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Recent textile finds from Dios and Xeron

New mines of archaeological textiles

Since 1994 a program of systematic excavations in the Eastern Desert of Egypt has focused on small Roman fortresses (*praesidia*) built during the 1st century CE. They are scattered at a regular distance of approximately 30 km along two caravan roads leading from Koptos (now Quft) on the Nile, respectively to Myos Hormos (Quseir), and to Berenike, two important harbours on the Red Sea Coast at the beginning of the Christian era (Fig. 1). These military sites had a double function: to keep the roads safe from the desert Bedouin and to provide travellers, particularly caravans, with an adequate supply of water (Cuvigny 2003; Cuvigny forthcoming).

In those sites where rubbish heaps have been preserved in good condition, great numbers of ostraca (inscribed pieces of broken pottery), have been discovered (Fig. 2); they have provided a lot of information about everyday life in the *praesidia* of the Eastern desert (Cuvigny 2003, 2005; Bülow-Jacobsen 2003; Fournet 2003). They present these places as small garrisons of about fifteen soldiers, mostly infantry, but with a few horsemen for the postal service. The soldiers were all detached from auxiliary units. Officers were low to middle-ranking and the local commander of the fort, the curator, was typically a *signifer*. Some of the military staff had women with them. They were all surrounded by a satellite group of civilians providing commodities ranging from fresh fruit, vegetables and wine, to prostitutes. Numerous letters found at Dios show that vegetables were grown and sold at Compasi, the fort just north of Dios, where water was plentiful. A number of letters further tell us that clothes were sent there for washing.

Large quantities of textile fragments have also been found. Their study, together with that of textiles from other contemporary sites in the Eastern Desert, is contributing to new insight into the textile technology in the ancient world during the three first centuries CE (Cardon 1998; 1999; 2001; 2003; 2006; Bender Jørgensen 1990 a; 1990 b; 1999; 2000; 2004; 2008; Ciszuk 2000; 2004; Mannering 2000a; 2000b; Wild and Wild 2000; 2001; Wild 2002). A forthcoming publication discusses a substantial selection of clothing textiles discovered in Didymoi – a *praesidium* on the road to Berenike, occupied from AD 76/77 to about 240 - from another point of view: dress and identity in the Eastern parts of the Roman Empire (Cardon *et al*. forthcoming a). These finds are made particularly useful for the historian by the meticulous study of the stratigraphy of the deposits by the archaeologists of the team and the discovery of dated *ostraca* and inscriptions on stone (Brun 2003, 61-72; Brun *et al.* forthcoming). As a result, fairly secure and precise dates can be provided for most textile fragments. This is equally precious for our research into the dye sources and dyeing technology connected with the production of the textiles. This part of the project has benefitted from the generous permission granted by the Supreme Council of Antiquities of Egypt to take samples of small lengths of threads for dye identification and from the support of the French Institute of Oriental Archaeology (IFAO). The results of two series of dye analyses concerning six different categories of textiles have already been published or are forthcoming (Cardon *et al.* 2004a; 2004b; Wouters *et al.* 2008; Cardon *et al.* forthcoming). One of the categories consisted of textiles with a purple ground or with tapestry decorations including weft threads dyed in the broad range of shades that was aptly defined as "intended for purple" by Rodolphe Pfister and Louisa Bellinger, in their publication of the archaeological textiles from Dura Europos: that is, from greyish mauve to dark violet (Pfister and Bellinger 1945, 4, 11). One aim of our research was to check whether true purple obtained from marine molluscs – the most prestigious and expensive dye of the time, also called, somewhat misleadingly, 'Tyrian purple' or 'imperial purple' – could have been used in textiles from these sites that we know were inhabited mostly by 'ordinary' people, military and civilian. Another aim was to understand what alternative dyestuffs and dyeing processes were used to produce this range of shades, in order to obtain cheaper imitations of true purple. As a result of these analy-

