CHAPTER SIX

THE GREAT FILL PROJECT

(late 7th century BC)

Towards the late 7th century BC, the north-west part of the Borgo NW area was drastically changed. The 20 m long, east–west slope, with a sharp drop of some 6–7 m, was now reshaped. This required four major activities and which will be discussed in more detail in this chapter: (a) in the upper, eastern part of the slope it was necessary to remove much rock in order to obtain a suitable workshop area; (b) in the lower and sloping, western part it was necessary to create a sturdy terrace wall/fortification Ma-Me and a major fill; (c) the construction of a substantial drain carrying away the rain water from the higher, eastern area of the Borgo; and (d) the substantial constructions D3/D4 and D5/D6 with a terracing function under House D. This was a demanding project and was probably beyond what a few local people were able to handle. It is likely that the entire community was active in changing the Borgo NW area to a workshop area for metallurgy.

(a) SHAPING THE ROCK (*Figs. 55–59*)

The first part of the Great Fill Project was to reduce the east–west tufa slope (TRe) in order to create a surface on which to build and to work (*Fig. 60*). A considerably large amount of stone was worked off at Ah-Ae-Af to create a level some three metres below the original level of the Borgo *Spina*. This work also produced blocks for construction and large amounts of stone material for the filling. The rock faces exhibit many signs of this extensive work. All along TRe, from the rock-cut chamber Af in the north-east to the vertical cliff in Area R, there can be seen the marks of neatly working pick-axes and other tools (*Fig. 61*). The extent of this impressive quarrying operation is indicated by the later quarry areas still seen, some ten metres away, from the present face of TRe (Q13, Q24 and Q25).

(b) CONSTRUCTION OF WALLS Ma-Me (*Figs. 62–65*)

The second activity in the preparation work for the Great Fill Project was the construction of powerful retaining walls, also functioning as fortification walls, along the western side to support the substantial fill masses necessary to create a sufficiently large living surface. Four sections of this wall system are preserved: Ma-Mb-Mc-Md/Me (*Fig. 62*). They begin along the northern edge (Ma, *Fig. 63*), then continue as a combined ter-

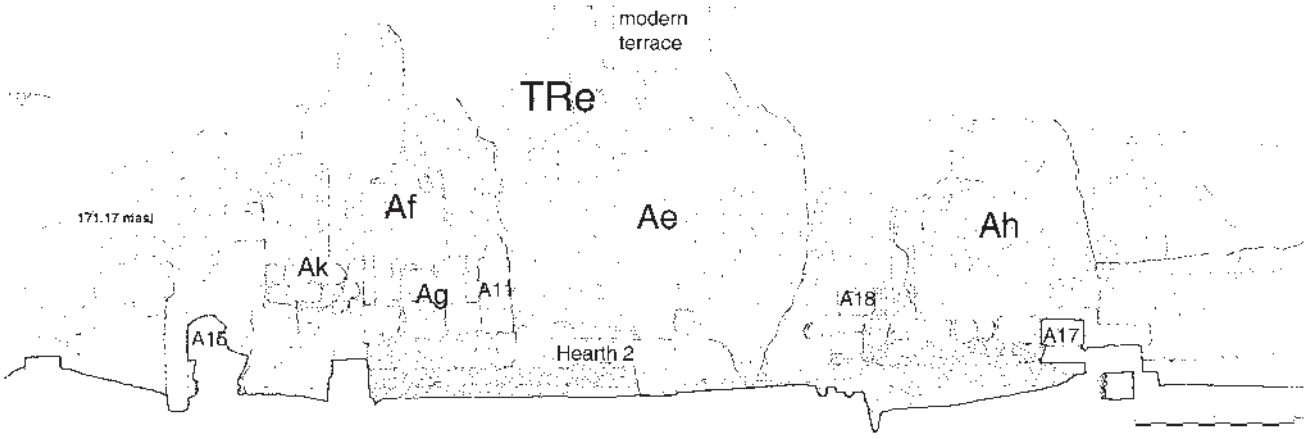

Fig. 55. Elevation of the shaped rock TRe and its niches (Section G1 = *Pl. 4*). Drawing by G. Tilia.

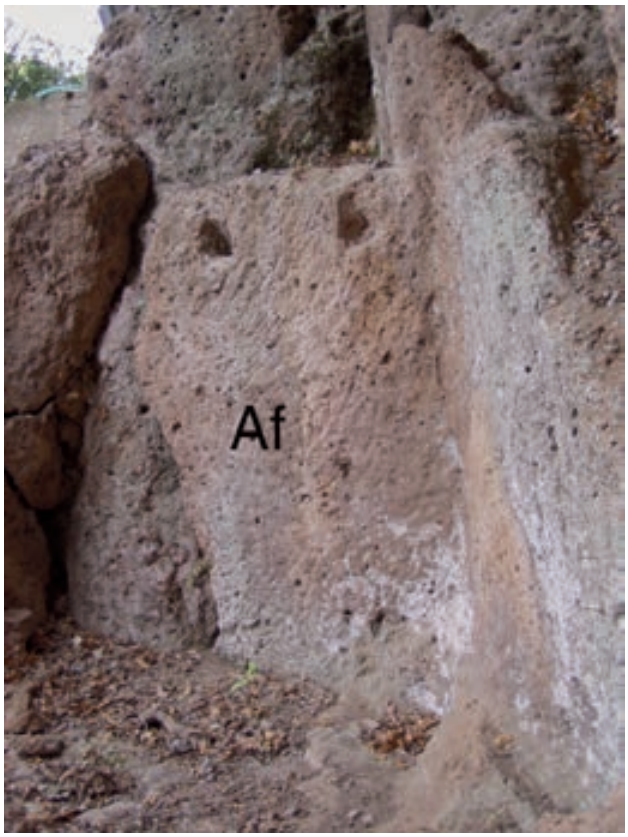

Fig. 56. The shaped rock TRe and niche Af. Photograph by J. Sigurdsson.

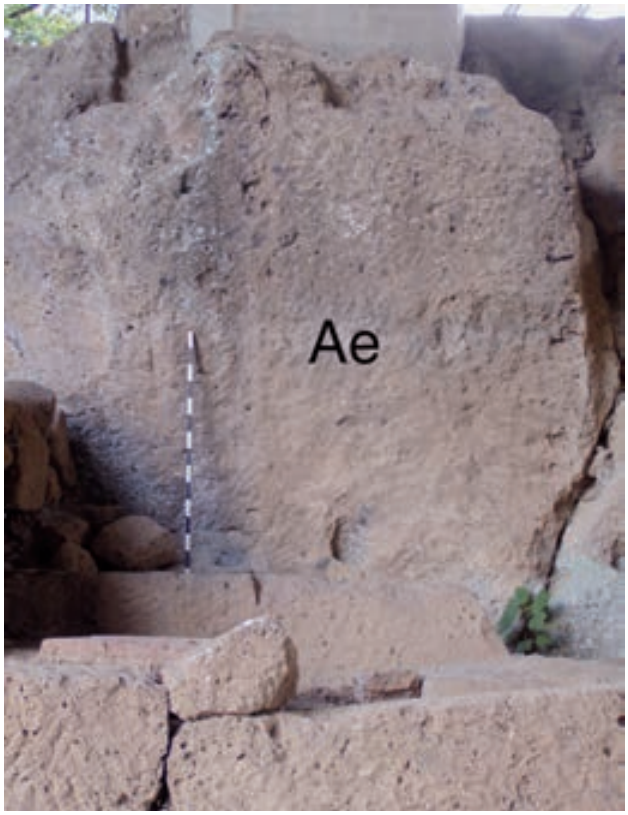

Fig. 57. The shaped rock TRe and cistern Ae. Photograph by J. Sigurdsson.

Fig. 58. The shaped rock TRe and niche Ah. In the background the modern fence above the rock. Photograph by B. Blomé.

race wall/fortification along the western slope (Ma-Mb-Mc, *Figs. 64–65*) and then disappear in the unexcavated areas towards the south (Md-Me), in the direction of the Acropolis (retraced further south in the excavations of 1999).[76]

At the lowest end of the western slope, there are the remains of the strong wall Mc, built with huge blocks laid as headers and stretchers. It had been uncovered in 1956–1957, together with the clearing of Lane K. In 1962/1963, the clearing of the tufa rock in area Na/Nb revealed a number of setting beds for similar, now missing, blocks of the same wall (Mb). This substantial wall Mb/Mc was built above the palisade cuttings Q7 and Q8, which slope down into the low-lying, eroded part of the rock in front of the drain foundation N1 and the water soakaway L4.

A closer look at the partly destroyed TRn-area just above the Via Dogana road indicated that walls Mb/Mc here had a continuation in the impressive (at least 1.80–2 m high for the level of the floor of room Ab) wall Ma, which once retained the northern part of the great foundation fill on the rock area Na.

A couple of sturdy blocks (Md) and the palisade cutting Q10 underneath, had been documented in the higher, south area close to House E on the western edge of the Borgo. The function of the sturdy wall sections Ma-Md as a fortification wall as well as a local terrace wall for the Great Fill seems clear. So is the function of the drain-like cuttings Q7/Q8 underneath the wall sections Ma/Md as a canal for the prehistoric palisade.

(c) ROADS AND THE GATE TO THE AREA (*Figs. 66–68*)

Considering the road system inside the Borgo NW, Lane K leads upwards for about 15 m from the low, west area of Nb, to the higher, eastern area Ib. Along the inside of the terrace wall/fortification Ma-Md, there is a narrow path that passes via areas

[76] See Karlsson 1999.

