was circulated to the participants, with the final publication of the proceedings to follow⁴.

Financial support has regularly been given by the Swiss National Fund for Scientific Research and the Museum of Art and History. Our colleagues of the Excavation Committee of the University of Geneva, whose president is Professor M. Valloggia, demonstrated their interest in our work by the award of several grants.

Excavation took place from 8 December 1988 to 28 January 1989, from 10 December 1989 to 28 January 1990 and from 8 December 1990 to 1 February 1991. The workmen, whose numbers varied at different times from 20 to 100, were as usual directed by our raïs, Gad Abdallah and Saleh Melieh. These latter were also able to participate in the Geneva conference. In 1991, Osman Idriss, one of our collaborators of very long standing and an excellent excavation technician, celebrated 25 years of work on our various sites. Salah El-Din Mohamed Ahmed, Mahmoud El Tayeb Mahmoud and Abdel Hai Abdel Sawi,

the inspectors who followed our research at Kerma, greatly facilitated contact with the local population and with the Antiquities Service for the Sudan. The first two named also undertook scientific studies. Moreover, Salah El-Din has recently (17 November 1990) been awarded a Doctorate at the University of Lille for his thesis on the Napatan buildings and a contemporary potter's kiln at Kerma⁵.

The necessary standard of work would not be achieved without our loyal colleagues in the Mission. Mme B. Privat recorded all the objects and carried out research work on these objects. Her work on both the necropolis and the ancient town complemented our own observations. MM. T. Kohler and T. Herbst also worked in the ancient town on the survey of the preserved structures. Mme M. Berti, who was responsible for the Mission's administration, also worked on the restoration of the finds and drew the detailed plans for some of the rescue excavations. MM. D. Berti and T. Herbst were responsible for the photographic survey while working on the excavations. MM. L. Chaix's and Ch. Simon's study of, respectively, faunal and human remains yielded significant results. Mme N. Ferrero participated in the field work in 1989.

Several recent publications have resulted from our work⁶, and these seem to have been well received. The contacts that have resulted from these publications have been a source of enrichment.

The ancient town

In the ancient town, cleaning took place in the northern sector, towards the east and the west. Ditches, which were part of the second main entrance into the town, were located on the edge of the urbanized area. This entrance was similar to that on the eastern side, with a large area (c. 50 x 50 m), left free of buildings, opening into the centre of the town. The open area was surrounded by fortifications high enough for any attacks on the gate to be easily repelled. The ditches that were dug at the foot of the badly preserved defensive walls were 4 to 7 metres deep. Ranges of palisades deployed right up to the base of the walls, provided a further obstacle against sapping (fig. 1-2).

A study of rubbish that had accumulated in successive ditches near this second entrance showed in to include considerable quantities of mud lumps from vessel stoppers or projecting knobs of chests. Some still bore the imprint of a seal. The collection suggested the existence of an administration responsible for the control and the exchange of goods.

In the north-west corner of the town was an unusual building with annexes (M 69), which could have been a house with two joining parts belonging to an official with important responsibilities. The exceptional nature of this building was seen in its monumental entrance and the long access road leading right into the town. The foundations of the building were laid on a bed of sand, as is the case with religious buildings (fig. 3).

In the same area, there were large enclosures for livestock or gardens. On either side of the road leading to the eastern entrance were districts of small houses. In comparison to neighbouring houses, these were undoubtedly modest dwellings (fig. 4).

In the north-west the habitation area was isolated from the religious quarter by a wall at least 5 m high. The wall had been pushed over with a single blow, and now lay horizontally, thus allowing the measurement of its height to be taken.

The diversity of the private architecture was surprising. Plans were rarely identical, even if they could be grouped in a general typology. Two houses had private chapels. One was square with a central roof support. It was entered through a trapezoidal courtyard. The thickness of the walls suggests that the building was of a substantial height. In plan, it was very similar to the chapels of the religious quarter and the necropolis. A red ochre wash was preserved on fragments of its carefully coated brick floor. This cult building and its courtyard seemed to be associated with an annexe, and with house 88 to the south.

House 100 was also notable. In plan it consisted of two blocks of buildings placed on either side of a central courtyard, a plan that is still in general use today. The interiors of the buildings were divided into several rooms. To the south was a vast, triangular-shaped courtyard, from which access was gained to the main building and to a secondary structure consisting of three rooms that formed a more or less square block. The passage joining the two dwellings was surprisingly narrow and hidden, so doubtless other, more visible entrances also existed. The exterior wall of the courtyard followed an irregular and sometimes sinuous course, terminating to the west at an apsidal building. The entrance to this building was framed by two engaged columns, between which were postholes that marked the presence of a gate. Facing the entrance was a roof support. The floor of the apse had been carefully coated and covered with a red ochre wash. The hearths that were found in several different places con-

tained many pieces of charcoal but they had not reddened the earth. There were many traces of stakes, but as yet their function has not been ascertained (fig. 5).

The study of these buildings suggested the presence of a religious meeting place, similar to those that exist today (el-messid). These are built slightly apart from the house, but connected to it via the courtyard. Each evening, some members of the family unit meet in the building to talk and to pray. Sometimes travellers are welcomed there.

There are vast artisans areas in this quarter still to be studied. They are characterized by accumulations of ashes, doubtless from open-fire pits used for firing pottery. The amount of ashes that had accumulated suggests a very long period of use. It is surprising that such an industrial area should have been established practically in the centre of the town.

The stratigraphy of the religious quarter

Studies of the stratigraphy at the foot of the Deffufa in the town confirmed the existence of a religious quarter dating from the Middle Kerma period (2050-1750 BC). Chapels and votive deposits, which must be related to foundation ceremonies, were found in the deepest levels. One of these deposits contained, in addition to fine pottery, several polished stones and ostrich eggs, a giraffe metapodial and a horn core from a Nubian ibex. It is the first time that the presence of these animals has been attested at Kerma. Under the corner of one building was a stela inscribed with the names of ships' captains, 'Iy-mri and Mrrī. The title *imy-irty* is usually given to people who are involved in mining or quarrying activities and expeditions, who have been dispatched beyond the Nile valley. The inscription, written in hieratic script, is dated to the end of the Ancient Kingdom, and was thus in a secondary position⁷ (fig. 6).

The monuments of the Classic Kerma period

Seventeen years ago, we worked under technically difficult conditions to uncover an extraordinary circular structure, 17 m in diameter, with foundations almost 5 m deep, that is 2 m below the water table. The structure doubtless post-dated the pharaonic conquest of the 18th Dynasty, and seems to have been built as the sepulture of one of the last kings of Kerma. Since other remains were located in the immediate surroundings, a survey had been undertaken in order to avert total destruction.

This Classic Kerma site is situated 1 km to the south of the ancient town, within the modern town of Kerma. Recently, conversion and house construction projects in the area provided the opportunity for rescue excavations which gave information on the final phase of Kerma's history.

We had already located mud brick foundations on a mound eroded by the Nile floods, and excavations here showed the presence of an earlier building. There were so many postholes dug into the silt that they could not all be recorded. However, in the eastern area there was evidence of a rectangular structure, 6.60 m by 3.60 - 3.80 m. On the same site, a mud brick structure, 5 m by 9 m replaced the earlier one, covering it almost completely. Its floor of coated bricks was covered with an ochre wash, suggesting a religious function for the building. Later, following the collapse of the brick walls, a new wooden construction, approximately 3.50 m by 7.70 m, was erected, occupying the internal area of the former brick chapel.

The same sequence of construction methods, witness to a remarkable continuity of occupation, has frequently been observed at Kerma. In the ancient town, the houses deteriorated rapidly and there seems to have been no hesitation, when time or means were lacking, in utilizing lighter materials for rebuilding.

