



## “When sorted and cleaned may prove of great interest”\*

### The textiles from Antinoopolis held in the collections of the Museum of New Zealand Te Papa Tongarewa (Te Papa)

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## Abstract

Te Papa holds a collection of 17 textile fragments acquired in 1914 from the Egypt Exploration Fund. These fragments were excavated from the site of Antinoopolis in Egypt during the 1913–1914 season of fieldwork, carried out under the direction of John de Monins Johnson. They derive from items of dress and soft furnishings dating from the first millennium CE (the Roman Period and Early Arabic Period in Egypt). The objectives of this study were to identify the original textiles that the fragments derive from and their dates of manufacture and use, all within the context of the story of Antinoopolis. As part of the study, the textile fragments were examined according to standard modern practice. The study was carried out as an extension of recent work undertaken by institutions in the United Kingdom in particular the Whitworth Art Gallery, on the textiles recovered from Johnson’s excavation, most of which are held in collections in the United Kingdom. The Te Papa study is significant in that it adds to this body of work. In addition, the collection is a valuable resource for education and research.

## Keywords

Egypt, Roman, Excavation, Dress, Furnishings, Antinoopolis

## Introduction

The main objective of this paper is to present the results of a study undertaken on the textiles from Antinoopolis held in the International History collection\*\*\* of the Museum of New Zealand Te Papa Tongarewa (Te Papa). These results include the identification and dating of the textiles, and how they were made and used, in association with life in Antinoopolis during the Roman and early Arabic Periods. In addition, the results will be placed within the broader context of other recent and current research

relating to Antinoopolis. Previous and potential use of the Te Papa collection will also be addressed briefly.

In August 1914, Te Papa (then the Dominion Museum) received a consignment of artefacts from the Egypt Exploration Fund (EEF). These artefacts had been recovered from the site of the city of Antinoopolis, then known as Antinoë, during John de Monins Johnson’s excavation of rubbish mounds on the site, which took place between 9 December 1913 and 7 February 1914 (Johnson 1914, 180; EEF 1914, 12; Livingstone 2021, 86). The consignment consisted of approximately 50 items, including a comb,

\* Annotation beside the textiles on the list that accompanied the items acquired from the Egypt Exploration Fund in 1914 (Te Papa Archives MU2/Box 64/Item 4).

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\*\*\* The textiles have an FE prefix, but originally had a G prefix. Old labels with this prefix are attached to some of the textiles.

fish hook, beads, carved bone items, leather shoes and 17 textile fragments (MU/Box 64/Item 4; O’Connell 2014, 462–463). The acquisition of these items by the Dominion Museum is described in Livingstone (2021, 86–87).

The 17 textile fragments are the primary focus of this paper. All but one of the fragments are small, the exception being a nearly-complete woman’s hairnet (FE001730). The fragments date from between the second to ninth centuries CE (AD), a timespan that includes most of the Roman Period and the early Arabic Period in Egypt (Pritchard 2014, 47–48). According to Pritchard (2013, 55) the textile fragments from Antinoopolis enable “...a more detailed understanding of the important role played by textiles in the life of the town...”.

### The city of Antinoopolis: “...the life of the town...”

The emperor Hadrian founded the town/city of Antinoopolis in circa 130 CE, more than a century after Egypt had become a province of the Roman Empire. He named it in honour of his favourite, Antinous, a young man who had drowned

nearby in the Nile River (Johnson 1914, 168). The city was built on the east bank of the Nile, circa 300 km south of Cairo (Fluck and Froschauer 2011, 55) (Fig. 1). Hadrian populated his new city with Roman military veterans and Egyptians with Greek ancestry; the latter being encouraged to move there with offers of tax exemptions and other privileges (Johnson 1914, 171). The basis of Egypt’s economy was agriculture but there was little cultivatable land in the vicinity of Antinoopolis. Therefore, the city’s economy depended upon business, trade and manufacture, with textile production being one of its major industries.

For several centuries Antinoopolis was a wealthy and important city. It became the capital of the Thebaid region in the late third century and by the fifth century CE it had become the most important city in Egypt after Alexandria (Johnson 1914, 72; Fluck and Froschauer 2011, 55). It also benefited from the Via Hadriana, the road connecting Antinoopolis with ports on the Red Sea coast, built to facilitate maritime trade with the East (Fluck and Froschauer 2011, 55). Imported commodities arriving in the city via this road included goods shipped from India, as well as those arriving from China, Persia and other regions traversed by the Silk Road (De Moor 2008, 57). Antinoopolis also became an important centre of religion as Christianity spread throughout Egypt during the fourth



**Figure 1.** Map of Egypt showing the location of Antinoopolis. © Daniela Greinert and Robert Kuhn.

century (Bagnall 1993, 325). Between 619 and 629 CE Persian Sasanians occupied Egypt. The Egyptians regained control, but this only lasted a short time; in circa 642 Muslim Arabs conquered the country (De Moor 2008, 54).

Antinoopolis appears to have declined after the Arab conquest (Fluck and Froschauer 2011, 55). Most of the artefacts recovered from the site date to no later than the eighth century CE (Lintz and Coudert 2013; Pintaudi 2017), suggesting that the city had been abandoned before the end of the first millennium CE. During later centuries, most of the stone from walls was removed for the construction of buildings elsewhere, and remaining mounds and house fill, which often contained quantities of artefacts and texts, were used to make fertilizer (Johnson 1914, 172–173). Drawings made during the 1789–99 Napoleonic Survey of Egypt show that some of the city walls, a triumphal arch, and colonnades flanking the two main streets were still standing (Gillespie et al. 1987, Vol. IV Plates 53–57). But by the time of the 1913–14 excavation little of the city remained (Johnson 1914, 174).

Information about daily life in the city during the first millennium CE comes from various sources, including papyrus texts recovered from Antinoopolis and elsewhere. Textiles are sometimes mentioned in these texts. For example, *P. Antinoopolis 93* is a letter written by a bridegroom in the fourth century, asking his future mother-in-law to find a house for him and his bride in the same neighbourhood as her own. He asks if she needs anything for the wedding; he has already sent her some items, including a pillow. Another text is a receipt dating to 324 CE (*P. Antinoopolis 39*), associated with the *vestis militaris*, a tax that required citizens to contribute clothing to the Roman army. This receipt relates to Isadora, sister of a former magistrate and councillor, who had provided a *chlamys* (cloak) and a *sticharion* (narrow-sleeved tunic) as payment of the *vestis militaris* (the text also refers to the value of these garments). A scribe wrote on behalf of Isadora; despite her family status she was illiterate, the norm for most women in Egypt at the time (Bagnall 1993, 250).

