

The World of Middle Kingdom Egypt (2000-1550 BC)

Contributions on archaeology, art, religion, and written sources

Volume I

Edited by

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Front cover: Detail of canopic stopper from Shaft 106, Dahshur (*cf.* Baba, Yazawa: “Burial Assemblages of the Late Middle Kingdom”, pp. 18-9 © Baba, Yazawa)

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To hybrid creatures

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Stone Objects from the Late Middle Kingdom Settlement at Tell el-Dab'a

Bettina Bader

Abstract

In this article a group of hard stone objects will be presented. They were found in various parts and phases of a late Middle Kingdom settlement quarter at the Delta site of Tell el-Dab'a. The relevant local Phases are G/4 and G/3-1 (c. 1770-1710 BC), about two generations before the onset of the so-called 'Hyksos' period in the Egyptian Nile Delta. The macroscopic appearance of the objects seems reasonably similar to warrant the presentation as a group. As these objects were found in the stoneless Delta they had been brought to the site from the Nile valley either in the form of raw material or as finished products. Frequently such objects remain without known provenance. Partly this is the reason why they are in general rarely published and discussed, especially from settlements. Thus, almost no comparative corpus exists for the late Middle Kingdom.

Introduction

The excavations revealing a quarter (A/II) of the late Middle Kingdom settlement at Tell el-Dab'a on the last remains of the ancient tell took place in 1968-83 with some soundings during the later 1980s (see Table 1). The work was undertaken by the Austrian Archaeological Institute Cairo Branch then led by Manfred Bietak.¹ Three different settlement areas (A/II,² F/I³ and A/IV⁴) are currently known at Tell el-Dab'a/ancient Avaris for this era. Whilst for area A/II the phase designations relevant for this article are G/4 and G/3-1, those for F/I are d/1 and c.⁵ Comparative research has shown that the lay-out, use and spatial distribution of various elements within this settlement's quarters are distinctly different in the late Middle Kingdom. The differentiation begins in Phase G/4, in which area A/II is used as a housing quarter without burials within this part of the settlement.⁶ In contemporary phase d/1 in area F/I a large elite mansion is situated with a high status burial ground attached to it.⁷

In the next later Phase, G/3-1 and c, respectively,⁸ the differences continue further with small housing units built into the standing remains of the stately mansion in area F/I, whilst the outline and plans of housing units in area A/II remain along much the same lines as the earlier phase. A crucial difference to before is represented by the presence of a small number of tombs within the single housing units. This is in stark contrast to the situation in area F/I, where a much greater number of graves were laid out by the inhabitants of that quarter within the housing units and surrounding courtyards.⁹ The finds within these settlement areas also show some differences, and one of them is the presence of a number of stone objects of a particular greenish stone type found in various places of area A/II in phases G/4 and G/3-1. Objects of different kinds but of the same or at least similar material were only reported from the contemporary area F/I (stratum c) in three instances, namely an elongated grinder or smoothing stone (reg. no. 4996),¹⁰ a trapezoid palette (reg. no. 3307)¹¹ and a mould for tools (reg. no. 4210)¹².

¹ See BIETAK, *AfO* 25, 314-7. BIETAK, *Tell el-Dab'a V: Ein Friedhofsbezirk*, 27-34.

² For a recent overview on this area see BADER, in MYNÁŘOVÁ (ed.), *Egypt and the Near East – The Crossroads*, 41-72.

³ MÜLLER, in HORN *et al.* (eds.), *Current Research in Egyptology 2010*, 105-6. MÜLLER, *Das Stadtviertel F/I in Tell el-Dab'a/Auaris*.

⁴ HEIN, in *Sesto Congresso Internazionale*, 249-53.

⁵ For the most recent comprehensive stratigraphic chart see KUTSCHERA *et al.*, *Radiocarbon* 54, fig. 3.

⁶ Except one in-house burial of an infant under the floor of a room.

⁷ BIETAK, *Avaris. The Capital of the Hyksos*, 21-30. SCHIESTL,

Tell el-Dab'a XVIII: Die Palastnekropole.

⁸ A comparative study of the two areas in Phase G/3-1(=c) by B. Bader and M. Müller is in preparation.

⁹ For an overview see BADER, in MYNÁŘOVÁ (ed.), *Egypt and the Near East – The Crossroad*, *passim*. The tombs are published in detail by KOPETZKY, *Datierung der Gräber*.

¹⁰ MÜLLER, *Das Stadtviertel F/I in Tell el-Dab'a/Auaris*, vol. II, 37-39 among material left on the floor of the room.

¹¹ MÜLLER, *Das Stadtviertel F/I in Tell el-Dab'a/Auaris*, vol. II, 33 from discarded material in a courtyard.

¹² MÜLLER, *Das Stadtviertel F/I in Tell el-Dab'a/Auaris*, vol.

Dating and diachronic distribution

The objects presented here were found in settlement contexts of Phases G/4 and G/3-1 (to F), but only one of them might have been an in situ find (see below). The majority of the finds were deposited in fill layers or trash accumulations. Also some of the stone objects were already broken when found or had been used for a secondary purpose.

It is a distinct possibility that the objects of Phases G/4-1 are older than the layer in which they were found, but they cannot be dated much earlier than the late Twelfth Dynasty because prior to Phase H (*i.e.* the late Twelfth Dynasty) area A/II was not inhabited. Moreover, the domestic structures of this phase suggest rather low status inhabitants in this area because of the thinness of the walls (mostly half a brick's width) and the small size of the housing units (mostly consisting of only one room). It has been suggested that this area was used for low level housing, agricultural activities and animal pens in this period.¹³ Such a background may make it rather unlikely to expect highly desirable and rare hard stone objects there.

Beyond any doubt is the lack of such material in the earliest settlement at the site from the beginning of the Twelfth Dynasty.¹⁴ The Twelfth Dynasty settlement sequence of Ezbet Rushdi nearby only produced three objects of similar material but of different shape.¹⁵

The other option is that these items might have derived either from the cemetery close to the mansion in area F/I or from the mansion itself, both representing elite institutions of the early Thirteenth Dynasty (Phase G/4). The objects could have been used or in some instances re-used in the settlement of Phase G/3-1 (*esp.* the rectangular weight shows signs of specific wear). If the elite cemetery, indeed, was the source of these objects, not a single one remained preserved within or around these tombs. This hypothesis may not seem too farfetched in view of the severe (later) robbing of that cemetery. It has to be borne in mind though that the looting only seems to have started later, probably after Phase G/3-1, because cultic continuity was noticed after Phase G/4 as well as careful avoidance of the earlier tombs in placing the Phase G/3-1 graves.¹⁶

The possibility that these objects were first used in the mansion in Phase G/4 (=d/1) remains intact, especially with the thought in mind, that three similar finds

were recorded from area F/I in stratum c. Although there were distinctly less of them in that quarter (area F/I), these spatial differences may be due to post-depositional processes, as the difference in numbers is not so great as to carry much statistical significance. From the mansion of the early Thirteenth Dynasty (Phase G/4) only one possible find fits our category. This is the fragment of a sculpted fish figure.¹⁷

In the phases past the late Middle Kingdom there is not much evidence for the use of objects made of a greenish hard stone either. The tombs on the tell (area A/II) only yielded very few items fitting such a description,¹⁸ whilst in those of area F/I no objects of such description occurred at all.¹⁹

The settlement layers, as far as they are published, also yielded very few such objects,²⁰ for example in Phase D/3 a fragment of a dish made from such material.²¹ The settlement remains of the Hyksos period (= later Second Intermediate Period = Fifteenth Dynasty in the Delta) in area A/V yielded one trapezoid palette,²² whilst the numerous offering pits of the Second Intermediate Period did not contain any hard stone objects such as described here.²³

The raw material

Because the frequency of hard stone object finds, apart from flint tools, is generally very low, especially in the settlement quarters of the notoriously stone-less Nile

¹⁷ Reg. no. 4466.

¹⁸ Cf. BIETAK, *Tell el-Dab'a V: Ein Friedhofsbezirk*, 276-7, the lid of a stone vessel reg. no. 1579 in Phase D/3. FORSTNER-MÜLLER, *Tell el-Dab'a XVI: Die Gräber des Areals A/II*, 169, reg. no. 2592, scarab from Phase F; 349, reg. nos. 6459A and D, a dish and a gaming piece made from schist. There is also a reference to a palette in Phase F made of greenish hard stone (p. 55), but the object referred to (reg. no. 5435, p. 145) is described as calcite in the catalogue.

¹⁹ KOPETZKY, *Datierung der Gräber*. It is possible that objects made from greenish hard stone occur in hitherto unpublished tombs.

²⁰ Reg. no. 4123c represents the rim fragment of a stone vessel of siltstone with a horizontal lip of a type frequently found in tombs (probably Phase F). For the form cf. FORSTNER-MÜLLER, *Tell el-Dab'a XVI: Die Gräber des Areals A/II*, fig. 84a.9. It has to be noted though that the find spot was situated in the vicinity of two tombs cutting into the settlement from later phases and may have belonged to the contents of one of them.

²¹ Reg. no. 2039d, BIETAK, *Tell el-Dab'a V: Ein Friedhofsbezirk*, 267, without drawing.

²² HEIN, JÁNOSI, *Tell el-Dab'a XI: Areal A/V*, 75, reg. no. 6869 Phase D/2, 'Granatglimmerschiefer'. The material does not look as dense and fine as the stone objects presented here.

²³ MÜLLER, *Tell el-Dab'a XVII: Opferdeponierungen*.