Beside the chapel, and in direct contact with it, there was a temple, also built on the site of an earlier structure, but in this case the axis of the sanctuary was at a slight slant in relation to the axis of the postholes of the earlier building. The mud brick foundations were those of a very elongated sanctuary, flanked by two annexes of identical proportions. Access to these two rooms was via a transverse vestibule. Behind the sanctuary, there was a narrow space for store rooms or a staircase. To the south, were what was probably the remains of the two piers of a pylon with stone foundations (fig. 7-8).

In concept, this temple clearly showed Egyptian influence. Both the plan and the proportions show similarities with structures such as the central body of the southern temple of Buhen⁸. At Buhen, at the end of the Second Intermediate Period, a commandant named Sepedhor had a temple of Horus constructed to the satisfaction of the king of Kerma⁹. At various times there was close contact between Egypt and its southern neighbours, and this temple of the Classic Kerma period could also have resulted from collaboration with an Egyptian architect.

There were also many Meroitic tombs dug into the same mound, confirming a considerable extension (about 2 kilometres in length) of the Graeco-Roman cemetery.

The third monument of the Classic Kerma period to be found in this zone close to the Nile was also built on a more ancient site, which seems to extend in the direction of the river. The postholes of this settlement suggested rounded structures, including one of more than 10.50 m in diameter. Several storage pits dug into the soil were associated with these remains and the small number of pottery sherds have been provisionally dated to the Ancient and Middle Kerma periods.

Powerful stone foundations (1.90 m), were set on a bed of fine sand, in which were found large beads of

faience, vitrified quartz and cornelian. The walls of this structure were almost certainly of mud brick, and we postulate the existence of one or even two storeys. Despite their poor state of preservation, the remains indicated a rectangular building at least 26 m long and 10 m wide. Three square rooms (with sides of 5-7 m) formed the ground floor. In the central room there was a shallow well; during floods the water table must have almost reached the level of the foundations. A narrow wall surrounded the upper part of the well (fig. 9-10).

In the south-west corner, three elongated stores, built against the main body of the building, belonged to an earlier phase of building; access must have been from the first floor. Pottery and a score of seal impressions, sometimes inscribed, testified to the presence of Egyptian imports. In an appendix to this report, there is a preliminary study of these seal impressions by B. Gratien, who dates them to the Second Intermediate Period and to the beginning of the New Empire.

These remains are, in all likelihood, the central part of a "Residence" or a kind of "Treasury". There must have been annexes built around this central part, but their less solid foundations must have been destroyed by the Nile flood, or they remain to be discovered beneath the modern houses.

These three imposing Classic Kerma monuments, only 100 m to 200 m apart, give indirect evidence for the existence of a relatively important secondary settlement, probably connected with harbour installations. Traffic on the river and exchange of goods must have demanded the presence of people of high responsibility. The king himself must have overseen some of these activities on which the prosperity of his kingdom depended. The layout of this settlement was perhaps inspired by the Egyptian fortresses of the 2nd cataract. There, in a much more hostile region, defended towns were established, each with a specific responsibility, either defensive, commercial or administrative. The palaces were generally outside the walls, at some distance from the forts and the ports¹⁰.

It is also possible that the port was, from its earliest beginnings, associated with a complex of warehouses, administrative buildings and houses for the labour force. A detailed study of the banks of the Nile and of land in the modern town would help to verify this hypothesis, but the traces of early settlements with huts of wood and straw have already given us some indications of the occupation of this area during the Ancient Kerma period.

The eastern necropolis

Organizational difficulties prevented us from working in the large necropolis during the last two campaigns. During the 1988-1989 season, two new areas were studied

in the eastern zone of the Classic Kerma area. The excavations of G. Reisner only touched the principal tumuli¹¹ leaving large areas still intact, which gave us the opportunity for the comparative studies that are essential to our work.

Sector CE 17 belongs to a transition phase between the Middle and Classic Kerma periods. There were many human sacrifices. In several instances, the principal male inhumation, which was usually lying on a bed, was accompanied by a female and an adolescent. Even in the tombs of sector 13, children were often placed beside the corpse, suggesting a kinship relationship between the principal inhumation and the sacrifices. The hope of attaining a new life beyond the earthly one no doubt supported the development of this practice, which had serious implications for the demographic evolution of a relatively thinly populated kingdom (fig. 11).

In CE 18, two chapels were found to the north-west of a tomb that was of larger than average size for the sector. For the first time that we had seen in the necropolis, the superstructure was supported on a mud brick foundation, circular in shape and with no mortar bonding. The tumulus was, however, surrounded by the usual circle of slabs in ferruginous sandstone and pebbles of white quartz. In the centre, the rectangular pit had been badly robbed, but bones of three individuals were recovered. There were also the remains of three complete sheep and 88 joints of meat from the butchery of at least 11 sheep and a goat (fig. 12).

The eastern deffufa

The archaeological investigation of the eastern deffufa took place in 1989. Two rooms were completely cleared, showing the development of the monument and recovering a rich archaeological material.

As has already been described, the two rooms in the building were originally covered by a Nubian vault¹². It is likely that the brickwork had been gradually eroded by the wind and by the few annual rainfalls. Consequently, the eastern wall of the second chamber had collapsed, probably when the large beams supporting the walls had been gnawed through by termites. The vault seems to have stayed up, facing walls were nevertheless built inside the whole building. Later, a double row of large posts were placed to support the roofing. However, these attempts to correct the structural problems were unsuccessful, and finally the vault collapsed, crushing the liturgical furniture (fig. 13).

When the roof was reconstructed, the floors were raised and the southern room was paved with stelae taken from the cemetery. On one of them was a graffito representing an oared boat. The others, oval in form and carefully polished were often pitted on top. Between

these sandstone slabs, mixed with a mortar of silt, were thousands of fragments of faience, pottery and gold leaf, the remains of the furnishings and decoration from the earlier period.

A trench was dug in the cavity that had been made for the base of a column and exposed its original filling, in which was found a decorative element of particular interest. It was made of four rilled faience tiles, attached on each side to a thin wooden support, which was slightly damaged. The form of the motif was reminiscent of a *Djed* column or the prophylactic sign *Sa*. Bronze threads passed through the wood, serving, no doubt, to join this piece to other similar ones. Such a decoration, designed to be seen from both sides, must have come from the top of a gate or a canopy. Other fragments were from a second curious piece, a cone of black faience 0.50 m high, inserted into a blue cylindrical receptacle. We should also note that fragments of gold leaf were attached to the surface of a large number of tiles.

If the large lions discovered in 1916 really were set onto the facade of the monument, the majority of the others fragments, including the beam decorated with tiles that was referred to by G. Reisner, do not seem to have belonged to a mural decoration. The partitions were painted with various motifs, including a procession of animals, boats and scenes of everyday life. Traces of several feline paw marks were found when cleaning at the base of the paintings. A number of these faïences seemed to have been fixed on wooden supports perhaps to form an ornamental frame - a rather sumptuous one, given the profusion of gold leaf - for the stone funeral beds.

The fire that destroyed the monument is undoubtedly associated with the arrival of the Egyptians at the beginning of the 18th Dynasty. The funerary temple was abandoned and the immense neighbouring tomb was plundered.

A Napatan potters' kiln

Projected construction works on a piece of land 120 m south of the Napatan building that was excavated between 1982 and 1985¹³ necessitated a rescue excavation. This work was directed by Salah Mohamed Ahmed, and a large potters' workshop, described at the end of this report, was discovered.

The Meroitic cemetery

We were able to confirm that the Meroitic cemetery extended in the direction of "Kom des Bodegas"¹⁴. During the winter of 1989, labourers made a chance find of

some ceramics, some of which were still intact. The graves, which seem to have been close to the surface, has disappeared.

In 1990, Mahmoud El Tayeb Mahmoud, inspector of the Antiquities Service, was in Kerma and urged us to investigate a large funerary burial vaulted chamber of a type otherwise unknown at Kerma. He himself directed and recorded the fieldwork. The chamber, which was situated to the north of the western Deffufa, had only been partially disturbed and turned out to be of great interest. It is further described at the end of this report.

