STUDIES OF ANCIENT EGYPTIAN FOOTWEAR. TECHNOLOGICAL ASPECTS. PART IV. PLAIN PLAITED SANDALS FROM QASR IBRIM

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1. *Introduction*

Ancient Egyptian basketry, basketry-manufacturing techniques and cordage have become the subject of increased interest over the last 20 years, one of the most important works being about the basketry and cordage finds from New Kingdom Deir el Medinah (Gourlay, 1981a, b). Especially, the last two decades have seen a boom in publications (for example Wendrich, 1989, 1999 and several chapters in the Berenike reports; Sidebotham & Wendrich, 1995-2000), although most of these deal with non-Pharaonic material.

It is remarkable, however, that within the basketry and cordage, little attention has been given to footwear. On the contrary, Wendrich (1999: 241), who published some of the basketry from Qasr Ibrim, the famous but threatened site in Lake Nasser, mentions the find of eight pieces of fibre footwear from Qasr Ibrim and only gives a short, rather general description of the pieces (see also Wendrich, 1996: 63). However, the total number of plain plaited sandals exceeds 150 and a total number of 36 fibre shoes (Veldmeijer, In press a) and 16 cordage sandals (Veldmeijer, 2006/2007) have been registered.

The study of the footwear is part of the Ancient Egyptian Footwear Project, which is a multidisciplinary, ongoing research project; the present paper, therefore, focuses on the technological aspects and other footwear-related subjects (among which are socio-economic aspects) will be dealt with only in passing, to be discussed in detail at a later stage. In describing footwear, terminology used here follows Goubitz *et al.* (2001). Terminology for knots follows Veldmeijer (2006; see also Ashley, 1993); for cordage terminology reader is referred to Veldmeijer (2005), but see also Wendrich (1991). For explanation of the surfaces and sides of the foot and footwear (such as dorsal, ventral etc.), see Part III of the studies on footwear, elsewhere in this JEOL volume. The preliminary classification is based on Montembault (2000: Category, Type, Variant). Goubitz *et al.* (2001), however, uses recognisability rather than a classification on the basis of technological features only. With sandals, this often goes hand in hand, but the importance of recognisability differs with the categories. In plain plaited sandals, however, recognisability plays an important role in the designation of the types. A combination of Montembault's and Goubitz' systems are used.

The present work is based on the specimens that have been studied by the author (housed in London[1] and Aswan). Some of these plaited sandals were distributed to Cairo (Egyptian Museum) or re-buried on site; these have not been included in the present analysis.

[1] When studied, the objects were stored in Cambridge, hence the prefix 'cam-' with the specialist numbers. In 2008, however, all leather finds as well as all footwear was moved to the British Museum.

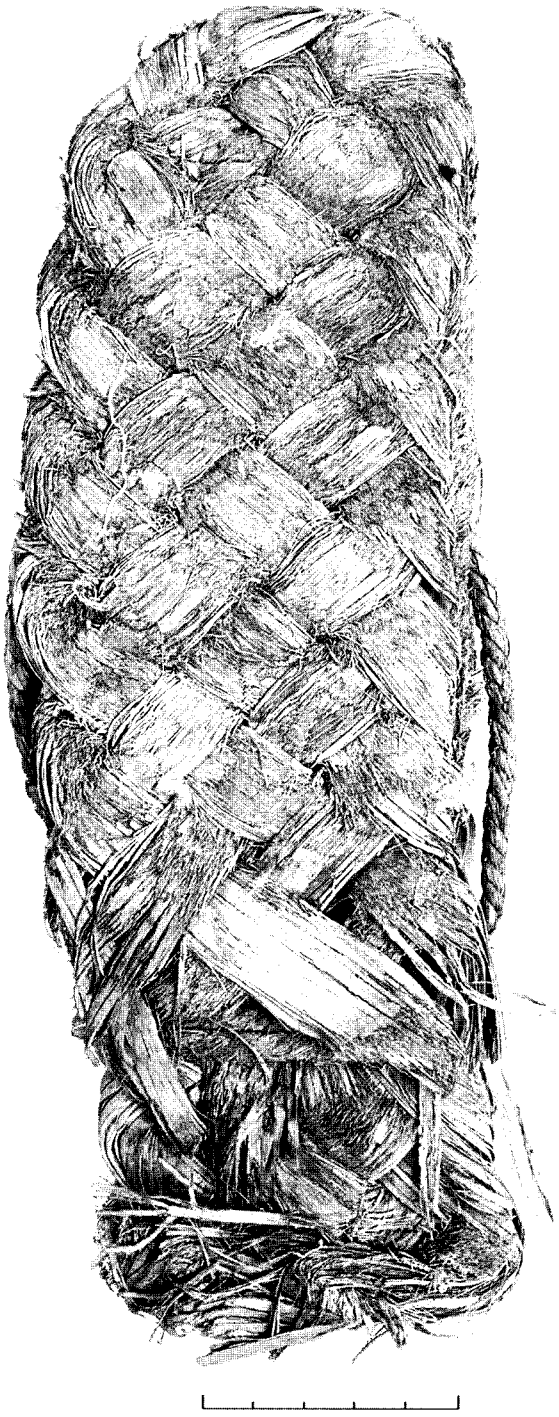


Fig. 9. Example of the wear pattern. The heel of the treadsole is entirely worn, showing that the back strap is sandwiched between the in- and treadsole. Scale bar in cm. Photography by E. Endenburg. Courtesy of the Egypt Exploration Society.

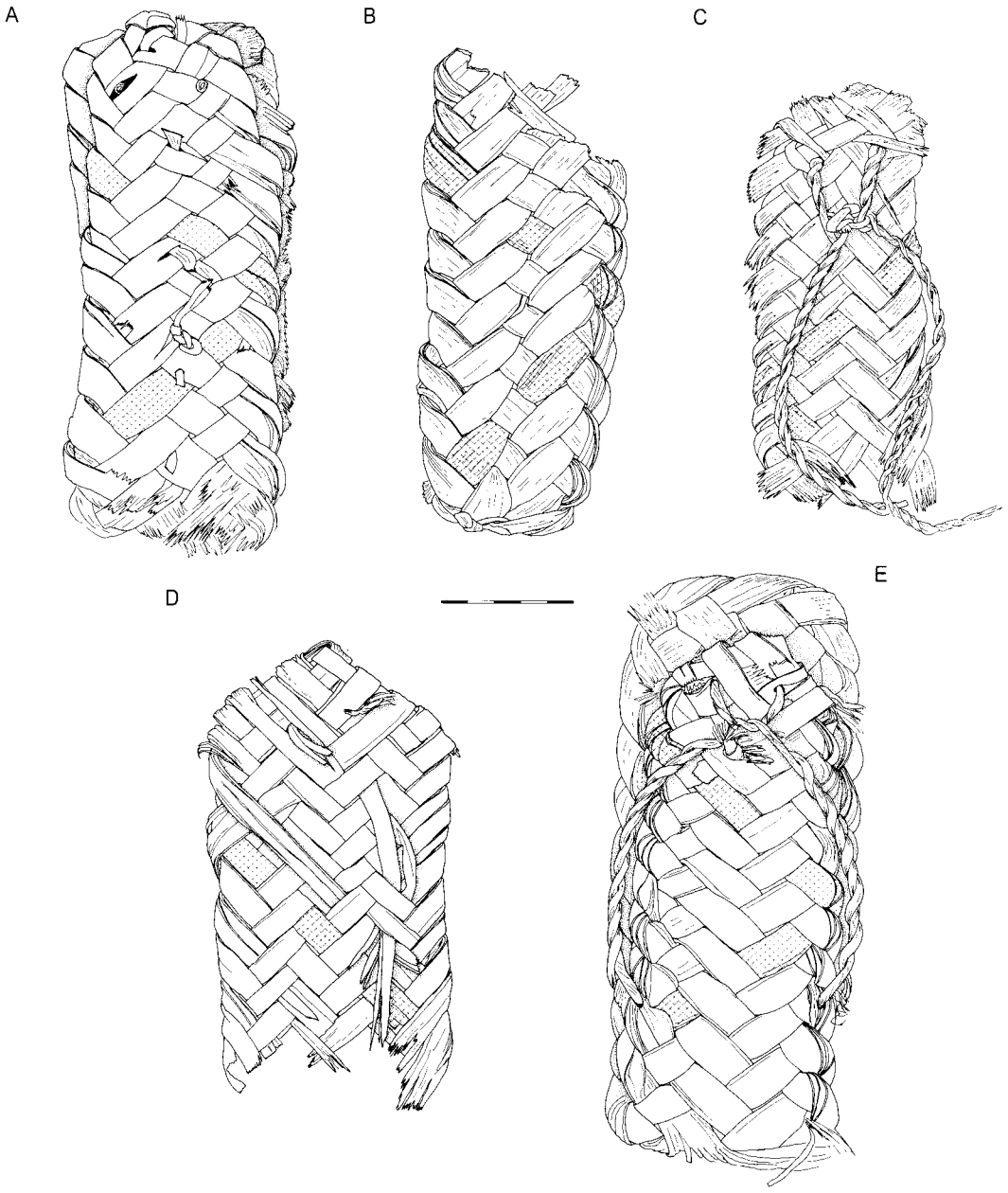


Fig. 8. Examples of non-'over 1/under 1' techniques. All sandals are shown in dorsal view. A) Cam-0088 in 'over 1/under 2/over 1/under 1/over 1/under 1/over 1/under 1/over 2/under 1/shift 1' technique; B) Cam-0049 in 'over 1/under 2/over 1/under 2/over 1/under 1/over 2/under 1/over 2/under 1/shift 1' technique; C) Cam-0050 in 'over 2/under 2/over2/under 1over 1/under 1/over 1/under 2/over 2/under 2/shift 1' technique; D) Asw-5001 in 'over 2/under 2/over 2/under 2/shift 1' technique. However, the fabric is irregular; E) Asw-5006 in 'over 1/under 1/over 2/under 2/over 1/under 1/over 1/under 1/shift 1' technique. Scale bar in cm. Drawings by A.J. Veldmeijer.