II, 104 from a metal workshop. See also PHILIP, *Tell el-Dab'a XV: Metalwork*, 193, cat. no. 390.

¹³ BIETAK, *Tell el-Dab'a V: Ein Friedhofsbezirk*, 21.

¹⁴ CZERNY, *Tell el-Dab'a IX: Eine Plansiedlung*.

¹⁵ Ernst Czerny, personal communication, 25 June 2014.

¹⁶ See SCHIESTL, *Tell el-Dab'a XVIII: Die Palastnekropole*, passim and 215.

Delta, a closer look at this material seems warranted.

The raw material is in all cases of dark greenish grey colour with whitish-greyish veins and small lighter patches. The density of the stone is very high and it appears very compact. In some of the objects very fine grains are visible in their breaks with the naked eye. In most instances the surface of the stone was smoothed very well sometimes even polished.

The identification of the stone type cannot be definitive without the aid of petrographic thin sections and the expertise of a geologist, and, because such a consultation could unfortunately not take place, several options exist. Comparing the macroscopic description of the objects at hand to the relevant literature a tentative identification of this stone material as sedimentary rock, namely siltstone or greywacke, seems most likely at the moment.²⁴ The main quarry sites of siltstone and greywacke were to be found in the Wadi Hammamat. Greywacke represents a stone variety with larger grain size and cannot be completely excluded.²⁵

Perhaps some greenish varieties of serpentinite occurring in the Eastern Desert may be taken into consideration, although this is a different stone type altogether (metamorphic rock).²⁶

Dolerite is also described as greyish-green stone with clearly visible crystals and fine to medium grain size. Because objects consisting of that material comprise almost exclusively spherical hammers and were found mainly around Aswan, it seems unlikely that this material might have reached the Delta.²⁷ Also the crystals described were not identified in the objects.²⁸

Previously other terms for this type of greenish stone were used, which include slate and schist. Nowadays such terms are considered to have been applied erroneously,

as they refer to stone, which comes apart in layers, and are medium to coarse grained.²⁹

Considering the most likely derivation of the stone, from which the objects in the late Middle Kingdom settlement of Tell el-Dab‘a were made, this would mean that such finds would have to have been brought quite a distance from southern Egypt into the Delta and precious little is known about the way to acquire such things and their distribution throughout the country. Whilst objects made from hard stone might be expected to be equally rare as metal objects in the archaeological record of a settlement, as they were apparently continuously re-used, the absolute frequency of siltstone/greywacke objects is much higher than of metal objects in the specific case of the late Middle Kingdom settlement in area A/II of Tell el-Dab‘a, which were even rarer than siltstone/greywacke objects. Still, this fact might have quite different reasons and should therefore not be over-interpreted.

In this article the designations given to the stone type by the original sources will be retained with the addition of ‘...’ and a visual description added (mostly only of colour), typically derived from colour photos published either in books or on the internet (especially when museum databases are used). It has to be borne in mind that it was possible neither to revisit those objects nor to conduct any scientific analysis by means of thin sections. Moreover, photographs can be very misleading depending on the type of camera or lighting in the room where objects are kept. It has to be clear therefore, that any possible grouping proposed in this article is based on macroscopic considerations only and must be corroborated by experts trained in geology. The proper identification of raw materials is in need of more rigorous basic work to reach firm conclusions. This is the more difficult as classification of stones are typically done along proportional scales in triangular diagrams.³⁰

Object types

1. Trapezoid palettes and grinders (Figs. 1.a-c, 2.a-b)

An object category that is known from the Middle Kingdom in general and from cemeteries in particular is represented by trapezoid palettes with an oval depression on the top and sometimes with small bell-shaped devices usually interpreted as aid for grinding some substance (grinder or ‘muller’), either for cosmetic purposes,³¹ namely to grind up galena or malachite (or other

²⁴ Cf. ASTON, *Egyptian Stone Vessels*, 28-32 and pl. 6.a. Note that one vessel thin sectioned and identified by Aston as siltstone (footnote 188; BM EA 2637) is listed as serpentinite in the object data base of the British Museum. Unfortunately no photograph is provided. Serpentine/serpentinite shows black veins, cf. ASTON, *Egyptian Stone Vessels*, 56-9.

²⁵ DE PUTTER, KARLSHAUSEN, *Les Pierres*, 87-90 do not differentiate greywacke and siltstone. See cl. pls. 54d.16 and 54e.17 for polished greywacke. Cf. also KLEMM, KLEMM, *Steine und Steinbrüche*, 369-72, who explain the difference between the two.

²⁶ Cf. KLEMM, KLEMM, *Steine und Steinbrüche*, cl. pl. 13.3 and p. 376-8. Cf. also ASTON, *Egyptian Stone Vessels*, 56-9, but the photographic examples shown on her pl. 12 do not resemble the objects from Tell el-Dab‘a. Cf. the previous note and SPARKS, *Stone Vessels*, 159, table 8 for a concise comparative approach. According to this table serpentinite/serpentine seems more unlikely.

²⁷ One spherical object of a coarser greenish hard stone with apparent crystals fits the description of a stone hammer well due to the damage visible. From K1027 from the late Middle Kingdom settlement, see below under section 8.

²⁸ KLEMM, KLEMM, *Steine und Steinbrüche*, 421-2, cl. pl. 13.6.

²⁹ ASTON, *Egyptian Stone Vessels*, 31. See also ASTON *et al.*, in NICHOLSON, SHAW (eds.), *Ancient Egyptian Materials*, 57-8. These terms are nevertheless often represented in older literature.

³⁰ E.g. ASTON, *Egyptian Stone Vessels*, fig. 4.

³¹ BIETAK, HEIN (eds.), *Pharaonen und Fremde*, 170, cat. no. 161.

pigments) for make-up or writing.³² The grinders (e.g. Fig. 1.b) may be of different forms and shapes but usually they are cylindrical with a rounded top and tapering in the middle (bell-shaped). It must be stressed here that all the palettes in area A/II were found in secondary deposition and the grinder separately. Hence, it is not possible to shed more light on the purpose and actual use of these objects.³³ The parallels from tombs rather suggest a cosmetic purpose, because they were found in tombs of females (where this could be ascertained) and in combination with other cosmetic items such as kohl pots, mirrors and jewellery items.³⁴

Parallels are widely known in Egyptian art collections, but unfortunately only a minority is derived from controlled excavations. The museum databases contain numerous examples made from a variety of stone types including 'basalt', 'diorite' and 'syenite'.³⁵ Notable exceptions are the five palettes from the Middle Kingdom settlement of Lahun,³⁶ where at least five such objects were found. They are now housed in the Manchester Museum but were produced from a different stone.³⁷ At Harageh a similar example was found in a ruined house, possibly dating to the Twelfth or Thirteenth Dynasties.³⁸ In the cemeteries of the Middle Kingdom

such objects were also frequently found.³⁹ Interestingly no such object is as yet published from the Middle Kingdom and Second Intermediate Period levels from Elephantine.⁴⁰

The only other example from a settlement was found in the last (transitional) phase of the Second Intermediate Period to the early Eighteenth Dynasty at Balat, which was right at the surface and therefore not attributable to a particular context. Thus, it may well have been residual. The palette was fragmented and consists of 'schiste verte' with a clearly delineated depression to grind the pigments. The shape of the depression is rather oblong with curved corners than oval.⁴¹

In tomb 416 at Abydos⁴² one example was described as 'greenish schist',⁴³ which may well correspond to the material of the examples from Tell el-Dab'a. The shape of these Abydos examples differs to those from the settlement in that the central depression is not oval but obliquely cut in the corners and quite irregular. Moreover, the Abydos examples show a distinct edge to mark the depression. Whether this difference could serve as a dating criterion will have to be evaluated very carefully. In the cemetery of Lisht North a 'diorite' palette was found with a shallower oval depression that was not sharply delineated. It was dated to the Twelfth to mid-Thirteenth Dynasty⁴⁴ and might be part of a morphological development of such objects. Other Middle Kingdom tombs at Abydos also yielded such palettes with grinder, but without description of the material or of the sex of the tomb owner.⁴⁵ An exception is the undisturbed tomb E3-3, which contained three burials with trapezoid palettes in combination with toiletry articles (small cosmetic containers, a mirror, beads,

³² PETRIE, *Objects of daily use*, 63, pl. LVI.11. Petrie grouped such objects with other ink trays. The measurements of 20.0 x 11.9 cm appear larger than those from Tell el-Dab'a.

³³ One parallel from area F/I was made of the same or a similar material ('Grünstein'), MÜLLER, *Das Stadtviertel F/I in Tell el-Dab'a/Auaris*, vol. II, 33, reg. no. 3307, from the courtyard of a house in stratum c (= G/3-1).

³⁴ Cf. n. 42.

³⁵ For the Petrie Museum see <<http://www.accessingvirtualegypt.ucl.ac.uk/COVES/index.php>>, accessed 15.10.2014. All objects from this museum are described there and those relevant for this article were accessed via this website.

³⁶ PETRIE, *Kahun, Gurob and Hawara*, 30. Petrie mentions "rectangular trays for rubbing up paint and ink" but does not disclose the number of them. Further, they were identified by him as 'syenite', 'black granite' (= gabbro according to Aston) and 'basalt', but none shown.

³⁷ Cf. Manchester Museum website: collection database. MM 137a-e, 'syenite'. The sizes appear to be very similar to our examples (15.0 x 9.0 cm; 11.8 x 7.3 cm; 13.8 x 8.7 cm; 10 x 5.8 cm; 13.0 x 9.0 cm), but the material does not seem to be greenish except perhaps 137a. The descriptions are the same as in JOHNS, *Catalogue of Egyptian Antiquities*, 21, reg. nos. 137a-e ('syenite'), 139 ('diorite'), and 140 ('diorite').