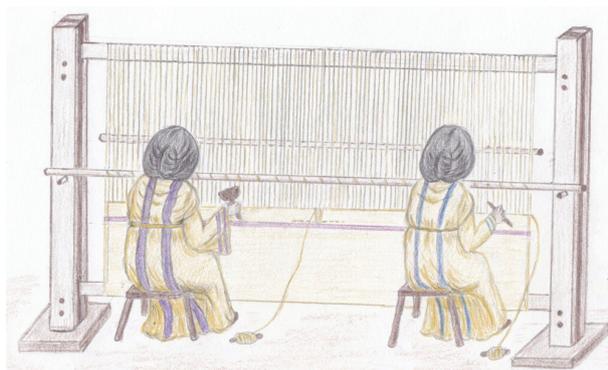
Numerous artefacts relating to daily life have also been recovered from archaeological excavations of the site, which have been ongoing since the late nineteenth century (Gayet 1902, 115–140; Johnson 1914, 180; Fluck and Froschauer 2011, 55–56; Calament 2013, 23–29; Letellier-Willemin 2021, 113–114). In the last decade considerable research, including a major study by the British Museum, has been undertaken on artefacts recovered during the 1913–14 excavation.<sup>\*\*\*\*</sup> Most of the artefacts from the excavation are held in institutions in the United Kingdom, with small numbers being held in a few overseas institutions, including Te Papa and two museums located in

Sydney: the Chau Chak Wing Museum and the Australian Museum (O’Connell 2014, 421; Livingstone 2021, 86).

Frances Pritchard from the Whitworth Art Gallery surveyed the textiles from the excavation held in institutions in the United Kingdom. She found that they are “... a fairly representative indication of the types of textiles in use in a prosperous Nile Valley city...” (Pritchard 2013, 36).<sup>\*\*\*\*\*</sup>

Surviving texts reveal that Antinoopolis had an important textile industry. *The Edict of Diocletian on Maximum Prices* of 301 CE (Section XXVIII, Line 46) mentions the high-quality mattress and pillow fabric manufactured there (these fabrics were translated into English as tick or ticking, which is a hard-wearing, tightly woven, striped fabric). The city’s textile industry is also referred to in some of the papyri recovered from the site. For example, *P. Antinoopolis 44* is a fourth/fifth century letter from Longinus to Hermammon (who owned a linen textile workshop in Antinoopolis), in which Longinus orders clothing for his younger brother.

Textile workshops would have employed highly-skilled workers, and specialised looms were used for weaving certain textiles, such as those made from silk (Aezani copy of *Edict of Diocletian*, Line 32a). Most textiles, though, would have been woven on a vertical two-beam loom, the Roman loom that appears to have been introduced into the province during the early centuries CE (Sheffer and Granger-Taylor 1994, 231; Mossakowska-Gaubert 2020, 13) (Fig. 2). Not only were textiles produced in workshops, many women would have spun and woven the textiles required for everyday use in their own households as well. This is evident from the numerous textile tools recovered from houses in Antinoopolis (Rutschowscaya and Calament 2013, 452–455), and from other contemporary towns and villages, such as Kellis in Dakhleh Oasis (Bowen 1999, 11).



**Figure 2.** Two women working at a wide, vertical two-beam loom. Drawing by R. Livingstone.

<sup>\*\*\*\*</sup> Former Te Papa staff member and current Honorary Research Associate, Ricardo Palma, examined a comb in the collection from Antinoopolis and found the remains of head lice. He concluded that living in a prosperous city “...does not necessarily mean a reduction in head lice infestation.” (Palma 1991, 194).

<sup>\*\*\*\*\*</sup> Moreover, the textiles are probably fairly representative of the textiles made and used throughout Egypt. For example, in the early centuries CE, Roman-style textiles predominated in the province. This can be seen in the third to fourth century textile fragments from the village of Kellis in Dakhleh Oasis, most of which are similar to those of the same date from Antinoopolis (Livingstone 2015).

Wool was the principal fibre used by the Romans (Larsson-Lovén 2013, 112), and it was frequently used in textile production in Egypt during the Roman Period and later. Wool dyes easily, and all the coloured yarns used in the Te Papa textiles were spun from dyed wool fleece: in the ancient world wool was normally dyed in the fleece before spinning (Pliny Nat. Hist. IX, XXXVIII). Only ten plant and animal dyes were regularly used at this time. These comprise various hues: blues from indigotin obtained from woad or indigo, reds from madder, other plants and some scale insects, yellows from weld and other sources, and browns from tannins obtained from plants (Hofman-de Keijzer et al. 2007, 214–215). Purple dyestuff was obtained from certain marine molluscs in the Mediterranean but this was seldom used because it was extremely expensive. So, although purple was the predominant colour of the Roman world (Pritchard 2006, 60), the purple colour found on textiles was usually produced by dyeing the fleece with indigotin and then over dyeing with madder (De Moor et al. 2010, 44; Hofman-deKeijzer et al. 2007, 216). Other colours, such as greens and blacks, were also produced by combining dyestuffs.

In Egypt fibres and fleece were traditionally spun in an anticlockwise direction, using a high whorl spindle rolled down the thigh with the right hand, to produce S-spun thread (Crowfoot 1931, 31) (Fig. 3A, B). The threads were sometimes Z-plied, being spun together in a clockwise direction to produce a thicker and stronger thread ( $S_xZ$ ). The threads used for sewing were always 2 ply ( $S_2Z$ ), and textiles with a Z-plied warp became common from the later Roman Period.

S-spun threads were typical of Egypt and neighbouring regions throughout the Roman and early Arab Periods (Pritchard 2006, 29; Verheeken-Lammens 2008, 65–66), but uncommon in other areas of the ancient world. According to Pritchard (2006, 29) the Z-spun yarn sometimes found in Egyptian textiles was most likely either imported or spun by foreign women living in the province.

The manufacture of textiles was labour-intensive and, as a consequence, they were valued possessions. As such they were frequently recycled, sometimes more than once,

to obtain as much wear from them as possible before they were finally discarded. Consequently, it can be difficult to determine the original function of textile fragments.

## The textiles from Antinoopolis in the Te Papa collections

Although the collecting of the textiles and their acquisition by Te Papa is the subject of another paper (Livingstone 2021, 86–95), a few details should be mentioned here. Most importantly, the objective of Johnson's excavation was to obtain papyri. Other items recovered from the excavation, such as textiles and other small objects, were distributed to institutions that subscribed to the Egypt Exploration Fund (EEF 1913/14, 12). No information about them was recorded.

Fortunately, nearly all the textile fragments recovered from the excavation incorporate decorative elements, and many of these decorations are found on specific types of textile that were only manufactured and used during a particular time period. Consequently, it has been possible to identify and date many of the textiles held in the United Kingdom (Pritchard 2013) and other museums, including those in the Te Papa collection.

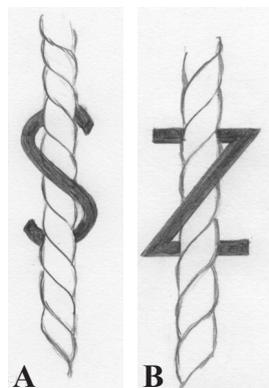
Examination of the Te Papa textiles was carried out by the writer according to current standard methodologies used for the study of archaeological textiles. Each textile was examined thoroughly and the results recorded. Other equipment used for examination is as follows. A rule with millimetre divisions was used for measuring the dimensions of the textiles and areas of pattern. A hand magnifier (6×) was used to count the number of weft threads and warp ends per centimetre, and to determine the direction of the spin of the yarns. A free-standing magnifier with 25 × magnification was used for more detailed examinations of the yarn and weave structure. Tiny samples of yarn were wet-mounted on to slides and examined under a compound optical microscope, using 40 × magnification to identify the fibre. In addition, the obverse and reverse of each textile was photographed by Te Papa photographers, Norman Heke and Michael O'Neill.