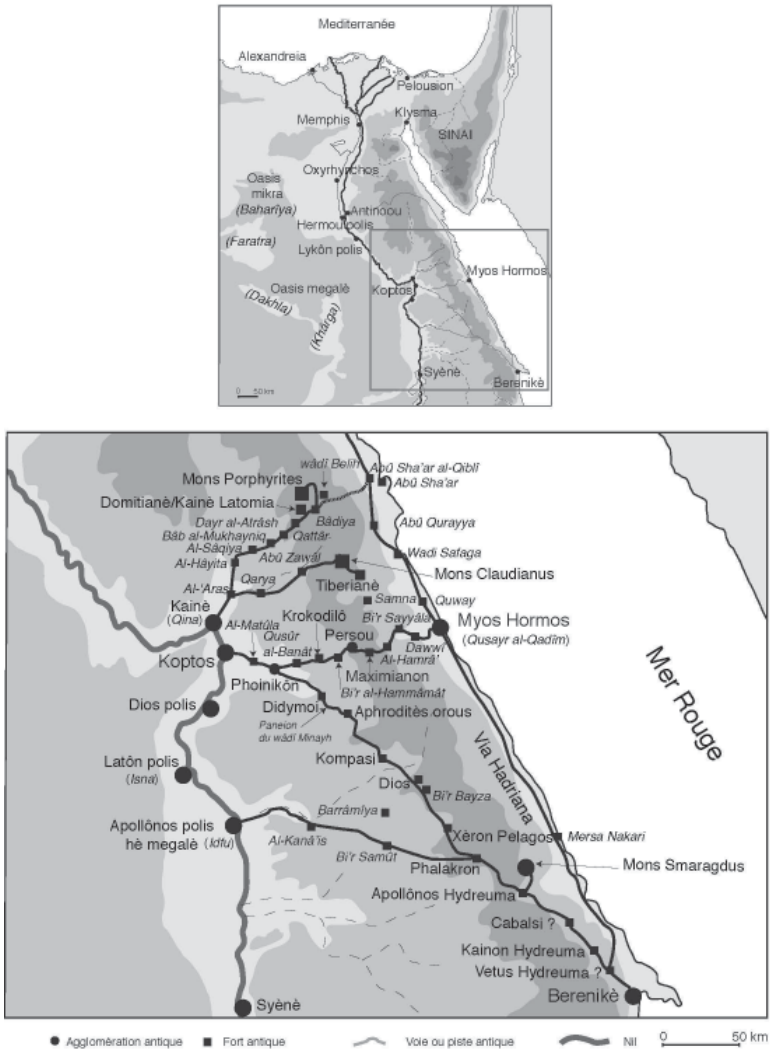

Fig. 1. Map of Egypt with location of praesidia mentioned in the text. © J.-P. Brun (CNRS-Centre Jean Bérard).

ses, true purple was identified in 13 different textiles from Maximianon, Krokodilô and Didymoi. Our research provides new ground for a reappraisal of the economic and social importance of purple in Roman Egypt during the three first centuries CE (Cardon *et al.* forthcoming b; forthcoming c).

We now report on work in progress on textiles from the rubbish heaps of the two most recently excavated *praesidia*, both situated further than Didymoi along the road from Koptos to Berenike: Dios, excavated by our team between 2005 and 2008; and Xeron, in which the first campaign started in December 2009, ending in January 2010. As an example of the kind of information that can be obtained from this type of corpus, as compared with textiles and clothing from burial sites, we publish and discuss the technical analyses of fragments from semicircular hooded cloaks found in different layers of the main rubbish heap of Dios and in the first excavated squares of the dump at Xeron: they come as complements to Hero Granger-Taylor's seminal publications on woven-to-shape semicircular cloaks in two recent issues of *ATN* (Granger-Taylor 2007; 2008) and to the section of our forthcoming chapter on clothing textiles from Didymoi where we publish fragments from two cloak hoods decorated with tapestry bands in true purple (Cardon *et al.* forthcoming a).

Dios and Xeron

The names we use for the sites have been established, or confirmed, by our study of the ostraca. Before this series of excavations, the toponyms of the *praesidia*

Fig. 2. Greek ostracon. Here part of an amphora with an address 'To Xeron pelagos' followed by the name and the unit of the soldier to whom it was sent. Infrared photo © A. Bülow-Jacobsen.