Fig. 59. The shaped rock TRe and niche Ah. Photograph by J. Sigurdsson.

Nb, Na and Ai, into the eastern rock-cut Af and Ac. From the area Nb a path, probably, leads through Nc (*Fig. 67*) up to the six steps (*Fig. 68*) leading to the southern, higher part of Borgo and to the Acropolis. No doubt, a gate was probably located in the western area. However, a section of the ancient remains has been destroyed in this area, between TRw/Md/Q9 and lower Md.

(d) DRAIN L AND FOUNDATION N1 (*Figs. 69–72*)

The wall foundation N1 and the impressive Drain L, which runs from the east to the west down the slope through the entire excavation area, constitute the boundary between House A and Houses B/C. Drain L's existence is not a surprise: the very violent autumn rains rush from the higher Borgo *Spina* down the slope to the lower, earth-filled area of N1 and walls Mb/Mc. Even today, in spite of the big protective roof, after a couple of hours of rain the porous tufa rock will still produce water within the excavation area.

The long Drain L with its two side walls L1 and L2 (*Figs. 71–72*), 11 and 13 m long, abuts wall N1 which is built on the tufa bedrock. N1 is a rough but powerful construction (*c*. 4.5 m long and 1.20–1.30 m deep), built with 25 very substantial tufa blocks. The heavy wall construction N1 had the special function of retaining the fills of courtyards Ad and Be, and, above all, to support the two walls L1 and L2 of Drain L, and also being a foundation for the outlet of Drain L.[77] Like the nearby wall section Mb/Mc, foundation N1 is one of the earliest constructions in the slope of Borgo NW.[78] When Drain L was completed and functioning, the N1 foundations had the function of slowing down and diluting the flow of the water, which was led through it. The water then left the settlement through an outlet, still preserved under the lowest course of the terrace wall/fortification Mc further down.

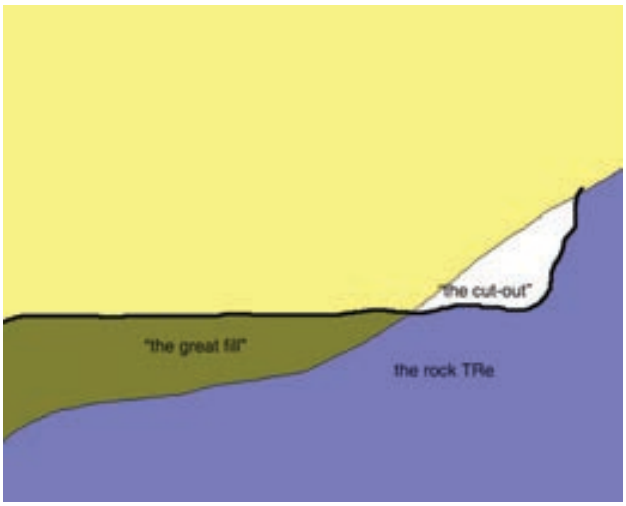

Fig. 60. Sketch showing in section the principle of the Great Fill Project.

[77] "Foundation" may not be the right term in the sense that Drain L, at least as presently preserved, does not really rest on it. Yet the drain is clearly functionally related to N1 and there may once have been further blocks, now missing, in front of Blocks 22 and 23.

[78] For a while it was thought that the enigmatic cutting Q1, running in a north-east–south-west direction from the bottom of Drain L down to Lane K, may have had some function of diverting the water flow during the work on foundations and fills. Even now, with the entire area covered by the great protective roof, rain water from the *Spina* tends to end up in the Q1 cuttings. However, such water pours into and stays in one of its depressions and does not reach the rest: thus its function cannot have been that of taking care of water. It is likely rather to have been part of a pre-house palisade on the Borgo slope.

Fig. 61. Marks of the pick-axe on niche Ah. Photograph by J. Sigurdsson.

Drain L begins in Area R East, just beneath the tufa rock face TRe and the grotto Ah. The water arrives from the area of the higher Borgo *Spina* and then flows gently, by means of cutting Q2, into the opening of Drain L. After some ten metres the water pours through N1 and finally, disappears under wall Mb/Mc into L4. Yet, had the Drain's function been exclusively that of handling rain water, there would have been no reason to give it a maximum height of some 1.60–1.70 m, instead of the more practical and economical solution of building it low and covering it with slabs. The conclusion from this is that its construction proves that its two side walls L1 and L2 were built in connection with the Great Fill Project.

(e) WALLS D3/D4 AND D5/D6 (*Figs. 76–79*, *Pls. 38–39*)

The powerful terrace construction of walls D3/D4 was built in the east–west and the north–south directions. The first function of walls D3/D4 was to retain the substantial fills caused by the difference in level between of the south, higher Area D and the lower Lane K. Soon, however, walls D3/D4 become part of the House D.

The strong terrace wall D3/D4 is quite impressive (*Pl. 39*). It runs along the slope for 15.10 m in an east–west direction and, at its western end, bends towards south into wall D4.[79] D3's northern façade which faces Lane K is only partly visible due to later constructions in Lane K and wall K2 in Period 3. However, the south façade of D3 is fully visible, exhibiting the care devoted to its strong construction. Wall D3 had to adapt, along its east–western length, to a slow, irregular drop in level of about 3 m and also to handle differences in the south–north direction.

Generally speaking, wall D3 may be described as having two horizontal parts: a strong, header-dominated foundation (1–1.10 m thick), on which rests the upper, thinner part of the wall, consisting almost exclusively of stretchers (0.50–0.60 m thick). Due to the unevenness of the sloping rock, the wall was built in three sections, (1) the lower, western, and (3) the upper, eastern, sections are separated by (2) a complicated reinforcement at a drop in the ground, 5 m from the western, and 9 m from the eastern end. An exception to the lower header/upper stretcher arrangement is the section constituting the angle of walls D3/D4, where some care was taken to achieve a regular alternation of stretcher and header courses to create a bonding with the contiguous wall D4. It was only in the upper part of the wall that the courses are laid evenly. Since the blocks have different dimensions, there are no regular joints between the courses. The upper thickness of wall D3 is only one stretcher (0.50–0.60 m), i.e. about half of the lower, header-built part (1–1.10 m). The entire wall was an impressive piece of work and its seven courses at the D3/D4-corner reached a height of 3.50 m, or even more. It contained about 80 blocks with an average weight of about 200–300 kg.[80]

The little surviving part of wall D4 can be supplemented by the documentation made before the construction of the *Capannone* (*Pl. 38b*). The bonding wall D4 was, in principle, the counterpart of the lower, westernmost part of wall D3, displaying headers where D3 had stretchers and so on.

Walls D5/D6, which are short and much less well built than D3/D4, should be interpreted as belonging to the terrace system of the south area. Their only function within the Great Fill Project was, apparently, to keep open a room-like space to the west. Here a kind of cistern, with its bottom reinforced by tile and pottery fragments, had been cut into the darkish, powdery tufa rock. It was fed through a canal from the higher south-west area and House E. As the cistern and its canal must antedate the fill and wall D1, there can be little doubt that the function of walls D5/D6 was to be part of the terracing work in the area and that they are roughly contemporary with and, constructionally, presuppose the existence of D3/D4.

DEVELOPMENT OF THE AREA AND STRATIGRAPHY OF THE EARTH FILLS A/B/C (*Figs. 70*, *73*)

The foundation N1 was built on the tufa rock as an essential and early part, together with wall Ma-Md, to create an adequate habitation and workshop surface. As already pointed out, the Borgo slope was modified and reshaped by quarrying and rock cutting in its upper, eastern parts and by terracing and earth filling in its lower, western and northern parts. Enough of this huge filling has been preserved, in various baulks left in the 1960s, to allow the establishing of stratigraphic connections between House A and the N1/Drain L-complex on one side and House B and yard Be on the other side. From the stratigraphic point of view the construction process of N1 and Drain L, in relation to the fills, to House A and to House B can be reconstructed as follows, starting with the oldest activities:

[79] These walls D3/D4, in spite of their unusually strong construction, were originally thought to be part of House D and have already been presented and discussed by Blomé 1969. It is clear today that the walls' first and main function was that of a retaining wall for the huge fill in the southern part of the area. The short stretch of wall D4 was to a great extent destroyed in 1964 during the placing of one of the huge plinths for the *Capannone*, but it was well documented during the first seasons.

[80] The weight of a standard tufa block measuring 0.90 × 0.45 × 0.45 m (with a density factor of 1.4 g/cm^3 and including the quarry water content) is *c*. 250–300 kg; see the section on geology by Judson above.