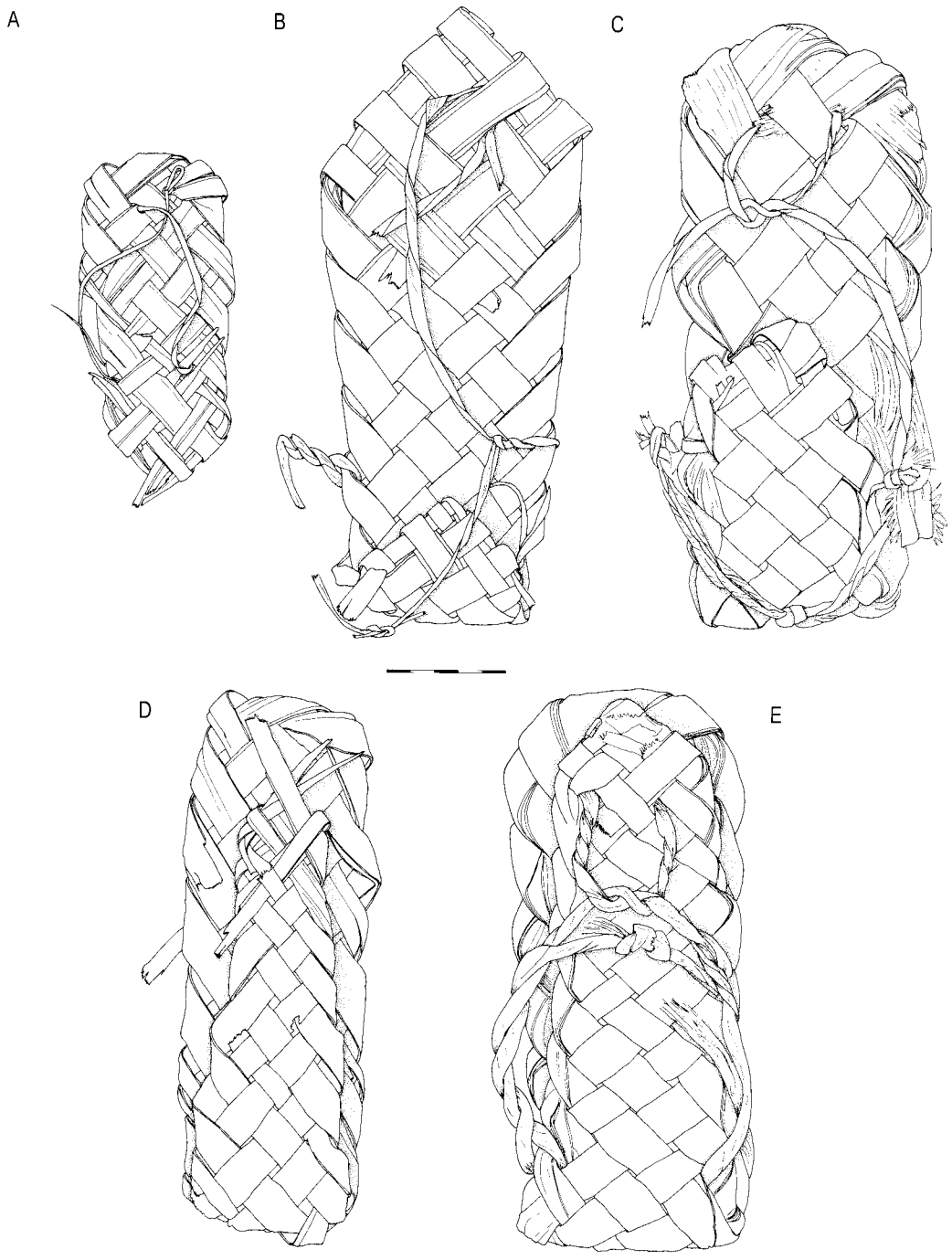


Fig. 7. The degree of which the heel is folded varies. All sandals are shown in dorsal view. A) Cam-0079 has no folded heel; B) Cam-0074 with a heel that is folded to a quarter of the length; C) Cam-0094 has a heel that is folded to half of the sandals length; D) The heel in cam-0014 is folded to about three-quarters of the sandal's length; E) Cam-0006 shows a complete insole by folding the plaited fabric to half along its length. Scale bar in cm. Drawings by A.J. Veldmeijer.

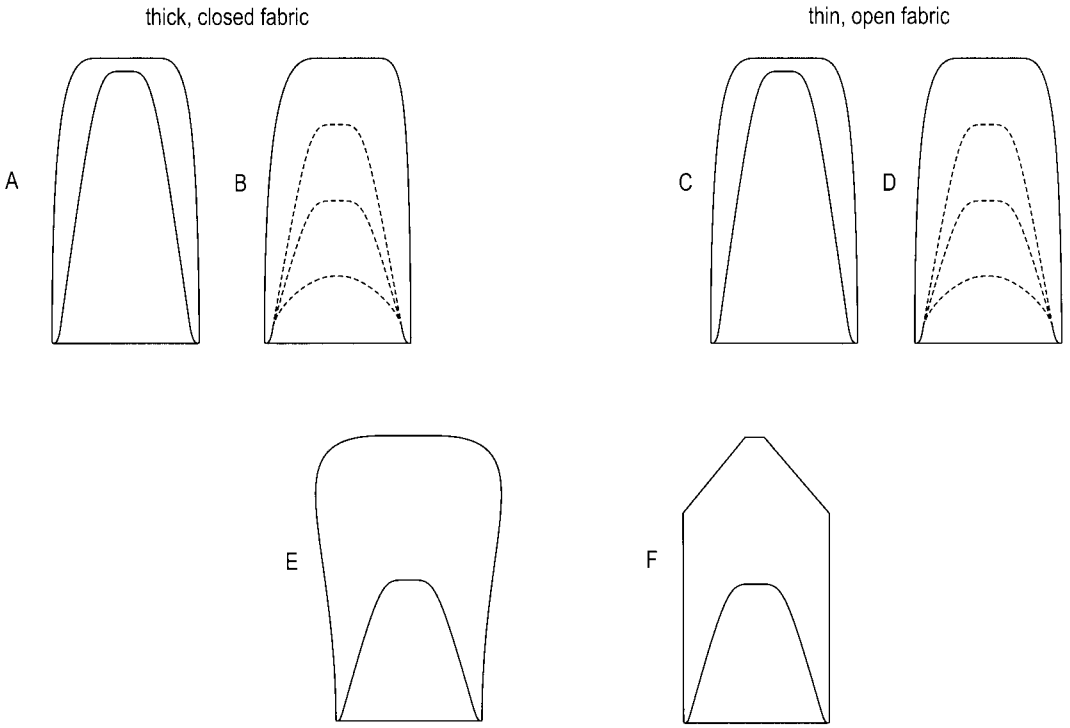


Fig. 6. The plain plaited sandals can be divided in six types on the basis of shape, thickness and tightness of plaiting and the degree of folding of the heel. Variants are distinguished on the basis of the plaiting technique. Not to scale. Drawing by E. Endenburg/A.J. Veldmeijer.

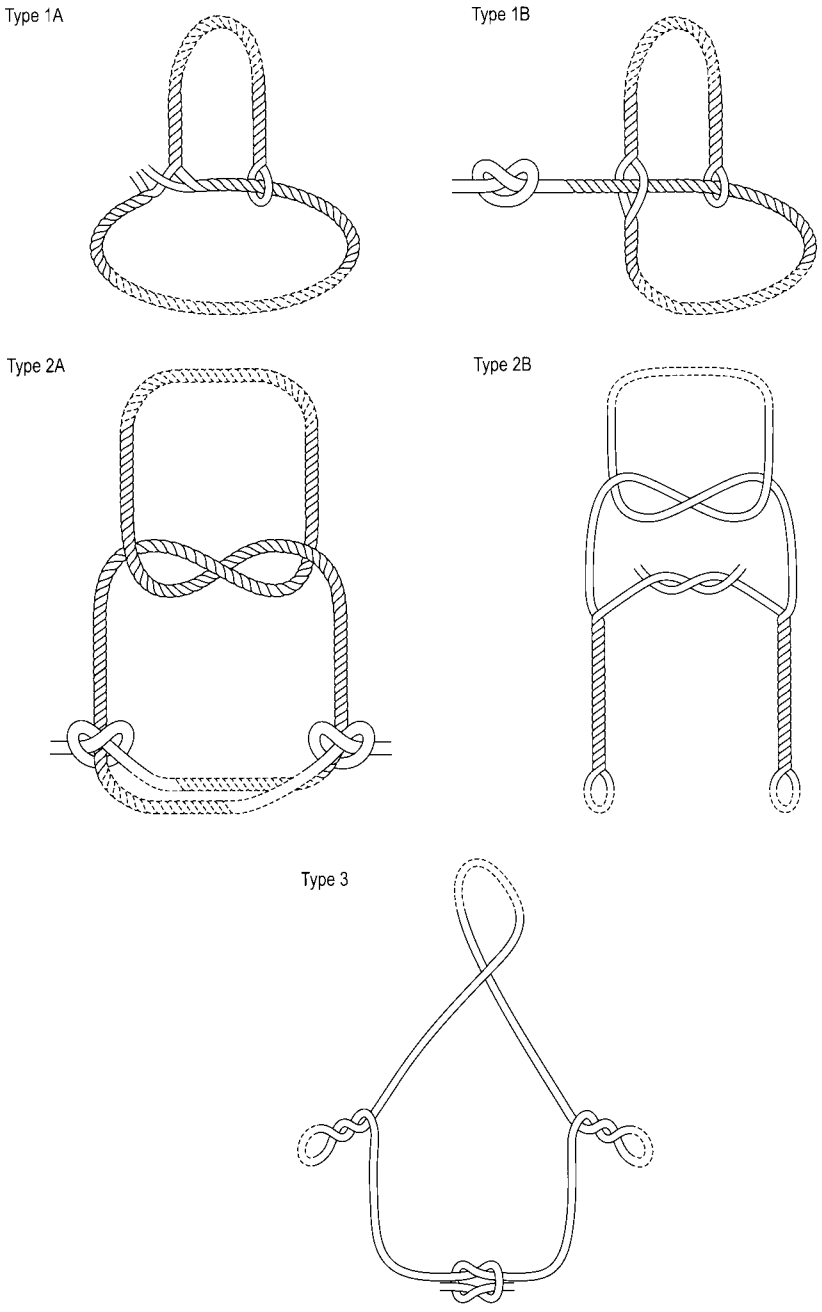


Fig. 5. The different types of strap complexes. Parts that are not visible at the dorsal view as they run for example under the insole are in dashed lines. A) Type 1A (mainly based on cam-0044); B) Type 1B is highly comparable to 1A, except for the attachment of the back strap to the front strap. The construction is based on cam-0091; C) Type 2A (mainly based on cam-0038); D) Type 2B compares to 2A, but is made of yarns, rather than plied string, resulting in a slightly different construction; E) Type 3 is the only construction which includes a heel strap. Usually, this type is rather flimsy and made of yarns only. Not to scale. Drawings by E. Endenburg/A.J. Veldmeijer.