on the road from Koptos to Berenike were known thanks to three itineraries from antiquity, transmitted through mediaeval tradition: the *Antonine Itinerary*, the *Tabula Peutingeriana* and the *Ravenna Cosmography*. The three sources do not always agree, either between them, or with the ostraca discovered on the sites. In the case of Dios, the *Antonine Itinerary* mentions the site as Iovis (i.e. [*praesidium*] of Jupiter). This name has been generally used by modern historians and it has also been found by us on one ostracon written in Latin. However, all the ostraca written in Greek that mention the name of the site call it Dios (i.e. [*praesidium*] of Zeus »), which is also the name used in the *Tabula Peutingeriana*. The name most often found for the other site considered here is *Aristonis*, which is a medieval Latin distortion of the Greek Xeron (*i.e.* 'dry') (Bülow-Jacobsen forthcoming). The name *Aristonis*, as found *e.g.* in the *Itinerarium Antoninianum* and on many modern maps (including, regrettably, the Barrington Atlas), but not in the *Tabula Peutingeriana*, is thus never found in any of the ostraca from the sites. The full name in antiquity was *Xeron Pelagos*, *i.e.* 'The Dry Sea'.

Dios

According to an inscription found on the site, Dios (Fig. 3) was founded in 114/115 CE, that is 38 or 39 years later than Didymoy. It apparently replaced an earlier *praesidium*, Bi'r Bayza, (the ancient name is not known) which is situated 7 km further along the road towards Berenike. A brief excavation campaign in January 2008 provided evidence that Bi'r Bayza was abandoned before the end of the 1st century CE. Dios was occupied until c. 250 CE: the latest dated ostracon in the rubbish heap mentions the 3rd or 6th year of the reign of Philip the Arab (245/6 or 248/9 CE).

The rubbish dump occupied a surface of circa 600 m2 and its maximum height, in the centre, was approximately 1.30 m. As compared with the rubbish heaps at Maximianon on the road to Myos Hormos, and at Didymoi, on the same road as Dios, organic remains here were less well preserved. The environment of the site may have been less dry. It is now surrounded by a sparse vegetation of spiny bushes. The bulk of the deposit was more compact, heavy and sandy, the stratigraphy consisting of a succession of layers of sand, straw, gravel, alternating with solid lenses of

Fig. 3. Dios fort with rubbish dump to the right (the small heap in the front is the excavation area and the bigger heap behind it is the radim, where the sand and gravel from the excavation is dumped). © A. Bülow-Jacobsen.

Fig. 4. The site of Xeron Pelagos, "the Dry Sea", seen from SW before the excavations were begun. The rubbish dump is partly hidden behind it to the right. © A. Bülow-Jacobsen.

ashes or lime. Botanical remains were less abundant than in Didymoi, very few leather objects were found and ostraca were mostly in rather poor condition. Textiles also appeared less well preserved, and less abundant at first, but even in comparatively 'poor' sites, textile fragments are counted by the hundreds.

In the end, the textiles discovered in Dios fill two big metal boxes, the first of which contains 283 bags (each bag containing all the textile fragments recovered from a particular stratigraphic unit in the rubbish dump). Sorting of the textile remains started in January 2009 with Dominique Cardon in charge of the