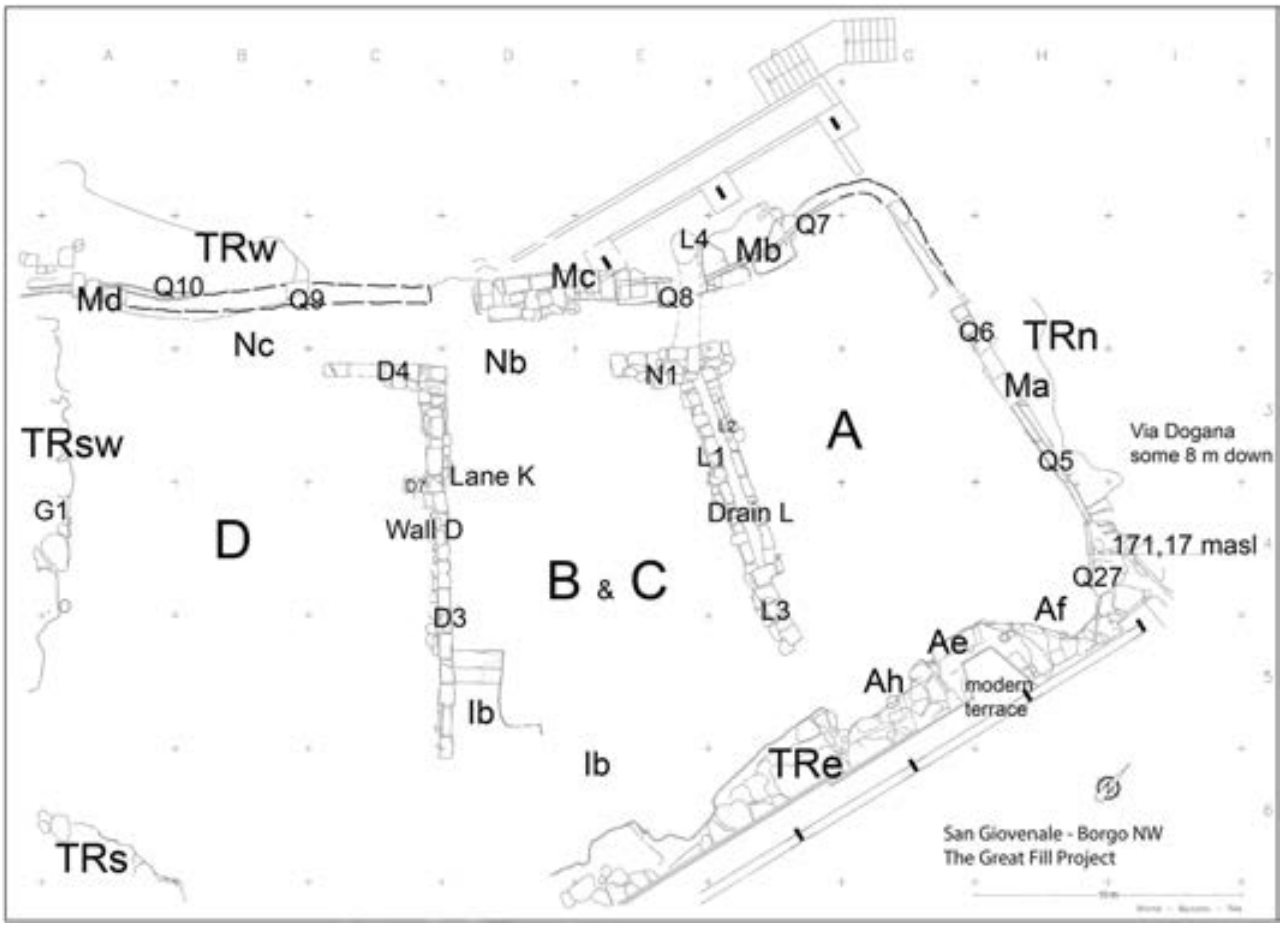

Fig. 62. Plan of Borgo NW showing terrace walls/fortification Ma-Mb-Mc-Md/Me, foundation N1, Drain L, House D and Lane K about 600 BC.

(1) The rock cuttings and foundations for terrace wall/fortification Ma-Md are made.

(2) Foundation N1 is laid on the bedrock with, in first phase, the stones 1–3, 7–9.

(3) The clayish, compact and light-brown-yellowish fill stratum A is beginning to accumulate on the slope over the north-west area. Water is passing through the N1 by this stage.

(4) The opening in the centre of N1's course I was then closed with uncut stones and tile fragments (4–6) and course II is laid on top (10–15).

(5) Further fill stratum A material was accumulated against N1.

(6) The grey fill of stratum B was spread out on top of fill stratum A over much of the lower slope. It is stratigraphically important that the grey fill stratum B runs against N1 and covers part of the area of both Houses A and B/C.

(7) An early stage of the fill stratum C was laid out. The lowest blocks of Drain L rest *on* stratum C.

In the lower, western part of the Area A, the terrace wall/fortification Mc/Mb and the sturdy foundation N1 for Drain L were constructed in order to retain the Great Fill Project. This fill was traced in three different strata, A, B and C, over a major part of Area A (and also a part of Area B). The fill is particularly well preserved underneath House A, in the baulks of yard Ad, outside House A, and in the N1-area around the mouth of Drain L. It was possible to build House A only after the creation of this huge fill. All three fill strata A, B and C were built up against the sturdy retaining wall N1 and against the terrace wall/fortification Mb/Mc (*uf.* 5.00 m). House A rests partly on the Fills A and C (*uf.* 2.60–3.00 m). In the east, wall A2 is built on the rock and even cut into it. In the A-B-C filling there was a kind of workshop floor extant before the construction of House A and before Floor 1 (*uf.* 2.70 m). Under room Ab (deepest block A7: *uf.* 3.05 m) there was evidence of a sloping, deeper "Floor 0" with the hearth 0 (*uf.* 3.08–3.16 m). Under room Aa, there is a rock-cut circle for a huge water vessel (Q26: depth *uf.* 3.42 m). The fills are in this way related to the general stratigraphy:

Fill C. The character of the fill material changes, almost dramatically. In much of the area, on top of Fills A and B, follows fill C of varying thickness (max. 0.65 m, *uf.* 2.70–3.25/3.35 m). It is thin in the east, but increasing down the slope to the west. Here it is a thick, darker brown stratum, very rich in medium-sized stones and many *tufetti* from the extensive quarrying in the eastern part of the area. Finds: Fill C contained 58 reported sherds or other items: Faliscan Impasto (1), Buccheroid Impasto (6), Etrusco-Corinthian ware (3), Bucchero, Transitional, Ordinary and Grey Bucchero (8), Red-slip ware (6), Internal and Burnished Red-slip ware (12), Late Italo-Geometric ware or imitations (3), Buff-slip ware (1), Kitchen ware (8), large jars

Fig. 63. Terrace wall/fortification Ma and the palisade canal Q5. Photograph by B. Blomé.

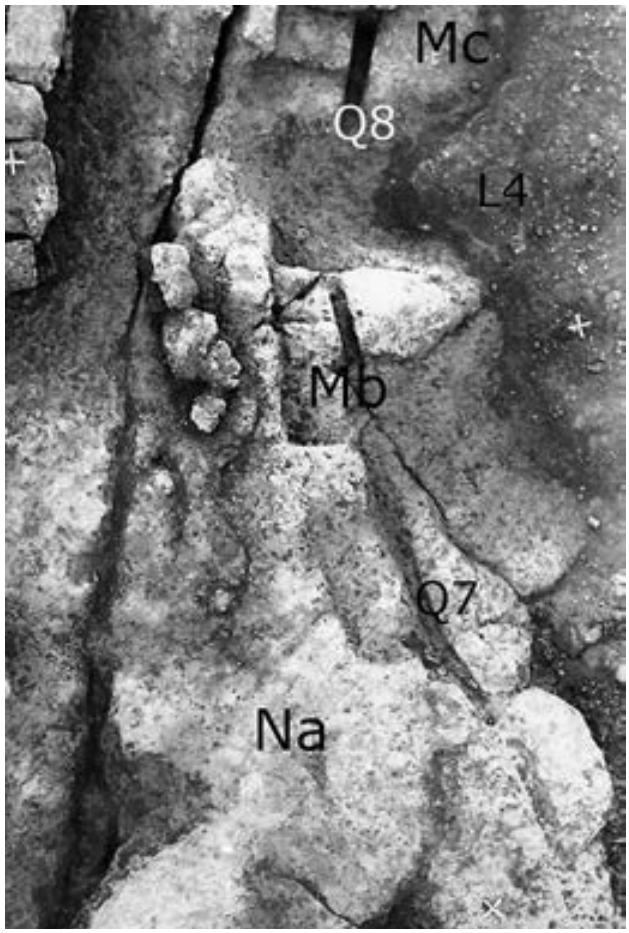

Fig. 64. The Na-area with terrace wall/fortification Mb-Mc and palisade canals Q7–Q8. Photograph by B. Blomé.

or *dolia* (5), cooking stand (1), Uncertain object (1) and roof-tile fragments (2).[81]

Fill B. In the south-west, i.e. in the lower, western part of the later courtyard area Ad, fill B (roughly *uf.* 3.25–3.45/3.50 m) was laid above fill A. This easily recognizable, greyish-white fill B is an important link between both sides of Drain L, i.e. in courtyard Ad and in courtyard Bc. This stratum was found only in places and there were no finds recorded.

Fill A. The big fill operation begins at the rock level with fill A. It is a dense, compact mass of clayish earth, light brown and yellow, with almost no stones. It was spread thinly on the uneven rock floor of the eastern part of the later courtyard Ad and grew in thickness as the slope in the west increased (max. *uf.* 3.50–4.10/4.20 m). It has a maximum thickness of 0.70 m. Fill A is buttressed by retaining wall N1. The upper sloping level of fill A seemed to have, at least partly, a floor-like surface ("Floor 0"). It is partly a hard, red layer including hearth 1 (levels *uf.* 3.03–3.16 m). Finds: Fill A contained 11 fragments of early wares: Buccheroid Impasto spiral amphora and Faliscanizing *amphoriskos* (2), Brown Impasto (1), one sherd of Fine Bucchero with a dotted fan pattern, Red-slip ware (4), hand-made Impasto Kitchen ware (2), and a spindle whorl.[82]

[81] Find groups 63-127 and 63-171; *San Giovenale* V:2, 28–30, cat. nos. 1–58.