The bases of three small mud brick pyramids were discovered to the north-west of the ancient town. This type of superstructure was not previously known at Kerma. At foundation level the sides measured, respectively, 3 m, 4.5 m and 9 m. Tomb robbers had dug holes of about 1 m diameter into the pyramids, near the corners, and the tombs were very badly disturbed. Not a single human bone remained, and the only finds were a few fragments of jars that dated the burials to the end of the first century BC or the first century AD. In one of the holes dug down to the west, potsherds had been thrown onto the ground and were mixed with the fill. Some had even been inserted between the bricks that sealed the entrance to the vault. All the sherds belonged to the same vessels. This group of tombs gave us very interesting information about the funerary arrangements carried out at different points in the ancient site. The deffufa is not far from this site, and it is even possible that some rites took place within the ruins of this monument, where many Meroitic potsherds have been found (fig. 16).

A Christian burial vaulted chamber at Koya

In 1988, M. Khider Adam Eisa of the Antiquities Service asked us to organize an excavation at Koya, a village on the left bank of the Nile, 10 kilometres to the south-west of Kerma. Following torrential rains, the vault of a tomb caved in, causing the interior courtyard of a house to subside. The burial chamber, which measured 2.60 m by 1.20-1.40 m, with an internal height of 1.20 m, was carefully constructed. The walls and the vault were covered

with a white coating and an epitaph was painted above and along the door jamb. The text was written in Greek and can be dated to the Middle Ages.

The main inhumation was of a man between 30 and 40 years old. A lamp was placed beside his head. Later, the bodies of a woman and two old men had been placed in the tomb. Anthropological examination of the male skeletons suggested that they belonged to the same family. This tomb must have been part of a vast cemetery established near to a church whose ruins are still partially preserved in cultivated land (fig. 17).

Report of the survey near El Laqiya (western desert)

The area surveyed was near the oasis of El Laqiya, north of Dongola, about 24 km from the left bank of Nile and 16 km south-west of El-Laqiya. This area of low ground, levelled by water, was very suitable for growing palm trees, many of which remain today. The area is characterized by silts covered in places by gypsum. The Bedouins still call the area El Hamra (the red) because the considerable quantities of potsherds have coloured the archaeological layers. In the desert zone, layers of ferruginous sandstone alternate with the remains of petrified forests from the Secondary or Tertiary eras.

Archaeological remains were scattered over an area of several square kilometres. Some of the sites were undoubtedly from early historic periods. There was a particular abundance of ostrich shell fragments and of roughly shaped stone objects. However, the majority of the structures and the visible material were from the Christian period. In addition to the many small walls made of stone and earth, a small cemetery was particularly interesting. A score of tombs, protected within a rounded enclosure, still had their superstructure preserved. They were rectangular in plan and surrounded by worked stones. Some inscribed stelae were still *in situ* on the western side, and had been surmounted by a cross, also made of stone. These crosses, which had fallen to the ground, carried inscriptions and one of them was consigned to the Office of the Antiquities Service at Dongola.

¹ Owing to the reorganization of the journal *Genava*, we were not able to publish our usual bi-annual report.

² We wish to express our grateful thanks to all those involved in the exhibition, especially to the commissioners, Mmes B. Privati and Y. Mottier; to Mme Fr. Magnin, the architect who was responsible for the beautiful display of the objects; and to N. Ferrero and I. Gautier who also made important contributions to the success of this difficult enterprise.

³ Charles BONNET *et al.*, *Kerma, royaume de Nubie*, Geneva 1990. Most of the editorial work for this volume was undertaken by Mmes B. Privati and N. Ferrero, whom we gratefully thank.

⁴ Mme N. Ferrero and P. Berndt took the major responsibility for the preparation of these documents. We should also like to thank all the members of the Cantonal Archaeological Service of Geneva for the practical organization of the meeting and the various events.

⁵ SALAH EL-DIN Mohamed Ahmed, *Les habitats kouchites; caractères et évolution. Un modèle de Kerma* (in press), Doctoral thesis of the University of Lille III, 17 November 1990.

⁶ In addition to the exhibition publication already cited: Ch. BONNET, *Les fouilles archéologiques de Kerma (Soudan), Rapports préliminaires sur les campagnes 1977-78; 1978-79 and 1979-80; 1980-81 and 1981-82; 1982-83 and 1983-84; 1984-85 and 1985-86; 1986-87 and 1987-88*, in: *Genava*, n.s. vol. XXVI, 1978, pp. 107-127; vol. XXVIII, 1980, pp. 31-62; vol. XXX, 1982, pp. 29-53; vol. XXXII, 1984, pp. 5-20; vol. XXXIV, 1986, pp. 5-20; vol. XXXVI, 1988, pp. 5-20; in *Nyame Akuma*, no. 29, Dec. 1987, p. 52; no. 30, Dec. 1988, pp. 32-33; no. 31, Sept. 1989, pp. 35-37; no. 34, Dec. 1990, pp. 25-27; *Travaux de la Mission de l'Université de Genève sur le site de Kerma (Soudan, Province du Nord)*, in: *Bulletin de la Société Française d'Égyptologie*, no. 109, Paris, June 1987, pp. 8-23; *Le territoire du Royaume de Kerma - Cent quarante ans après l'expédition de Karl Richard Lepsius*, in: *Karl Richard Lepsius (1810-*

1884). Akten der Tagung anlässlich seines 100. Todestages, 10-12.7.1984 in Halle, Berlin, 1988, pp. 328-338; *Un bâtiment résidentiel d'époque napatéenne à Kerma. Premières interprétations*, in: *Actes de la 5ème Conférence internationale d'Études méroïtiques, Rome, 1984*, in: *Meroïtica*, 10, Berlin, pp. 853-861; *Kerma, l'un des plus vieux royaumes d'Afrique*, in: *Archeologia*, no. 258, June 1990, pp. 32-41; *Kerma, point de rencontre entre l'Égypte et les populations africaines*, in: *Sabara*, 3/1990, pp. 83-88; Ch. BONNET *et al.* *Sépultures à chiens sacrifiés dans la Vallée du Nil*, in: *Cahiers de Recherches de l'Institut de Papyrologie et d'Égyptologie de Lille*, Université de Lille, no. 11, pp. 25-39; J. LECLANT, *Fouilles et travaux en Égypte et au Soudan*, in: *Orientalia*, vol. 57, fasc. 3, 1988, pp. 377-379; vol. 58, fasc. 3, 1989, pp. 411-413; vol. 59, fasc. 3, 1990, pp. 419-421.

⁷ D. VALBELLE, *L'égyptien à Kerma sous l'Ancien Empire*, in: *Kerma, royaume de Nubie*, Geneva, 1990, pp. 95-97; M. VALLOGGIA, *Les amiraux de l'oasis de Dakkeh*, in: *Mélanges offerts à Jean Vercoûtter*, Paris, 1985, pp. 355-364.

⁸ B. PORTER and R. MOSS, *Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs and Paintings*, VII, *Nubia, the deserts, and outside Egypt*, Oxford, (1952), 1962, pp. 131-137.

⁹ H.S. SMITH, *The Fortress of Buben, the Inscriptions*, London, 1976, pp. 80 ff.

¹⁰ For the "satellite towns" see: B. GRATTEN, *Les Égyptiens en Nubie, Politique et administration aux 3e et 2e millénaires avant J.-C., L'expansion égyptienne en Nubie*, vol. II, Thèse de doctorat d'État du 19 Nov. 1990, Université de Paris-Sorbonne, Paris IV.

¹¹ G.-A. REISNER, *Excavations at Kerma, Part III, Harvard African Studies*, vol. V, Cambridge (Mass.), 1923, pp. 61 ff.

¹² Ch. BONNET, *op. cit.*, *Genava*, vol. XXXVI, pp. 13-14.

¹³ Ch. BONNET, *op. cit.*, *Genava*, vol. XXXVI, pp. 18-19.