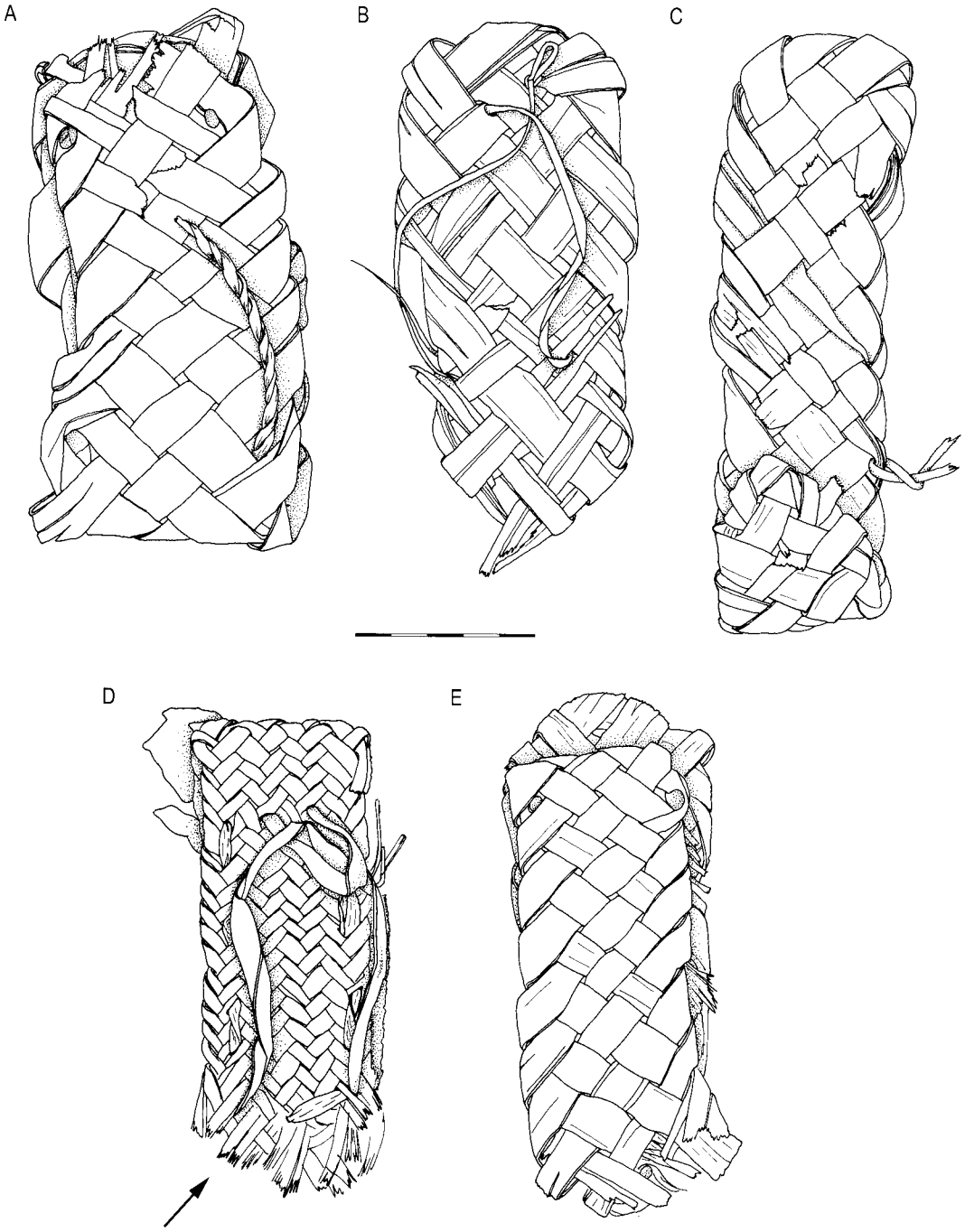


Fig. 3. Children's sandals in dorsal view. A) Cam-0013; B) Cam-0079; C) Cam-0081; D) Cam-0063. The arrow points to the cut off edge, suggesting the sole is made from a longer strip of fabric, possibly a basket; E) Cam-0080. Scale bar in cm. Drawings by A.J. Veldmeijer.

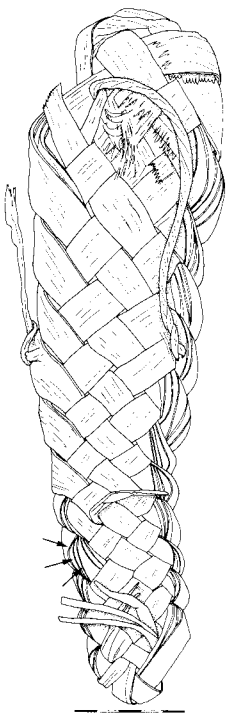
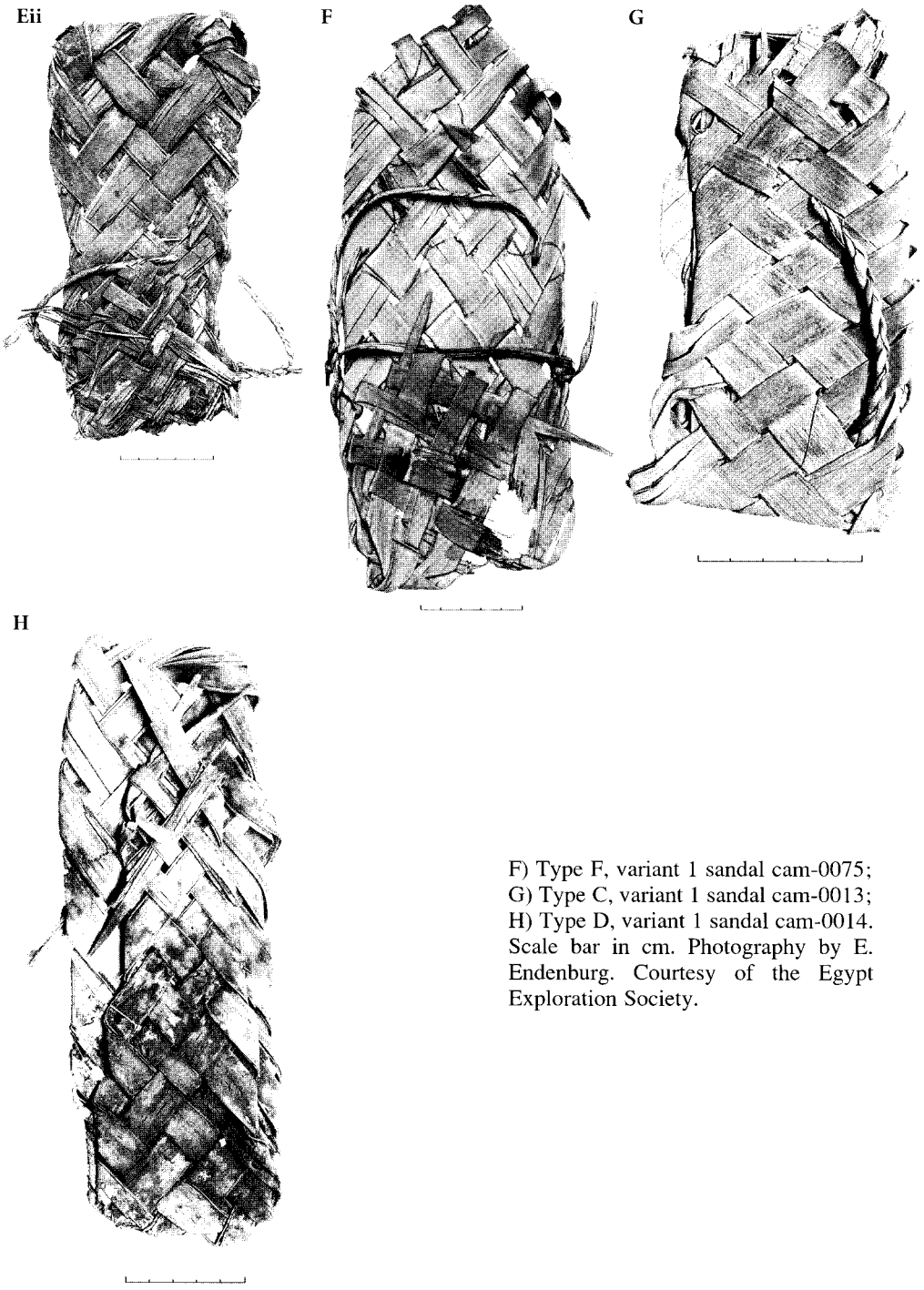


Fig. 2. Dorsal view of cam-0019. The sandal is complete, the heel of which has not yet been folded, showing how a plain plaited sandal was made. Scale bar in cm. Drawing by A.J. Veldmeijer.



Fig. 4. Dorsal view of cam-0051. The sole layers are fastened (besides the double front strap) by means of three longitudinal rows of widely spaced running stitches of sZ_2 palm leaf string (*cf.* Veldmeijer, 2007/2008, figure 5A [this JEOL volume]). Scale bar in cm. Drawing by A.J. Veldmeijer.



F) Type F, variant 1 sandal cam-0075; G) Type C, variant 1 sandal cam-0013; H) Type D, variant 1 sandal cam-0014. Scale bar in cm. Photography by E. Endenburg. Courtesy of the Egypt Exploration Society.