³⁸ ENGELBACH, *Harageh*, 16-7, pl. 11, group 530. This context may well also date to the late Middle Kingdom. I would like to thank Wolfram Grajetzki for drawing my attention to the double scarab from this group and its discussion by MINIACI, QUIRKE, *BIFAO* 109, 339-83 and to the discussion by KEMP, MERRILLEES, *Minoan Pottery*, 17-23, 96-7. The second scarab in this group also fits well into that period as it seems to belong to the 'early Tell el-Dab'a workshop' by its back type (IIIa). Cf. MLINAR, in BIETAK, CZERNY (eds.), *Scarabs of*

the Second Millennium BC, 113-22.

³⁹ E.g. in Petrie Museum UC 34505 from Koptos, 'diorite', Twelfth Dynasty length 12.0 cm, height 3.1 cm.

⁴⁰ Cf. VON PILGRIM, *Elephantine XVIII. Untersuchungen*.

⁴¹ MARCHAND, SOUKIASSIAN, *Balat VIII. Une habitat*, 105, 108, 296 and photo 547. The photo indicates a coarser texture of the rock than the example from Tell el-Dab'a.

⁴² Tomb 416 contained at least one woman. Cf. KEMP, MERRILLEES, *Minoan Pottery*, 105-75 with further references. UC 38022 in the Petrie Museum made from 'diorite'/'serpentinite' was found in this tomb as well as a grinder of 'basalt'. The same material was used for yet another palette from that Museum UC 38023 also said to come from tomb 416.

⁴³ KEMP, MERRILLEES, *Minoan Pottery*, 118, 416.A.07.3, fig. 40 and pls. 10-2, now in the Ashmolean Museum E 3300, length 17.1 cm, width 10.6 cm, height 2.7 cm. Thus, it remains unclear whether there were only two such objects as on the photograph or more in this tomb.

⁴⁴ MMA 22.1.16a-b with a grinder, measurements: 10.4 x 6.7 by 3.5 cm.

⁴⁵ PEET, LOAT, *The Cemeteries of Abydos. Part III*, 24, pl. VIII.15, tomb D 109, palette combined with a small cosmetic faience jar.

etc.), but the material is not described in detail.⁴⁶

Another parallel of similar form with a sharp edge along the oval depression comes from a tomb at Denderah (Twelfth Dynasty) also in combination with cosmetic items.⁴⁷ Tomb 153 at Esna dates to the Middle Kingdom and was assessed as largely undisturbed, but the two palettes found are only shown on a dark photograph and seem to be very flat. It remains unclear if they show a depression at all or not. The other finds include some cosmetic containers, but the sex of the tomb owner remains unclear.⁴⁸

At Qurna such a trapezoid palette with grinder and sharp edged depression to grind the pigments was found (tomb 33). The only other items on the plates of Petrie's publication with the same tomb number are one stone vessel of beaker shape, an oval offering tray and some pottery. The material of the palette ('ink-slab') is not stated, also no tomb register provides additional information on the group,⁴⁹ which may well date to the early Twelfth Dynasty.⁵⁰

Tomb 53 at Edfu dateable to the Middle Kingdom contained four such items of 'serpentine', which include a shallow oval depression with a sharp edge. Their shape corresponds to that of the Tell el-Dab'a ones ('en forme de pyramide tronquée renversée'). Two different sizes are attested: 14.0 x 8.0 x 2.5 cm and 9.4 x 6.0 x 2.1 cm. One of the palettes was decorated with an incised cartouche around the oval depression.⁵¹ This example is now in the Warsaw Museum on display⁵² together with the bell-shaped grind-

er also from tomb 53.⁵³ Tombs NO 23 and NOI 28 at Edfu yielded such objects described as 'schiste', too, but they were published only in a small group photograph.⁵⁴ One palette is shown to have a rectangular depression in the middle, but the material of this example is given as 'serpentine'.⁵⁵

One single, seemingly intact tomb at Qubaniya-North (11.1.1) contained two trapezoid palettes with one grinder, but only the grinder, again bell-shaped, is of greenish stone, whilst one of the palettes is described as 'grey slate'.⁵⁶ The middle of both palettes shows a depression from use, but no sharp edge delineates the oval grinding area. The sex of the tomb owner was not given, but the other finds tend to support an interpretation as cosmetic item because they comprised stone vessels and the remains of a possible jewellery box. All items were deposited at the feet of the deceased.⁵⁷

A few examples of this type were found abroad at Gezer in the Levant, in a settlement area dated to the early Middle Bronze Age (IIA),⁵⁸ but the finds mentioned by Macalister vaguely in the same place also comprised a 'Bügelkanne'. The interior of the palette shows 'a dash' of red pigment and the depression is sharply delineated but rectangular.⁵⁹ Another example from gneiss-hornblende was found in a much later context (Late Bronze Age II, Tell Abu Hawam). The shallow depression was oval with an edge.⁶⁰ Interestingly this type was not produced locally.⁶¹

Finally a possibly late example of a trapezoid palette is kept at the Roemer-Pelizäus Museum in Hildesheim with a 'black granite' grinder with an incised inscription of Ramesses II. Unfortunately these objects are not of known provenance. Whilst they seem to have been acquired by the museum as a set, it might be possible that they had been inscribed at a later date and re-used.⁶²

⁴⁶ GARSTANG, *El Arábah*, 25-6, pl. 10. The sex of the two adult bodies was not ascertained the third burial belonged to a child.

⁴⁷ PETRIE, *Denderah*, 26 and pl. 20, 'syenite'.

⁴⁸ DOWNES, *Excavations at Esna*, 4-7, 99, fig. 75 from tomb 153, 121-2. In fig. 75 the palettes are shown in the lowest row to left and right with letters 'o' and 'Wn', as one came from the shaft and one from the western chamber. The tomb register (121-2) lists a bevelled granite palette of 10.0 x 18.0 cm with a grinder in the western deposit under letter 'o'; and another granite one also under letter 'o' measuring 12.8 x 7.6 x 3.8 cm with some lumps of kohl in it.

⁴⁹ PETRIE, *Qurneh*, 3-4, pl. VIII.16. Two tombs with number 33 seem to have existed A33 with VIII.14-16, and B33 with a fragmentary stela, pl. 10. It remains totally unclear to which tomb the other items marked with only '33' belong: offering tray: pl. XXI.626; pottery model dishes: pl. XIV.105, 107, 109; a deep but narrow hemispherical cup: pl. XIV.102; a pointed beaker: pl. XV.174; a model jar: pl. XV.231; two small squat jars: pl. XV. 249-50; a medium globular jar with indentations on the rim: pl. XVI.337; three bag-shaped jars: pl. XVIII.424, 439, 461; another small to medium jar pl. XVIII.421.

⁵⁰ SEILER, in SCHIESTL, SEILER (eds.), *Handbook of Pottery*, esp. figs. 10-2.

⁵¹ MICHALOWSKI *et al.*, *Tell Edfou 1938*, 32, cat. nos. 11-2, pl. XI.10-1.

⁵² Loan of the Warsaw University, reg. no. 139274 and 139278 for palette and grinder, now described as 'basalt'.

⁵³ MICHALOWSKI *et al.*, *Tell Edfou 1938*, 32, cat. no. 13, pl. XI.13, described as 'schiste'.

⁵⁴ MICHALOWSKI *et al.*, *Tell Edfou 1939*, 185, cat. nos. 151 and 153 are described as being made of 'schiste' with sizes of 2.5 x 8.9 x 7.2 cm and 2.9 x 10.6 x 6.9 cm, respectively. See also pl. XX.5 and 7. Cf. also SEIDLMAYER, *Gräberfelder*, esp. 63-8.

⁵⁵ MICHALOWSKI *et al.*, *Tell Edfou 1939*, 184, cat. no. 149, pl. XX.3, measurements: length 6.2 cm +x, height: 3.0 cm, from tomb 3.

⁵⁶ Vienna, Kunsthistorisches Museum ÄS 7455. Cf. SEIPEL, *Das Vermächtnis der Pharaonen*, 152, cat. no. 78.

⁵⁷ JUNKER, *Bericht über die Grabungen von El-Kubanieh-Nord*, 146, 155, Blatt 23, no. 27. The photo shows the second palette. All of these objects were described by Junker as 'black granite'.

⁵⁸ SPARKS, *Stone Vessels*, 15-6, cat. no. 15.

⁵⁹ MACALISTER, *Gezer*, vol. II, 310-1, fig. 449.1. The palette is described as 'diorite' and measures 11 x 7.5 cm.

⁶⁰ SPARKS, *Stone Vessels*, 15-6 and 280, cat. no. 18 shown on fig. 3.1. Cat. no. 16 is of different shape and should not be assigned to this group. Cf. MACALISTER, *Gezer*, vol. III, pl. XLIII.5.

⁶¹ SPARKS, *Stone Vessels*.

⁶² PETSCHER, in HASLAUER (ed.), *Im Reich der Pharaonen*, 158.