For the purposes of this paper, the Te Papa textiles have been divided into two types: dress and soft furnishings. The few fragments that could not be identified with certainty have been placed in the most appropriate section, with their uncertain identity noted.

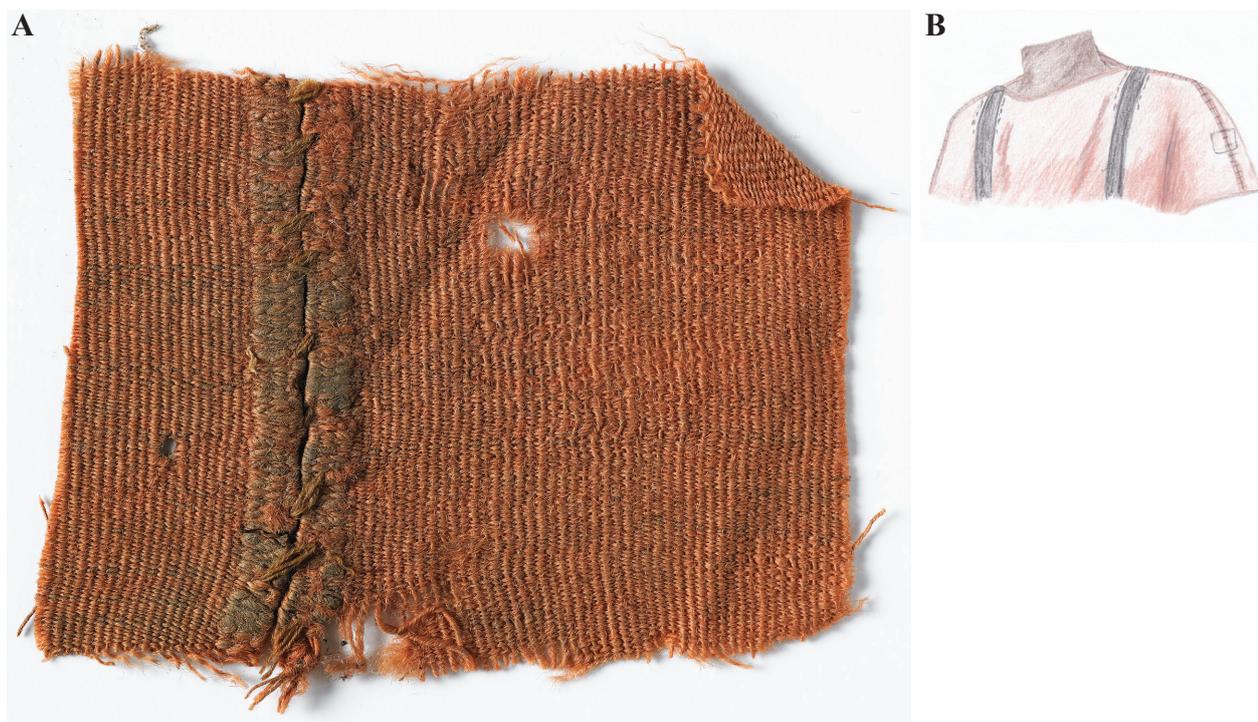
### Dress

Ten of the 17 textile fragments derive from items of dress, and two more are tentatively identified as fragments of headwear.

One of the earliest textiles in the collection, FE001731/02, dates to between the second to fifth centuries



**Figure 3.** Spin direction of threads: Shown on the left (A) is the anticlockwise or S-spin direction, and on the right (B) is the clockwise or Z-spin. Drawings by R. Livingstone.



**Figure 4. A.** Egyptian textile, c. 100–600 CE, maker unknown. FE001731/02: A textile fragment comprising two pieces of fabric joined together along the selvages with top stitching. Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.035172. **B.** An example of a two-piece tunic with top stitching along the shoulders; the rectangle shows the general area where FE001731/02 may derive from. Drawing by R. Livingstone.

(Fig. 4A, B). It consists of two small fragments, woven in weft-faced tabby using wool dyed an amber colour, which were joined along their selvages. (See catalogue below for detailed descriptions of the textiles.) They were stitched together using top stitching, which produced a flat join. Top stitching was used to join the shoulder seams of tunics during this period (Sheffer and Granger-Taylor 1994, 185, fig. 58) indicating that FE001731/02 is likely to be the remains of the shoulder area of a tunic.

It was common practice, particularly in the early Roman Period, to weave a tunic in two rectangular pieces, then remove them from the loom and turn them 90 degrees (see below). The pieces were then stitched together to make a tunic with the selvages laying across the neck and shoulders and around the hem (De Jonghe and Verhecken-Lammens 1993, 42). This sleeveless, two-piece tunic was called a *chiton*. It required no cutting because it was woven to shape, and it was very wide; the sides of a *chiton* draped over the shoulders sometimes reaching as far down as the elbows. These wide tunics were normally worn with a belt; this was fastened under the bust of women and worn around the waist or hip by men (Pritchard 2006, 46).

Tunics were often decorated with *clavi*. These were woven as weft bands that were heavily beaten down so they covered the warp beneath making them highly visible. When the pieces were turned 90 degrees the *clavi* lay vertically, extending from either side of the neckline to the hem, on both the back and front of the tunic. *Clavi* were an important marker of Roman identity; only people

living under the jurisdiction of the Roman Empire wore tunics decorated with *clavi* (Handley 2000, 15–16). Even though tunics for everyday wear were often woven without *clavi*, each piece was still turned 90 degrees after being removed from the loom.

No *clavi* are evident on the small pieces that make up FE001731/02. However, they are finely woven and are dyed, indicating that the original tunic was a high-quality garment, most likely decorated with *clavi*.

In the late second century, tunics with wide sleeves (*dalmaticae*) appeared, while those with narrow sleeves (*sticharia*) materialised during the third century (Mossakowska-Gaubert 2006, 172).

Sleeves were frequently decorated with a pair of bands on the cuff. FE001731/14 comprises the remnants of a pair of sleeve bands (Fig. 5A, B). These are multi-bands, each sleeve band being made up of three narrow purple bands with two narrow white bands in between. The purple bands are dyed wool and the white bands are linen. The remains of the linen ground survive on the edges of the bands, indicating that the tunic was made from linen. It would have also been decorated with *clavi* comprising single multi-bands identical to those on the sleeves. Unfortunately, FE001731/14 is too small for the width of sleeve to be determined, but it can be dated from between the late second and fourth centuries, due to the warp-faced weave of the linen ground. Up until around the fourth century Egyptian weavers continued the traditional practice of weaving linen textiles in warp-faced tabby, unlike the Romans who wove their textiles,



**Figure 5.** A. Egyptian textile, c. 100–400 CE, maker unknown. FE001731/14: A textile fragment incorporating two purple multi-bands. (Image of the obverse at the top, image of the reverse at the bottom). Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035213, MA\_1.035214. B. The cuff of a narrow-sleeved tunic decorated with multi-banded sleeve bands resembling those of FE001731/14. Drawing by R. Livingstone.