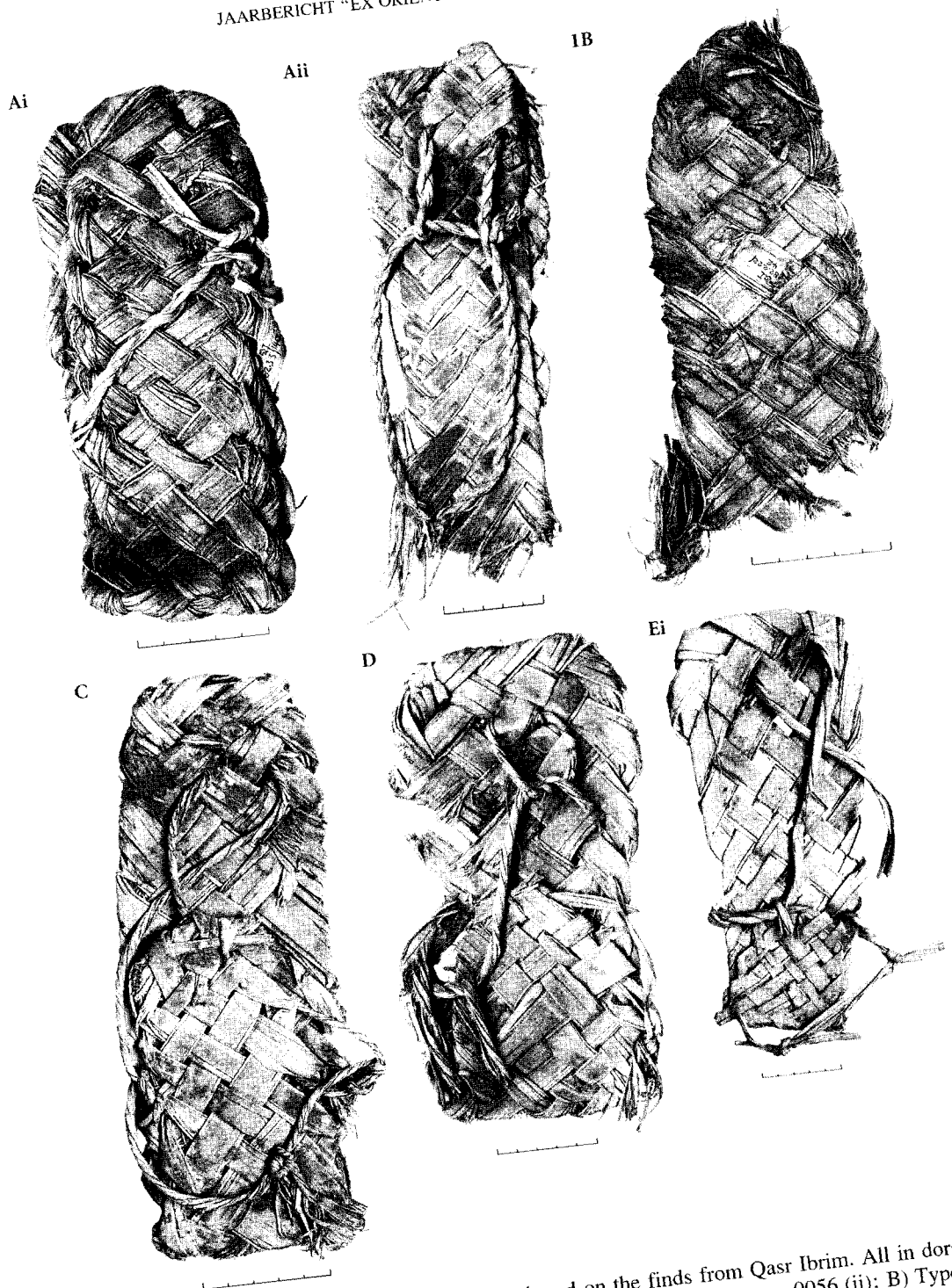


Fig. 1. The six types of plain plaited sandals, based on the finds from Qasr Ibrim. All in dorsal view. A) Type A, variant 1 sandal cam-0016 (i) and type A, variant 2 sandal cam-0056 (ii); B) Type A or B, variant 1 sandal cam-0022; C) Type B, variant 1 sandal cam-0015; D) Type B, variant 1 sandal cam-0002; E) Type E, variant 1 sandal cam-0018 (i) and type E, variant 2 sandal cam-0087 (ii).

80.2.12/71	(c. 25 BC-25 AD)?									sandal
cam-0084 80.2.26/94	Roman 2 (c. 25-100 AD)?	W front: 95; W heel: 87.5. L: 200. W strips: 15. T: 5.4 (14.3 at thick front part). D strap: 5.9.	8	over 1/under 1/over 2/under 2/over 1/ under 1/shift 1	?	1?	A?B?/2	\/	?	-
cam-0085 80.1.24/30	?	W front: 73.3; W heel: 100. L: 210. W strips: 17. T: 7.8. D strap: 9.1/4.6.	6	over 1/under 1	?	?	C?D?/1	\\	2B	-
cam-0086 82.1.17/36	Ottoman (1500-1811 AD)	W front: 75.4; W heel: 79.2. L: 220. W strips: 13.5. T: 15.4. D strap: 6.3/3.6.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	1	?	A?/2	\\	2A	-
cam-0087 82.2.17/71	Late Christian 2 (1300-1400 AD)	W front: 111.5; W heel: 86.8. L: 220. W strips: 8.7-19. T front: 13; W heel: 7.6. D strap: 6.1/3.2.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ shift 1	$^1/_4$-$^1/_2$	1	E/2	\\	3?	-
cam-0088 82.2.14/55	Ottoman (1500-1811 AD)	W front: 82.3; W heel: 89. L: 250. W strips: 12-17. T: 17.2.	8	over 1/under 2/over 1/under 1/over 1/ under 1/over 1/ under 1/over 2/ under 1/shift 1	1	1	A/2	\\	?	-
cam-0089 80.3.14/50	?	W front: 82.8; W heel: 82.6. L: 255. W strips: 14.5. T: 16.2.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	1	1	A/2	\\	?	-
cam-0090 82.1.23/18	Ottoman (1500-1811 AD)	W front: 83.3; W heel: 91.7. L: 290. W strips: 17.5. T: 16.8.	6	over 1/under 1	1	1	A/1	\\	2A?	-
cam-0091 80.3.14/48	Terminal Christian (1400-1500 AD)	W front: 75.1; W heel: 85.4. L: 265. W strips: 17.5. T: 8.9.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	1?	?	A?/2	\\	1B	-
cam-0092 84.1.14/18	Ptolemaic?	W front: 72.1; W heel: 88.7. L: 290. W strips: 14.1-21. T: 15.7.	6	over 1/under 1	1?	?	A?/1	\\	2A?	-
cam-0093 82.1.30/21	Late Christian 1 (1100-1300 AD)	W front: 87.1; W heel: 71.8. L: 265. W strips: 10.5-21.4. T: 10.3.	6	over 1/under 1	1	1	A/1	\\	3?	-
cam-0094 84.2.23/114	?	W front: 109.9; W heel: 97.3. L: 275. W strips: 14.3-22.5. T: 13.2.	6	over 1/under 1	$^1/_2$	1	A/1	\\	3	-

cam-0061 82.2.4/33	Ottoman (1500-1811 AD)	W: 59.2. L: 82.5. T: 7.6.	> 4	over 1/under 1?	?	?	?/1?	?	?	-
cam-0062 82.2.28/90c	Ottoman (1500-1811 AD)	W: 77.5. L: 170. T: 5.2. D strap: 8.5/4.1.	6	over 1/under 1	?	?	C?D? /1	//	2B	-
cam-0063 82.2.21/61	Ottoman (1500-1811 AD)	W front: 50; W heel: 52.5. L: 140. W strips: 5 (average). T: 7. W straps: app. 6.5.	8	over 2/under 2/ shift 1	1	1	A/2	\\	?	incom- plete leather straps
cam-0068 82.2.21/89	Ottoman (1500-1811 AD)	W front: 75.8; W heel: 78.8. L: 240. W strips: 12.5 (average). T: 20.4. D back strap: 4.4/3.	8	over 1/under 2/ over 1/under 2/ over 1/under 1/ over 2/under 1/ over 2/under 1/ shift 1	1	1	B/1	\\	?	made of palm fibre; repair straps
cam-0074 82.1.30/13	Late Christian 2 (1300-1400 AD)	W front: 111.1; W heel: 77.3. L: 285. W strips: 18.5. T: 8.3. D straps: 3.2.	6	over 1/under 1	¼	3	F/1	\/	3	-
cam-0075 78.1.17/28a	Late Christian (1100-1400 AD)	W front: 105; W heel: 109.7. L: 285. W strips: 18.5-23. T heel: 5.8. D straps: 3.6.	6	over 1/under 1	¼	3	F/1	//	3	-
cam-0076 82.2.1/27	Ottoman (1500-1811 AD)	W front: 103.5; W heel: 91.3. L: 250. W strips: 18. T: 8.7. D straps: 3.	6	over 1/under 1	¼	3	F/1	\/	3	-
cam-0077 78.1.17/28b	Late Christian (1100-1400 AD)	Wt front: 86.6; W heel: 70.6. L: 180. W strips: 17. T: 4.4.	> 5	over 1/under 1	?	?	C?D? /1	\\	?	-
cam-0078 78.3.20/27b	Early Christian 2 (700-850 AD)	W front: 94.4; W heel: 80.6. L: 180. W strips: 15-19.5. T: 7.8.	6?	over 1/under 1	?	1?	E?/1	\/	?	-
cam-0079 78.3.13/4	Early Christian 2 (700-850 AD)	W front: 64.2; W heel: 58.5. L: 160. W strips: 12.5. T: 3.2.	> 5	over 1/under 1	-	1	D/1	\\	3	-
cam-0080 84.2.23/99	?	W front: 54.1; W heel: 57.8. L: 150. W strips: 10.5. T: 5.8.	6	over 1/under 1	1	1	C/1	\\	?	three sole layers
cam-0081 84.2.23/98	?	W front: 53.2; W heel: 50. L: 175. W strips: 8.5-14.8. T: 5.9.	6	over 1/under 1	¼	1	D/1	\\	3?	-
cam-0082 80.1.31/103	Ptolemaic?	W: 92.5. L: 175. T: 4.6. W strips: 7.7-16.5.	> 7	over 1/under 1/over 2/under 2/over 1.../shift 1	?	F?	?/2	?	?	probably not sandal
cam-0083 80.2.12/71	Roman 1 (c. 25 BC-25 AD)?	W: 88.8. L: 170. T: 8.4. W strips: 8.5.	8?	over 2/under 2/ shift 1	?	?	?/2	?	?	probably not sandal