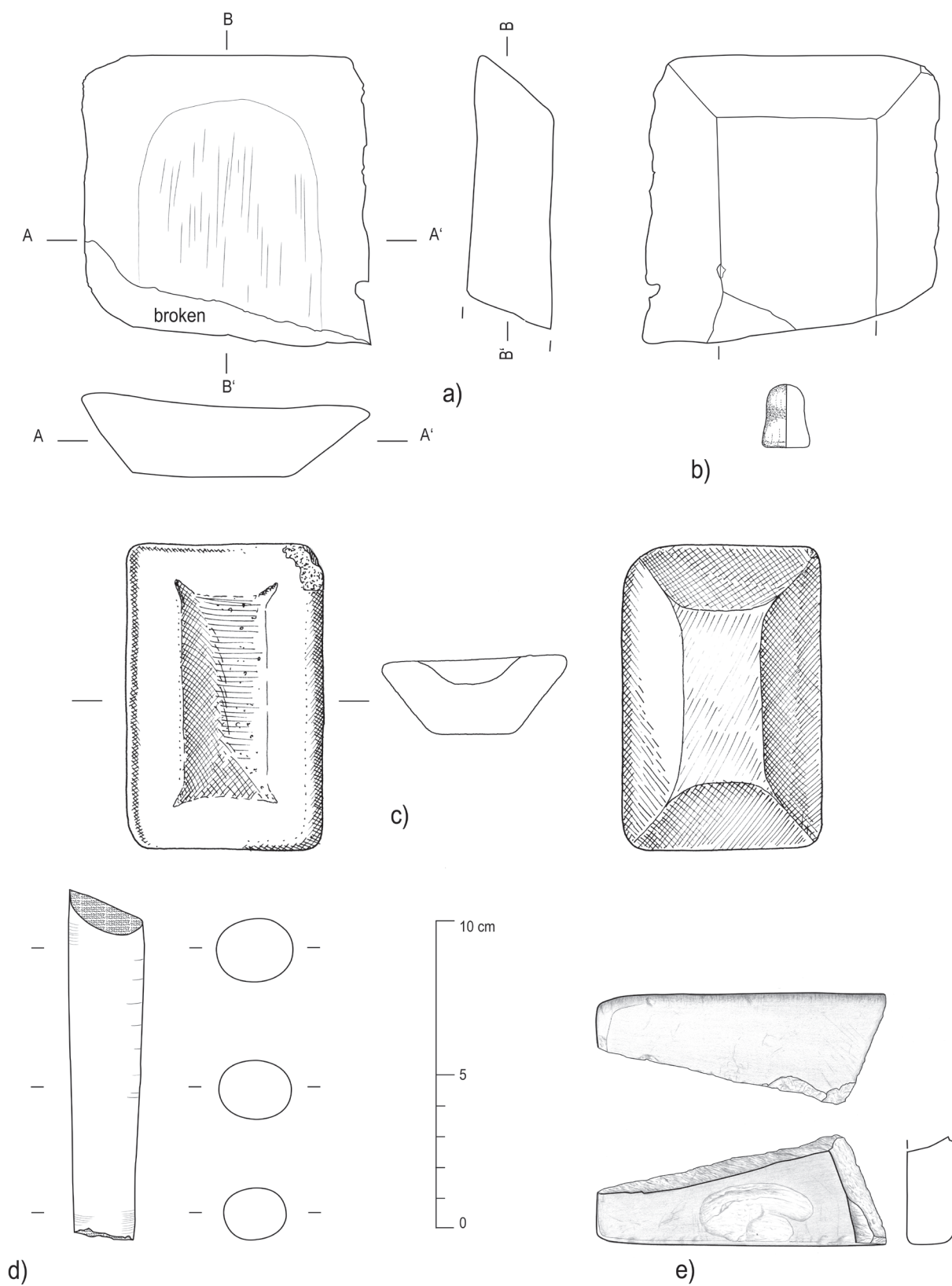


Fig. 1 - a) Palette reg. no. 2392, drawing by the author, KhM, Vienna; b) Grinder reg. no. 1969a, Tell el-Dab'a Archive; c) Palette reg. no. 1871, Tell el-Dab'a Archive; d) Cylindrical object reg. no. 1102, drawing by the author, KhM, Vienna; e) Palette reg. no. 3071a2, drawing by M.A. Negrete-Martinez

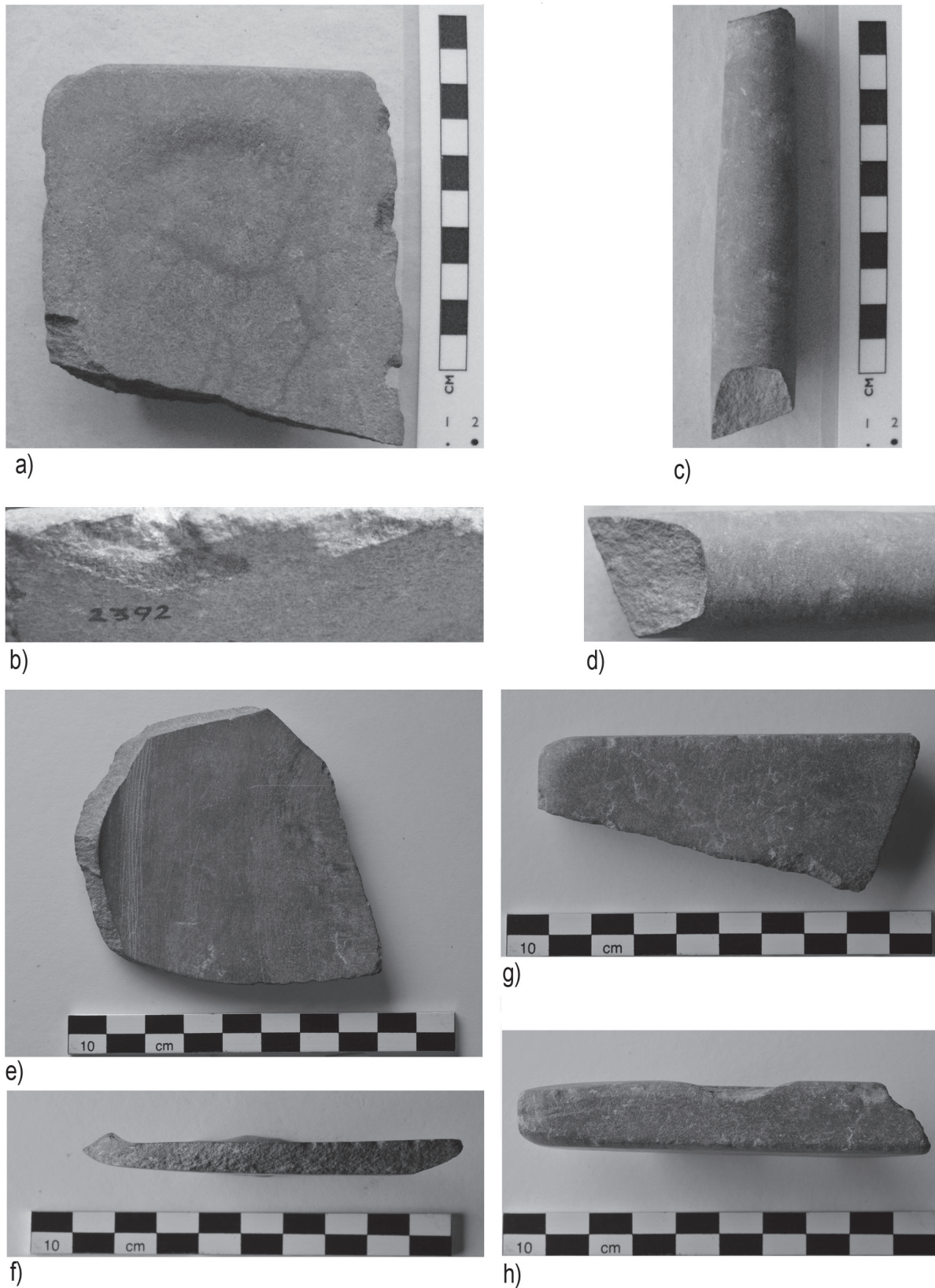


Fig. 2 - a-b). Palette reg. no. 2392, photograph by author with permission of KhM; c-d) Cylindrical object reg. no. 1102, photograph by author with permission of KhM; e-f) Stone vessel fragment reg. no. 3071a2, photograph by A. Krause © ÖAI Kairo; g-h) Palette reg. no. 3071a2, photograph by A. Krause, © ÖAI Kairo

Examples from the settlement

Reg. no. **2392** (Vienna, KhM AS 3594), part of a trapezoid, rectangular palette. Position: A/II-n/10, pl. 4-5, 1.90 m/N, 3.40 m/W, 2.40 m/d (H~ 5.00 m/NN), found inside a wall of relative phase f. Secondary deposition. Phase G/3-1 to F. Records: B/W negative SW1190/42, 44, redrawn and re-recorded. Rectangular palette with a shallow oval depression in the middle (due to wear?) edges damaged, section shows form of irregular trapezoid. In one corner remains of red paint could be observed. The material consists of greenish-grey, dense stone, the surface was polished. The depression in the middle of the object was not sharply delineated. Measurements: length= 9.4 + x cm; width= 8.8 cm; height= 2.3-2.6 cm.

Reg. no. **1871** (Cairo Museum JE 91636), rectangular, trapezoid palette. Position: A/II-k/12, pl. 5, 3.90 m/E; 1.0 m/N; 1.45-1.50 m/d (H= c. 4.50 m/NN) measured down from northern section. Phase G/3-1 to F, contemporary with tombs k/12-1 to 3. Records: B/W negatives SW1143/13-14; 1184/44; 1149/2-2A; 3-3A; 2777/1; ZN 195/68, E/26. The palette was made from greenish stone with a rectangular depression in the centre. One corner was damaged. Measurements: length= 9.9 cm; width= 6.2 cm; height= 2.5 cm.⁶³

Reg. no. **1969a**, grinder made of greenish stone. Position: A/II-m/13, south eastern corner of test trench along southern section. Phase H to G/4-1. Records: drawing ZN 9/69. Measurements: height= 4.0 cm; max D.= 2.8 cm.