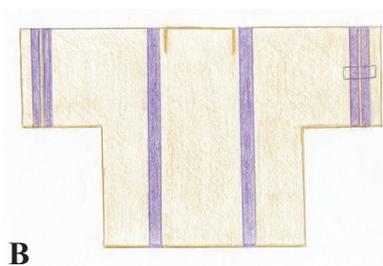
usually made from wool, in weft-faced tabby (De Jonghe and Verhecken-Lammens 1993, 35, 46).

Weaving clavi into the Roman-style, weft-faced tabby textiles only required the weaver to beat down the weft more forcefully. Whereas it was impossible to beat down the weft on a textile woven in the traditional Egyptian way; these were warp-faced linen textiles where the warp ends lay close together. During those early centuries Egyptian weavers used various techniques to weave the densely weft-faced clavi into their warp-faced linen

tunics. One technique used was to group warp ends within the bands and, if necessary, to eliminate some to float on the reverse (De Jonghe and Verhecken-Lammens 1993, 36). In FE001731/14, each multi-band has warp ends grouped in a ...4:1:4:1... sequence with groups of 3 warp ends floating on the reverse. (The white bands in each sleeve band differ in width; this may be due to the weaver making an error).

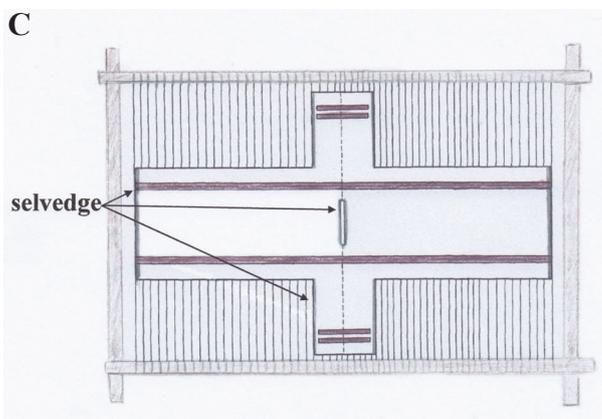
The remains of another pair of sleeve bands are very different (Fig. 6A, B). FE001731/11 consists of two

A



B

C



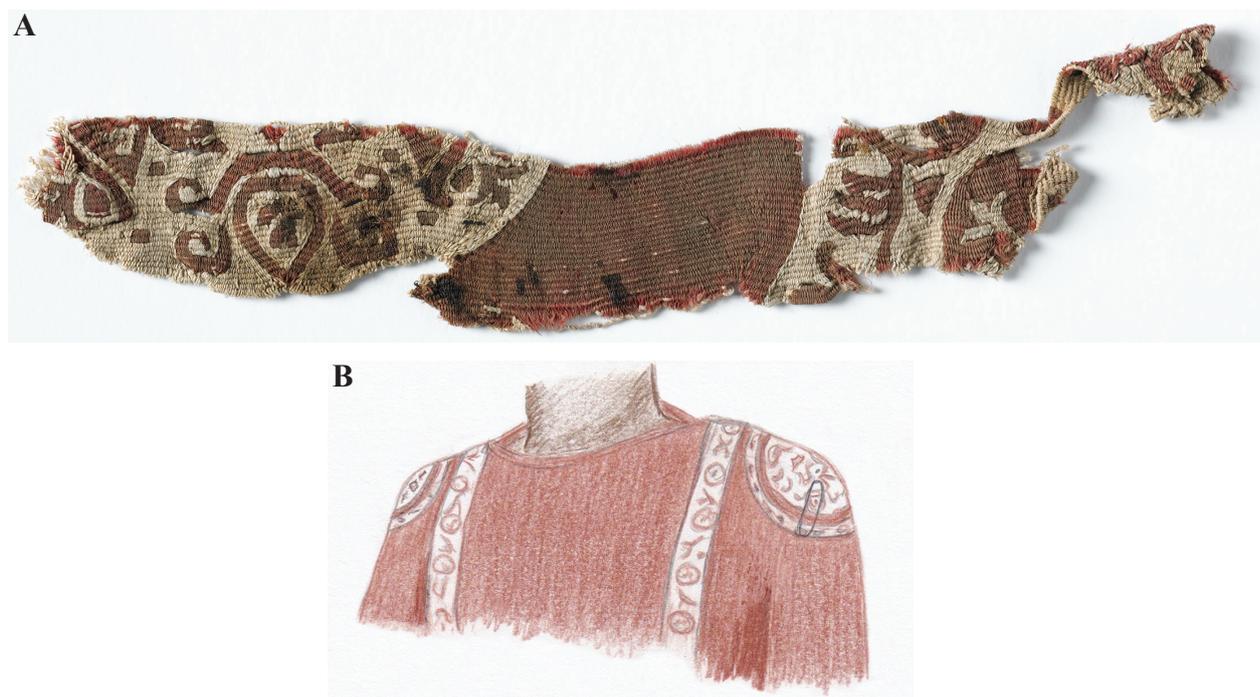
**Figure 6.** A. Egyptian textile, c. 300–600 CE, maker unknown. FE001731/11: A textile fragment incorporating two wide, blue bands. Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.084569. B. Wide sleeve bands on a wide-sleeved tunic; the rectangle shows the general area where FE1731/11 may derive from. Drawing by R. Livingstone. C. A one-piece tunic on a wide loom. Adapted from Carroll (1988, 38 fig. A) by R. Livingstone.

72 mm-wide sleeve bands made from dark blue wool, which originally adorned a linen tunic. The linen ground is weft-faced, an indication that this fragment is not as old as FE001731/14; it almost certainly dates to at least the fourth century when the Egyptians began to weave linen in weft-faced or balanced tabby. On fragment FE001731/11 the sleeve bands are more densely weft-faced than the linen ground to make them visible; with the woollen weft yarn being finer than the linen warp yarn this allowed it to be beaten down very easily. Wide-sleeved dalmaticae were often decorated with very wide sleeve bands and clavi during the fourth and fifth centuries (Cortopassi 2008, 152). This, together with the weft-faced weave, suggest that FE001731/11 derives from a *dalmatica* from this period.

By the fourth century, tunics were often woven in one piece sideways on a very wide loom (Fig. 2). Tunics with sleeves were woven beginning at the cuff of one sleeve, with a gap made in the weaving for the neck opening, and ending after completing the other sleeve (Fig. 6C). FE001731/11 was possibly professionally manufactured in a workshop due to the large loom required to weave it.