¹⁴ Ch. BONNET, *op. cit.*, *Genava*, vol. XXXVI, p. 19.

Seal impressions and administration at Kerma in the Classic Kerma period

By Brigitte GRATIEN

During the 1990-91 season, the Archaeological Mission of the University of Geneva discovered several seal impressions on the floor and in the foundations of denuded storerooms situated a short distance from the western Deffufa. They could not be dated by their stratigraphic position; the pottery dates back to the end of the Classic Kerma period. However, thirteen of the sealings were sufficiently well preserved to merit study. This is not the first find of its kind at Kerma: G.A. Reisner discovered several hundreds of such objects in the sunken stores built inside the western Deffufa. The seals had been applied on baskets or wooden chests. Others came from the entrance to the funerary chapel K XI and must have been used to seal the door¹. None of them bore a title, and the majority must have been affixed by local functionaries who only possessed seals engraved with geometric motifs. Some of them, particularly those decorated with figures or heraldic animals, or with spirals and prophylactic symbols, belong to a type that is well known in the Egyptian world of the Second Intermediate Period. In addition, many mud impressions that were too eroded to be readable had been thrown into the Classic Kerma period ditches of the ancient town².

These discoveries raise the problem of the possible existence of a developed and organized local administration, and of the continuity of diplomatic and commercial relations between Theban Egypt and the kingdom of Kush in the Classic Kerma phase.

Description of the seal impressions

The thirteen impressions described here had been made by eight different seals: that is to say, four examples of number 1 were found, and three of number 2, confirming the non-random character of these finds and the existence in the vicinity of an important administrative centre.

In every instance, the impression was made of a coarse, heterogeneous paste, of a uniform mid-grey colour; its composition was of filtered alluvium, but still included a large quantity of grains of rolled quartz, numerous mica particles, crushed shells, and occasional granules of grog and charcoal, unless these were fragments of rock or plant debris.

Each time the imprint on the bottom was identifiable, the sealings had been affixed to a small ligatured bolt, similar to those used to close wooden chests, of which they still bore trace (nos 1a, 1d, 2a, 4, 6, 7 and 8). On some, only the mark of the binding was preserved (2b, 2c and 3). As was the custom, well known from other sources, the seal could be applied several times by the functionary in charge of the sealing or sending of the package, thus 1a has been applied twice. The seal itself was usually a scarab, sometimes mounted in a ring (nos. 3 and 5).

Impression 1: this seal is fairly large (c. 3 cm) and can be reconstructed in its entirety. It is bordered by elongated spirals, of a type frequently used on the administrative seals of the XIIth Dynasty to the Second Intermediate Period³. The inscription is of particular importance as it gives the name of a king *Dd^cnb-R^c*, surrounded by the signs *w3d* and *w3s*, which precede that of *Sbk* inscribed in a cartouche.

The king Djedankhrê-Mentuemsaf is well known by a relief from Gebelein⁴, and by two scarabs where the royal name is inscribed within a cartouche surrounded by spirals rather different from ours⁵. No monument mentions a king Djedankhrê-Sobek⁶. The pharaoh Djedankhrê-Mentuemsaf only appears on the surviving lists of the Royal Papyrus of Turin⁷; the comparison of his first name with that of Didumes I and Didumes II and the identical distribution of their monuments, give him a date at the very end of the XIIIth Dynasty⁸. He was probably one of the dynasts that governed the region of Gebelein⁹.

This information, even if it does not allow us to identify the person mentioned on our seal, does, however, suggest a date for the Kerma impression of the very end of the XIIIth Dynasty.

Impression 2: three fragments without a border, made by the same seal, bear the funerary formula [*hṯp dī*] *nsw//// nb (?) Bḥ [dt] n k3 n ỉry^ct 'Imni²-snb*¹⁰. The signs are very close together and small. The name *'Imni* is known, and it, either on its own or followed by *^cnḥw*, and that of *'Imni²-snb* is dated to the Middle Kingdom¹¹. The title *ỉry^ct*, "storekeeper", was widespread from the time of Amenemhat III; it frequently appeared on the sealings of the late Middle Kingdom, not only in Nubia,

but also in Kahun and Abydos, often on its own, as in this case, without the department or the institutions on which the holder was dependent being cited¹². In so far as he was a royal servant, he was appointed to a place, the *šnʿw* or to one of its divisions or even to the Treasury, and could thus accompany expeditions. The presence of such a seal in Nubia is thus not exceptional.

Impression 3: this seal, mounted in a ring whose setting has left a mark, has only the end of a name */// iy*, flanked either by the framed signs *nfr*; or by two spirals. This name, like its compounds, is, in almost every case known, from the Middle Kingdom¹³.

Impression 4: a new example of an administrative seal, divided in three columns, separated by a double line: the two sides carry symmetrically the symbolic signs *nb*, *hs* and *nfr*: in the centre the inscription *s3b nbn* [s3] - *Imn* can be read. This disposition, by comparison with the royal seals, can be dated to the XVth and XVIth dynasties (Seuserenrê, Chian, Sheshi-Maaibrê Amu)¹⁴. The proper name *s3-Imn* — as the extremity of the tail of the bird allows us to restore — is used as much in the Middle as in the New Empire¹⁵.

The title *s3b-iry Nbn*, dignitary, official at Nekhen' is used by the people in charge locally, outside the palace. They are of an elevated rank, with a military and judicial role¹⁶, a real function from the XIIth Dynasty up to the XVIIth Dynasty, and they have left many seals. Some of them exercised their responsibilities over the second cataract (responsible for recording the height of the Nile waters, co-recipient of the dispatch of Semneh no. 6, who lived at Kummeh, proprietors of seals). *S3b Nbn* is rare¹⁷ but has been found three times at Buhen, in the Second Intermediate Period, and notably on the stela of Sehekemheb II, the father of Sepedher¹⁸; this title is perhaps a Nubian corruption of *s3b iry Nbn*.

Impression 5: this fragment bears only a spiral, usually found on the seal of an official¹⁹. It has been stamped by a mounted scaraboid.

Impression 6: this stamp is engraved with the prophylactic signs *k3* and *dd*, surrounded by elongated spirals, of a type often used from the XIIth Dynasty²⁰, and frequently found on Egyptian sites of Lower Nubia as well as at Kerma itself and in Egypt in late Middle Kingdom layers.

Impression 7: this example, and the next, both belong to the category of "hollowed seals", well known in the Hyksôs period, but making their first appearance sometime earlier²¹. Here, the impression has, under the sign *nb*, the representation of a person, walking, wearing a long loincloth, the left arm beside the body and the right

arm carrying a cane surmounted by a cobra²². Reisner discovered examples very similar to this and the next one at Kerma, both among the scarabs in the Classic Kerma period necropolis and among the impression of K I²³.

Impression 8: the last fragment bears a heraldic animal, possibly a lion, and the sign *hpr*²⁴.

As discussed above, we can date the Kerma impressions, both by their style and by comparison with the royal scarabs, to the period between the end of the XIIIth Dynasty and the end of the Second Intermediate Period. However, there is some uncertainty about their place of origin: three hypotheses can be proposed: Egypt, Lower Nubia and the second cataract, or Kerma itself. It seems unlikely that the chests had been sent from the Egyptian urban establishments of Nubia, where, with the exception of the seals decorated with prophylactic signs, the style of the impressions is very different. These latter, dated to the XIIth and XIII Dynasties, are earlier than those from Kerma. We know almost nothing about the functioning of their administration before their occupation by the king of Kush.

On the other hand, the discoveries made by Charles Bonnet and George Reisner, show that there was a developed administration at Kerma — at least in the Classic Kerma period — one that it seems followed the Egyptian model and used the Egyptian language. It is known that the doors of buildings such as K XI at least, were regularly sealed, and that the goods that circulated in packages were also stamped. But until now, there were no finds of seals belonging to officials at this site. The exceptional finds of scarabs with names in tombs as early as the Middle Kerma period (the Middle Kingdom) could be explained as the result of looting, or following the acquisition from Egyptians of these objects, which were only usable by their original owners. However, the majority of the impressions founds in K I and K XI had geometric motifs which were very probably made by fired clay scaraboid seals which were made locally, some of which were found at the site²⁵.