80.3.14/51b	(1500-1811 AD)	strips: 13.3. T: 7.3. D strap: 4.7/3.3.		1/under 2/over 1/ under 1/over 2/						
				under 1/over 2/ under 1/shift 1						
cam-0053 82.3.4/177	Ottoman (1500-1811 AD)	W front: 75.5; W heel: 89.5. L: 225. W strips: 15 (average). T: 7.9.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	?	?	?/2	\\	?	-
cam-0054 66a/364	?	W front: 68.7; W heel: 81.8. L: 255. W strips: 15 (average). T: 5.7.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	1?	?	A?/2	\\	1A?B?	-
cam-0055 82.3.4/179	Ottoman (1500-1811 AD)	W front: 65.2; W heel: 74.3. L: 285. W strips: 13 (average). T: 23.3.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	1?	?	A?/2	\\	?	-
cam-0056 82.2.23/66	Ottoman (1500-1811 AD)	W front: 87.5; W heel: 71.1. L: 270. W strips front: 11; W strips heel: 18.3. T: 11.8.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	1	1	A/2	\\	1B	-
cam-0057 82.3.4/182	Ottoman (1500-1811 AD)	W front: 57.6; W heel: 65.4. L: 220. W strips: 11 (average). T: 12.8. D straps: 6/3.4.	6?	over 1/under 1	?	?	?/1	\\	1A	sole longitu-dinally sewn
cam-0058 82.2.21/88	Ottoman (1500-1811 AD)	W: 93.2. L: 160. T: 11.	> 5	over 1/under 1	?	?	?/1	\\	?	-
cam-0060 82.2.25/10	Ottoman (1500-1811 AD)	W front: 63.7; W heel: 69.9. L: 205. W strips: 7.6 (average). T: 15.	10	over 2/under 2/over 3/under 2/over 2/ under 3/over 2/ under 2/shift 1	1	1?	A/1	\\	?	sole longitu-dinally sewn; strap complex *cf.* Veldmeijer 2007/2008

cam-0045 80.3.14/49	Ottoman (1500-1811 AD)	W front: 64.7; W heel: 83.8. L, as pres.: 195. W strips: 11-14.1. T: 8.	8	over1/under2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	1?	?	A?/2	\\	?	-
cam-0046 80.3.14/40b	Ottoman (1500-1811 AD)	W: 79. L: 125.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	?	?	?/2	\\	?	-
cam-0047 82.2.28/90b	Ottoman (1500-1811 AD	W front: 59.7; W heel: 70.2. L: 225. W strips: 7.8-12.6. T: 6.2 (only insole).	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under1/over 2/ under 1/shift 1	1?	?	A?/2	\\	?	-
cam-0048 82.3.2/122	Ottoman (1500-1811 AD)	W max.: 70/65. L: 225/75. W strips: 12.5 (average). T: 7.7. 1	8	over 1/under 2/over under 2/over 1/ under 1/over 2/ under1/over 2/ under 1/shift 1	?	?	?/2	\\	?	-
cam-0049 80.3.14/54a	Ottoman (1500-1811 AD)	W front: 79.2; W heel: 66.8. L: 220. W strips: 13.5. T: 10.3.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 1/over 2/ under 1/shift 1	?	?	?/2	\\	?	-
cam-0050 82.1.16/58	Ottoman (1500-1811 AD)	W front: 63; W heel: 68.2. L: 200. W strips: 10 (average). T: 6.4. D strap: 4.3/3.1	8	over 2/under 2/over 2/under 1over 1/ under 1/over 1/ under 2/over 2/ under 2/shift 1	1?	?	A?/2	//	1A	-
cam-0051 82.2.11/56	Ottoman (1500-1811 AD)?	W front: 74; W heel: 82. L: 240. W strips: 12 (average). T: 8.7 (insole). D strap: 7.7/4.	8	over 1/under 2/over 1/under 2/over1 /under 1/over 2/ under 1/over 2/ under 1/shift 1	1?	?	A?/2	//	1A	sole longitu-dinally sewn
cam-0052 80.3.14/51b	Ottoman (1500-1811 AD)	W front: 59; W heel: 68.8. L: 150. W strips: 13.3. T: 7.3. D strap: 4.7/3.3.	8?	over 1/under 2/over 1/under 2/over 1/	1?	?	A?/2	\\	2A	-

78.3.13/15	(1500-1811 AD)	strips front: 13; W strips heel: 21. T: 15.8. D strap: 5.7/2.8.								
cam-0035 82.1.30/19	Ottoman (1500-1811 AD)	W front: 78.2; W heel: 58.5. L: 230. W strips front: 12; W strips heel: 18. T: 14.6.	6	over 1/under 1	¾?	?	B?/1	\\	?	-
cam-0036 82.2.28/88	Late Christian (1100-1400 AD)	W front: 58.7; W heel: 72.5. L: 265. W strips: 12.5-20. T: 13. D front strap: 6/3.8.	6	over 1/under 1	1?	?	A?/1	\\	?	-
cam-0037 80.3.14/54b	Ottoman (1500-1811 AD)	W front: 58.1; W heel: 78. L: 235. W strips front: 13; W strips heel: 18.5. T: 14.7 (much of the treadsole is worn away). D front strap: 4.4/2.9.	6	over 1/under 1	1	1?	A?/1	\\	?	sole longitu-dinally sewn
cam-0038[6] 82.1.30/50	Ottoman (1500-1811 AD)	W front: 58.8; W heel: 74.2. L: 240. W strips front: 12.6; W strips heel: 16. T: 9. D front strap: 4.5/3.2.	6	over 1/under 1	1?	?	A?/1	\\	2A	-
cam-0038 82.1.30/74	Ottoman (1500-1811 AD)	W front: 76.3; W heel: 87.5. L: 255. W strips: 21 (average). T: 10.4. D front strap: 6.9/4.4.	6	over 1/under 1	1?	?	A?/1	\\	2A?	-
cam-0039 82.2.28/87	Ottoman (1500-1811 AD)	W front: 58.5; W heel: 79.7. L: 180. W strips: 14.2-22.5. T: 7.3. D back strap: 4.6.	6	over 1/under 1	?	?	?/1	\\	?	-
cam-0040 66a/363	Christian (650-1500 AD)	W front: 60; W heel: 82.8. L: 260. W strips front: 10; W strips heel: 17.5. T: 6.2. D straps: 4.9/4.	6	over 1/under 1	1?	?	A?/1	\\	1A	-
cam-0041 80.3.14/40a	Ottoman (1500-1811 AD)	W front: 54.6; W heel: 77.4. L: 255. W strips front: 12; W strips heel: 18. T: 6.7. D straps: 4.2.	6	over 1/under 1	1?	?	A?/1	\\	?	-
cam-0042 76.2.21/6	?	W front: 61.6; W heel: 78. L: 270. W strips front: 12.8; W strips heel: 17.7. T: 8.8. D original straps: 6.3/3.9; D repair strap: 3.5-5.1.	6	over 1/under 1	1?	?	A?/1	\\	2A?	-
cam-0043 82.2.11/8	Ottoman (1500-1811 AD)	W front: 65.4; W heel: 74.8. L: 225. W strips: 10 (average). T: 5.5.	8	over 1/under 2/over 1/under 2/over 1/ under 1/over 2/ under 2/over 2/ under 1/shift 1	1?	?	A?/2	\\	?	-
cam-0044 78.1.24/72a	Ottoman (1500-1811 AD)?	W front: 74.3 (= W insole); W heel: 68.1. L: 270. W strips: 11.4-14.5. T: 5.2 (insole only).	8	over 1/under 2/ over 1/under 2/ over 1/under 1/ over 2/under 1/over 2/under 1/shift 1	1?	?	A?/2	\\	1A	-

[6] QI 82.1.30/50 and 82.1.30/74 have the same specialist number by mistake.

cam-0018 82.1.25/11	Late Christian 2 (1300-1400 AD)	W front: 114.5; W heel: 75. L: 260. W strips heel: 9; W strips front: 17.3. T: 5.	8	over 1/under 1	1/4	1	E/1	//	3	-
cam-0019 76.2.22/6	Late Christian (1100-1400 AD)	W front: 91.7; W heel: 46.1-68.9. L: 330. W strips heel: 10.7; W strips front: 20.3. T: 8.2.	6	over 1/under 1	1/4?	1	B/1	\/	?	-
cam-0020 84.1.18/29	Ptolemaic?	W front: 68.6; W heel: 88. L: 240. W strips: 118.5. T: 9.5.	6	over 1/under 1	?	1	A?B? /1	\\	?	-
cam-0021 82.1.27/22	Ottoman (1500-1811 AD)	W front: 75; W heel: 75.3. L: 225. W strips: 16.5. T: 9.8.	6	over 1/under 1	?	?	?/1	\\	?	-
cam-0022 82.2.22/42	Ottoman (1500-1811 AD)	W front: 66.5; W heel: 76.3. L: 180. W strips: 15.6. T: 7.7.	6	over 1/under 1	?	1	A?B? /1	\\	?	-
cam-0023 82.2.16/55	Ottoman (1500-1811 AD)	W front: 81.8. W heel: 73.1. L: 250. W strips heel: 13.6; W front: 20.7. T: 13.6.	8	over 1/under 1	1/2?	1	B?/1	\\	?	-
cam-0024 82.1.27/47	Ottoman (1500-1811 AD)	W front: 67.4; W heel: 82.7. L: 250. W strips heel: 14.5; W strips front: 10.5. T: 6.4.	8	over 1/under 1	1	?	A?/1	\/	2B	-
cam-0025 82.2.21/87	Ottoman (1500-1811 AD)	W max.: 96.9. L: 185. W strips: 18 (average). T: 7.7.	>5	over 1/under 1	?	?	A?B?/1	\/	?	-
cam-0026 82.1.18/76	Ottoman (1500-1811 AD)	W front: 81.8; W heel: 103. L: 290. W strips heel: 22.5; W strips front: 14. T: 10.4.	6	over 1/under 1	?	?	A?B? /1	\\	?	-
cam-0027 80.3.14/55	Ottoman (1500-1811 AD)	W front: 57.2; W heel: 66.2. L: 220. W strips: 4 (average). T: 8.9.	6	over 1/under 1	1?	?	A?/1	\\	?	-
cam-0028 82.3.3/143b	Ottoman (1500-1811 AD)	W front: 61.7; W heel: 73.5. L: 245. W strips: 16 (average). T: 9.6. D straps: 6.3/3.5.	6	over 1/under 1	1?	?	A?/1	\\	2A?	-
cam-0029 80.2.2/103b	Ottoman (1500-1811 AD)	W front: 53.8; W heel: 77.6. L: 250. W strips front: 10; W strip heel: 15. T: 9.6. D straps: 4.1.	6	over 1/under 1	1?	?	A?/1	\\	?	-
cam-0030 80.3.14/53	Ottoman (1500-1811 AD)	W front: 70.4; W heel: 85.5. L: 250. W strips front: 11.8; W strips heel: 15.2. T: 5.6. D straps: 3.8/2.5.	6	over 1/under 1	1?	?	A?/1	\\	?	-
cam-0031 80.3.14/40d	Ottoman (1500-1811 AD)	W front: 85.8; W heel: 98.5. L: 225. W strips: 17.3-21.5. T: 6.6.	6	over 1/under 1	?	?	?/1	\\	?	-
cam-0032 84.1.18/27	Ptolemaic?	W front: 58; W heel: 60.3. L: 215. W strips: 6.2-13.5. T: 2.8. D strap: 3.4.	8?	over 1/under 1	1/4?	3?	F/1	//	3	-
cam-0033 80.3.14/52a	Ottoman (1500-1811 AD)	W front: 52; W heel: 61. L: 233. W strips: 13 (average). T: 4. D strap: 4.	6	over 1/under 1	1?	1?	A?B? /1	\\	?	-
cam-0034 78.3.13/15	Ottoman (1500-1811 AD)	W front: 81.8; W heel: 75.6. L: 260. W strips front: 13; W strips heel: 21. T: 15.8. D strap: 5.7/2.8.	6	over 1/under 1	1	1	A/1	\\	2A	-