[82] Find groups 62-186, 63-127a and 62-136; *San Giovenale* V:2, 27f., cat. nos. 1–11.

THE DATE OF THE GREAT FILL PROJECT AND THE BORGO BUILDING PROGRAMME

When speaking of the huge, Pre-House Great Fill, which covers a major part of the west slope and was held in place by the fortification/retaining walls (Ma-Mb-Mc-Md/Me), N1/Drain L and walls D3/D4, we should make an important distinction. "Historically" there was one, major "fill" project, implying a great social effort. "Archaeologically" speaking, however, there were several, different fills in different places.[83] The problem is an important one and has a bearing on the date of the early Borgo NW. The understanding of the entire "historical" dimension of the many details of the archaeology of the Great Fill has only slowly arrived.

The new excavations in 1961 were to a great extent determined by the walls and constructions visible of House B, which had been excavated in 1956–1957. In 1961, the thick, black-greyish strata (in Bb:10/11 and in Ba:7) under House B was found and excavated down to the rock. It produced a fair amount of very early pottery (71 fragments). It included examples such as spiral amphorae in Fine Buccheroid Impasto (5), carinated cups in Fine Brown Impasto (3), Faliscan Impasto (5), Italo-Geometric/Italo-

[83] We are talking here of the initial Great Fill Project. There were several later fill activities at various points in the some-200 years of the life of the Etruscan quarter which will be discussed later.

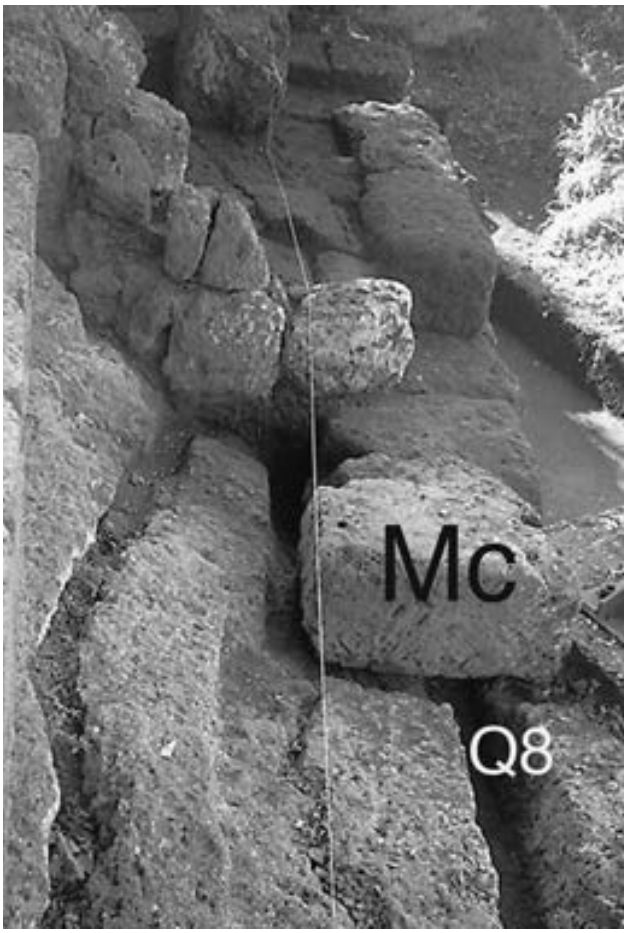

Fig. 65. Terrace wall/fortification Mc and palisade canal Q8. Photograph by B. Blomé.

Protocorinthian ware (2) and others, all dated in the middle of the 7th century.[84] This early fill was then thought to indicate the approximate date of the entire, first constructions in Areas A, B and C. The absence of Bucchero and tiles in this fill under House B seemed a further argument for such an early date. So did the fact that the early fill in other places (especially Area A: strata A-B-C) turned out to contain fairly little of the earliest material and more of the slightly later pottery. Consequently, it was long thought that the fill under House B and its date of *c.* 650 BC was an important *pars pro toto* for the entire Great Fill Project.[85] This date has also been followed by Pohl in her publication of the Borgo pottery.[86]

However, there are some difficulties with this early date. Firstly, at the time of the Great Fill Project, the entire western part of the tufa rock was fairly bare. Not only the early canal Q1, but also the constructions Mb-Mc, terrace wall N1, Lane K, walls D3/4 and even wall B1 were all placed *on* and even cut *into* the rock. It was quite clear that the one-metre high, black-grey strata 10/11 and 7 under House B were laid *after* the constructions of Mc and N1 and were supported against the heavy Mc blocks.

Secondly, were then the entire Great Fill Project and all these constructions of Mb/Mc, N1/L to be dated *c*. 650 BC by the pottery under and inside House B? This was hardly possible: important facts argue for a later date. In the early construction N1—clearly earlier than the fill strata 10/11under House B—at least three fragments of roof-tiles are still firmly locked in between the blocks (nos. 4–6) of the centre, lowest course of N1 (nos. 1–9). A few further roof-tile fragments were found among the N1 stones close to the rock. The "idea of the terracotta roof probably did not reach Etruria before the third quarter or middle of the 7th century."[87] For such broken fragments to occur in an early construction in a peripheral, inland *centro minore* we have to assume a later date, sometime in the late 7th or around 600 BC for the N1—and for the other buildings within the same Great Fill Project.

Thirdly, several blocks in early walls like that in the Drain wall L1 and in walls of Houses A, B and C, display cuttings which are clearly non-functional in their present context and which demonstrate that the blocks have been reused from some previous construction. This, again, argues against a dating of the "Borgo Building Project" too close to a mid-century date because of the pottery and the hut-type material in the dark fill of House B/C. Again, we should allow for some more time to pass before such blocks end up in a secondary reuse context in the Borgo slope. The impressive Great Fill is the sum of soils from many fills taken from various places. Thus the original earth-material reflected different original situations and therefore different periods or dates. One can therefore assume that the first and deepest materials of the fills were taken from as near as possible. It is easy to imagine that the first and deepest fill under House B came from the closest earth-area: i.e. only few metres away from the K- and B-areas.

In conclusion then, it is reasonable to argue for a later date for the "Borgo Building Project" than 650 BC. A date sometime in the late part of the 7th century seems more probable and would have the advantage of not forcing us to take all material later than 650, in the fills and early constructions, as intrusive. It would also make the "Borgo Building Project" roughly contemporary with the stone and tile-house constructions of Area F East on the Acropolis.[88]

It would also give a more understandable setting for the construction of the impressive terrace walls D3/D4 as an integral part of the original organization of the Borgo NW area.

MEASUREMENTS OF ARCHITECTURAL FEATURES

(Block measurements are given as they are seen in the wall face: length × height × depth, thus headers which go into the wall fill will have a larger depth than visible wall face.)

Terrace wall/fortification Ma-Mb/Mc-Md-(Me)

(a) The Ma cuttings

There are various cuttings in the rocky outcrop (TRn = Tufa Rock north) between the alley Ai, niche Ak, the rock niche Af and the much lower Via Dogana. First, there is a set of step like cuttings,

[84] Find groups 61-173, 63-134f, 63-156 and 63-157, ind. nos. 63-135–137; *San Giovenale* V:2, 74–77.

[85] This was long the excavator's conviction, cemented by his very first important find on the very first day of the excavation, 26 September 1961, on, or just above, the floor of House C: the main parts of an early, Faliscan Impasto plate decorated with stylized lotus patterns (ind. no. 61-102; *San Giovenale* V:2, 96, cat. no. 24, pl. 17).

[86] See *San Giovenale* V:2, 20 and 225.

[87] Wikander 1981.

[88] See *San Giovenale* IV:1, 30. The date of the passing from the "rectangular hut phase" (Period 2) into the phase of advanced Etruscan stone architecture (Period 3) has been set to around 625 BC.