If the chests came from Egypt, or from the region of the third cataract, there must have been at Kerma during the late Middle Kingdom and the Second Intermediate Period, a structured and centralized organization, modelled on that of Egypt, with officials who certainly knew the Egyptian language, if not actually Egyptian themselves²⁶, controlling the circulation of goods. Thus the objects described above were found in the workshops and warehouses of the religious centre, or on the floor of the administrative building. They are the result of more than merely episodic activities, since of the eight impressions found, one had been made by a "royal seal", and four by seals bearing names. Moreover, three and four examples of two of these have been found, suggesting a regular exchange of goods.

However, there is no evidence as yet to prove a local origin for these impressions. On the contrary, it is very likely that some of them had been applied to packages that came from Egypt, from Upper Egypt rather than from the Licht region ; this is shown by the name Djedankhrê. The three functionaries' names that we have found are Egyptian, and two of these names are based on the name of the god Amon. The impressions under discussion here can be compared

with the seals with the names of Maaibrê, Sheshi and Yaqoub Hor that were found at Kerma at the beginning of the century, and with the basin with the name Didumes, as they are almost contemporary. At the end of the XIIIth and the beginning of the XVth Dynasties, the relationships of the kingdom of Kush were as much with the Theban region as with the Delta, even though it had probably already won control of Lower Nubia.

¹ G.A. REISNER, *Excavations at Kerma*, Boston, 1923 : part. I-III, pp. 38 and 265, pls. 2 and 3 : part. IV-V, p. 70 ff ; Ch. BONNET, *Kerma, royaume de Nubie*, Geneva, 1990, p. 49.

² Ch. BONNET, personal communication.

³ As in the Nubian fortresses of the Middle Empire : type 7 B3 (ii) a of Tufnell - O. TUFNELL, *Studies of scarab seals. Volume two : Scarab seals and their contribution to history in the early second millennium B.C.*, Warminster, 1984, p. 129.

⁴ G. DARESSY, "Notes et remarques", *RT* XX, 1898, p. 72.

⁵ P.E. NEWBERRY, *Ancient Egyptian scarabs*, Chicago, 2nd ed., 1979, p. 123, pl. X, 25 and 26 ; O. TUFNELL, *op. cit.*, p. 160, pl. LVI, 3202 and 3203 - University College no. 11225 (Flinders Petrie, *Scarabs and cylinders with names*, London, 1917, pl. XI 11 E) and British Museum no 40687 (H.R. HALL, *Catalogue of Egyptian scarabs... in the British Museum. I : Royal scarabs*, London, 1913, p. 230).

⁶ O. TUFNELL has published a scarab s3 r^c (*Sbk*), in a cartouche, with spirals identical to those from Kerma, and dated to the XIIIth to XVth dynasties = BM 66154 (*op. cit.*, pl. LXIV, no 3531).

⁷ Perhaps in A.H. GARDINER, *The Royal Canon of Turin*, Oxford, 1959, pl. III, VII, 13 or VIII, 27 (?).

⁸ J. von BECKERATH, *Untersuchungen zur politischen Geschichte der Zweiten Zwischenzeit in Ägypten*, *Ägyptologische Forschungen*, 1965, p. 256 H ; at the end of the XIIIth Dynasty : H. GAUTHIER, *LdR* II, p. 53, no. 56 ; E. DRIOTON - J. VANDIER, *Les peuples de l'Orient méditerranéen. II. L'Égypte*, 3rd ed., 1952, p. 288 and 630 = 29th king of the XIIIth Dynasty ; N. GRIMAL, *Histoire de l'Égypte ancienne*, Paris, 1988, p. 546.

⁹ According to Hayes, and for the same reasons, he was a king of Upper Egypt, vassal of Hyksôs, reigning over several nomes or a town, (W.C. HAYES, *Egypt from the death of Ammenemes III to Sequenre II*, CAH II, 3rd. ed., Cambridge, 1973, p. 53 and 818). It should be noted that Reisner found vessels bearing the cartouche of Didumes I or II in tumulus K XVI at Kerma (G.A. REISNER, *Excavations at Kerma*, part. IV-V, Boston, 1923, p. 517).

¹⁰ It is possible to see, at the second line, the beginning of the sign *nb*, which precedes the sign *hb* ; the formula, though somewhat unusually, could thus be dedicated to Horus of Behedet, and the

seal could thus originate from Egypt. The sign which follows *l* is not identified, but could be the *t* of *ct*.

¹¹ H. RANKE, *Die ägyptische Personennamen*, Glückstadt, 3 vol. = *RPNI*, 31, 10 and 11 ; 32, 2 and ff.

¹² W. Ward cites several instances (W. WARD, *Index of Egyptian administrative and religious titles of the Middle Kingdom*, Beirut, 1982, no. 452), amongst them 29 owners of a seal ; cf. also, G.T. MARTIN, *Egyptian administrative and private-names seals*, Oxford, 1971, no. 1485, 1486 ; in addition, 22 impressions with this title have been discovered at Mirgissa, on the second cataract ; other store-keepers have left their names on the stelae and rocks of Semneh-Kummeh, Uronarti, Abusir...

¹³ *RPNI*, 8, 10.

¹⁴ O. TUFNELL, *op. cit.*, p. 122 and 165, class 3 E 1.

¹⁵ *RPNI*, 280, 22.

¹⁶ D. FRANKE, *Ursprung und Bedeutung des Titelsequenz s3b R3-Nbn*, *SAK* II, 1986, p. 216.

¹⁷ G.T. MARTIN, *op. cit.*, no. 1307, 1417.

¹⁸ Stela Kh. Mus. 370, middle 2IP ; stela at Khartoum, unnumbered, end 2IP (H.S. SMITH, *The fortress of Buhén. The inscriptions*, London, 1976, p. 44, 46 and 48, pl. LXX, 2 and 4).

¹⁹ O. TUFNELL, *op. cit.*, p. 129, class 7 B 3 (ii) a, (see also impression 1).

²⁰ O. TUFNELL, *op. cit.*, p. 128 and pl. XXIX, class 7 A 2a.

²¹ It is contemporary with the seals of Maaibrê-Sheshi (H. STÖCK, *Studien zur Geschichte und Archäologie des 13. bis 17. Dynastie Ägyptens*, *Ägyptologische Forschungen* 12, Glückstadt-Hambourg, 1942, p. 28).

²² O. TUFNELL, *op. cit.*, p. 134, pl. XLIV, class 10 A 2.

²³ G.A. REISNER, *op. cit.*, vol. I, pl. 3, 2 ; vol. III, p. 76, fig. 169, no. 97 ; pl. 40, 2, 7 and pl. 42, 1, 25-9 and in the Boston Museum of Fine Arts reserves.

²⁴ O. TUFNELL, *op. cit.*, class 9.

²⁵ B. GRATHEN, in Ch. BONNET, *Kerma, royaume de Nubie*, Geneva, 1990, p. 99 and, for example, p. 163, no. 67.

²⁶ Sa-Imen, *s3b Nbn*, like certain of the dignitaries of Buhén, could have been one of these.

A potter's workshop of the Napatan period and some Christian tombs

By Charles BONNET and Salah El-Din MOHAMED AHMED

A settlement of the Napatan period was found during rescue excavations in the modern town. Two residential buildings had been found earlier (1982-1988), and during the 1988-1989 season the remains of a potter's workshop were discovered, giving us new information about the topography of the site and craft production.

The second residential block lay about 80 meters to the east of the Napatan building that has already been published¹. Only the north-east angle of the construction was able to be studied, as the remains were very eroded, and modern buildings prevented the extension of the area of excavation. Nevertheless, the thickness of the walls and the restorations carried out on the structures showed this building to have been as important as its neighbour. Several phases of occupation on the same site were shown in the stratigraphy.