[5] The orientation of the edge is less important for sandal-fabrics than for basket-fabrics as the former were not meant to be sewn together (*cf.* Wendrich, 1999: 209-213, 241-243); nevertheless, the orientation of the edge has been inserted in the table. Since the edge does not make part of the typological technical characters, it has its own column.

cam-0002 82.1.30/20	Late Christian 1 (1100-1300 AD)	W front: 120; W heel: 111. L: 260. W strips: 11-20. T front: 7.1; T heel: 15.5. D strap: 6.	8	over 1/under 1	½	1	B/1	\\	3	-
cam-0003 82.3.4/174	Early Christian 2 (700-850 AD)	W front: 97; W heel: 99. L: 230. W strips: 14.5-19.5. T: 4.8.	8	over 1/under 1	?	1	D?/1	\\	?	-
cam-0004 82.1.27/43	Late Christian 2 (1300-1400 AD)	W front: 102.8; W heel: 110. L: 210. W strips: 15.3-186. T: 4.8. D straps: 4.	6?	over 1/under 2/ over 1…/shift 1	?	1	A?B? /2	\/	?	-
cam-0005 82.3.4/178	Late Christian 1 (1100-1300 AD)	W front: 117; W heel: 94. L: 190. W strips: 12.6-20. T front: 4.7; W heel: 7.7. D straps: 5.6.	>6	over 1/under 1	½?	?	B/1	\\	?	-
cam-0006 72/593	Meroitic (c. 100-200 AD)	W front: 100.4; W heel: 94.5. L: 260. W strips: 14.7-19.2. T: 20.4. D straps front: 6.5; D straps heel: 10.3.	6	over 1/under 1	1	1	A/1	\\	2B	-
cam-0007 82.1.20/39	Ottoman (1500-1811 AD)	W front: 63; W heel: 61. L: 190. W strips: 14,7. T: 13.3. D straps: 5.5/3.5.	6	over 1/under 1	1?	1	A/1	\\	2A?	-
cam-0008 72/390	?	W front: 109; W heel: 81. L: 220. W strips: 24.5-27.57. T: 8.4. D straps front: 4; D straps heel: 6.3/4.3.	>6?	over 1/under 1	?	1	D?/1	\\	3?	-
cam-0009 82.3.4/175	Classic Christian 2 (1000-1100 AD)	W front: 98; W heel: 63.6. L: 180. W strips: 17-20.6. T: 5.1.	>7	over 1/under 1	?	1	D?/1	\\	?	-
cam-0010 82.3.4/181	Ottoman (1500-1811 AD)	W front: 76.5; W heel: 82.2. L: 190. W strips: 13.9-18.8. T: 4.7.	>4	over 1/under 1	?	1	D?/1	\\	?	-
cam-0011 80.3.14/52b	Ottoman (1500-1811 AD)	W front: 68.7; W heel: 72. L: 180. W strips: 14.8-18.3. T: 4.1.	6	over 1/under 1	1	1?	A/1	\\	3?	-
cam-0012 80.3.14/40c	Ottoman (1500-1811 AD)	W front: 81.8; W heel: 90.5. L: 150. W strips: 16.2-22.2. T: 11.4.	6?	over 1/under 1	?	1	A?B? /1	\/	?	-
cam-0013 82.3.3/143c	Ottoman (1500-1811 AD)	W front: 66.5; W heel: 73.5. L: 150. W strips: 9.7-16.8. T: 5.9.	6	over 1/under 1	1	1	C/1	//	?	-
cam-0014 82.3.4/176	Late Christian 1 (1100-1300 AD)	W front: 78; W heel: 78. L: 240. W strips: 8.5-19.8. T: 5.3 (two layes at heel).	8	over 1/under 1	¾	1	D/1	\\	?	-
cam-0015 72/390	?	W front: 75.5; W heel: 73.5. L: 245. W strips: 10.6-21. T front: 8.4; T heel: 10.8 (two layers). D straps: 3.8.	8	over 1/under 1	½	1	B/1	\\	3	-
cam-0016 82.3.3/140	Ottoman (1500-1811 AD)	W front: 83.3; W heel: 76. L: 200. W strips: 10.9-15.2. T: 16.3 (two layers heel). D straps: 5.5.	8	over 1/under 1	1	1	A/1	\\	2B?	-
cam-0017 82.2.3/41a+b	Late Christian 1 (1100-1300 AD)	W front: 88.2; W heel: 67.2. L: 200+130. W strips: 10-22.5. T: 5.6.	6?	over 1/under 1	¾	1	B/1	\\	?	-

Table 1. Plain plaited sandals from Qasr Ibrim showing excavation registration and specialist numbers (first column; the prefix 'asw' is used for material in the storage room of the Supreme Council of Antiquities in Aswan, Egypt; the prefix 'cam' is used for material that was stored in Cambridge, England but is housed in the British Museum since 2008), date (second column), measurements (third column), number of strips (fourth column), typological technical characters (fifth-seventh shared column), type/variant (eighth column), edge (ninth column[5]), type of strap complex (tenth column), and remarks (11th and last column).

Specalist no. / Excavation no.	Date	Measurements	No. of strips	Typological technical characters			Type / Variant	Edge	Strap complex	Remarks
				fabric	fold heel (¼, ½, ¾, 1)	shape				
asw-5000 85.12.20/22	?	W heel: 74; W front: 80. L: 195. W strips: 18. T: 6.4.	6	over 1/under 1	?	?	?/1	\\	?	-
asw-5001 85.12.20/14	?	W heel: 91.5; W front: 95.7. L: 210. W strips: 11. T: 6.5.	10	over 2/under 2/over 2/under 2/shift 1	?	3	?/2	\/	3?	-
asw-5002 95.1.2/293	Late Christian (1100-1400 AD)	W heel: 96.1; W front, reconstructed: 102.5. L: 220. W strips: 20. T: 9. D strap: 3.2-4.2.	6	over 1/under 1	?	?	?/1	\\	3?	-
asw-5003 95.1.2/44	?	W heel: 93.1 (including lateral bending); W front: 99.3 L: 250. W strips: 21 (but substantially smaller at the heel part (12 mm). T one-layer-front: 8.2; T two-layer-heel: 14. D strap: 5.3.	6	over 1/under 1	½	1	B/1	\\	3	-
asw-5004 98.18199	?	W heel: 54.2; W front: 81.8. L: 97.4. W strips: 17 (avarage as large variation). T: 6.1.	?	over 1/under 1?	?	?	?/1	?	?	-
asw-5006 95.1.2/174	?	W heel: 90.8; W front: 95.4. L: 265. W strips: 13.5. T one-layer-front: 9.9; T two-layer-heel: 15.5. D strap: 6.0/3.5.	8	over 1/under 1/over 2/under 2/over 1/ under 1/over 2/ under 2/over 1/ under 1/shift 1	1	1	A/2	\\	2B	-
cam-0001 78.2.11/19	Ottoman (1500-1811 AD)	W front: 71.6; W heel: 57.8. L: 180. W strips: 21.3-32.8. T: 8.8.	4	over 1/under 1	?	?	?/1	'\\'	?	-

[5] The orientation of the edge is less important for sandal-fabrics than for basket-fabrics as the former were not meant to be sewn together (*cf.* Wendrich, 1999: 209-

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cam-0002 82.1.30/20	Late Christian 1 (1100-1300 AD)	W front: 120; W heel: 111. L: 260. W strips: 11-20. T front: 7.1; T heel: 15.5. D strap: 6.	8	over 1/under 1	½	1	B/1	\\	3	-
cam-0003 82.3.4/174	Early Christian 2 (700-850 AD)	W front: 97; W heel: 99. L: 230. W strips: 14.5-19.5. T: 4.8.	8	over 1/under 1	?	1	D?/1	\\	?	-
cam-0004 82.1.27/43	Late Christian 2 (1300-1400 AD)	W front: 102.8; W heel: 110. L: 210. W strips: 15.3-186. T: 4.8. D straps: 4.	6?	over 1/under 2/ over 1…/shift 1	?	1	A?B? /2	\/	?	-
cam-0005 82.3.4/178	Late Christian 1 (1100-1300 AD)	W front: 117; W heel: 94. L: 190. W strips: 12.6-20. T front: 4.7; W heel: 7.7. D straps: 5.6.	>6	over 1/under 1	½?	?	B/1	\\	?	-
cam-0006 72/593	Meroitic (c. 100-200 AD)	W front: 100.4; W heel: 94.5. L: 260. W strips: 14.7-19.2. T: 20.4. D straps front: 6.5; D straps heel: 10.3.	6	over 1/under 1	1	1	A/1	\\	2B	-
cam-0007 82.1.20/39	Ottoman (1500-1811 AD)	W front: 63; W heel: 61. L: 190. W strips: 14,7. T: 13.3. D straps: 5.5/3.5.	6	over 1/under 1	1?	1	A/1	\\	2A?	-
cam-0008 72/390	?	W front: 109; W heel: 81. L: 220. W strips: 24.5-27.57. T: 8.4. D straps front: 4; D straps heel: 6.3/4.3.	>6?	over 1/under 1	?	1	D?/1	\\	3?	-
cam-0009 82.3.4/175	Classic Christian 2 (1000-1100 AD)	W front: 98; W heel: 63.6. L: 180. W strips: 17-20.6. T: 5.1.	>7	over 1/under 1	?	1	D?/1	\\	?	-
cam-0010 82.3.4/181	Ottoman (1500-1811 AD)	W front: 76.5; W heel: 82.2. L: 190. W strips: 13.9-18.8. T: 4.7.	>4	over 1/under 1	?	1	D?/1	\\	?	-
cam-0011 80.3.14/52b	Ottoman (1500-1811 AD)	W front: 68.7; W heel: 72. L: 180. W strips: 14.8-18.3. T: 4.1.	6	over 1/under 1	1	1?	A/1	\\	3?	-
cam-0012 80.3.14/40c	Ottoman (1500-1811 AD)	W front: 81.8; W heel: 90.5. L: 150. W strips: 16.2-22.2. T: 11.4.	6?	over 1/under 1	?	1	A?B? /1	\/	?	-
cam-0013 82.3.3/143c	Ottoman (1500-1811 AD)	W front: 66.5; W heel: 73.5. L: 150. W strips: 9.7-16.8. T: 5.9.	6	over 1/under 1	1	1	C/1	//	?	-
cam-0014 82.3.4/176	Late Christian 1 (1100-1300 AD)	W front: 78; W heel: 78. L: 240. W strips: 8.5-19.8. T: 5.3 (two layes at heel).	8	over 1/under 1	¾	1	D/1	\\	?	-
cam-0015 72/390	?	W front: 75.5; W heel: 73.5. L: 245. W strips: 10.6-21. T front: 8.4; T heel: 10.8 (two layers). D straps: 3.8.	8	over 1/under 1	½	1	B/1	\\	3	-
cam-0016 82.3.3/140	Ottoman (1500-1811 AD)	W front: 83.3; W heel: 76. L: 200. W strips: 10.9-15.2. T: 16.3 (two layers heel). D straps: 5.5.	8	over 1/under 1	1	1	A/1	\\	2B?	-
cam-0017 82.2.3/41a+b	Late Christian 1 (1100-1300 AD)	W front: 88.2; W heel: 67.2. L: 200+130. W strips: 10-22.5. T: 5.6.	6?	over 1/under 1	¾	1	B/1	\\	?	-