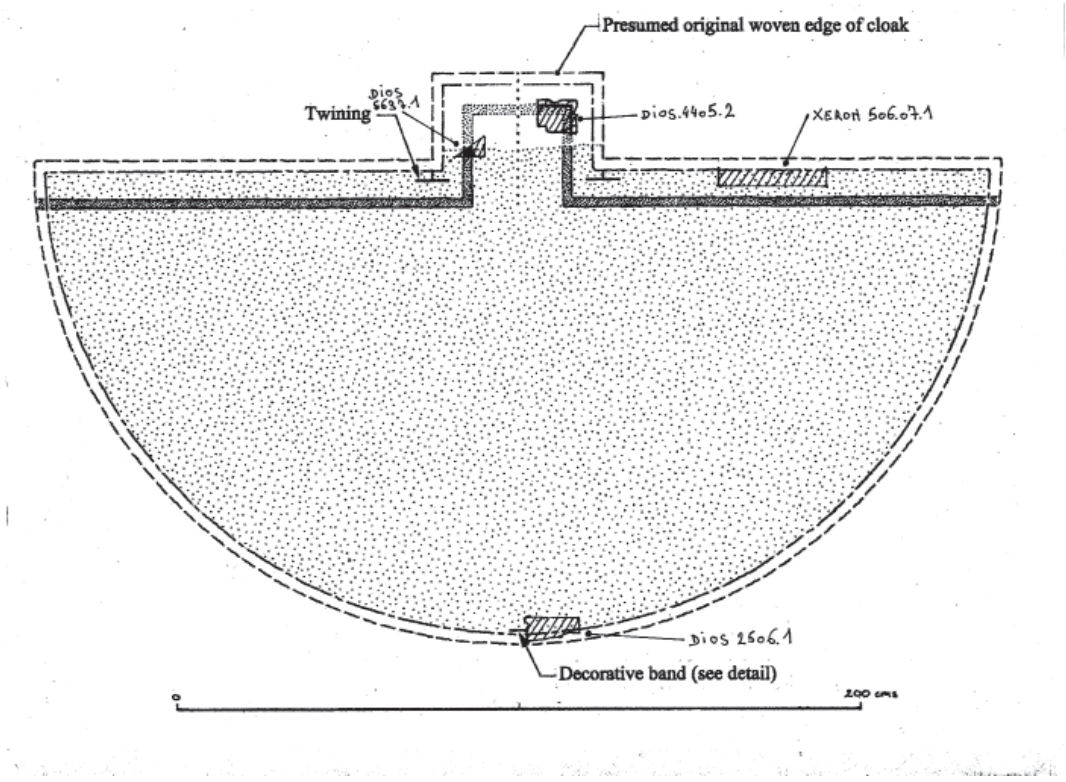

Fig. 7. Ideal plan of a hooded cloak marked with the possible position of the Dios and Xeron textile fragments. Drawing by J.M. Tarrant and H. Granger-Taylor (plan of cloak) and D. Cardon (inserted fragments).

Fig. 5. Stratigraphy of a fully excavated square in the rubbish dump of Xeron at the end of the first excavation campaign. © D. Cardon.

Fig. 6. Upper corner of a cloak hood, Dios.4405.2. © D. Cardon.

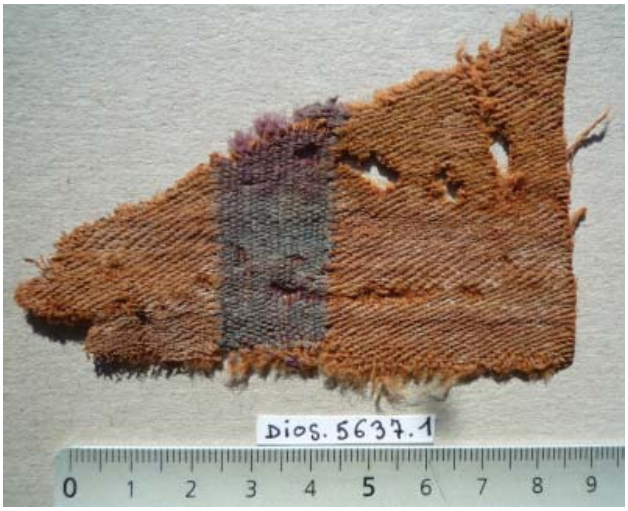

Fig. 8. Fragment from the side of a cloak hood with a vertical band in tapestry, Dios. 5637.1. © D. Cardon.

Fig. 9. Lower edge of a semicircular cloak with notched bar in tapestry, Dios. 2506.1. © D. Cardon.

Fig. 10. Close-up of the notched bar in tapestry, Dios. 2506.1. © D. Cardon.

Fig. 11. Re-used piece from the upper edge of a semicircular cloak with sewn edge, Xeron.506.07.1. © D. Cardon.

Fig. 12. Close-up of the sewn edge, Xeron.506.07.1. © D. Cardon.

textiles and Dany Nadal responsible for their preparation and conservation. The contents of a first lot of 48 bags were sorted in January and February 2009, while the remaining 235 bags were examined in January and February 2010. The textiles in the other metal box have not been examined yet. Each bag examined contained between one and ten different textiles. After being cleaned of earth and dust, they were sorted, placed in new bags and grouped by categories in big transparent envelopes for future study. As cleaning and sorting progressed, some particularly interesting textiles were selected and fully studied to allow a quick publication.

Like in the previously studied *praesidia*, the main bulk of textile remains consists of small to very big pieces of goat hair fabrics that served as matting and soft furnishing, or parts of animal equipment. Pieces of felt, mostly undyed and much yellowed, but occasionally dyed nice green (originally blue?) or orange (originally pink?) shades are also present in many bags, from all parts of the rubbish heap. Like in other *praesidia*, linen textiles, extremely rare, only appear here as small fragments of coarse, badly preserved tabby textiles.