Classification of the archaeological material showed it to be entirely representative of the Kerma productions of a period of two or three centuries². It was almost entirely pottery of a buff fabric, sometimes covered with a red slip. The jars or bowls were of various forms and had been fired in a consistent manner. There are many similarities between this material and that from the tombs of El-Kurru and Nuri³. The second building seems to have been inhabited from the seventh to the fifth century before Christ, a date that has been confirmed by radiocarbon analyses.

The potter's workshop

Just over 100 m to the south was an industrial zone which appeared to be associated with, and form the limit of, the Napatan town. Decantation pits, a kiln and an artisans' shelter formed part of the working area. We were prevented from investigating the entirety of the archaeological site by the enclosure walls of the modern houses, and we were limited to an area that had not been built on.

The circular firing chamber of the kiln was buried 0.60 m in the ground; its diameter of 2.40 m, shows it to have been an imposing structure. Four solid brick pillars held up the vaults on which the base of the firing chamber was supported. Access was via a descending passage on the western side, and on the opposite side, on the

same axis, was a sort of chimney used to improve the draught. In order to avoid the risk of fire, the openings were deliberately orientated so that they did not face into the prevailing northerly winds. The walls of the chamber, made from mud brick, were coated with a hardened silt, which had also been applied to the pillars. A thick layer of the same material covered the floor of the kiln and showed the care which had been given to the planning of the structure.

In the filling of the chamber, layers of charcoal and cinders had been preserved in situ. Mixed in with these were some potsherds, including many wasters, which showed that the pottery had been produced in this kiln.

The reconstruction of the elevation of the structure, and indeed its general layout, showed it to be of a type known in Egypt as early as the Ancient Kingdom⁴. At Kerma, in the ancient town, several workshops had similar kilns, although they were of a smaller size⁵. Structures of the dimensions of this Napatan kiln are only found again in Christian times.

The two pits situated beside the kiln seem to have been used for preparing the clay, by washing it and letting it settle before mixing it with tempering material. We were not able to discover the system used to bring water to these pits. There was perhaps a channel close to the surface of the ground. Excavation of the pits uncovered different layers from which we recovered very many potsherds and misfired pieces, even though we were only able to excavate a part of them. The pits were gradually filled in with the rubbish and misfired pieces from the potters working nearby.

Comparison of this material with the pottery found in habitation layers has allowed us to refine the chronology a little. The production of this kiln seems to have commenced during the second half of the sixth century and to have continued until the end of the fifth century BC.

The artisans' house was relatively modest, initially comprising two rooms and a cooking area. It became even more rudimentary, as it was successively replaced by three or four circular huts. The ancient mud brick building had a covered area on its north side, which was probably used to set up the pottery. In the kitchen, the cylindrical domestic ovens had ventilation holes in their bases. Jars, sunk into the ground, had originally contained fish sauce.

A Meroitic tomb from the cemetery of the ancient town

By Charles BONNET and Mahmoud EL TAYEB MAHMOUD

More than a thousand years after the end of the Kerma civilization, the ancient ruins of the eponymous town were again occupied, this time by a Meroitic population. Several first century sherds attesting their presence were found in an ancient chapel of the Deffufa, the imposing religious monument that no doubt still retained its aura of sanctity, despite its long deconsecration. To the west and the north of the Deffufa, an immense necropolis developed, enclosing tombs dating to the New Empire and to subsequent periods.

During the classic Meroitic period, the number of inhumations increased and burial chambers surmounted with mud brick pyramids made their appearance. Even though their foundations had often been eroded away, it was possible to establish that several small groups of tombs and pyramids had been constructed on the site of the ancient town¹. Tomb 91 was from one of these groups; it seems to have been built beside an existing tomb, and, as we have seen elsewhere, could have been a secondary tomb built up against the principal funerary structure. The two pyramids must have been erected one beside the other, unless the two graves were covered by the same superstructure. Unfortunately, there is nothing of their above ground structure left.

The exceptional character of tomb 91 lies in its dimensions - 6 m by 1.80 m -, which make it the largest funerary chamber found at Kerma. In all likelihood it was conceived at the outset for multiple inhumations (fig. 1).

The entrance was to the west and gave access to a chamber roofed with a Nubian vault in mud brick. The interior space was rather narrow (c. 0.90 m) and elongated (5 m). The low ceiling (0.70 m) cannot have made it easy to insert the corpses, and some of them must have been pushed to the back or sides of the tomb (fig. 2).

The vault was partly collapsed and had recently been further damaged, in all probability by animals and treasure seekers. However, the poverty of the grave goods seems to have limited the activities of the tomb robbers, and several skeletons were still more or less in anatomical connection. Thirteen individuals were identified by Ch. Simon, including 7 children, 1 adolescent and 5 adults (cf. *infra*).

The dead were placed in extended position, orientated east-west, with the head to the west. The position of the bodies suggested that they had been placed in three suc-

cessive layers; however, the tomb does not seem to have been used over a very long period. The first inhumations were those designated a, b, c, g, h, 1, 2, 3, 4, 5; these were separated from "d" and "e" by a layer of silt approximately 0.10 m thick. The last inhumation was of "f", who was placed close to the entrance.

The material found with the skeletons was comparable to that found in nearby tombs. There were two pottery vessels, pieces in bronze, amulets, tweezers and an iron point (fig. 3-4).

A handmade caliciform goblet was found beside the right arm of individual "e" (fig. 3/1). It was of a fairly dark brown colour, with a polished exterior surface, and its rim was incised with a festoon decoration. This pottery is still of Napatan character, even though the form is known in the Meroitic period².

Several large fragments of a wheel-thrown jar, together with a bronze bowl, were found in the fill near inhumations 3 or 4 (fig. 4/2). The jar, which was covered with an orange-coloured slip, was polished on the outside³. A rectangular and an oval sign incised on the body were probably connected with the secondary function of the vessel. They may have wished to mark the jar as destined for purification rites or for libations. This hypothesis, and the support of other examples, leads us to interpret these two graffiti as representing a pyramid and a grave⁴.

The traditional form of this jar is found in Egypt as far back as the Ptolemaic period, but at Kerma, jars of this type are always found associated with objects of a later period.

The bronze bowl found with the disturbed remains of individuals 3 and 4 seems to be part of the same deposit that included the jar just described (fig. 3/3). The interior is decorated with a fillet under the rim and a circle on the bottom⁵. This type of hemispherical bowl was often placed upside-down over a jar⁶. It was probably also used in purification rites or for libations, such as offerings of wine, although it seems that the jars that we find deliberately smashed in the passages into the tombs are more often to be associated with such practices⁷. There was a cup in tinned bronze with individual "c". On the walls and the soldered foot of the vessel were trace of a tool used on the lathe to thin the metal before it was tinned. The cup had been placed on the lower legs of a child, who wore at its neck a faience amulet representing

a dwarf (fig. 3/4). This might represent the god Bes but without any other attributes we cannot be certain of this⁸.

Two other amulets were also part of the same group of finds. One of these, found near skeleton "e" (fig. 3/6), was rectangular in shape, and made from a soft, green stone incised with plant motifs, perhaps representing palm leaves. The second, which was found near individual "f", represented a ram's head surmounted with a sun disc (fig. 3/7). Several gilded glass and faience beads seemed to belong to the same ornament. Other collections of beads made of cornelian, glass, faience and stone should also be noted (fig. 3/8).

We found a pair of very corroded tweezers (fig. 3/9) behind the back of individual "a", and a fragmentary

arrow head in similar condition beside individual "d" (fig. 3/10).

The objects found in tomb 91 did not allow a precise date to be given to the burials. However, taking into consideration the material found in neighbouring tombs, the type of the construction, and the chronological indications given by the two jars and the bronze vessel, we suggest a date towards the end of the first century BC or during the following century. Most certainly these types of grave goods were copied for a long time and we must await the results of further research to know if jars identical to that found in tomb 91 were still being produced in the 2nd century.