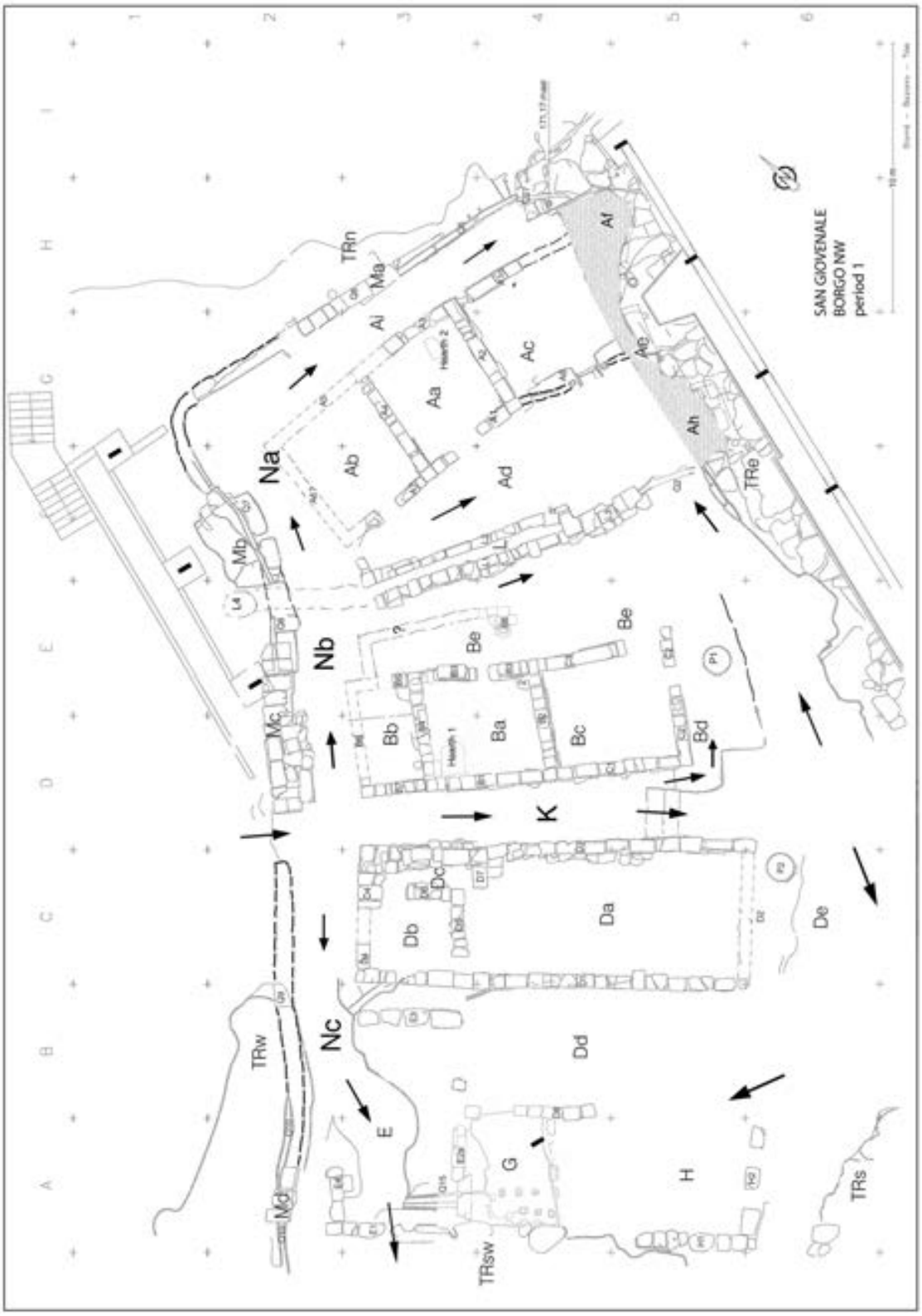

Fig. 66. Plan of Borgo NW showing walls, roads and houses about 600 BC.

horizontal and vertical, in the rock rising towards the east. Some look like the remains of quarrying activities; others are too well cut to result from the extraction of building materials. However, a few cuttings to the north seem to lie on a line parallel to alley Ai and the back of House A and look like setting beds for blocks now missing. They may indicate the northern face of a (fortification) wall with a width of 0.70 m. Five setting beds, measuring respectively, 1.20, 1.10, 0.40, 0.40, 0.60 m in length, can be traced as cuttings for blocks of fortification wall Ma.

A full understanding of all these cuttings in TRn is difficult, but the most likely suggestion is that they were setting beds for a fortification wall in this area. The palisade once built in cuttings

Fig. 67. Passage Nc. Photograph by B. Blomé.

Q5-Q6 and its hypothetical continuation towards the east were both destroyed, with part of the bedrock, by the earthquake of 550/530 BC. Only a full excavation of this area, including an investigation of the huge pieces of cracked and fallen pieces of rock, may answer the questions raised by the great number of cuttings.

(b) The Mb cuttings

The Na-area has suffered particularly badly from the earthquake. A number of broad cracks and fissures crisscross the area and big chunks of rock have been broken off. In addition, the sloping rock is much eroded. About six setting beds for blocks of the Mb-stretch of the terrace wall/fortification remain, in addition to the drain-like cutting Q7, which was once underneath the now-missing blocks. At first these cuttings seem to intercut chaotically with each other. However, most, if not all, of these features share a common assumed construction type with alternating headers and stretchers. On the other hand, these cuttings would not allow a wall thickness of 1.60 m, which is the width of wall Mc. Here the wall would have had a thickness of only one header, i.e. about 1–1.10 m.[89] Palisade canal Q7 is rather shallow, 0.05–0.20 m, due to erosion and runs in a somewhat irregular course, partly disturbed by a huge crack in the rock, towards the low-lying water outlet under wall Mb/Mc.

(c) The Mc wall

The stretch Mc is the best preserved part of the Borgo NW terrace wall/fortification system. In addition, through the preserved fill behind it, it still allows an unbroken stratigraphic connection with House B. A big earthquake crack, 0.10–0.15 m wide, runs through and behind the construction and has caused the fissure of some of the Mc blocks.[90] Underneath the Mc blocks runs the deep-cut palisade canal Q8. On a big ledge in the rock were laid the impressive first courses of wall Mc, the lowest course consisting of huge headers and the second of stretchers. The stretcher course has a series of headers behind the stretchers so as to reach a full depth of *c.* 1.60–1.70 m. There are seven huge headers preserved of course I, and these present a somewhat jagged front.[91] Their dimensions are: a uniform height of 0.45 m and a depth of 0.90 m, while the length varies between 0.45–0.60 m. Course II consists of only two huge stretchers (1) 0.91 × 0.45 × 0.57 m and (2) 0.97 × 0.45 × 0.56 m, with four headers laid behind (1) 0.53 × ? × 1 m; (2) 0.46 × ? × 1.10 m; (3) 0.56 × ? × 1.10 m; and (4) 0.56 × ? × 1.10 m. Only two blocks are preserved from course III, and they are not *in situ*.

Although the situation is now somewhat obscured by the construction of the *Capannone* in 1964, it seems clear that the Mc section did not have a uniform thickness. The last two blocks were laid on the rising rock towards the south-west. A setting bed for a now-missing block indicates a wall thickness of only one header. The blocks measure (1) 0.40 × 0.35 × ? m and (2) 0.46 × 0.42 × 1.12 m. Such a change within the same Mc system, when the terrain so demands, makes it easier to accept the differences in wall thickness noted for the Ma-Mb stretches.

(d) The Md wall

Setting bed Q9 and palisade canal Q10 and three blocks still *in situ* on the much higher TRw testify to a continuation of this wall system close to the western wall E4 of House E.[92] The Q10 cutting can be followed further along the edge of the Borgo West for at least another 12 m, sometimes deeply cut into the rock, 0.30–0.50 m. Setting beds and three sturdy blocks (0.90 × 0.50 × 0.35 m), alternately laid as headers or stretchers indicate a thickness of the wall, at this point, of almost 1.80 m.

(e) The Me wall

The Me construction was documented by Lars Karlsson in 1999.[93]

Foundation N1 (*Figs. 69–70*)

The front of N1 consists of the two somewhat irregular courses I and II. The majority of the blocks of course I (numbers 1–3 and 7–9) rest firmly on the tufa rock. The strong character of course I was initially interrupted in the middle, approximately beneath Drain L's outlet, by an opening of *c.* 1.10 m. Somewhat later, the smaller blocks, nos. 4–6, were laid in a mixture of earth, tufa stones and tile fragments. In front of this section, the tufa rock sloping towards the west is heavily eroded, no doubt caused

[89] This is not necessarily a problem. Even the Mc-section limits itself to headers when the rock rises towards the south and the pressure from the fill is less. The strong and carefully built retaining wall D3 has an average thickness of one header, i.e. *c.* 1–1.10 m in its sturdier, lower courses.

[90] It should be pointed out that the construction of the *Capannone* in 1964 has damaged part of the blocks. The present situation does not correspond to that documented by means of the *giraffa* photographic tower in 1961–1963.

[91] There were still nine blocks in 1963.

[92] A later (medieval) entrance passage to the Borgo existed here in the sloping Nc area between buildings D and E on one side, and TRw on the other. It has obliterated any trace of a conjunction between Mb/Mc and Md. The Lane K, on the other hand, may have ended in a kind of entrance gate, which would have caused a break in wall Mb/Mc-Md and allowed for the slight difference in direction of Mb/Mc and that of Md.

[93] Karlsson 1999.

Fig. 68. Steps in the bedrock at Q15. Photograph by J. Sigurdsson.

by running water. Course II consists of mostly big blocks, nos. 10–14, lying in some earth on top of course I. Course II extends backwards toward the Drain L outlet with blocks nos. 15–19. Further back there is another, higher "course", partly standing on earth.

Drain L (*Figs. 71–72*) with walls L1 (*Figs. 74–75*, *Pls. 30–31*) and L2 (*Pl. 29*)

Wall L1a/b is not one of which the Etruscan stonemasons could feel very proud. It is a crude piece of masonry, built in four rather irregular courses, I–IV, of which only I (20 blocks) and II (4+10 blocks) are relatively well preserved. Considerable care was taken to ensure the stability of L1 but little to give it unity and coherence.[94] The brute albeit sturdy character of this high Drain-wall L1a/b with its reused blocks and uneven façade tends to show that its southern front was not intended to be visible. Its height of 1.60–1.70 m confirms that it did also have the function of a retaining wall for the fills, necessary in the Bc-area, as is clear from the accumulation and the sequences of (two or three) floor levels still visible on the preserved stratigraphic baulks.