Dress changed over time. For example, by the fourth century clavi did not always extend to the hem. Short clavi only extended to above the waist, finishing with a decorative end (terminal). Clavi were frequently patterned, often worked in tapestry weave, which at this time was normally monochrome (purple on an undyed ground) tapestry. Other ornamentation was often added to tunics from the fourth century, including large tapestry-woven round (*orbiculi*) or rectangular (*tabulae*) ornaments located on the shoulders with smaller ones on each side of the tunic near the hem (Pritchard 2006, 50–52).

FE001731/10 is a fragment of monochrome tapestry that was probably part of a garment ornament (Fig. 7A, B). This fragment is dated to around the sixth century CE based on the presence of a 2 ply ( $S_2Z$ ) linen warp, a technique not commonly used before that time (De Jonghe and Verhecken-Lammens 1993, 38). The fragment is tiny and identification is difficult. Given the pattern and extreme fineness of the weave, the most likely origin of the fragment is a large *orbiculus* from the shoulder of a high-quality tunic.



**Figure 7. A.** Egyptian textile, c. 500–600 CE, maker unknown. FE001731/10: A textile fragment woven in monochrome tapestry; the pattern is identical on both faces. Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.084568. **B.** An example of a tunic with tapestry-woven orbiculi on the shoulders: the rectangle shows the general area where FE001731/10 may derive from. Drawing by R. Livingstone.

Some of the fragments derive from dress accessories. FE001731/01 was originally part of a sock (Fig. 8A, B). It is made from dyed wool and worked in *nalbinding*, the technique used for making socks in the Roman Period. *Nalbinding* is an ancient technique that is made using a single needle with a large eye. FE001731/01 is worked in a basic *nalbinding* stitch, which resembles knitting worked in stocking stitch, commonly known as Coptic or Tarim stitch (Köstner 2019, 174). The original sock would have had a rolled top, and possibly a split down the front secured with ties; it may also have had a division between the big toe and the other toes so it could be worn with a sandal (Köstner 2017, 177, 180). Children's socks were usually multi-coloured and adult's socks plain (Köstner 2017, 182). FE001731/01 is plain, suggesting it was originally part of an adult's sock. Surviving *nalbinding* socks have been radiocarbon dated to the third and fourth centuries (Köstner 2017, 188), the likely date of the sock this fragment derives from.

FE001731/05 may have been part of a woman's cap from the early–middle centuries CE. It is a fragment comprising alternating bands worked in purple-dyed wool and undyed linen (Fig. 9A, B). Each purple band has groups of ...4:1:4:1... warp ends and three warp ends floating on the reverse. The purple bands are not connected to the linen bands; they are discrete, unlike FE001731/14 where the grouping occurs across the entire multi-band. Discrete coloured bands are seen on caps and turbans from the third to sixth centuries, however, all other known headwear from Antinoopolis made using this technique have red, not purple, bands (Beugnot 2011; Fluck and Froschauer 2011). At present, this fragment remains tentatively identified as

a fragment of headwear, but it may derive from a different item of dress or even a soft furnishing.

Fragment FE001731/15 can be positively identified as the semi-circular front part of a child's cap (Fig. 10A–C). On the original cap a plain semi-circular piece would have formed the back, and a long, narrow strip of fabric would have formed the top and sides. The ends of the strip would have extended beyond the bottom of the front and back and been fashioned into small semi-circular flaps that covered the ears. A number of similar, small caps have been recovered from Antinoopolis dating to around the fifth and sixth centuries (Linscheid 2011, 299–301), suggesting they were commonly worn by children there at that time.

The semi-circular shape of FE001731/15 is created by three pieces of linen stitched together. The centre front is decorated with three small pieces of pink and white patterned silk fabric. It is characteristic of Roman-style silk *samite* weaving (compound twill) with a Z-spun warp and unspun wefts. The silk would have come from China as unspun thread, and later spun and woven in the eastern Roman Empire, the fabric possibly being woven in Antinoopolis. The use of two colours in the pattern is typical of the fifth and sixth centuries in the eastern Empire (Wild 2003, 142, 149).

The edges, of both the silk fabric and the entire fragment, are bound with strips of linen and cotton fabric. The binding around the curved outer edge is S-spun linen, and that along the straight lower edge and either side of the silk is made from cotton, which is Z-spun in one system and S-spun in the other. Although cotton was cultivated and used in textile manufacture in the Western Desert of Egypt, it was S-spun. The combination of S and Z spun cotton yarn is rarely seen,



**Figure 8. A.** Egyptian textile, c. 300–400 CE, maker unknown. FE001731/01: A textile fragment worked in nalbinding technique. (Image of the obverse is on the left, image of the reverse is on the right). Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.035170, MA\_1.035171. **B.** A sock worked in nalbinding; the rectangle shows the general area where FE001731/01 may derive from. Drawing by R. Livingstone.



**Figure 9. A.** Egyptian textile, c. 200–600 CE, maker unknown. FE001731/05: A textile fragment incorporating five narrow, purple bands. (Image of the obverse at the top, image of the reverse at the bottom). Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035188, MA\_1.035189. **B.** Example of a woman’s cap decorated with purple bands. Adapted from Beugnot (2011, 34 fig. 11) by R. Livingstone.

although some examples have been found on the site of the port town of Berenike, suggesting that this cotton fabric may have been imported, probably from India (Wild and Wild 2020, 32). The cap, although almost certainly made in Antinoopolis, includes elements that originated from beyond the province and the Roman Empire.

FE001730 is an almost-complete sprang hairnet (Fig. 11). Evidence from burials and radiocarbon dating of a number of hairnets indicates that they were commonly worn by females between the fourth and seventh centuries (Pritchard 2006, 129, 135; Linscheid 2011, 38, 259, 267–268; De Moor et al. 2014, 105). Sprang is a technique that only requires a warp attached to a frame; the warp is manipulated, by interlinking and/or other techniques, to create the fabric.

Sprang is worked from the top and, as the work progresses, a mirror image is created at the bottom. Where the top and bottom meet in the centre they are secured to prevent the sprang from unravelling (Linscheid 2011, 64). The most common method of securement is to chain the threads together, however a common method seen on hairnets from Antinoopolis was to leave unworked threads in the centre of the sprang, fold them over, twist them tightly together, and secure them with stitching to form a tassel (Pritchard 2006, 129, 132; Linscheid 2011, 59, 236). After removal from the sprang frame, the net would be folded in half crosswise so that the tassel became the top of the hairnet, and the sides of the net would be stitched together. FE001730 has a tassel and would have been made using this method. Around the



**Figure 10.** A. Egyptian textile, c. 400–600 CE, maker unknown. FE001731/15: A semi-circular textile fragment with a central decoration comprising fragments of another textile. (Image of the obverse at the top, image of the reverse at the bottom). Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035216, MA\_1.035215. B. The parts of the cap that FE001731/15 probably derives from. Drawing by R. Livingstone. C. The probable appearance of the cap when worn. Drawing by R. Livingstone.

bottom of edge are the remnants of a drawstring that would have been used to secure the hairnet on to the head (Fig. 11). The interlinking sprang technique used to make this hairnet produced an openwork mesh.