¹ For this type of tombs, see: W.-B. EMERY, *Egypt in Nubia*, London, 1965, pp. 227 ff.; M. SCHIFF GIORGINI, *Soleb-Sedeinga*, in: *Kush*, vol. XV, 1967-1968, pp. 257-265.

² W.-Y. ADAMS, *Ceramic Industries of Medieval Nubia*, Part. II, Lexington, Kentucky, 1986, p. 437, A/9, Fam. M.

³ L. TÖRÖK, *Jars no. 357, 360, 361, 364*, in: *Kerma, Royaume de Nubie*, Geneva, 1990, pp. 239-241.

⁴ Ch. BONNET, *Les fouilles archéologiques de Kerma (Soudan)*, in: *Genava*, n. s., t. XXVIII, 1980, pp. 58-60.

⁵ L. TÖRÖK, *Hemispherical bowl no. 365*, in: *Kerma...*, p. 241.

⁶ Ch. BONNET, *Fouilles archéologiques à Kerma (Soudan)*, in: *Genava*, n. s., t. XXVI, 1978, pp. 120-126.

⁷ Ch. BONNET, *Les fouilles archéologiques de Kerma (Soudan)*, in: *Genava*, n. s., t. XXVIII, 1980, p. 53.

⁸ For earlier examples, see: St. WENIG, *Africa in Antiquity, The Catalogue*, no. 106 and 108.

⁹ We wish to express our grateful thanks to the raïs Saleh Melieh who supervised some difficult parts of the excavation.

An anthropological study of human skeletons from a Christian tomb at Koya and a Meroitic tomb at Kerma

By Christian SIMON

The skeletons described in this report came from two tombs excavated by the University of Geneva Mission to the Sudan, during the 1988-1991 campaigns. A Christian collective tomb, containing four skeletons, was excavated at Koya, near Argo, and a Meroitic tomb was found at Kerma, in the ancient town.

1. METHODOLOGY

The determination of sex of the skeletons was made using the method of Acsádi and Nemeskéri (1970), in which several characteristics of the skull, iliac bone, sacrum and femur are examined. The age of the adult skeletons was determined using both Masset's (1982) method, based on observation of the cranial sutures, and that of Acsádi and Nemeskéri (1970), which uses four criteria: the degree of fusion of the cranial sutures, the appearance of the pubic symphysis, and the state of degradation of the spongy tissue of the femur and of the humerus. The age at death of the children and adolescents was based on dental eruption and the state of fusion of the long bones (Oliver 1960, Brothwell 1981 and McKern and Stewart 1957).

Morphological analysis was undertaken utilizing Martin and Saller's (1957) definitions of metrical characteristics. For the analysis of discrete characteristics, reference was made to the work of Berry and Berry (1967).

2. THE CHRISTIAN TOMB OF KOYA

This collective tomb contained four skeletons in a very good state of preservation. The skulls were complete and the postcranial skeleton was generally in good condition, with the exception of some of the epiphyses of long bones.

Determination of sex and age

All the skeletons are those of adults, aged between 30 and 60 years. Three males and one female could be securely identified, thanks to the good state of preservation of the bones.

Morphology

The skeletons are all very robust, with well marked muscle attachments.

Description of the skulls :

The skull is robust, with marked muscle attachments.

a. *Norma facialis*: the face is very variable, being generally average, but also long or wide. The orbits are average to low, and the zygomatic bones are robust. The nasal aperture is wide to very wide, but the lower margin is generally sharp without a pre-nasal furrow.

b. *Norma lateralis*: the glabella and the superciliary arches are not very pronounced. The face is prognathous only to the level of the sub-nasal fossa. The forehead is slightly rounded, the cranial vault average to high and the occipital rounded with a slight protuberance. The mastoid processes are well developed and the sub-mastoid crest lightly marked.

c. *Norma verticalis*: the skull is long and narrow (dolichocephalic), of ovoid or bursoid form, with projecting parietal bosses. There is a slight sagittal crest.

Description of the mandibles :

A fairly robust bone with marked muscle insertions. There is a moderate projection to the chin. The dental arcade is well developed, without dental prognathism. The ascending ramus is fairly large and the sigmoid notch is shallow.

Dentition :

In the majority of individuals, the teeth are of medium to large size. The teeth are fairly worn and in a poor state. The pulp cavity is exposed and numerous abscesses have formed cavities on the alveolar margin of the maxilla and the mandible. Several teeth have become stumps. Many teeth have been lost pre-mortem from the jaws.

Post-cranial skeleton :

The bones are robust and the skeleton of tall stature. The tibia is markedly elongated in relation to the femur, and the trunk is elongated in relation to the arms.

In general terms, there are numerous morphological similarities between the males, with the female slightly different from them.

Group analysis :

Following these preliminary observations, it seems worthwhile to make a more detailed analysis of these individuals from the Koya tomb, as at least some of this small group were probably from a single family. Thus we have looked for evidence of possible familial relationships between these four skeletons. Individuals that are genetically related show similarities in certain morphological and morphometric characteristics. (It is thus possible, from this type of observation, to try to establish family connections between individuals). For this study, we have used non-metrical (epigenetic) and metric characteristics. We have calculated the morphological distance between each skeleton and represented this analysis in a dendrogram.

Figure 1 shows that individuals 1 and 4 form a clear group, with individual 4 quite close to it, and the female, individual 2, rather separate from the rest.

There seems to be a familial relationship between the three men, particularly between two of them, while the woman is not part of this group. She was perhaps the wife of one of the three men.

3. THE MEROITIC TOMB (KERMA T 91)

This tomb contained several individuals. The length of time over which it was used is not known for certain, but it seems to have been a fairly limited period (several generations). The group is interesting because the tomb may well have been for a single family. Unfortunately, the skeletons were not in a very good state of preservation, and several of them were very fragmentary, the post-cranial skeleton being particularly affected.

The position of the skeletons allowed the majority of them to be individualized¹. Some of the anatomical elements found separately could be attributed to the incomplete skeletons, using sex or age criteria, or morphological similarities.

		Age group				
1-4	5-9	10-14	15-19	Adults	Total	
3	0	4	1	5	13	

Table 1 : Age groups of the sub-adult skeletons.

A large proportion (60 %) of the skeletons were those of children and adolescents. This is not abnormal since it is known that child mortality is very high in ancient populations.

Nonetheless, we can make certain observations about the age groupings, while being aware that the sample size is very small, and the apparent variation in the size of the different age groups may be a function of the size of the sample.

There are some curious anomalies : the complete absence of babies (0-1 year) and the small number of young children (1-4 years). Normally, mortality is very high in the 0 to 5 years group as deaths caused by infectious diseases are relatively common.

The absence of 5 to 9 years old children is also remarkable, as normally one would expect to find twice as many in this group as in the 10 to 14 years group.

The selection of ages in this tomb does not seem to be a random one, and despite the small number involved, it would seem that there has been deliberate selection of older children. The adults include an equal number of men and women (three males and three females, including one female of 17-18 years). All the other adults were mature (between 50 and 60 years). Thus the mortality of this group is predominantly of children and mature adults.

Morphology :

The opportunity to make morphological observations was limited, as there were few adult skeletons and many of them were in poor condition. There seems to be a certain uniformity of morphological characteristics. They are not very robust, and the muscle attachments are not very marked.

Description of the skulls :

The skull is fairly gracile, with slight muscle insertions.

a. *Norma facialis* : the face is average to long. The orbits are average to high. The zygomatic bones are slender. The nasal aperture is average to narrow, with the lower margin very distinct and without pre-nasal furrow.

b. *Norma lateralis* : The glabella and the superciliary arches are not very pronounced. The face is prognathous only to the level of the subnasal fossa. The forehead is rounded and the cranial vault average to high, and the occipital rounded with a slight protuberance. The mastoid processes are very small, the inion very insignificant and the sub-mastoid crest only lightly indicated.

c. *Norma verticalis* : the skull is long and narrow (dolichocephalic), of oval or bursoid form, with projecting parietal bosses.