Measurements of blocks

Wall L1 (*Figs. 74–75*, *Pl. 31*). Course I: (1) 0.30 × 0.38 × 0.45 m; (2) 0.96 × 0.34 × 0.35 m; (3) 0.74 × 0.36 × 0.45 m; (4) 0.42 × 0.40 × 0.45 m; (5) 0.43 × 0.34 × 0.46 m; (6) 0.88 × 0.47 × 0.45 m; (7) 0.42 × 0.34 × 0.42 m; (8) 0.84 × 0.40 × 0.41 m; (9) 0.12 × 0.26 × 0.31 m; (10) 0.83 × 0.46 × 0.41 m; (11) 0.42 × 0.29 × 0.44 m; (12) 0.42 × 0.27 × 0.32 m; (13) 0.40 × 0.22 × 0.32 m; (14) 0.38 × 0.24 × 0.40 m; (15) 0.82 × 0.36 × 0.45 m; (16) 0.49 × 0.35 × 0.36 m; (17) 0.45 × 0.28 × 0.49 m; (18) 0.35 × 0.25 × 0.23 m; (19) 0.60 × 0.30 × 0.43 m; (20) 0.54 × 0.32 × 0.46 m.

Course II: (1) 1.18 × 0.50 × 0.40 m; (2) 0.87 × 0.35 × 0.38 m; (3) 0.88 × 0.48 × 0.49 m; (4) 0.56 × 0.45 × 0.46 m; (5) 0.98 × 0.36 × 0.38 m; (6) 0.30 × 0.40 × 0.40 m; (7) 0.60 × 0.30 × 0.44 m; (8) 0.37 × 0.33 × 0.60 m; (9) 0.79 × 0.42 × 0.43 m; (10) 0.30 × 0.32 × 0.45 m.

Course III: (1) ? × 0.33 × 0.55 m; (2) 0.51 × 0.32 × 0.37 m; (3) 0.60 × 0.37 × 0.45 m; (4) 0.45 × 0.45 × 0.52 m; (5) 0.64 × 0.40 × 0.68 m; (6) 0.80 × 0.32 × 0.36 m.

Wall L2a in its upper, eastern part is rather crude and made of fairly small blocks, the first five being set in the bedrock and the other four laid on earth or smaller stones, occasionally with earth-filled gaps between them. Course II protrudes far northwards beyond course I and lies to a great extent on earth fill in area Ad. It can hardly be part of the original construction and, like course III of L2b, was probably an addition during a later construction phase centred on the laying of Floor 2 in Area A. Wall L2b begins after block 13 with a slight change in direction. Now follows a sequence of three courses of bigger and thicker blocks (mostly *c*. 0.50 m thick as compared to the 0.32 m of blocks 12 and 13 of L2a), much better cut and laid so as to constitute what was once a decently looking façade towards south.

Wall L2. Course I: (1) ? × 0.50 × 0.52 m; (2) 0.96 × 0.35 × 0.50 m; (3) 1.05 × 0.36 × ? m; (4) 0.88 × 0.50 × ? m; (5) 0.96 × 0.50 × ? m; (6) 0.40 × 0.40 × ? m; (7) 1.02 × 0.32 × ? m; (8) 1 × 0.36 × 0.56 m; (9) 0.45 × 0.46 × 0.33 m; (10) 0.60 × 0.50 × ? m.

Course II: (1) 1.12 × 0.40 × 0.45 m; (2) 0.94 × 0.40 × ? m; (3) 0.82 × 0.35 × ? m; (4) 0.70 × 0.40 × 0.56 m; (5) 0.96 × 0.30 × ? m; (6) 0.94 × 0.38 × ? m; (7) 0.50 × 0.32 × 0.56 m.

[94] It may be important to note that the first, huge drain cover block of course II has cracked. There may be several reasons for such cracks in tufa blocks, but it is intriguing that this lies exactly in line with the cracks in a block and the ground in the nearby Well P1 area, reasonably explained as part of the earthquake disturbance around 550–530 BC. Similar cracks are noted in the last two blocks of both walls of Drain L as a result of a similar, roughly north–south crack in the tufa rock. It should also be noted that the last two blocks of courses I and IIb have been broken by an earthquake fissure visible in the bedrock of area Bc and continuing through bottom of the drain and the corresponding blocks of wall L2.

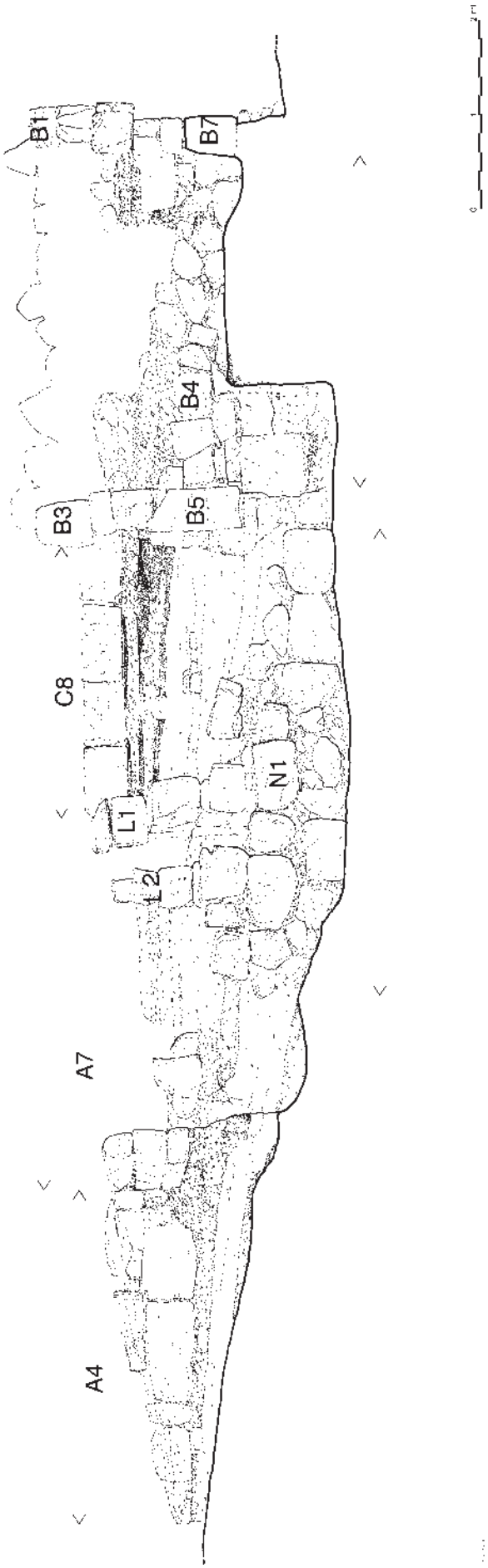

Fig. 69. North–south section through Houses A and B (walls A7, C8) with elevation of foundation N1 and Drain L (Section G2 = *Pl. 5*). Drawing by G. Tilia.

Fig. 70. Foundation N1 and Drain L consisting of the two substantial walls L1 and L2. Photograph by B. Blomé.

Fig. 71. Drain L towards the west. Photograph by B. Blomé.

Fig. 72. Drain L towards the east. Photograph by B. Blomé.

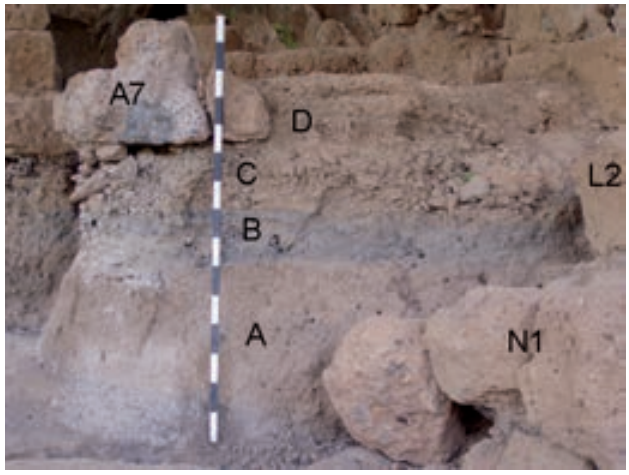

Fig. 73. The fill levels A-B-C. Photograph by J. Sigurdsson.

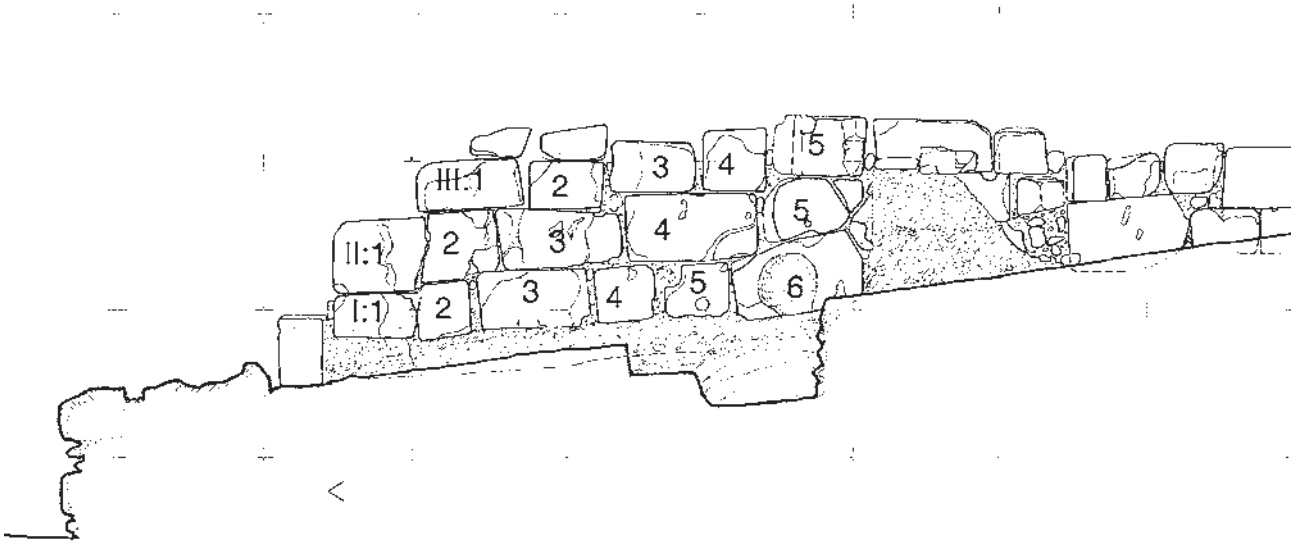

Fig. 74. South elevation of wall L1 (Section T15 = *Pl. 31*). Drawing by B. Blomé, A. Bizzarro and G. Tilia.