2. Flat rectangular palettes (Figs. 1.e, 2.g-h)

Probably a simpler type of palette is represented by two fragments found in the settlement of the late Middle Kingdom. They consist just of a flat rectangular platter (also described as slab or plate) of up to 2 cm thickness. The shape of the fragments indicates that the corners of the palettes were well executed and that the thickness does not taper towards the edge. Using those palettes for grinding material produces a shallow rather undefined depression on the perceived top of the object. Such a use pattern was observed in reg. no. 3254b, but not in 3071a2.

Possible examples for such flat palettes can again be found in tomb groups of general Middle Kingdom date, for example in tomb 416 at Abydos,⁶⁴ although so far no complete parallel for a flat rectangular palette was located.⁶⁵ The material remains frequently undescribed.

A function as whetstone is also possible, but the rec-

tangular shape was kept intact as far as preserved and there are not sufficient traces of such usage on the extant pieces to warrant such an interpretation.

Examples from the settlement

Reg. no. **3071a2**, palette fragment. Position: A/II-m-n/14, from baulk, c. 3.0 m/E, level H= 4.30 m/NN. Phase G/3-1. Records: B/W negatives SW1466/32A, 34A, drawing ZN 154/80, 78/2008 redrawn and re-recorded. Material: hard greenish stone, very dense. Measurements: length= 8.9 + x cm; width= 3.6 + x cm; thickness= 1.5 cm.

Reg. no. **3254b**, palette fragment. Position: A/II-m/17, pl. 5-6, in north eastern part of square, courtyard, 1.30 m/E, 1.40 m/N, H= 4.78 m/NN, relative stratum e = Phase G/3-1 to F. Records: B/W negatives SW1521/25-26. Material: hard greenish stone, rectangular. Very smooth, probably reused. On the top a shallow depression was noticeable. Measurements: length= 6.0 cm + x; width= 3.8 cm + x; thickness= c. 1.9 cm.

3. Cylindrical tapering object (Figs. 1.d, 2.c-d)

No parallels for this object or evidence for its function came forward as yet. The fact that red pigment is adhering to this stone object might hint at a use in combination with grinding of pigments or similar. Another possibility is that the object might have been a handle or foot of a fancy form of stone vessel, but no contemporary ones are known for the Middle Kingdom.⁶⁶

Example from the settlement

Reg. no. **1102** (Vienna, KhM AS 1845), cylindrical, slightly tapering object. Position: A/II-m/13, pl. 7, relative stratum f = Phase G/3-1, exact position not recorded. Records: B/W negative SW1085/30, drawing ZN 19c/68, redrawn and re-recorded. Material is probably siltstone: greenish, very dense and fine grained stone; traces of red paint were visible on the object. The object is very well smoothed, and even polished but broken at both ends. Measurements: length= 11.2 + x; thickness= 1.9-2.3 cm.

4. Open stone vessel fragment (Figs. 3.a, 2.e-f)

Stone dishes and bowls are not very common in the Middle Kingdom at all,⁶⁷ thus it is possible that this fragment is much older than the Middle Kingdom.⁶⁸

⁶³ BIETAK, HEIN (eds.), *Pharaonen und Fremde*, 170, cat. no. 161.

⁶⁴ KEMP, MERRILLEES, *Minoan Pottery*, 125, cat. no. 416.A07.35 rectangular but thinner, and 124-5, cat. no. 416.A07.33 with a curved side, catalogue entry with parallels.

⁶⁵ If rectangular palettes are located in the literature at all, they are usually bevelled, and if they comprise flat non-tapering ends they have one curved side.

⁶⁶ I would like to thank Vera Müller for her comment on early stone vessels. ASTON, *Egyptian Stone Vessels*, but no early fancy vessels are mentioned there.

⁶⁷ ASTON, *Egyptian Stone Vessels*, does not list any open shapes for the Middle Kingdom.

⁶⁸ One pre-dynastic rectangular palette with the tell-tale three incisions along the edges (reg. no. 2394) was found in a wall of the late Middle Kingdom settlement of Tell el-Dab'a al-

Example from the settlement

Reg. no. **3071a1**, stone vessel fragment. Position: A/II-m-n/14, from baulk, c. 3.0 m/East, level H=4.30 m/NN. Phase G/3-1. Records: B/W negatives SW1466/32A, 34A, drawing ZN 154/80, 79/2008 redrawn and re-recorded. The object shows clear tool marks from the manufacturing process. There are parallel scratched in lines, which may be derived from some turning process. The surface of the dish is only partly well-polished. Material: hard greenish stone, very dense, probably silt-stone. Measurements: length=7.0 cm; width=8.0 cm; thickness=0.7 cm.

5. Polished spherical object (Figs. 3.b, 4.a)

Objects of this type are very rarely attested from controlled excavations and are referred to as grinders, pounders or hammers. The fact that this example from Tell el-Dab‘a in contrast to others (see below) was extremely well polished with no damage to the surface at all renders the identification as pounder or hammer at least unlikely.⁶⁹ First, the object is relatively small and not particularly heavy and second the polishing of the surface would seem as wasted effort, if the object will be damaged anyway during use.

Published parallels for such objects are rare, because they are not very specific or sometimes easy to recognise. A variety of purposes comes to mind for such objects and those undamaged with well executed and polished surfaces are in the majority in museum collections. They are generally labelled as grinders, hammers or pounders. A few examples were identified as polishing stones, some perfectly spherical, from the Lisht North Cemetery, dated to the Twelfth and Thirteenth Dynasty with a diameter of c. 6.0 cm. The stone type was not identified.⁷⁰ An undated example found at Qau was made from a greenish stone described as ‘basalt’ and also very well rounded and polished. This object is described as grinder or pounder although it does not seem to show any broken surfaces.⁷¹ Another one may have been found at Balat in the advanced Second Intermediate Period.⁷² One crucial

though no traces of such an early occupation are proven from the site. It could well have come from nearby much more ancient sites such as Minshat Abu Omar but it is impossible to know by what agent and when.

⁶⁹ Cf. PETRIE, *Weights and Measures*, 5.

⁷⁰ Metropolitan Museum of Art, New York, from Lisht North cemetery, e.g. MMA 11.151.733, the left example. The other two show several edges.

⁷¹ Petrie Museum UC 20502, measurements 4.5 x 4.4 cm. Weight not given.

⁷² MARCHAND, SOUKIASSIAN, *Balat VIII. Une habitat*, 105, 107, 143, 282-3, photo 524. The object consists of sandstone, but is very well smoothed and does not seem to show damage from pounding. Its diameter is similar with 6.6-6.8 cm.

question in understanding the function of these objects is, whether a mere polishing tool really needs to be exactly spherical to do its polishing job, or if this shape is rather a result of its specific use.

Another interpretation for its function is as stone weight of round shape. Especially noteworthy is that one side of the spherical object from Tell el-Dab‘a is slightly flattened in a way so it became stable enough not to roll around. Possible parallels for the shape can be found in Petrie’s work on weights (form 9, perhaps form 439 although this is usually dated to the Late Period). The size is very similar although the flattened part is more pronounced in Petrie’s examples.⁷³ Moreover, Petrie’s examples of this shape of weight are represented in several of his weight standard classes.⁷⁴ Similar objects are in the collection of the Petrie Museum unfortunately most of them without provenance and date,⁷⁵ but two were found at Lahun.⁷⁶ At least one object of similar description is derived from Minet el-Beida/Ugarit in the Levant⁷⁷ showing a wide distribution of such shapes of weights, probably quite independently.

In conclusion, it is not certain whether this object was indeed a weight, especially as it does not contain an inscription with numerals. Unfortunately the weight of this object is not known, but even if it was, the dangers of using uninscribed –obvious– weights to sort them into a weight standard has been pointed out quite recently.⁷⁸

Example from the settlement

From sherd collection **K875**, spherical object. Position: A/II-o/17, pl. 3 on a bench-like mud brick feature close to western section, H= 4.17 m/NN, relative stratum c = Phase G/4-1. Redrawn and re-recorded. Material: hard greenish stone, very dense, very well polished, object

⁷³ PETRIE, *Weights and Measures*, pls. III.9 and V.439. In pls. 27 to 42 two references to ‘ball’ in the column for the form seem also to corroborate the existence of round(ed) weights, nos. 2097 and 2303 one of them dated by Petrie to the Twenty-third Dynasty. Unfortunately many of the entries with form 9 are undated or dated to the Twenty-third Dynasty suggesting a wide date range for such weights.

⁷⁴ PETRIE, *Weights and Measures*, cf. pls. 27-42: nos. 2099, 2118, 2364, 2401, 2929, 3086, 3177, 4279. The materials are given as ‘alabaster’, ‘grey granite’, ‘basalt’, ‘haematite’, ‘syenite’.

⁷⁵ E.g. Petrie Museum UC: 76860, 76861, 76881, 76879, 76869, etc. All of them are very round and polished and of greenish stone.

⁷⁶ Petrie Museum UC 27956 and UC 27956 are slightly irregular spherical weights from the settlement of Lahun and made from ‘basalt’ and ‘grey syenite’.

⁷⁷ See Louvre AO 11675, from Ugarit, Late Bronze Age, <http://cartelfr.louvre.fr/cartelfr/visite?srv=car_not_frame&idNotice=21410&langue=fr>, accessed 15.04.2015.