It is possible that a fragment of woollen netting, FE001729, was also originally part of a hairnet. Netting is not as elastic as sprang and therefore not as suitable for hairnets, but a few netting hairnets are known (Linscheid 2011, 81–83). FE001729 is a fragment of netting worked in tan, brown and green-dyed 2-ply wool yarns (Fig. 12). The netting knots are reversed on every second row indicating that the textile was turned around at the end of each row as it was worked. After completion the netting was folded in half cross-wise and stitched along each side to form a rectangular bag-like textile. The fragment is too small to be identified with certainty; the original textile may have been a hairnet, but equally could have been a bag (Linscheid 2021, pers. comm.). If FE001729 does derive from a hairnet it was probably a snood, a bag-like hairnet that holds hair that has been gathered at the back of the head and neck, a hairstyle popular in the early fourth century (Croom 2000, 149, fig. 48). A mosaic dating to this period, in the Bardo National Museum in Tunis, depicts a woman wearing a Roman-style tunic and a snood (Linscheid 2011, 77, fig. 27).

The collection contains three fragments of dress that date to around the time of the Persian and Arab conquests of the province in the early and mid-seventh century (Pritchard 2006, 81). These conquests brought further changes to dress. These included a change from monochrome patterns on dress to the use of more colourful patterns. Moreover, whereas the earlier patterns were woven into the fabric, it became more common to apply separately-woven decorations to garments. Another major change that occurred after the Arab conquest was the gradual replacement of woven-to-shape clothing by cut-to-shape (tailored) garments (Pritchard 2006, 83).

The collection includes three fragments of long tapes that would have been woven separately and then applied to garments. The design of FE001731/06 suggests a Persian Sasanian influence; it dates to about the seventh or eighth centuries (Fig. 13). It consists of two colourful, patterned stripes, one of which is a row of flowers with four-petals and the other, an undulating line on a plain background. No selvages have survived so the original width of the tape is unknown. It is warp-faced. The warp ends are made from 2-ply dyed wool and undyed linen; all are  $S_2Z$  except for the black warp which is  $Z_2Z$ ; this may have been imported into the province. The complex pattern of the tape strongly



**Figure 11.** Egyptian textile, c. 400–700 CE, maker unknown. FE001730: A woman's cap worked in sprang technique. Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.035184.



**Figure 12.** Egyptian textile, c. 300–400 CE, maker unknown. FE001729: A fragment of netted textile, folded crosswise, and stitched along one side. Te Papa image MA\_1.035182.

suggests a Sasanian influence, although it was probably woven in Antinoopolis. The weave is complex, possibly an example of tablet weaving (Linscheid 2021, pers. comm.).

Another type of tape, commonly applied to the neckline, cuffs and hem of tunics from around the seventh century, was woven in a brocade technique known as *lancé*. This technique uses supplementary weft yarns to produce the pattern; these extend across the width of the tape and when not in use they float on the reverse. Like FE001731/06 (Fig. 13), both examples of *lancé* tape are warp faced; the warp is made from 2-ply ( $S_2Z$ ) dyed wool, the ground wefts are S-spun dyed wool, and the supplementary wefts comprise thick S-spun linen yarn.

FE001731/07 is one of the fragments of *lancé* tape in the collection (Fig. 14A–C). The centre is red with

dark blue borders. It is decorated with a lozenge design and discrete rosettes. No selvages survive, but the blue borders suggest the original width was not much greater than the existing fragment. The loss of the selvages may have occurred when the tape was cut from the tunic. The original tape may have adorned the sleeves of a tunic dating to about the seventh century. Such tunics were sometimes a mix of woven-to-shape and tailored garments, the latter often seen as a cut neckline (Fig. 14B). These tunics had a wide body and extremely narrow sleeves. The tunic body would have draped over the shoulders and hung down over the top of the sleeves (Pritchard 2006, 87). When worn with a belt the sleeves of these tunics would have been similar in appearance to nineteenth century gigot sleeves on European dresses (Fig. 14C).



**Figure 13.** Egyptian textile, c. 600–700 CE, maker unknown. FE001731/06: A fragment of warp-faced, polychrome tape that was possibly tablet-woven. (Image of the obverse at the top, image of the reverse at the bottom). Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035190, MA\_1.035191.



**Figure 14.** A. Egyptian textile, c. 600–800 CE, maker unknown. FE001731/07: A fragment of red, blue and beige tape worked in lancé technique. (Image of the obverse is on the left, image of the reverse is on the right.) Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035192, MA\_1.035193. B. An example of tape adorning a rectangular tunic with a cut neck opening. Drawing by R. Livingstone. C. Probable appearance of tunic 14b when worn. Drawing by R. Livingstone.

The other example of lancé, FE001731/09, is decorated with two roundels and an eight-pointed star (Fig. 15A). It may date to later than FE001731/07; a similar fragment in a Belgian collection has been dated

to between the seventh to ninth centuries (De Moor 1993, 241). If FE001731/09 does originate from this time, it may have been applied to a tailored tunic (Fig. 15B).



**Figure 15. A.** Egyptian textile, c. 600–900 CE, maker unknown. FE001731/09: A fragment of tape worked in brown and beige lancé technique. (Image of the obverse is on the left, image of the reverse is on the right.) Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035173, MA\_1.035174. **B.** A tailored tunic with gussets, shaped sleeves and a cut neck opening. Drawing by R. Livingstone.

## Soft furnishings

Four of the fragments have been identified as deriving from soft furnishings with another tentatively identified as such. They can often be distinguished from dress fragments by their design and method of manufacture, but they are difficult to date because similar styles were made and used over several centuries. As mentioned above, Antinoopolis was renowned for its manufacture of quality bedding textiles, and the four fragments with a definite identification are items of bedding. These would have been produced in workshops in the city.

Fragment FE001731/03 has a dark green ground decorated with brown and beige bands of differing widths (Fig. 16). This multi-band pattern is often seen on bedding textiles, especially blankets; FE001731/03 is almost certainly the remains of a blanket. It may date to around the seventh century. A large blanket fragment, with a similar pattern, from Dayr Abu-Matta in Dakhleh Oasis dates to between the fifth and seventh centuries, and another from Krokodilopolis in the Fayum, has been radiocarbon-dated to the seventh century (Fluck and Mälck 2007, 158–159, fig. 13).

FE001731/12, decorated with alternating orange and turquoise-coloured bands, was possibly originally part of a pillowcase (Fig. 17). Several complete Roman Period pillowcases have survived, and some are similarly decorated with narrow coloured bands; these are believed to have been home-made and date from the fifth to early sixth centuries (Paetz gen. Schieck 2009, 120–121, 130).

FE001731/12 is made from S-spun dyed wool and woven in half-basket weave. The original textile was recycled in antiquity; the fragment is folded in half and joined on the other three sides to form a small completely closed-in textile. Its function in this recycled form is unknown.

Two other fragments are remnants of coverlets, used to cover a bed or couch. They were made using two very different techniques.