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Specalist no. / Excavation no.	Date	Measurements	No. of strips	Typological technical characters			Type / Variant	Edge	Strap complex	Remarks
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asw-5000 85.12.20/22	?	W heel: 74; W front: 80. L: 195. W strips: 18. T: 6.4.	6	over 1/under 1	?	?	?/1	\\	?	-
asw-5001 85.12.20/14	?	W heel: 91.5; W front: 95.7. L: 210. W strips: 11. T: 6.5.	10	over 2/under 2/over 2/under 2/shift 1	?	3	?/2	\/	3?	-
asw-5002 95.1.2/293	Late Christian (1100-1400 AD)	W heel: 96.1; W front, reconstructed: 102.5. L: 220. W strips: 20. T: 9. D strap: 3.2-4.2.	6	over 1/under 1	?	?	?/1	\\	3?	-
asw-5003 95.1.2/44	?	W heel: 93.1 (including lateral bending); W front: 99.3 L: 250. W strips: 21 (but substantially smaller at the heel part (12 mm). T one-layer-front: 8.2; T two-layer-heel: 14. D strap: 5.3.	6	over 1/under 1	½	1	B/1	\\	3	-
asw-5004 98.18199	?	W heel: 54.2; W front: 81.8. L: 97.4. W strips: 17 (avarage as large variation). T: 6.1.	?	over 1/under 1?	?	?	?/1	?	?	-
asw-5006 95.1.2/174	?	W heel: 90.8; W front: 95.4. L: 265. W strips: 13.5. T one-layer-front: 9.9; T two-layer-heel: 15.5. D strap: 6.0/3.5.	8	over 1/under 1/over 2/under 2/over 1/ under 1/over 2/ under 2/over 1/ under 1/shift 1	1	1	A/2	\\	2B	-
cam-0001 78.2.11/19	Ottoman (1500-1811 AD)	W front: 71.6; W heel: 57.8. L: 180. W strips: 21.3-32.8. T: 8.8.	4	over 1/under 1	?	?	?/1	'\\'	?	-

[5] The orientation of the edge is less important for sandal-fabrics than for basket-fabrics as the former were not meant to be sewn together (*cf.* Wendrich, 1999: 209-213, 241-243); nevertheless, the orientation of the edge has been inserted in the table. Since the edge does not make part of the typological technical characters, it has its own column.

11. *Cited literature*

Adams, W.Y. 1996. *Qasr Ibrim. The Late Mediaeval Period.* - London, Egypt Exploration Society.

Adams, W.Y. & N.K. Adams. 1998. *Kulubnarti II. The artifactual remains.* - London, The Sudan Archaeological Research Society.

Ashley, C.W. 1993. The Ashley book of knots. - New York, Doubleday.

Goubitz, O., C. van Driel-Murray & W. Groenman-Van Waateringe. 2001. *Stepping through time. Archaeological footwear from Prehistoric times until 1800.* – Zwolle, Foundation for Promoting Archaeology (Stichting Promotie Archeologie).

Gourlay, Y.J.-L. 1981a. *Les sparteries de Deir el-Médineh. XVIII^e-XX^e dynasties. I. Catalogue des techniques de sparterie.* - Cairo, L'Institut Français d'Archéologie Orientale.

Gourlay, Y.J.-L. 1981b. *Les sparteries de Deir el-Médineh. XVIII^e-XX^e dynasties. II. Catalogue des objets de sparterie.* - Cairo, L'Institut Français d'Archéologie Orientale.

Montembault, V. 2000. *Catalogue des chaussures de l'antiquité Égyptienne.* – Paris, Réunion des Musées Nationaux.

Sidebotham, S.E. & W.Z. Wendrich. Eds. 1995, 1996, 1998, 1999, 2000. Preliminary reports of the excavations at Berenike. - Leiden, Centre of Non-Western Studies (Special Series).

Veldmeijer, 2005. Archaeologically attested cordage. Terminology on the basis of the material from Ptolemaic and Roman Berenike (Egyptian Red Sea coast). – Eras 7 http://www.arts.monash.edu.au/eras/edition_7/veldmeijerarticle.htm (version 9 November 2006).

Veldmeijer, A.J. 2006. Knots, archaeologically encountered: a case study of the material from the Ptolemaic and Roman harbour at Berenike (Egyptian Red Sea Coast). - Studien zur Altägyptischen Kultur 35: 337-366.

Veldmeijer, A.J. 2006/2007. Studies of ancient Egyptian footwear. Technological aspects. Part I. Cordage footwear from Qasr Ibrim. - JEOL 40: 61-75.

Veldmeijer, A.J. 2007/2008. Studies of ancient Egyptian footwear. Technological aspects. Part III. Leather or string-reinforced plaited sandals from Qasr Ibrim. - JEOL 41: 101-102.

Veldmeijer, A.J. In press a. Studies of ancient Egyptian footwear. Technological aspects. Part V. Fibre shoes from Qasr Ibrim. In: Godlewski, W. & A. Lajtar. Eds. In press. *Acts of the 11th Conference of Nubian Studies, Warsaw, 27 August-2 September 2006, Vol. II. Session Papers.* – Warsaw, Warsaw University Publishers (Polish Centre of Mediterranean Archaeology of Warswaw University, Supplement Volume 4/5).

Veldmeijer, A.J. In press b. Studies of ancient Egyptian footwear. Technological aspects. Part VI. Sewn sandals. In: Ikram, S. & A Dodson.

Veldmeijer, A.J. Forthcoming. Studies of ancient Egyptian footwear. Technological aspects. Part XIII. Composite Fibre Sandals.

Veldmeijer, A.J. & E. Endenburg. 2008. Footwear from Qasr Ibrim. - EgAr 33: 18-20.

Wendrich, W.Z. 1989. Preliminary report on the Amarna basketry and cordage. In: Kemp, B.J. Ed. 1989. Amarna Reports V. – London, Egypt Exploration Society: 169-201.

Wendrich, W.Z. 1991. Who's afraid of basketry. A guide to recording basketry and cordage for archaeologists. – Leiden, Centre of Non-Western Studies.

Wendrich, W.Z. 1996. Ancient Egyptian rope and knots. In: Turner, J. C. & P. van de Griend. Eds. 1996. *History and science of knots.* Singapore etc., World Scientific Publishing (Series on knots and everything, vol. 11): 43-68.

Wendrich, W.Z. 1999. *The World According to Basketry.* – Leiden, CNWS.

9. *Discussion*[4]

Although the analyses of Qasr Ibrim's footwear focused on the manufacturing technology, and an exhaustive analysis is forthcoming, it is clear, as remarked by Veldmeijer & Endenburg (2008: 20) that the various periods of occupation were characterised to some extent by their own types of footwear. This is especially clear for the Roman garrison, showing typically Roman footwear such as the *caliga*. In contrast to cordage sandals, most of the plain plaited sandals are from Qasr Ibrim's Ottoman layers, but they did occur in the Christian period. The close relationship between the leather or string-reinforced plaited sandals (Veldmeijer, 2008/2009 [this volume]), consisting of the same plaited fabrics and in the same shapes, is emphasized by the fact that these too were recovered from the Ottoman layers.

It is surprising that this strong but simple type of sandal (plain plaited sandals) was never worn before the Christian period, even though the techniques were known and, indeed, used in the manufacturing of other footwear (such as sewn edge plaited sandals). Further research is needed to find a explanation for this.

The presented observations about the wear of the sandals contradicts Adam's (1996: 181) remark that "[...] in contrast to most of the other footgear found at Qasr Ibrim, many of the fibre sandals show few signs of wear." This, together with the discovery of pairs of sandals buried under the house floors, let him to believe that this fibre footwear was used primarily indoors. The available evidence, however, does not support this supposition: some sandals have dirt adhering to the ventral surface of the treadsole and seem to have been used outdoors. Moreover, we should realise that the degree of wear in fibre footwear is surprisingly low in general (*cf.* Veldmeijer, In press b), which might indicate an under-appreciation of the resilience of the material for use in footwear. Experiments are being organised as to gain better insight in wear patterns.

Adams (1996: 181) thinks that the degree of folding of the sole was used to adjust the size of the sandal, but this suggestion can be challenged: there is no visible indication of previous folds in the fabric, which one would expect if it was adjusted. Moreover, it is likely that the heel was already worn through before the lengthening the sole was required. Finally, the shape and type of fabric used in sandals with a full insole is not found in sandals with a partial insole.

10. *Acknowledgements*

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[4] For remarks on the differences of footwear from the different occupation phases at Qasr Ibrim as well as the need for strong footwear, see the discussion in Veldmeijer (2008/2009 [this JEOL volume]).

5. *Date*

As can be seen in Table 1, the great majority of the plain plaited sandals are of Christian or Ottoman date.[3] It seems strange that this simple technique for making good strong sandals was not developed *en masse* before late Christian times, a situation seemingly not exclusive to Qasr Ibrim but to the whole of Egypt. Indeed, the earlier sandals were perhaps more delicate, but also more fragile and prone to damage which obviously was very inconvenient in a harsh environment such as Qasr Ibrim.

6. *Distribution*

Plain plaited sandals are not known from the more northerly part of Egypt. They are known, however, from more southerly sites, such as Kulubnarti (Adams & Adams, 1998: 63-64; pers. obs. British Museum 2006), which suggest that these sandals were regarded as Nubian and hence were not worn by Egyptians. The fact that the sandals of which the strap complex is recognisable all have a double front strap, which is regarded as a Nubian or African feature, gives support to the supposition (Veldmeijer, 2006/2007: 73; Veldmeijer & Endenburg, 2008: 20).