⁷⁸ MOLLAT, *M&G* 84, 2045-77.

intact. One side of the object is slightly flattened. Measurements: diameter= 4.8-4.9 cm.

6. Other spherical objects (Fig. 3.c)

Several other spherical objects, but more irregular and lacking the finely polished surface came from various parts of the settlement. Whilst this object type was most probably used for grinding (of flour) or as pounding tool, the objects consist of a variety of stone types. Limestone, quartzite, chert and the same greenish dense hard stone occurred throughout the phases of the late Middle Kingdom settlement. The crucial difference to the last object type is the unfinished even rough surface and quite obvious damage derived from use. Contemporary parallels are rarely to be found in publications⁷⁹ or museum databases, where frequently no distinction can be made between 'pounders', 'hammers', 'grinders' and 'weights' as these categories all contain highly polished and well-rounded spherical objects from many sites and periods.⁸⁰ Only traces of use hint at the original function(s) although one does not exclude the other and these objects may be addressed as multi-purpose tools.

Examples from the settlement

From sherd collection **K587**, grinder/pounder. Position: A/II-m/16, pl. 4-5, from both sides of the wall in the north west corner, H= 4.30-4.50 m/NN, Phase G/3-1. Material: greenish hard stone, dense, not polished, damaged. Measurements: diameter= 5.4 cm x 5.2 cm; width 3.7 cm.

From sherd collection **K1084**, grinder/pounder. Position: A/II-p/16, pl. 4-5. From wall of building at eastern baulk, H = 4.00-4.30 m/NN, relative stratum c = Phase G/3-1. Old in its context. Material: greenish dense, hard stone. Damaged at one side. Measurements: diameter = 5.5 x 5.2 cm.

7. Cuboid oblong stone object with slightly domed/curved top (Figs. 3.e, 4.c-i; Pl. XIV)

Already at the time of the excavation the cuboid object of greenish stone (reg. no. 3258c) was referred to as stone weight. The general shape with domed top leaves little room for another interpretation, although the present weight does not include an inscription as some of the parallels. Most cuboid stone weights are much smaller and lighter than that from the late Middle Kingdom settlement at Tell el-Dab'a so that it most likely represents

multiples of a unit.⁸¹

Cuboid stone objects with domed tops occur in exhibition catalogues carrying inscriptions naming a king and/or numerals as well as unit designations of certain metals, either gold or copper.⁸² Several Middle Kingdom king's names from Senwosret (I) to Amenemhat III,⁸³ are known from weights and so far all of them are cuboid with more or less rounded edges. Unfortunately most of them lack a provenance. Hitherto there is no reason to doubt the contemporaneity of weights and inscriptions although it is (theoretically) possible that the objects were inscribed at a later time.

Vercoutter first studied a specific period with weights exclusively dated to the Middle Kingdom, and combined all of Petrie's weights, inscribed and uninscribed, that were dated to the Middle Kingdom. Most of those weights are actually oblong/cuboid⁸⁴ and he arrived at an average copper unit of 27.5 g, which is about the double amount of the gold standard of that period, ~13.75 g.⁸⁵ Those weights were found at Lahun,⁸⁶ Quft and Mirgissa.⁸⁷ Additional material is derived from Uronarti,⁸⁸ although the date of these weights is more difficult to ascertain, and from the cemetery/settlement of Lisht North.⁸⁹

At Elephantine two weights of the same general shape, but smaller dimensions were found in the Middle Kingdom/Second Intermediate Period levels. One was well

⁸¹ For caution on imposing weight standards on uninscribed weights see MOLLAT, *M&G* 84, 2051.

⁸² VERCOUTTER, in ENDESFELDER *et al.* (eds.), *Ägypten und Kusch*, 437-45. PETRUSO, *BMFA* 79, 44-7.

⁸³ E.g. LACOVARA, in LACOVARA, TEASLEY TROPE, D'AURIA (eds.), *The Collector's Eye*, 98. As only the prenomen is mentioned it remains uncertain which of the three Senwosrets is meant. The same holds true for weights from Vienna ÄS 3148 (GRIFFITH, *PSBA* 15, 310, no. 37) and Baltimore accession no. 41.31. Definitely Senwosret III is mentioned on a weight from Mirgissa, cf. VERCOUTTER, in ENDESFELDER *et al.* (eds.), *Ägypten und Kusch*. A weight in the Louvre, E 9288, made from limestone, provenance unknown is inscribed with the name of Amenemhat III. It mentions also the unit 4 *nwb* with a weight of 50.8 g making the single unit 12.7 g.

⁸⁴ Compare the numbers in Vercoutter's tables with the form corpus in PETRIE, *Weights and Measures*, pls. 3-8, 27-42. Cf. also WEIGALL, *PSBA* 23, 383-6; PETRUSO, *BMFA* 79, 44-7.

⁸⁵ VERCOUTTER, in ENDESFELDER *et al.* (eds.), *Ägypten und Kusch*.

⁸⁶ PETRIE, *Illahun, Kahun and Gurob*, 14-5.

⁸⁷ VERCOUTTER, in ENDESFELDER *et al.* (eds.), *Ägypten und Kusch*.

⁸⁸ PETRUSO, *BMFA* 79, 44-7.

⁸⁹ CARLAND, *BMMA* 12/4, 85-90. See also Metropolitan Museum of Art, New York collections database, e.g. MMA 22.1.798, 22.1.796: inscribed with three strokes yielding a single unit of 27.016 g; MMA 15.3.608, 15.3.607, 22.1.794, 16.3.4, 22.1.792, etc. These weights show wide variation as to forms (square, cuboid, brick shaped, various thicknesses, with and without rounded tops) and materials (diorite, 'alabaster', limestone, granite, sandstone, etc.).

⁷⁹ MARCHAND, SOUKIASSIAN, *Balat VIII. Une habitat*, 283-5, in ceramic Phases 1-2 equivalent to the Thirteenth Dynasty and 'the early Second Intermediate Period'.

⁸⁰ E.g. Petrie Museum UC 27957 is not as well polished as the other spherical weights of Lahun, but still labelled as weight. The original context might have improved our means to interpret such objects, but if found in unspecific situations as at Tell el-Dab'a no additional evidence comes forward.

smoothed and described as ‘dark hard stone, perhaps amphibolite’ weighing 71 g with a marking of five parallel strokes on the rounded top (3.6 x 4.0 x 2.2 cm), and the other, broken one as ‘diorite’ with a preserved weight of 174 g (4.2 x 6.0 cm preserved).⁹⁰

The study of weights in general concentrated on proving that weight standards were in use in ancient Egypt and to date there is a consensus about the existence of several such standards. They are thought to have been used at the same time, presumably for different commodities, but the number of these standards varies in the opinion of researchers,⁹¹ as well as the origin of at least some of those standards.⁹² This approach largely neglected dating, shape and material of weights.⁹³ Cour-Marty was able to show that the general shape of the weights themselves changed over time as well as the weight standard units, but because only 4% of the weights are inscribed with units and/or commodities (gold and copper only)⁹⁴ it is currently not possible to connect any further weight shapes with particular commodities.

Thus, it seems that cuboid weights are particularly frequent in the Middle Kingdom and perhaps in the Second Intermediate Period as well. Petrie arrived at relatively wide date ranges for his shape types ‘square, edges greatly rounded’, ‘square, edges less rounded’, ‘square, edges slightly rounded’, ‘oblong’, ‘cylindrical top’ and ‘pillow’, but they all include the Middle Kingdom.⁹⁵ The shapes that appear most frequently in Petrie’s various charts and are dateable to the Middle Kingdom

are his types 55, 62, 625, 63, 64, 642, 646, 65, 653, 658, 66, 691, 692, 694, 696.⁹⁶ Cour-Marty arrived at a similar conclusion. Most of the Middle Kingdom weights belong to her ‘square and oblong class 7’ and the most frequent materials belong to a collective group of ‘minerals’ including quartz and serpentine and another comprising limestone, travertine (‘alabaster’) and sandstone. Basalt, diorite and granite occur quite frequently, too. Nevertheless, Cour-Marty’s work also shows that cuboid weights occur at all times albeit in significantly smaller percentages in the later periods.⁹⁷ Whilst these results lead the way, more detailed studies of the material itself with new assessments of material, shapes, weights and traces of usage are necessary to gain a more detailed picture and avoid circular arguments.⁹⁸

Example from the settlement

Reg. no. **3258c** (Tell el-Dab‘a magazine), stone weight, slightly damaged. Position: A/II-n/18, pl. 7-8, from fill in south east corner of square, in the courtyard of a house, H = 4.14–4.30 m/NN.⁹⁹ Phase G/4-1. Records: B/W negative 1523/27-28, drawing ZN 11/1980, redrawn and re-recorded. Material: hard greenish stone, very dense, probably siltstone. The object is rectangular, with a slightly domed top. The edges were worked very carefully and the object was very well smoothed although very fine scratches are visible. The surface does not seem to have been polished. Considerable damage was done to the object: it is very chipped around the edges of its top and bottom, the right top corner is missing. The long sides are also quite chipped along the edges. These features might have resulted from the use of the object as a tool to pound something hard. It would seem unlikely that such damage could have resulted just from being kicked about the courtyard where it was found. Meas-

⁹⁰ VON PILGRIM, *Elephantine XVIII. Untersuchungen*, 274, fig. 119.d.-c.