FE001731/04 is made from reddish-purple dyed wool woven in half basket weave with a plied warp. It has a thick, S-spun, supplementary weft incorporated into the back, which produces ridges on the front of the fabric (Fig. 18). According to Emery (1994, 145) a



**Figure 16.** Egyptian textile, c. 500–700 CE, maker unknown. FE001731/03: A textile fragment incorporating multi-bands woven in brown and beige on a green ground. Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.035185.



**Figure 17.** Egyptian textile, c. 400–700 CE, maker unknown. FE001731/12: A textile fragment woven with alternating orange and turquoise-coloured bands, folded in half crosswise and stitched on the other three sides. Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.035210.

thick supplementary weft would have both strengthened and added weight to a textile. FE001731/04 is similar to another fragment, believed to be from a coverlet, also recovered from the 1913–14 excavation, which is now in a collection in the United Kingdom (Pritchard 2013, 37, fig. 2). Given it has a plied warp FE001731/04 may date from the sixth century CE or later.

FE001731/13 is an example of weft-faced, compound tabby weave, commonly known as *taqueté* (Fig. 19). Large pieces of *taqueté* have survived on other contemporary sites and this has enabled many of them to be identified as coverlets (Pritchard 2014, 53–54). FE001731/13 is woven from S-spun undyed and dyed wool. It is decorated with red, beige and green bands along one edge, but most of the fragment comprises a register of green and beige geometric designs that give the illusion of octagons. *Taqueté* is characterised by having two warp systems, one a binding warp for the tabby weave, and the other for making the pattern. Recent research indicates that coverlets with geometric designs are common and were cheaper versions



**Figure 18.** Egyptian textile, 100–800 CE, maker unknown. FE001731/04: A textile fragment with a thick, supplementary weft on the reverse. (Image of the obverse is on the left, image of the reverse is on the right). Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035186, MA\_1.035187.



**Figure 19.** Egyptian textile, c. 400–600 CE, maker unknown. FE001731/13: A textile fragment woven in *taqueté* weave, with green and beige designs that appear in the opposite colour on the other face. (Image of the obverse is on the left, image of the reverse is on the right). Gift of the Egypt Exploration Fund, 1914. Te Papa images MA\_1.035211, MA\_1.035212.



**Figure 20.** Egyptian textile, c. 500–800 CE, maker unknown. FE001731/08: A textile fragment comprising a band of polychrome tapestry; the pattern is identical on both faces. Gift of the Egypt Exploration Fund, 1914. Te Papa image MA\_1.035195.

of the more elaborate taquetés that survive. These common taqueté textiles were in use between the third and seventh centuries (Pritchard 2014, 54), but apparently not used by the more affluent residents of Antinoopolis.

FE001731/08 is a tiny fragment decorated with a central band worked in polychrome tapestry (Fig. 20). It is tentatively identified as a soft furnishing because the band includes an image that may depict a stylised Late Roman lamp on a stand, an object sometimes represented on soft furnishings (De Moor 2008, 50–51, figs 55, 57, 59). Nevertheless, the fragment is so small it cannot be identified as a soft furnishing with certainty. It is possible, although less likely, that it is a tunic fragment incorporating part of a clavus. If it is a soft furnishing, it may come from the border of a tapestry wall hanging. The fragment has been tentatively dated to the sixth or seventh centuries, based on the presence of the 2-ply warp.

## Summary and conclusions

The 17 textile fragments in the Te Papa collection are small, but as stated in the annotation to the list sent with the acquisition, they are of great interest. They represent some of the textiles made and used in Antinoopolis during much of the first millennium CE. These textiles include items of clothing, such as sleeved and sleeveless tunics, footwear and headwear. The collection also contains fragments of soft furnishings such as blankets, pillows and coverlets, and possibly a wall hanging. The fragments range in date from around the time of the establishment of Antinoopolis in the second century to about the ninth century CE, a period covering most of the Roman and early Arabic periods.

Antinoopolis was a major centre of textile manufacture and it is likely that many of the textiles were made there. However, due to the lack of agricultural land in

the vicinity of the city, raw products were brought into the city from other regions of Egypt and beyond. The four main fibres used in textile manufacture at the time, linen, wool, cotton and silk, are all represented in the Te Papa textiles. Sheep were bred and linen flax cultivated throughout Egypt and linen fibre and wool fleece could have been obtained from within the province. In addition, cotton was cultivated in the Western Oases of Egypt, although the unusual S/Z cotton fabric used for the child's cap (FE001731/15) may have been imported from India. The silk thread used to weave the samite fragments sewn on to this cap would have travelled along the Silk Road from China before being spun and woven within the eastern Roman Empire. Several textile techniques used in Egypt are also represented in the Te Papa collection: tabby weave, half-basket weaves, tapestry, lancé, taqueté and samite weaves, as well as the off-loom techniques of netting, nalbinding and sprang. Although not all the dyestuffs and textile weaves and technology used in Egypt during this period are represented in this collection, the vast majority are represented in the entire assemblage of textiles from the 1913–14 excavations.

Together with the objects, texts, art and architecture, recovered from excavations in Antinoopolis, the textiles form a large body of evidence giving an insight into life in Antinoopolis during the Roman and early Arab Periods. Despite being a small collection, the textiles and other objects acquired by Te Papa add to this body of evidence.

The textile collection has been used in the past for educational purposes (secondary and tertiary textile students) and this will undoubtedly continue. Future research could involve a study of the textile collection in conjunction with the collections held in the two Australian museums. Together they form a representative sample of the textile collections held in the United Kingdom, providing the southern hemisphere with an important source of research material.

## Catalogue

### FE001729 Netting fragment (hairnet or bag)

<b>Date</b>	Possibly 4 <sup>th</sup> century CE
<b>Dimensions</b>	112 × 75 mm (folded)
<b>Fibre and spin</b>	2 ply (S <sub>2</sub> Z) dyed wool
<b>Technique</b>	Netting (turned at end of rows)
<b>Mesh size</b>	5 mm

### FE001730 Woman's cap

<b>Date</b>	Probably 5 <sup>th</sup> to 7 <sup>th</sup> centuries CE
<b>Dimensions</b>	250 mm in length
<b>Fibre and spin</b>	2 ply (S <sub>2</sub> Z) linen, 2 ply (S <sub>2</sub> Z) dyed wool
<b>Technique</b>	Interlinking sprang
<b>Density</b>	Open

### FE001731/01 Sock fragment

<b>Date</b>	Probably 4 <sup>th</sup> century CE
<b>Dimensions</b>	81 × 76 mm (width × height)
<b>Fibre and spin</b>	4 ply (S <sub>4</sub> Z) S-spun dyed wool
<b>Technique</b>	Simple S-cross nalbinding
<b>Density</b>	4 rows and 3 stitches per cm

### FE001731/02 Tunic fragment

<b>Date</b>	Probably 2 <sup>nd</sup> to 6 <sup>th</sup> centuries CE
<b>Dimensions</b>	Circa 92 × 70 mm (warp × weft)
<b>Fibre and spin</b>	S-spun dyed wool
<b>Weave</b>	Weft-faced tabby
<b>Thread count</b>	8.5 × 36 per cm (warp × weft)
<b>Selvedges</b>	3 bundles of warp ends (3, 3, 3)