Course III: (1) 0.70 × 0.45 × 0.27 m; (2) –; (3) 0.97 × 0.45 × 0.30 m; (4) 0.95 × 0.48 × 0.31 m; (5) 0.78 × 0.38 × 0.35 m; (6) 1.15 × 0.35 × 0.33 m; (7) 0.87 × 0.31 × 0.40 m.

Wall L3. Course I: (1) 0.67 × 0.33 × 0.85 m; (2) 0.52 × 0.30 × 0.90 m; (3) 0.66 × 0.30 × 0.76 m; (4) 0.92 × 0.34 × 0.56 m.

While the unsystematic sloppiness of wall L1a/b does not allow any safe observations as to construction period(s) and possible additions, the better build wall L2a/b is more helpful. Courses L2a:I and L2b:I&II clearly belong together and are related to a first pavement/floor, Floor 1, in the A-area. Course L2b:III, on the other hand, differs somewhat by being some 0.10 m thinner and is related to the later Pavement/Floor 2, in the same area. The general stratigraphic situation of the Drain L-foundation N1-area will be discussed below.

While the upper, eastern part of Drain L runs along the sloping tufa rock for about 7–8 m the remaining part, as pointed out, is laid on earth. The water inside the drain had eroded its way through this earth and ran on the rock somewhat beneath the bottom level of the drain walls L1b and L2b. At the end and outlet of the drain there is a kind of "water lock" consisting of four rather small stones, one underneath each of the end blocks L1b:17 and L2b:20, perhaps to prevent the water from eroding the earth-bed of the end blocks, and two stones placed in the drain proper so as to create a small barrier to temporarily halt or slow down the water.

Fig. 75. Wall L1 from the south. Photograph by B. Blomé.

N1 and Drain L: stratification and finds[95]

The stratification inside the Drain indicated three separate chronological developments, starting with the earliest activities:

(a) Cutting Q1 with earth and *tufetti*.[96] The finds included three fragments of Buccheroid Impasto, including a miniature *kyatos*, and one fragment of transitional Impasto.

(b) Soil accumulation above bedrock or Drain floor (0.40–0.50 m).[97] Finds: Ordinary Bucchero (5), painted Impasto (1), Red-slip and Internal Red-slip ware, incl. a well-preserved jar (4); Kitchen ware (3), and an unidentifiable iron fragment.

(c) Fill-like accumulation with pottery and roof-tile fragments (0.70–0.80 m).[98] Ordinary Bucchero (1+8 unnumbered fragments), Red-slip ware (7), Internal Red-slip ware (4), slipped and Kitchen wares (5), tiles (4).[99]

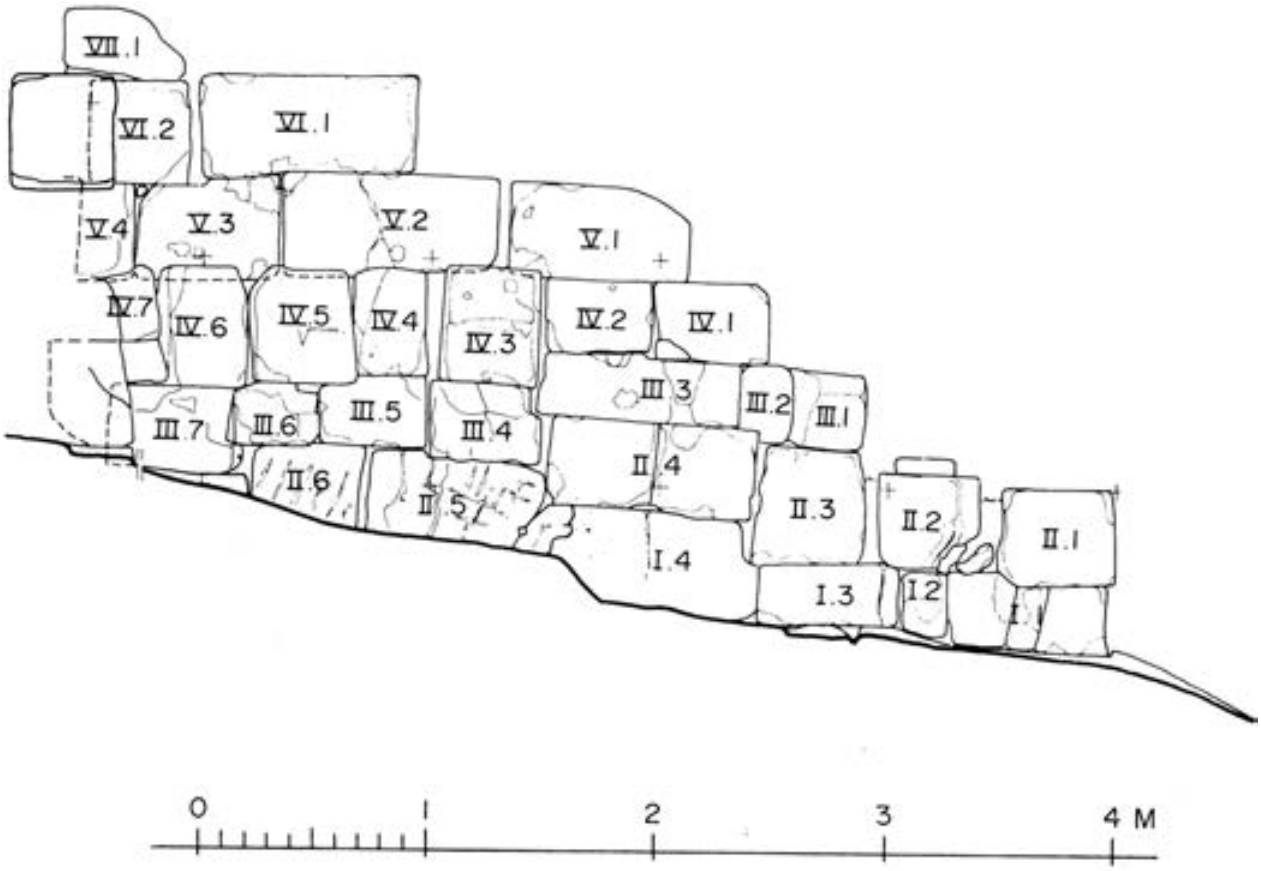

Fig. 76. North face of wall D3. Drawing by B. Blomé.

[95] Cf. *San Giovenale* V:2, 69–71.
[96] Find group 62-113; *San Giovenale* V:2, 70, cat. nos. 1–4. I. Pohl has listed the finds in cutting Q1 in connection with Drain L, although the modest material found came from the cutting outside the drain. It is, of course, possible that the small sherds could have ended up in cutting Q1 through water coming from the Drain. Cf. Chapter Four, the Pre-House period.
[97] Find group 62-172b and ind. nos. 62-107, 62-108, 62-112 and 65-102; *San Giovenale* V:2, 70f., cat. nos. 1–14.
[98] Find group 62-172a; *San Giovenale* V:2, 71, cat. nos. 1–21.
[99] Cf. Wikander 1981.

Fig. 77. Wall D3 from north-west. Photograph by B. Blomé.

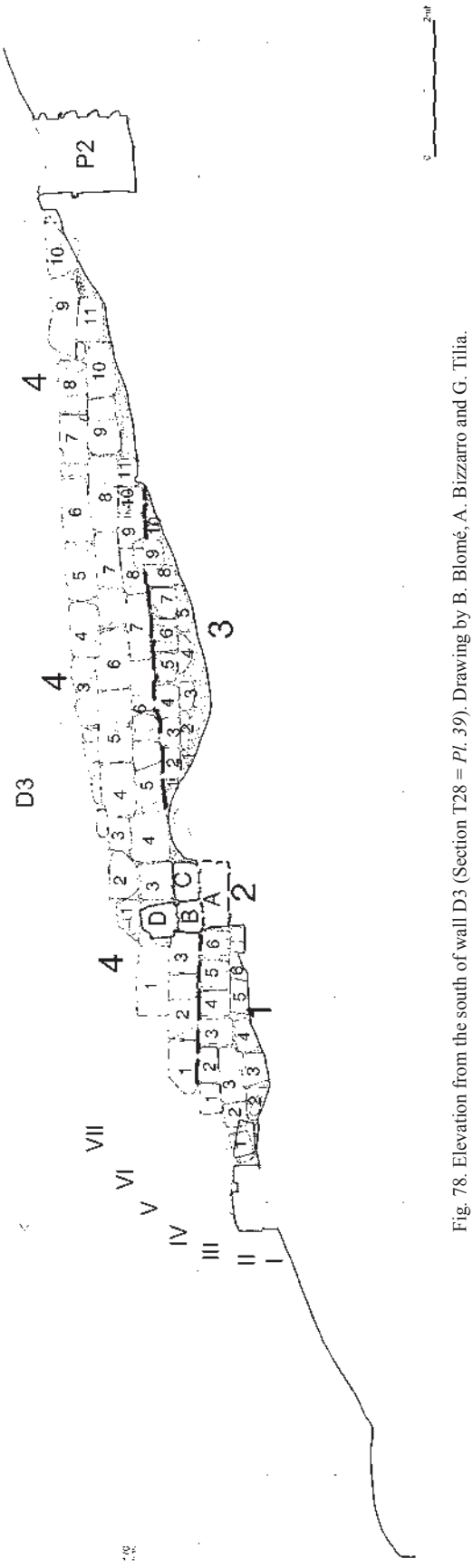

Fig. 78. Elevation from the south of wall D3 (Section T28 = *Pl. 39*). Drawing by B. Blomé, A. Bizzarro and G. Tilia.