⁹¹ 8 standards: PETRIE, *Weights and Measures*, vi, and passim. 8 ‘Normen’: KARWIESE, in CZERNY *et al.* (eds.), *Timelines*, 172. But note that he assigned one and the same weight to two different norms: p. 179, Petrie’s no. 2132, eleventh line from bottom (it does not correspond to COUR-MARTY, in BERGER, MATHIEU (eds.), *Études sur l’Ancien Empire*, no. 53 but to her no. 44) is the same as on p. 181, sixth line from the bottom given as CM44, which is Petrie’s no. 2132. 18 standards: MOLLAT, *M&G* 84, 2062.

⁹² According to PETRIE, *Weights and Measures*, 13-5, 17-9 only the ‘kedet’ and ‘gold’ standard are of Egyptian origin. KARWIESE, in CZERNY *et al.* (eds.), *Timelines*, 173 sees a strong Mesopotamian influence on the weights, especially on those of Deir el-Medina. COUR-MARTY, in BERGER, MATHIEU (eds.), *Études sur l’Ancien Empire*, 130, on the other hand does not think that the Shekel is present in the Egyptian weight system of the Old Kingdom, because the weights are very typical and occur certainly but only in the Late Period.

⁹³ E.g. Petrie, Karwiese, and Mollat.

⁹⁴ COUR-MARTY, *CRIPEL* 12, 21-7. COUR-MARTY, in BERGER, MATHIEU (eds.), *Études sur l’Ancien Empire*, 129-30. KARWIESE, in CZERNY *et al.* (eds.), *Timelines*, 173, maintains that all standards existed from very early on, without being more specific.

⁹⁵ PETRIE, *Weights and Measures*, 2, 4-7, 10.

⁹⁶ *Op. cit.*, pls. 6-7. Note that those shapes are kept separate by Cour-Marty in her rhomboid class, which seems not to have been discussed at all. Cf. COUR-MARTY, *CRIPEL* 12, fig. 10 and passim.

⁹⁷ COUR-MARTY, *CRIPEL* 12, 26-7 and 54-5 with fig. 26, class 7.

⁹⁸ All modern studies of ancient Egyptian weights take the work of Petrie as the basic source of research as it gives details for thousands of objects. The measurements are probably as accurate as they can be for Petrie’s day because he used a “new commercial balance by Becker” but he took “70 weighings an hour” (p. 3-4). The form classification seems in need of a re-evaluation, as e.g. Petrie Museum UC 27935 from Lahun does not really correspond to shape 64 on pl. 6, as well as the rock classification. Uncertain provenance and dating of many finds complicate conclusions on developments of weight units, shapes and materials as unprovenanced examples were assigned a date by shape or material.

⁹⁹ This description is taken from the original find slip kept together with the object. The register book contains a different description (“from pit in south east corner of square”).

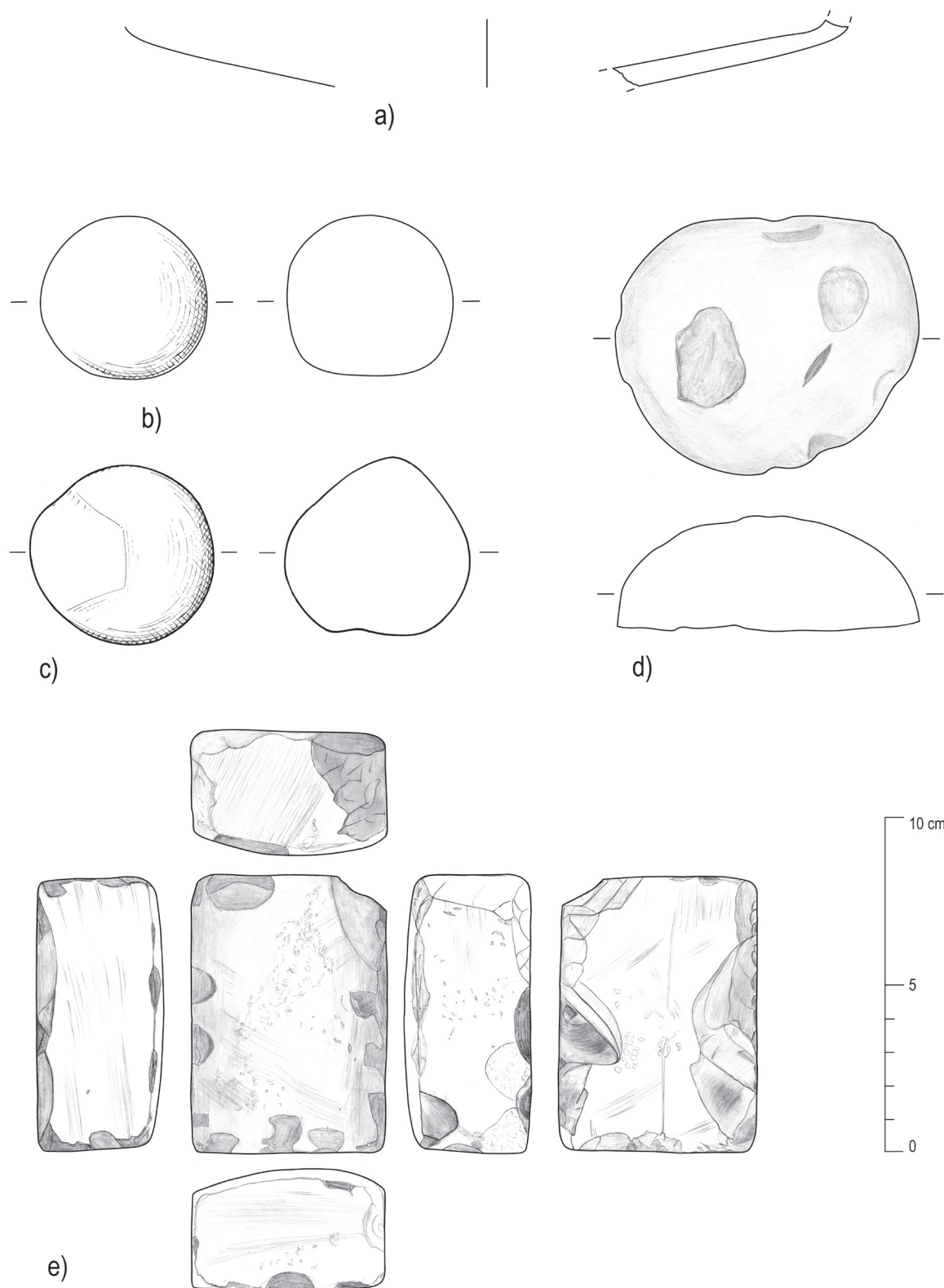


Fig. 3 - a) Stone vessel fragment reg. no. 3071a2, drawing by M.A. Negrete-Martinez; b) Polisher/weight reg. no. K875, drawing by the author; c) Pounder/grinder reg. no. K1084, drawing by the author, inked by W. Schenck; d) Grinder/hammer reg. no. K1027, drawing by the author; e) Weight reg. no. 3258c, drawing by the author

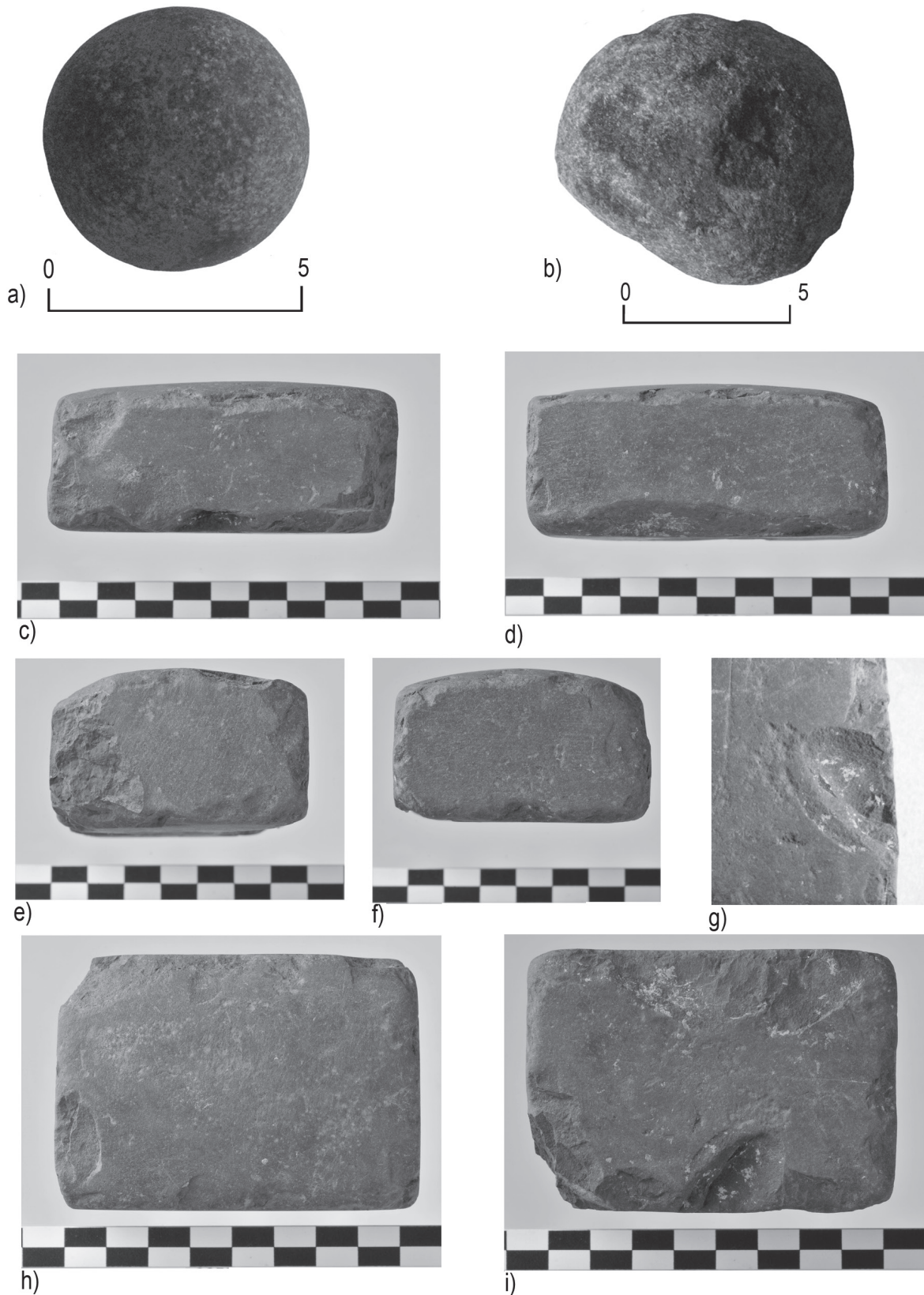


Fig. 4 - a) Polisher/weight reg. no. K875, photograph by the author; b) Grinder/hammer reg. no. 1027, photograph by the author; c-f, h-i) Weight reg. no. 3258c, photograph by A. Krause, © ÖAI Cairo; g) Weight reg. no. 3258c, photograph by the author