### FE001731/03 Blanket fragment

<b>Date</b>	Possibly circa 7 <sup>th</sup> century CE
<b>Dimensions</b>	110 × 70 mm (warp × weft)
<b>Fibre and spin</b>	S-spun dyed wool
<b>Weave</b>	Weft-faced tabby
<b>Thread count</b>	10 × c.30 per cm (warp × weft)

### FE001731/04 Coverlet fragment

<b>Date</b>	Possibly 6 <sup>th</sup> to 8 <sup>th</sup> centuries CE
<b>Dimensions</b>	80 × 85 mm (warp × weft)
<b>Fibre and spin</b>	2-ply (S <sub>2</sub> Z) dyed wool warp, S-spun dyed wool weft
<b>Weave</b>	Half basket weave with thick supplementary weft on reverse
<b>Thread count</b>	Ground is 5 × 8 pairs per cm (warp × weft)

### FE001731/05 Fragment with purple bands

<b>Date</b>	Possibly 3 <sup>rd</sup> to 6 <sup>th</sup> centuries CE
<b>Dimensions</b>	32 × 120 mm (warp × weft)
<b>Fibre and spin</b>	S-spun linen, S-spun dyed wool
<b>Weave</b>	Linen ground is balanced tabby, purple bands are weft-faced tabby
<b>Thread count</b>	Ground 20 × 20 per cm; Bands 2.5 groups × c.30 per cm (warp × weft)

### FE001731/06 Polychrome textile fragment

<b>Date</b>	Probably circa 7 <sup>th</sup> century CE
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<b>Dimensions</b>	90 × 22 mm (warp × weft)
<b>Fibre and spin</b>	Warps comprise 2 ply (S <sub>2</sub> Z) linen and 2-ply (Z <sub>2</sub> Z) dyed wool, weft is S-spun linen
<b>Weave</b>	Unknown, but is warp-faced and appears to have transposed warps in places.
<b>Thread count</b>	c.8 × c.8 per cm (warp × weft) (appears warp-faced: plied warp ends c.0.9 mm and weft 0.6 mm in diameter)

### FE001731/07 Lancé tape fragment

<b>Date</b>	Probably 6 <sup>th</sup> to 8 <sup>th</sup> centuries CE
<b>Dimensions</b>	60 × 72 mm (warp × weft)
<b>Fibre and spin</b>	Warp 2-ply (S <sub>2</sub> Z) dyed wool, weft S-spun dyed wool, supplementary weft S-spun linen
<b>Weave</b>	Tabby with supplementary pattern wefts extending selvedge to selvedge (lancé)
<b>Thread count</b>	Ground 6 × 12 per cm (warp × weft)

### FE001731/08 Polychrome tapestry fragment

<b>Date</b>	Probably 6 <sup>th</sup> to 8 <sup>th</sup> centuries CE
<b>Dimensions</b>	60 × 72 mm (warp × weft)
<b>Fibre and spin</b>	Warp 2-ply (S <sub>2</sub> Z) linen, wefts S-spun linen and S-spun dyed wool
<b>Weave</b>	Weft faced tabby and slit tapestry weave
<b>Thread count</b>	9 × 20 per cm (warp × weft)

### FE001731/09 Lancé tape fragment

<b>Date</b>	Probably 7 <sup>th</sup> to 9 <sup>th</sup> century CE
<b>Dimensions</b>	90 × 67 mm (warp × weft)
<b>Fibre and spin</b>	Warp 2 ply (S <sub>2</sub> Z) dyed wool, weft S-spun dyed wool, supplementary weft S-spun linen
<b>Weave</b>	Tabby with supplementary pattern wefts extending selvedge to selvedge (lancé)
<b>Thread count</b>	Ground 10 × 12 per cm (warp × weft)

### FE001731/10 Monochrome tapestry fragment

<b>Date</b>	Possibly 6 <sup>th</sup> century CE
<b>Dimensions</b>	125 × 18 mm (warp × weft)
<b>Fibre and spin</b>	Warp 2-ply (S <sub>2</sub> Z) linen, wefts S-spun linen and Z-spun dyed wool
<b>Weave</b>	Slit and eccentric tapestry
<b>Thread count</b>	16 × >50 per cm (warp × weft)

### FE001731/11 Wide sleeve bands

<b>Date</b>	4 <sup>th</sup> to 5 <sup>th</sup> centuries CE
<b>Dimensions</b>	246 × 62 mm (warp × weft)
<b>Fibre and spin</b>	Warp S-spun linen, wefts S-spun linen and S-spun dyed wool
<b>Weave</b>	Weft-faced tabby
<b>Thread count</b>	Ground 13 × 32 per cm, bands 13 × 56 per cm (warp × weft)

### FE001731/12 Textile with narrow orange and blue bands

<b>Date</b>	Possibly 5 <sup>th</sup> to 6 <sup>th</sup> centuries CE
<b>Dimensions</b>	102 × 131 mm (folded, warp × weft)
<b>Fibre and spin</b>	S-spun dyed wool

**Weave** Weft-faced, half basket weave (paired warps)  
**Thread count** 7 pairs × 11 per cm (warp × weft)

#### FE001731/13 Fragment of taqueté coverlet

**Date** 3<sup>rd</sup> to 7<sup>th</sup> centuries CE  
**Dimensions** 90 × 160 mm (warp × weft)  
**Fibre and spin** S-spun dyed wool  
**Weave** Weft-faced compound tabby (taqueté)  
**Thread count** 10 (both warps) × 18 per cm (warp × weft)

#### FE001731/14 Multi-banded sleeve bands

**Date** probably 2<sup>nd</sup> to 4<sup>th</sup> centuries CE  
**Dimensions** 44 × 108 mm (warp × weft)  
**Fibre and spin** Ground warp and weft are S-spun linen, band is Z-spun dyed wool  
**Weave** Ground is warp-faced tabby, bands are weft-faced tabby (grouped and eliminated warp ends)  
**Thread count** Ground 30 × 12 per cm, bands c.3.5 groups × c.25 per cm. (warp × weft)

#### FE001731/15 Front of child's cap

**Date** 5<sup>th</sup> to 6<sup>th</sup> centuries CE  
**Dimensions** 170 × 95 mm (width × height)  
**Fibre and spin** S-spun linen, S-spun and Z-spun cotton, Z-spun silk, unspun dyed and undyed silk  
**Weave** Ground and bindings are tabby, silk fragments are 2/1 weft-faced compound twill (samite).  
**Thread count** Linen ground 20 × 14 per cm, Samite 20 × 30 per cm, cotton bindings 12 × 20 and 12 × 32, linen binding 12 × 36 per cm (assumed warp × weft if fabric is weft-faced)  
**Sewing** Sewing thread is 2 ply (S<sub>2</sub>Z). Run and fell seams are used to join the ground pieces.

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