Wool textiles are numerous and diverse, and the range of types recognised so far corresponds to what has been found in previous *praesidia* for comparable dates, although they are generally less well preserved and of smaller dimensions than at Didymoi. There are some fortunate exceptions, however: among the 34 already fully studied textile pieces from Dios a complete and well preserved 'slipper/sock' with separate big toe made of wool cloth was found. It has been beautifully conserved by Nadal in 2009 and presented at the recent Conference of the research group "Textiles from the Nile Valley" at the Headquarters of Katoen Natie in Antwerp, Belgium, in October 2009. Its details will be presented in the forthcoming conference publication on *Dress accessories* (Cardon forthcoming in de Moor and Fluck, eds). Here we present detailed analysis of two fragments from cloak hoods and a fragment from the bottom part of a semicircular cloak.

Xeron Pelagos

'Xeron' is built on a low hill in the middle of the wide, flat sandy plain of a wadi, hence probably the name 'Dry Sea'(Fig. 4). Its foundation can quite safely be dated to the second half of the 1st century CE, from the ceramic remains found in the layers corresponding to the digging of the well, and it was probably occupied, like Dios, until *c.* 250 CE: the material in the latest layers in the rubbish dump corresponds to the second half of the 2nd and beginning of the 3rd centuries CE. The fort is small, compared to most *praesidia* of the Eastern Desert, in contrast with the huge rubbish dump situated, as usual, in front of the gate. During the recent first campaign, the rubbish dump was divided into squares with sides of 5 m. This season, squares 407, 408, 506 and 607 were excavated, revealing that the dump there was more than 2 m high (Fig. 5). Its stratigraphy is well preserved and mainly consists, as in the other sites, of layers of chaff, sand and ashes. The most remarkable feature is the presence of thick layers of gypsum and gravel which reveal repeated cleanings of the well. The abundance of gypsum in this part of the wadi must have contributed to fill continuously the well with mud. This is mentioned in a poem on an ostracon found in square 506 (like the fragment of semicircular cloak published below), which celebrates the well of Xeron and its *gypsophoros* water. The dump is disappointingly poor in the usual categories of material, even ceramic. The relative humidity of the area, that allows a scattered vegetation of acacia trees and spiny bushes to grow around the fort, could explain the paucity of textiles and leather, but not of ceramics and glass. This can only be due to an lower number of persons living in the fort. The general atmosphere and social life may have been different and less agreeable in this little fort, where the well was always on the verge of silting up, than in large *praesidia* such as Dios or Didymoi. In a curious letter found at Dios in 2007, a prostitute who has been sent to Xeron urgently asks to be allowed to come back to Dios. She argues that the horsemen who bring the official letters to Xeron have the impression, when they arrive in this garrison, to see *mimoi* (buffoons)!

Textiles did not fare better in the rubbish dump than poor Serapias during her exile in the fort. They come out crumpled and squashed, impregnated with whitish earth or coated with dried grey mud, which complicated the textile analysis considerably. Nevertheless, all textile fragments discovered this year were examined and sorted, and a selection of 41 textiles were cleaned and fully studied. As usual, the main bulk of textile remains consists of a variety of fabrics in brown goat hair and numerous pieces of yellowed felt. Fragments of wool textiles are not only far less numerous than at other *praesidia*, but also generally much smaller and badly worn. Moreover, those discovered so far do not cover such a wide range of categories/types. Some of the dense twill fabrics made of single or plied z-spun yarns have apparently been helped by their excellent quality to withstand the unfavourable conditions in the rubbish dump at Xeron and have survived better than the thin tabbies. This permits to add a textile from Xeron to

the following small collection of fragments of hooded, semicircular cloaks.

Hooded semicircular cloaks from Dios and Xeron
The identification of the following fragments as characteristic parts of hooded semicircular cloaks, and more precisely in the two first cases, as parts of hoods, would not have been possible without Granger-Taylor's recent discussion on the technical details of a hooded semicircular cloak discovered in a grave in the Nubian site of Ballana, completed by her identification of fragments of cloaks from Qasr Ibrim as parts of a hood. The shape she proposed for a semicircular cloak and for the hood have helped us to identify textile fragments from Didymoi as belonging to two cloak hoods (Granger-Taylor 2008, figs. 7, 8; Cardon et al. forthcoming a, fig. 322). They also allow identifying where on a typical semicircular hooded cloak the fragments from Dios and Xeron published below would have been located.