7. *Size*

Although the majority of the 'over 1/under 1' sandals are of a comparable layout, there is a small group of sandals of which the fabric is much more widely spaced (Figures 1E & F are such examples, but examples of even more open and thinner sandals can be seen in Figures 7A & B) and which are made of one or two layers of (thin) palm leaf strips, resulting in a thin, fragile sandal. Children's sandals (Figure 3) are usually made of thin fabrics and are always of types C-F. There are no children's sandals of types A and B, *i.e.* sandals with a heavy, thick sole: cam-0081 is the exception. One of the children's sandals shows evidence of being made of re-used basketry (cam-0063, Figure 3D).

8. *Wear*

As usual in fibre sandals, the straps are often damaged, but they seem relatively strong nevertheless: even in sandals in which the two sole layers are separated due to wear, the straps are often largely intact, allowing for the identification of the type of strap. Another indication as to the strength of the strap complex is the absence of repair. Wear at the heel is not often seen, but does occur. This apparent lack can, at least partly, be explained by the fact that many entries (Table 1) only consist of the isolated (partial) insole or treadsole and hence do not show clear wear. The separation of the two sole layers in plain plaited sandals, however, is due to the excessive wear to the heel part (a good example is cam-0034, Figure 9). Moreover, the fold in folded palm leaf strips is a weak spot in itself. This means that the number of objects in table 1 represents sandal *parts* and includes isolated insoles and treadsoles.

[3] The other contexts are uncertain and future research will focus on the interpretation of them.

4. *Preliminary typology*

The category of plaited sandals can be divided into six types (Figure 6, see Figure 1 for examples; Table 1), on the basis of a combination of several characteristics, the first of which is the shape. Note that, although there are several types of straps, these have not been used to classify the sandals, because the same type of strap complex occurs with different sole types (Table 1). Moreover, in most sandals, the straps are no longer recognisable. The plain basketry sandals can be divided in three shapes. By far the most common are sandals with a rectangular treadsole of (approximately) equal width (type A-D). The heel is square, due to the fact that the fabric is folded. The front is also square, but the corners are rounded, in contrast to the heel's corners. The insole ends in a triangular point (cam-0016 and cam-0056, Figure 1A), although there are some examples which have a 'swayed' insole (cam-0022, Figure 1B). This however, seems accidental rather than intended. There is quite some difference in the ratio of the width to the length: most are relatively narrow and long (cam-0015, Figure 1C), but others are much wider and shorter (cam-0002, Figure 1D). Sandals in which the sole increases in width towards the front occur (type E, cam-0018, Figure 1E), but are the smallest group. As yet, it is unclear whether this shape is intentional or not, but the peculiar shape does occur in Egypt's history (*e.g.* Petrie UC28309i-iv [Veldmeijer, forthcoming]). Far less common than the rectangular shape, but more often found than those that widen towards the front are soles with a pointed toe (type F, cam-0075, Figure 1F). These are symmetrical longitudinally and thus the sole is straight.

A second characteristic is the way the sole of the sandal is folded. A distinction is made between those in which the plaited fabric is folded halfway, resulting in a full treadsole and insole (Figure 6A), and those in which only part of the fabric is folded. In this latter case, there is, obviously, a full treadsole, but only a partial insole. This folded part can extend to various degrees, which are roughly about one quarter, half or three-quarters of the length of the treadsole (Figure 7). The division between these sandal types is based on the fact that the construction of sandals with a full insole differs from those with a partial insole: in the former, the two sole layers are fastened by means of the front strap, but in the latter, the folded heel is not fastened at all or only by means of the back straps. Another characteristic, albeit less precisely defined, is the thickness and tightness of the fabric. In general, the sandals of types A and B are thick (Figure 1Ai, Aii) and without openings between the strips of palm leaf; the remaining types show a much thinner sole with spaces (sometimes large) between the strips (Figure 1E), but there are some exceptions (Figure 1G, H). The thickness of the sole is the result, besides the folding of the plaited fabric (see below), of using strips of palm leaf consisting of several layers.

All six types can be subdivided on the basis of the plaiting technique: 'over 1/under 1' fabrics are referred to as variant 1 (Figure 1). All others, among which complicated techniques such as the 'over 1/under 2/over 1/under 2/over 1/under 1/over 2/under 1/over 2/under 1/shift 1' fabric in cam-0056 (Figure 1Aii) are referred to as variant 2 (Figure 8). These more elaborate techniques, however, do not occur within types B-D and F, which are only made in the much more common 'over 1/under 1' technique. Most of the 'over 1/under 1' fabrics are made with six strips; the more elaborate fabrics are usually made with eight, but there are examples which are made with 10 strips.

insole. One of the two straps ends in an eye, the small hole created by the folding of the string to start plying (Veldmeijer, 2005). The back strap runs through it. The other front strap splits: one yarn is used to ply the back strap in one direction, whereas the other yarn goes into the other direction. The ends finally meet again, usually close to the front straps, and are secured. This can be done in various ways: in cam-0044, the ends are wrapped with a small strip of palm leaf, which is half knotted. In cam-0051, however, it is wrapped in a rather shoddy way, seemingly without real tying. The back strap is inserted through the insole, close to the edge, and runs between the insole and treadsole. Type 1B (Figure 5, Figure 1Aii) is comparable to type 1A, with one exception. One front strap ends, as in 1A, in an eye, through which the back strip is pulled and inserted through the two yarns of the sZ_2 string of the other front strap. Thus the front strap is not split to take part in the back strap. Moreover, the end of the back strap that sticks out from the front strap has an overhand stopper knot to prevent it from slipping out of the ply.

The type 2 strap complex differs from type 1 in the connection between front and back straps. The complex referred to as type 2A (Figure 5) is made of a complete sZ_2 string (*i.e.* it has not been split in two yarns, *cf.* type 1A). The front strap runs under the ventral surface of the treadsole and emerge at two points at the dorsal surface of the insole, close to its edge. Here it is 'half knotted' with the back straps. At the heel, the back straps run under the insole to the other side and are tied to the edge of the sole. The knots used in, for example, cam-0038 seem to be simple half knots. Type 2B (Figure 5, Figure 7E) is comparable to 2A. However, instead of using a plied string as the front strap, the s-spun yarn is pulled through the front of the sandal and half knotted with the back strap, which is also a yarn. The yarn runs from the half knot with the front strap, towards the heel, where it is looped around the edge of the sole. Running towards the front again, it is plied (usually Z-wise) with itself. The left and right ends are loosely tied at the front, but participate in some examples in the half knot. Note that often the front strap is not visible at the ventral surface of the treadsole. In these cases, the straps are not inserted through the entire thickness of this lowest sole layer, but looped to one strip of the plaited fabric and hence not visible (Figure 1D). This has the advantage that the string does not suffer from friction of the sole with the ground.

The type 3 strap complex is always made of yarns and rather flimsy (Figure 5; Figure 1C, Ei). In contrast to the other types, it includes a heel strap. Running from here (*i.e.* from the heel) to the edges of the sole, it is looped around a strip of the sole's plaited fabric, 'plied' several times and runs towards the front of the sandal and underneath one strip of the sole's fabric. The ends of this yarn are tied with a reef knot halfway the heel strap.

The strap complex in cam-0060 is incomplete and therefore has not been given a type designation. However, the two front straps compare well with examples of leather or string-reinforced plaited sandals such as cam-618 and cam-3716 (Veldmeijer, 2008/2009 [this JEOL volume]).

3. *Material*

As noticed by Wendrich (1999: 242), the sandals are made of dom palm leaf, which is confirmed by macroscopic investigations of the material. Although the excellent preservation allows for identification by means of macroscopic research, microscopic analyses are forthcoming. For the harvesting and preparation of the raw material the reader is referred to Wendrich (1999: 273-282).

2. *Description*

2.1. Sole[2]

Plain plaited sandals are simple in layout. The sole consists of one piece of plaited fabric, made specifically for the sandal (*i.e.* the fabric has not been cut from a much larger piece), of which the heel is folded either to create a full insole or to create a partial second layer as reinforcement of the heel (Figures 1, 2). There is, however, one exception: cam-0063 (Figure 3D) is made from a piece cut from a longer strip of basketry and is a re-used part of a basket. Note the relative small width of the strips (see also below on the width of the strips). The thick soles, such as cam-0016 (Figure 1Ai) consist of plaiting which is done with several layers of palm leaf strips (arrows in Figure 2). But even the thin soles are most of the time still made with strips of at least a double thickness. The number of layers differs, due to which there is a large variation in thickness of the sole (Table 1). The thick fabrics are very tightly plaited, leaving (almost) no space between the strips (*e.g.* cam-0022, Figure 1B); the thin sandals, however, show much more lightly built plaited fabrics with (large) spaces between the strips (*e.g.* cam-0018, Figure 1Ei).

The width of the strips in the sandals varies considerably, but is always relatively wide compared to examples of very fine basketry or the upper in Qasr Ibrim's fibre shoes (Veldmeijer, In press a). Within one sandal, the width of the strips tends to decrease at the heel (Table 1; see for example Figure 2). Note that palm leaf strips are split leaflets, which have a tapering shape: this is partly the reason for the decrease in width. Moreover, splitting of the leaflets could be done to form almost any width.

The two sole layers in sandals with a full insole are fastened by means of the front strap, which is pulled through both. In addition, the back strap is attached to both soles. In partial insoles, the folded part lies at the dorsal surface of the treadsole without any fastening, except for the back strap attachment. Some sandals (Table 1), however, have string sewn longitudinally through the sole layers (Figure 4), which clearly serves as fastening of the two sole layers. This contrast with the function of the elaborate sewing in leather or string-reinforced plaited sandals, where it serves as reinforcement of the sole rather than fastening the two sole layers (Veldmeijer, 2008/2009 [the present JEOL volume]).

2.2. Strap complex

The different types of strap complexes (Figure 5) are related to the types of plain plaited sandals: the thick, heavy sandals (types A and B) have a strong and well-made strap complex (type 1) whereas the sandals that are made of a more open fabric (types C-F), have more flimsy straps (type 2). Only one example, cam-0063, shows a strap complex made of leather (type 4, not illustrated, but see Figure 3D; *cf.* Veldmeijer, 2007/2008, Fig. 4B [this JEOL volume]). Note, however, that the type 3 strap complex occurs predominantly but not exclusively with the lightly built sandals.

The double front strap of strap complex type 1A (Figure 5) is made of sZ_2 string and consists of one string that runs under the ventral surface of the treadsole in the case of sandals with a full

[2] The sole's shape and fabric are discussed with 'Preliminary typology'.