urements: length= 8.3 cm; width= 5.8 cm; height= 3.7 cm, current weight 404g.

8. Hemispherical object (Figs. 3.d, 4.b)

For this type of object, a spherical stone broken in half with irregular surfaces and quite damaged, no exact parallels are known from a settlement. The stone fragment might perhaps have been part of a statue (?) that was re-used as tool.

Example from the settlement

From sherd collection **K1027**, grinder/pounder. Position: A/II-o/17, laying on top of pl. 5, from south west corner, H= 3.92-4.05 m/NN, relative stratum e = Phase G/4-1. Probably already from below the house Phase G/3-1. Damaged on top in the form of hollows and holes. Material: hard dense dark green stone with some lighter veins, fine grained.

Discussion

Searching for the combination of the object groups presented here, the only site with similar finds is the settlement of Lahun excavated more than 100 years ago. In contrast to Lahun the stone type of the objects from Tell el-Dab'a is more uniform being of greenish dense hard stone. Apart from those stone objects there were only a few more stone vessel fragments of travertine ('calcite'/'alabaster') and rough to very rough limestone or sandstone implements for flour grinding to be found as well as some querns and mortars. All of these consist of different stone types.

It is noteworthy that both spherical and cuboid weights seem to occur at the same time at the settlement of Lahun¹⁰⁰ as well as trapezoid palettes thus ascertaining a similar range of object types available to the inhabitants there although it seems very likely that by the time they were deposited at Tell el-Dab'a they were already old due to the intrinsic value of stone in the stoneless Delta. An exception is the spherical weight found on top of a bench inside a house, which may well be contemporary.

There is no obvious spatial clustering of those stone objects in any location of the late Middle Kingdom settlement area A/II at Tell el-Dab'a, and, perhaps not unexpectedly, most of them came from fill or trash deposits and walls. It is, thus, unfortunate that the function of some of these implements still remains quite unclear although consideration of surface treatments and use traces may lead to a better awareness of possible criteria

for classification, especially with regard to pounders, grinders, polishers and weights.

Although no in depth consideration of weights and their use in settlements of the late Middle Kingdom can be offered here, there seem to have been a variety of types and standards in use at the same time. The assignation of uninscribed weights to weight standards remains tentative at best, thus, it is difficult to impose any standard units onto them, but Vercoutter could show that particularly oblong cuboid weights fit well his copper unit of c. 26-28.3 g averaging at 27.5 g.¹⁰¹ Applied to the cuboid weight found at Tell el-Dab'a, which is unfortunately damaged, it might have represented that standard as 15 times 27.5 g results in 412.5 g and its actual weight is 404 g. At the same time it is perfectly possible, if unlikely that the same weight could amount to 30 units of the gold standard, which is currently thought to be half the copper standard in the Middle Kingdom.¹⁰² However, it is extremely difficult to estimate the missing mass, thus it is perhaps wiser not to speculate.

Cuboid weights were also thought to be essentially in use at sites where metals were worked,¹⁰³ and at Tell el-Dab'a there is some evidence for such a supposition, because several stone casting moulds for the production of metal tools were found in area A/II¹⁰⁴ and F/I.¹⁰⁵ Although one would imagine that sites with such activities should be recognisable by the presence of kilns and large amounts of slag and ash to mark them as industrial sites, no such features were specifically noted during the excavation in area A/II. Although in some places ash layers of remarkable depth were noted, no industrial kilns were located. The fact that the cuboid weight was not found in context is not surprising as it shows traces of heavy reuse, clearly being conveniently at hand for some secondary pounding task giving objects like this a very long and varied use-life.

Compared with the thousands of finds made in the late Middle Kingdom settlement located in area A/II at Tell el-Dab'a the proportion of stone objects is minis-

¹⁰⁰ Note that there is a sizeable occupation of the settlement of Lahun also in later periods as identified by Petrie himself, PETRIE, *Illahun, Kahun and Gurob*, 15.

¹⁰¹ VERCOUTTER, in ENDESFELDER *et al.* (eds.), *Ägypten und Kusch*.

¹⁰² Note one piece with an inscription of Senwosret and *nwb* 6. As it weighs 75 g one unit would be 12.5 g. Cf. LACOVARA, in LACOVARA, TROPE, D'AURIA (eds.), *The Collector's Eye*, 98. Similarly the weight with the inscription of Amenemhat III in the Louvre weighs 50.8 g with 4 units of *nwb* resulting in 12.7 g for the single unit. This standard applied to our weight would lead to 32 units. 35 units would weigh 437.5 g.

¹⁰³ COUR-MARTY, *CRIPPEL* 12, 22. COUR-MARTY, in BERGER, MATHIEU (eds.), *Études sur l'Ancien Empire*, 131 for the Old Kingdom.

¹⁰⁴ Reg. no. 4588, made of limestone, Phase G/3-1, found in an open area between houses.

¹⁰⁵ MÜLLER, *Das Stadtviertel F/I in Tell el-Dab'a/Auaris*, vol. I, 369; vol. II, 96-106.

cule, attesting either to the attractiveness of such objects, so they were re-used many times over and not easily dumped in ordinary trash deposits or the distance to stone quarries was too great or the special material was too expensive to be brought along in higher quantities in the first place. As in many other instances there are not many contemporary data sets to which to compare those of Tell el-Dab^{CA}, in order to judge whether it is actually normal to find so few hard stone objects in a settlement or not.

The general frequency with which stone objects were found as well as the dissatisfying information on contexts and a long use-life make it extremely difficult to speculate about distribution patterns and availability of such items, even more so if specific stone types are in the focus of study. As the identification of particular and rarer rock types and distributions of such objects within Egypt are still very difficult to discern, a long way

of research is still ahead of us and collaborations with trained geologists or at least thorough instruction are sorely needed. Thus, stone objects housed in museums round the world continue to provide an immensely rich field of research and promise improvement of our knowledge about everyday life in ancient Egypt for the future.

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MB-PHASES	B.C.	EGYPT RELATIVE CHRONOLOGY	TELL EL-DAB ^{CA}					GENERAL STRATIGRAPHY
			TOWN CENTER (Middle Kingdom) 'Ezbet Rushdi	NEW CENTER MB-Population	EASTERN TOWN	NORTHEASTERN TOWN	PALACE DISTRICT 'Ezbet Helmi	
			R/I	F/I	A/I-IV	A/V	H/I-VI	
LB I	1410	Dyn.	H I A T U S					Amenophis II
	1440							C/2
	1470	XVIII						C/3
	1500							D/1
MB III (MB II C)	1530	AHMOSE	DENUDED					Ahmoose
	1560							D/2
MB II (MB II B)	1590	XV HYKSOS	DENUDED a PITS	a/2		D/2	e/2-f	D/2
	1620			b/1		D/3	g	Khayan D/3
	1650					E/1		E/1
	1680			b/2		E/2		E/2
MB I/II (MB II A-B)	1710	KINGDOM OF AVARIS NEHESI	DENUDED a STORAGE PITS	b/3		E/3		E/3
	1740					F		F
MB I (MB II A)	1770	XIII	DENUDED a STORAGE PITS	EPIDEMIC c H I A T U S		G/1-3		G
	1800			d/1		G/4		G/4
	1830			d/2	d/2a d/2b	H		moat 13/14 Ashkelon
	1860			b/1				H
EB IV (MB I)	1890	XII	DENUDED a STORAGE PITS	c/1-2 Sesostris III - year 5				I
	1920			e/1-4				K Sesostris III - year 5
	1950			f				L
	1980			?				M
	2000	XI	UNOCCUPIED					H I A T U S
	2050	X						N/1 N/2-3
			EXPANSION OF THE SETTLEMENT					
			HERACLEO-POLITAN FOUNDATION					
			?					

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Table 1 -Stratigraphic chart of excavation areas at Tell el-Dab^{CA}

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Colour Plate Captions

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- Pl. XXVIII: Faience lion figurine. Forepaws missing. The glaze is pitted and cracked. The details of the lion's fur, including the striped tail are indistinct. Abydos (El Arabah, tomb E.1); Manchester 1229
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Pl. XIV



Pl. XV



Pl. XVI



Pl. XVII