Dios**. 4405.2. Fragment of upper corner of hood, undyed, decorated with a purple right-angle in tapestry** (Fig. 6)
Date: discarded mid-2nd c. CE.
Description
10 x 11.8 cm; purple stripe *c*. 0.5 cm wide in vertical part of tapestry angle, running parallel to vertical torn edge, at *c*. 2 cm from it; horizontal part of purple right-angle *c*. 0.4 cm deep, running parallel to horizontal torn edge, at *c*. 1.1 cm from it; one stabbing stitch in white linen ending in knot, more or less in the middle of the fragment in warp direction; much worn, torn across vertical part of purple angle, several holes; encrusted dirt; preservation medium, purple contrasting weft slightly faded and discoloured.
Technical characteristics
Wool, tabby weave, balanced, fine and close texture, crêpe effect, and very good quality. Tapestry in purple right-angle woven in extended tabby: warp ends paired both in vertical and horizontal parts of right-angle; in vertical part, 4 groups of paired warp ends; in horizontal part, warp threads grouped with crossed threads, 2:2:2:2, etc. and margins of 2 picks of main weft on grouped threads above and below purple band; purple weft paired in vertical part of right-angle, single in horizontal part; the vertical joins between purple and ground wefts are woven in interlocking tapestry weave.
Warp: undyed and unpigmented, now creamy to yellowish, tight s-spin, *c*.19 ends per cm (abbreviated epcm below); 8 ends in 0.5 cm in vertical band.
Ground weft: same colour as warp, medium s-spin, *c*. 17 picks per cm (abbreviated ppcm below).
Contrasting weft: greyish purple, slight z-spin, paired in vertical part of angle, *c*. 18 ppcm (= 36 threads); single in horizontal part, 15 picks in 0.4 cm.
Dye identification of purple weft: the results of dye-analysis are not available yet.
Construction
Stabbing stitch, white linen, s-spin 2Z-ply.
Discussion
The presence of a big stabbing stitch in white linen thread in the middle of the fragment, makes it likely that this torn hood ended up in the rubbish heap as part of a *kentron*, that is in a swatch of recycled rags used to mend worn clothes, or as filling for cushions or saddles. In this hypothesis, the hooded cloak it originally belonged to, could have been woven somewhat earlier, during the first part of the 2nd century CE or even before, and would probably not have been worn by any of the fort dwellers. This is also the case for fragments of a cloak hood from Didymoi (D98.4404.1 A+B), discarded between 176 and 210 CE as part of a *kentron* (Cardon et al. forthcoming a). In Figure 7, the position of the fragment is shown on the outline of the plan of a cloak based on the Ballana cloak as reconstituted by Granger-Taylor and Nobuko Kajitani, from the Metropolitan Museum of Art (New York, USA). It could belong to either of the two upper corners of the hood but not to a bottom one, because it does not include any remains of reinforcement of weft twining, while such reinforcements are present at the bottom corners both on the Ballana cloak and on the Didymoi fragments. As compared with the Ballana cloak, this fragment has a much narrower purple band, like the band of the hood fragments from Didymoi. Other similarities with the cloak from Didymoi are: the ground weave in tabby; S-spin threads used for both warp and weft in the ground weave; identical warp counts; in both textiles, warp and contrasting weft are paired in the vertical part of the purple bands. But there also are significant differences between the two cloaks: not only in the tapestry technique used in the vertical joins between ground and band, and the spinning direction of contrasting wefts (z-spin in the fragment from Dios, s-spin in Didymoi). Most importantly, the dye – which has faded and changed colour at the surface of the fabric - and the thinner contrasting weft in the fragment from Dios, betray its lower quality as compared with the brilliance of the true purple identified in the hood from Didymoi and the amazing thinness of its purple-dyed contrasting weft, approximately 150 threads of which can be counted per cm.