A major stratigraphic baulk, with a total length of 9.20 m was left in area Ad between House A and Drain wall L2/N1. The baulk profiles, two (at blocks L9 and L11) in a roughly north–south direction and one (at block L12) running roughly east–west parallel to Drain L, illustrate the fill activities along the sloping rock and, in their upper parts, the existence of stratum 7 (see below). Floors 1 & 2. This stratigraphic baulk can be correlated with a corresponding one in yard Bc on the other side of the Drain. We may synthesize the stratigraphic information of these baulks as follows:[100]

Stratum 1 (Pohl, str. 1–3). The top layer consists of unsystematic soil, blocks, stones and tile fragments. In the upper, eastern part of the stratification fill stratum C lies directly on the bedrock. Strata A and B are found only when and where the rock begins to dip and slope, i.e. mainly outside wall A4, and further down. They constitute the first and earliest part of the Great Fill in the A- and Na/Nb-areas. Because of their compact character and distinctive features they are helpful in clarifying conditions around the constructions in the Nb area.

[100] Because of the sloping bedrock we do not find all strata in all three profiles. Thus the two lowest strata 6 and 7 are visible only in the lower, western part of this stratification. These two strata are not mentioned in Pohl's stratigraphic analysis (*San Giovenale* V:2, 25f.), due to the excavators', and above all my own insufficient notes of the remains of room Aa (room Ab in *San Giovenale* V:2). The problems of how to understand the stratigraphy of Area A will be discussed in the relevant section below.

Fig. 79. Wall D3 from south-west. Photograph by J. Sigurdsson.

Stratum 2 = Floor 2 (Pohl, str. 4).

Stratum 3 (Pohl, str. 5) is a fill stratum above Floor 1, some 0.30–0.40 m thick.

Stratum 4 = Floor 1 (Pohl, str. 6) lies on top of stratum 5.

Stratum 5 (Pohl, str. 7) is a brownish, earthy, stratum of varying thickness marked by much tufa stone, big and small, alternating with irregular horizons of a brown, and sandy earth as well as broken pieces of rock. This stratum is visible in all three baulk profiles and is clearly the top stratum of the Great Fill Project. Its many small and big tufa stone fragments derive from quarrying and stone working in the upper area Ac. Stratum 5 is poor in sherds, and contains very few fragments of broken tiles.

Stratum 6. In the lower, western part of the stratification, there is a *pozzolana* layer, 0.20 m thick, homogeneous, grey and very clearly defined, with few finds. Stratum 6 is also visible in yard Bc and even in House B.

Stratum 7. It is located on the bedrock in the lower, western part of the stratification. It is a thick (maximum thickness 0.60 m), dense and compact, clayish, light brown stratum without finds. It constitutes the lowest, first part of the Great Fill Project connected to the terrace wall/fortification Mb/Mc and foundation N1. Stratum 7 is found also in yard Bc as a fairly thin layer (0.20–0.30 m) lying on the sloping bedrock.

Walls D3/D4 and D5/D6

Section I (Figs. 76–77)

Course I, stretchers 1–4, of varying lengths (0.50–0.90 m) and heights (0.30–0.46 m) are laid on the prepared rock. The last block does not fit well in the cutting prepared for it, the little remaining space being filled out with a small stone, a fact indicating that the wall was built up the slope towards the east.

Blocks of course I measure: (1) 0.70 × 0.30 × 0.48 m; (2) 0.15 × 0.25 × ? m; (3) 0.61 × 0.28 × ? m; (4) 0.81 × 0.40 × ? m.

Course II, headers 1–7 are laid in on the somewhat irregular course I, partly anchored by offsets cut into the upper sides of the blocks in course I. The lengths vary between 0.35–0.50 m and the heights between 0.27–0.52 m.

Blocks of course II measure: (1) 0.51 × 0.40 × 0.97 m; (2) 0.42 × 0.40 × 1.05 m; (3) 0.47 × 0.51 × 1.07 m; (4a) 0.45 × 0.36 × ? m; (4b) 0.43 × 0.36 × ? m; (5) 0.72 × 0.40 × ? m; (6) 0.45 × 0.36 × ? m.

Course III is composed of two different parts (a & b), separated by a vertical joint. Course IIIa block 1 is missing but can be reconstructed as a substantial stretcher, about 0.90 × 0.45 m. It was followed by two rather small and thin stretchers with two more at the back to achieve the full wall depth of *c*. 1–1.10 m. On top of these are two small headers, while three (?) further headers (*c*. 0.35–0.45 m) are missing towards the front. Course IIIb consists of four sturdy headers. Such a change within course III can be explained by the preference for strong headers in the lower part of the wall (section I has 14 preserved headers versus seven preserved stretchers; in section III there are 15 headers versus five stretchers) and, on the other hand, the need to achieve bonding at the corner of D3/D4. It is only now with course III that an even, upper surface is achieved to function as a base for the upper, thinner stretcher part II of wall D3. The stretchers of course IV are firmly anchored in course III by ledges cut in the upper side of the course III headers.

Blocks of course III measure: (1) 0.30 × 0.30 × 0.49 m; (2) 0.20 × 0.32 × 0.49 m; (3) 0.86 × 0.30 × 0.83 m; (4) 0.47 × 0.35 × ? m (5) 0.46 × 0.36 × ? m; (6) 0.35 × 0.27 × ? m; (7) 0.50 × 0.37 × ? m.

Blocks of course IV measure: (1) 0.49 × 0.34 × 0.58 m; (2) 0.46 × 0.34 × 0.64 m; (3) 0.42 × 0.52 × ? m; (4) 0.31 × 0.49 × ? m; (5) 0.42 × 0.50 × ? m; (6) 0.35 × 0.52 × ? m; (7) 0.45 × 0.35 × ? m.

Blocks of course V measure: (1) 0.77 × 0.40 × 0.50 m; (2) 0.93 × 0.44 × 0.45 m; (3) 0.63 × 0.40 × ? m; (4) 0.42 × 0.43 × ? m.

Blocks of course VI measure: (1) 0.93 × 0.45 × 0.55 m; (2) 0.45 × 0.47 × 0.56 m.

Block of course VII measure: (1) 0.49 × 0.30 × ? m.

Section II

At a point *c*. 4.50–5.50 m from the west end of D3 a series of six huge blocks (from 0.90 × 0.45 × 0.52 to 0.55 × 0.30 × 0.40 m), laid perpendicularly to the wall's west–east axis, have been built into the north and the south sides of the wall, two of which are bonded into it and the others firmly locked in position by the superimposed bonded ones. This means an increase in wall thickness at this point up to 2.50 m, or even more in the lower part. The reason for this construction is probably a drop in the ground at this point and an assumed need to strengthen the wall against the pressure of the Great Fill in the higher area to the south.

Section III (Figs. 78–79, Pl. 39)

This section can only be studied from the south, the other side of the wall being hidden behind a fill and wall K2. It is laid on the uneven rocky ground and on some earth in which some six big, rough and flattish stones have been laid so as to provide a stable level for the first course.

Course I consists of a stretcher (0.65 × 0.30 m) close to the section II reinforcement, and then ten headers of varying sizes (length 0.35–0.42 m and height 0.30–0.45 m) which protrude, often obliquely, beyond the face of the vertical wall. Their upper sides have often been formed into ledges securely to lock in position the superimposed blocks of the next course.

Course II has a pattern of 1 huge stretcher (1.38 × 0.59 m) – 2 headers (0.45 × 0.42 m), – 3 stretchers (length 0.66–0.99 m and height 0.34 m), 3 headers (length 0.37–0.44 m and height 0.34–0.37 m) and has the function of providing an even level for the thinner upper, stretcher part of Wall D3.

Courses III and IV have 1 stretcher – 1 small header – 8 stretchers (length 0.74–1.43 m and height 0.34–0.51 m), and 9 (eroded) stretchers (0.11–0.55 m), respectively. The header of course III clearly does not really belong there: it has been recut to fit into a limited space not big enough for a regular stretcher.

Wall D5 is 0.50 m thick and consists of 14 roughly shaped stones laid on the sloping rock in a vague approximation of three courses (5+6+3) (Section L12, *Pl. 9*). Blocks nos. 5, 11 and 14 abut the bigger and somewhat better cut corner blocks of wall D6, which has only five blocks. Only one of these is in its old position on earth, the others were underpinned by mortared tufa blocks in 1965.