Description of the mandibles :

This bone is not at all robust, and has only slight muscle attachments. The chin is scarcely to slightly projecting. The dental arcade is little developed, without dental prognathism. The ascending ramus is average to large and the sigmoid notch is shallow.

Dentition :

The condition of the dentition is poor. The majority of the specimens have small to medium sized teeth, which are only slightly worn. Unlike those from Koya, there is little trace of dental pathology. There is no pre-mortem tooth loss and very few caries.

Post-cranial skeleton :

The skeletons are gracile and of tall stature. Poor preservation prevented the study of limb proportions.

Group analysis :

For the same reasons that we gave in relation to the Koya skeletons, that is the likelihood of morphological and morphometric affinities between related individuals, we carried out a comparative analysis between individuals. In this tomb, where the preservation of the skeletons was very poor, we were forced to limit our observations to morphological characteristics on a small number of individuals and variables (6 individuals and 19 variables). The same method was used as for the Koya skeletons and figure 2 shows the similarities between individuals. Despite the small sample size, some interesting points have emerged. There are very strong similarities between individual 6 (a child) and individual e (an adult male), with a slightly less pronounced similarity between the children 5 and g. There is a certain separation from individual d (an adult female), while individual 2 (an adult male) is very different from the rest.

There would seem to be some family connections here, perhaps father-son, or brother-brother, but some of the individuals do not seem to be part of the same family, or, if they were, only very distantly related. This analysis suggests that this group might include an extended family. However, we must treat this interpretation with some caution, given the small size of the sample, of both in terms of the numbers of individuals and of observable variables.

4. BIOMETRIC ANALYSIS

Several analyses of the ancient populations of the region (Ancient and Middle Kerma) have already been

undertaken, but we have relatively little knowledge of the more recent populations. For this reason we have attempted an analysis of two regional groups : Meroitics from Kerma and Christians from Kerma and Tabo². These two groups have then been compared with other populations, using only metrical characteristics. We have taken four cranial variables, M1, M8, M9 and M17, which correspond to the length, width and height of the cranial vault, and 4 facial variables, M45, M48, M54 and M55, which correspond to the nasal and facial dimensions.

Our populations are compared with two Egyptian groups, a Christian group from the Aswan region (Smith and Wood-Jones 1910, cemetery 5, Biga Island) and a Meroitic group from the same region (Batrawi 1935, cemetery 150), and to a recent group from Kenya, East Africa (Kitson 1931). We have thus 79 individuals, on which the 8 measurements defined above are present.

Egypt	
Meroitic (Batrawi)	17 individuals
Christians (Smith et Wood-Jones)	17 individuals
Nubia	
Meroitic - Kerma	13 individuals
Christian - Kerma and Tabo	14 individuals
Kenya (Kitson)	18 individuals

Table 2 : List of the populations analyzed.

An analysis of principal components was carried out, which placed each individual and each population in comparison to the others in respect of morphological differences. In addition, it is possible to determine the importance of each variable in determining the position of the individuals by looking at the correlations between the principal components and the measurements. Probability ellipses, based on the principal components, have been calculated for all the individuals of each group. This type of representation seemed the most appropriate for visualising the variability within each population.

Before proceeding with the analysis, the variables of the male and female groups were normalised and then the two groups were amalgamated in order to analyze the two sex groups together.

Measurement	Axis 1	Axis 2
M1. Anterior-posterior diameter	0.54	0.03
M8. Transverse diameter	0.21	0.32
M9. Minimum frontal diameter	0.46	0.13
M17. Cranial height	0.18	0.06
M45. Bizygomatic width	0.46	0.05
M48. Upper facial height	0.51	0.13
M54. Nasal width	0.22	0.34
M55. Nasal height	0.42	0.34
Weight	37.5	17.4

Table 3 : Relative importance of the factors for each variable.

Table 3 shows that the first two axes represent 54.9% of the total variability, with axis 1 having the most weight (37.5). The low value of the weighting for the first two axes is due to the pronounced morphological similarity between the groups. The important variables for axis 1 are the length of the skull, the width of the forehead, the dimensions of the face and the height of the nose. For axis 2, the nasal dimensions and the width of the skull are the most important.

Figure 3 shows the probability ellipses of each population calculated from the principal components of all the individuals in each group, in respect of the value of the principal components for axes 1 and 2.

In the lower part of the figure, the Egyptian Christians can be distinguished by their large skulls and narrow faces and noses, and their great variability.

In the upper part of the figure are the Kenyans, with a much more narrow skull and a larger nose.

The Meroitic Egyptians are very different from the Christians of the same region. They have more affinities with the Kerma populations. The two groups from our region are fairly similar to each other, with, however, a stronger similarity between the African populations and

the Christians. We have already observed such a picture with the Kerma populations, which seem to have an intermediate position between the Egyptians and the black Africans. In figure 3 are marked the positions of the Koya individuals and the two Meroitic individuals from tomb 91 that were sufficiently well preserved to have been included in this analysis. This confirms what we have already deduced from the visual characteristics. The three Koya males fall one side of the Christian ellipse and the single Koya female on the other side with similarities with the Egyptian Christians. Thus she is unlikely to be from the same family and may have come from northern Nubia. As for the two Meroitic individuals, they show close similarities, as we have already seen from the visual examination.

The results of this analysis show that the Christian and Meroitic individuals that we have examined have pronounced Nubian characteristics, with perhaps some influence from the south.

Although this study has brought us some indications of the morphology of these populations, the small size of the sample has limited the scope of the results.

CATALOGUE OF THE TOMBS

A. *The tomb at Koya:*

Individual 1: male, 30-40 years, skull long and narrow (dolichocephalic), face average, nose very large. Tall stature (177-173 cm)³.

Individual 2: female, 35-45 years, skull long and narrow (dolichocephalic), long face, nose large. Stature average to tall (153-161 cm).

Individual 3: male, 40-50 years, skull long and narrow (dolichocephalic), face large, nose very large. Tall stature (177-173 cm).

Individual 4: male, 50-60 years, skull long and narrow (dolichocephalic), face average, nose very large. Tall stature (181-179 cm).

B. *Meroitic tomb (Kerma T 91):*

Individual 1: child, 12-13 years, 135 cm tall⁴.

Individual 2: male, 56-68 years, large nose, average stature (167 cm)⁵.

Individual 3: female, 51-63 years, skull moderately elongated (mesocephalic), face long and nose narrow, stature sub-averagely tall (161-157 cm).

Individual 4: male?, 50-62 years, skull long and narrow (dolichocephalic).

Individual 5: child, 12-13 years, 135 cm tall.

Individual a: baby, 2-3 years, 93 cm tall.

Individual b: child, 11-12 years, 133 cm tall.

Individual c: baby, 2-3 years, 73 cm tall.

Individual d: female, 54-66 years, skull long and narrow (dolichocephalic).

Individual e: male, 48-60 years, skull very long and narrow (hyperdolichocephalic), face and nose average, tall stature (176-173 cm).

Individual f: baby, 2-3 years, 91 cm tall.

Individual g: child, 10 years, skull moderately elongated, face average and nose large, 129 cm tall.

Individual h: female, 17-18 years, skull moderately elongated (mesocephalic), face and nose average, tall stature (164-162 cm).

¹ Thanks are due to Louis Chaix, who lifted the skeletons in the absence of the author during the 1989-90 season.

² The measurements of the Tabo skeletons were taken by R. Terisse (unpublished).

³ Estimation of stature based on the method of Dupertuis-Hadden 1951 (black and white populations).

⁴ Estimation of stature based on the method of Telkka (1962).

⁵ Estimation of stature based on the method of Manouvrier (1892-93).

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