Dios. 5637.1. Fragment of side of cloak hood, orangey-brown with purple vertical band in tapestry, discoloured to blue in places (Fig. 8)
Date: discarded during the 2nd *c*. CE.
Description
6 x 9.3 cm; width of purple band: c. 1.9 cm; distance from band to torn edge more or less parallel to warp: 3.5 to 4.2 cm; distance from band to point of angle formed by the two other torn edges: 3.15 cm; much worn, insect holes, encrusted in places with a whitish substance (lime?) that has made the wool brittle and has had a dramatic effect on the dye of the contrasting weft, turning it from its bright violet colour (particularly visible at margins of holes) into sky blue; preservation poor.
Technical characteristics
Wool, 1/2 twill weave (diagonal of the twill in Z direction on weft face) and tapestry in purple vertical band. Ground weave densely weft-faced, quality fine and dense. Purple vertical band woven in extended tabby: 34 warp threads are paired for band, and purple weft threads are also paired; at the vertical joins between purple and ground wefts, paired threads of purple weft and single threads of ground weft alternately turn back around the same paired warp, creating a toothed effect.
Warp: orangey-brown, s-spin, shiny, *c*. 13 epcm.
Ground weft: same colour as warp, z-spin, *c*. 28 ppcm.
Contrasting weft: bright purple (mid blue in stained places), z-spin, paired, 24 ppcm (= 48 weft threads).
Dye identification: results of dye-analyses of ground yarns and contrasting weft not available yet.
Discussion
This fragment could come from the middle part of either of the two sides of a cloak hood where the decorative purple band runs parallel to the warp (Fig. 7), like in fragment A from a hood found in Didymoi (D98.4404.1 A). The ground weave is different: tabby in the fragment from Didymoi, 1/2 twill here (like in the fragments of cloaks from Qasr Ibrim identified by Granger-Taylor). The tapestry technique used in vertical joins between ground weave and vertical band, and the weave in the band, are the same here as in the textile from Didymoi. The spinning direction of warp is the same in both textiles but the spinning directions of both ground and contrasting wefts are different. The dyes may be different: in the Didymoi cloak, the band is dyed with true purple. In this fragment, the variations in hue (from bright purple to sky blue) in the contrasting weft – that are also found in the following fragment - are intriguing. It is hoped that dye-analysis will bring an explanation for this phenomenon.

Dios. 2506.1. Fragment of bottom part of semicircular cloak, orangey-brown with remains of a blue to mauve notched ornament in tapestry (Fig. 9)
Date: discarded at the end of 2nd or beginning of 3rd *c*. CE.
Description
7.7 x 15.3 cm; height of blue and mauve notched tapestry motif preserved: *c*. 1.4 cm; distance from last pick of mauve/blue weft to torn bottom edge of fragment: *c*. 2 cm; depth of best preserved tooth: 0.35 cm; width of weft between teeth: *c*. 0.3 cm; much wear, torn at the side of tapestry teeth and in mid depth of the lower tooth; preservation poor; the colour of the tapestry weft now varies from sky blue to mauve.
Technical characteristics
Wool, 1/2 twill weave (diagonal of the twill in Z direction on weft face), and tapestry in preserved part of blue/mauve ornament. Ground weave densely weft-faced, quality fine and dense. Tapestry ornament woven in extended tabby (basket weave): warp threads are paired, and both contrasting weft threads, and ground weft threads between the blue-mauve teeth, are also paired (Fig. 11). Contrasting ornament, and ground weft between the teeth, woven in interlocking tapestry weave: one single ground weft and one paired tapestry weft interlocking between adjacent warp ends.
Warp: orangey-brown, s-spin, 2Z-ply, shiny, *c*. 10.5 epcm.
Ground weft: same colour as warp, z-spin, shiny, *c*. 24 ppcm in ground weave; paired in each pick between the two teeth, *c*. 17 ppcm (= 34 threads per cm).
Contrasting weft: mid blue to mauve, loose s-spin, 2Z-ply, paired, 20 ppcm (= 40 threads/cm).
Discussion
This fragment must come from the same bottom part of a semicircular cloak as the small notched bar on the Ballana cloak (Fig. 7 and Granger-Taylor 2008, 8 Fig. 3). Considering the distance between the bottom part of the toothed motif and the torn edge, it could actually be a piece of the original, frayed edge of the cloak. The spinning direction of warp and contrasting weft, and the ground weave are different from those of the Ballana cloak, however. The fragment is more similar to the fragments of cloaks in fine brown weft-faced 1/2 twills found in Qasr Ibrim and to the preceding textile. The two 1/2 twills from Dios, however, each have different spinning systems both in warps and in contrasting wefts, and the tapestry technique used at the vertical joins between purple and ground wefts is also different. The interlocking technique found in this fragment is also used in the fragment of hood corner Dios. 4405.2, described above. The varia-

tions in hue (from sky blue to mauve) in the contrasting weft, also found in the preceding fragment, are intriguing and would have deserved a dye analysis. However, the remains of tapestry ornament are so small that, in this case, we have to wait for progress in non-destructive techniques of dye identification to look for an explanation of the phenomenon.

Xeron. 506.07.1. Re-used off-cut of very fine and dense, light golden-beige 2/2 twill, probably from the upper edge of the "wing" of a semicircular cloak, with sewn edging along the top edge parallel to the weft (Fig. 11)
Date: discarded 2nd century CE.
Description
C. 4.7 x 18.5 cm as presently folded (a portion, 13 cm wide, of the fragment is folded twice and sewn to upper layer); the total width of the fragment if it was unfolded would be 31.5 cm; some holes; the corded sewn edging has become worn and torn in places and the frayed edge has been coarsely mended; preservation of textile very good.
Technical characteristics
Wool, 2/2 twill, densely weft-faced, fine, very good quality. The sewn edging along the straight edge parallel to the weft is composed of three fine adjacent cords, z-twisted, each made of 3 s-spin threads, attached by whipping stitches which pass between the twisted threads (Fig. 12). There are c. 6 stitches per cm. The sewn finish created in this way is 0.35 cm wide.
Warp: golden beige, z-spin 2S-ply, *c*. 14 epcm.
Weft: same colour as warp, z-spin, *c*. 47 ppcm.
Construction:
Sewing thread in needlework edging, wool, beige, z-spin 2S-ply; Z-plied edge cords, beige, made of three s-spin yarns.
One end of the fragment is folded twice on itself in the weft direction and the three layers are sewn together by big stabbing stitches 1.5 cm apart. Stabbing stitches light linen, s-spin 2Z-ply.
Discussion
The identification of this fragment as part of a semicircular cloak is based on close technical similarities with the Ballana cloak: it has the same spinning system, the same ground weave, and most importantly, the sewn edging along the straight edges parallel to the weft, in the Ballana cloak, is nearly identical to the sewn edging in this fragment (*cf*. Granger-Taylor 2008, 9, fig. 5). Ground weave and spinning systems are also similar to those of hood fragments from Didymoi, D99.1516.1A + B, discarded between 125 and 140 CE. In the fragments from Didymoi and Xeron, the warp and weft counts are slightly lower than in the Ballana cloak, but they all three undoubtedly belong to the same type of high quality garment, particularly appreciated in the Roman army. It is difficult to figure out what was the purpose of folding and sewing this long off-cut in such a way, but it may show that cutting and re-use may have taken place on the site. Another sign of this is, that the fragment was not as crumpled and squashed as if it came from a torn-open *kentron*. In this hypothesis, the hooded cloak it originally belonged to could have been worn by one of the fort dwellers. It is somewhat of a surprise to find the remains of a garment of such quality in this fort where the soldiers are described as looking like "*mimoi*". Maybe it was bought second-hand: the sewn edging along the top edge shows that the original edge of the cloak had already been cut away and repaired. On the other hand, elaborate decorative edging added during successive refurbishment processes are often found in fragments of such valuable pieces of clothing. This is the case in the Ballana cloak.

Conclusion
The study of this small collection of fragments from hooded cloaks in different weaves and qualities, but presenting common technical characteristics, very aptly illustrates the invaluable information – as well as the limitations - of the type of corpus the textiles from rubbish dumps constitute, as compared with textile finds from burial sites. To understand the function of the small rags exhumed from the rubbish heaps, we must rely on the information supplied by discoveries of whole garments and pieces of soft furnishing in tombs in other contemporary sites, and complete this evidence by the study of contemporary paintings and sculptures. On the other hand, the exceptional quantity and diversity of textile fragments found in the *praesidia* provide a wealth of examples for many types of textiles, considerably enriching our knowledge on the technical variations which could be found in apparently similar products, and our understanding of the importance of cross-influences between textile traditions from Europe and the Near East. This is due to the two main ways through which textiles were discarded into the dumps. As remains of soldiers' belongings, some textiles provide examples of foreign fashions and foreign textile techniques, because of the mixed ethnic origins of the soldiers that spent some time in the forts. The multitude of rags from *kentrones*, on the other hand, offer examples of a wider range of textiles, which were originally used by all kinds of people of diverse economic means and social status and were probably produced mainly, but not only,

in Egypt. From the thorough analysis of such a rich mine of documents which can be related to fairly precise dates, a more complex but also more complete vision of the evolution of textile techniques and fashions in the first centuries of the Roman Empire is gradually emerging.

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