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Al-Andarin / Androna  
An early Byzantine settlement in Central Asia

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Al-Andarin, ancient Androna, is situated in north central Syria, midway between the Orontes and Euphrates Rivers, where it was recorded in the late third-century Antonine Itinerary as a *mansio* on the road between Palmyra and Chalcis, leading to Antioch.<sup>1</sup> It lies near the so-called Basalt Massif to the east of the better-known Limestone Massif, and to the south of the area surrounding the cities of Chalcis, Anasartha and Gabbula, an area which experienced expansion during the fifth and sixth centuries to judge by dated building inscriptions.<sup>2</sup> As discussed below, it appears that Androna was deliberately expanded in this same period by an increase in water supply, namely the installation of field irrigation. It became a very large (covering 256 ha) and densely settled site which eventually required a second, longer circuit wall. It was large compared to other villages and even to some cities. Androna had at least eleven churches, two circuit walls, a large *kastron* and a bath (the last two built by one Thomas in 558-9) and a second bath.<sup>3</sup> Nearby is Qasr Ibn Wardan<sup>4</sup> whose sixth-century basalt and brick buildings are contemporary with Thomas' *kastron* and bath at Androna. Despite its size the legal status of Androna was that of a *kome*, not a *polis*.<sup>5</sup> Important construction work occurred at Androna in the second half of the sixth century when it is often argued that Oriens and other parts of the Empire experienced economic and other difficulties, leading to the Arab conquest of the mid-seventh century

In the past the site was partially surveyed by H.C. Butler in 1905 and by Mouterde and Poidebard in the 1930s.<sup>6</sup> Since 1997 an international project of excavation and survey at the site has been carried out by three teams – a Syrian team from the Department of Antiquities at Hama (which has excavated an Umayyad bath and a house), a German team directed by Prof. Christine Strube of Heidelberg (which has excavated the *kastron*, a domestic complex and parts of the circuit walls), and a British team from Oxford directed by myself.<sup>7</sup> Given Androna's location in a semi-arid zone, Oxford's work there has concentrated on its water usage. Thus, our team excavated the

<sup>1</sup> Mouterde and Poidebard, *Limes*, 17 note 3, 61-3, 174.

<sup>2</sup> Mundell Mango, 'Baths, reservoirs and water use', note 3.

<sup>3</sup> For the inscriptions see *IGLS*, nos. 1676-1713; C. Mango in 'Andarin Oxford 1998'; Griesheimer, 'Occupation', 137-41; Strube, 'Vorbericht', 69-72, 92-3, 112-4.

<sup>4</sup> On Qasr Ibn Wardan see Butler, PUAES, 26 ff.

<sup>5</sup> 'Andarin Oxford 1999', 308.

<sup>6</sup> Butler, PUAES, 47-63; Mouterde and Poidebard, *Limes*, 15, 171-4, 217.

<sup>7</sup> See [http://www.arch.ox.ac.uk/research/research\\_projects/Andarin/publications](http://www.arch.ox.ac.uk/research/research_projects/Andarin/publications) for bibliography of Oxford work; all participants, among whom A. Claridge deserves special mention, are listed below or on the website. For the German team's work see Strube, 'Vorbericht'.

Byzantine bath within the site and two reservoirs outside, and have terminated work with a landscape study around the site which has included a survey of water flow. Our aim has been to assess native existing resources and their enhancement in late antiquity that led to the site's physical and economic expansion. To do this we have combined the approach of environmental archaeology with the more traditional. The following paper describes our work.

To begin with the bath built by Thomas in ca. 560.<sup>8</sup> This bath is situated in the centre of Androna, opposite the *kastron*. It had at least two Greek inscriptions in verse which identify it as a bath (*loutron*) open to the public. Excavation revealed that it was relatively large (c23 x 40 m). In contrast to the village baths of the Limestone Massif, the Androna bath's layout (large entrance court, large *frigidarium*, *tepidarium*, three-room *caldarium*) and operation recall those of the urban bath at Zenobia on the Euphrates built about 10 years earlier.<sup>9</sup> It appears to have eventually influenced an Umayyad bath built nearly beside it at Androna which in turn resembles other Umayyad baths.<sup>10</sup> In line with its urban architectural pretensions, the bath was expensively decorated. O. Karagiorgou has classified 19 types of marble and decorative stone used on floors and walls.<sup>11</sup> There were also wall and floor mosaics, and both figural and epigraphic frescoes. Excavated finds from the bath include imports, such as the marbles (more than half being Proconnesian), fine wares, stamped *unguentaria*, amphorae from Asia Minor and Egypt, and decoloured glass. Local manufactured products include the water-lifting jars (see below), Syrian amphorae and other, buff-ware pottery, in addition to plain glass, especially perfume flasks and small drinking glasses. N. Pollard who is studying all excavated pottery, dates imports as Late Roman (sixth to seventh century) and the local work to the transitional late Byzantine-Umayyad period; A. Vokaer has studied the Syrian Brittle Ware used for cooking.<sup>12</sup>

Our excavation produced other material relevant to an understanding of water management and local resources. The bath's water was provided by a well and a cistern, not by an external aqueduct. The water for its pools was lifted in jars (fragments of several hundreds were recovered) from the *saqiyya*-operated well on the west side of the bath up to an elevated water tank. There were three furnaces to heat the hot and warm rooms. Refuse water was drained to the south via a double-level drain and to the north via a latrine into a disused well 11 m deep. Rain water from the roof of the peristyle entrance court on the east side of the bath was collected by way of vertical

<sup>8</sup> 'Andarin Oxford 1999', 307-15; 'Andarin Oxford 2000', 293-7.

<sup>9</sup> Mundell Mango, 'Periphery', 123-5.

<sup>10</sup> Yegül, *Baths*, 341, figs. 428-9.

<sup>11</sup> Mundell Mango, 'Stylite', 333-4.

<sup>12</sup> 'Andarin Oxford 1999', 307-15; 'Andarin Oxford 2000', 293-7; Vokaer, 'Brittle Ware'.

pipes down into a central cistern. This water was used for drinking, judging by the layer of broken pottery found on its floor.

Excavation also produced organic material that reflects the improved environmental conditions at Androna afforded by irrigation. Flotation of sampled deposits produced remains of three types of grain (bread wheat, durrum wheat, barley), organic evidence of grain processing, and coniferous and deciduous wood used as fuel, all identified by M. Robinson. Plant cuttings were also recovered. Study by P. Lange of the excavated animal bones reveals that sheep and goat bones were most numerous: mortality occurred at 1-6 months or 2-3 years, which suggests slaughter for meat. The next largest group found was domesticated pigs which were killed at 1-2 years. C. Cartwright has identified the bones of sea fish such as bream and mullet and river fish such as catfish. Fish may have been bred in one of Androna's extra-mural reservoirs (on which see below). This is suggested by the series of recesses at the base of its walls. The reservoir could have held up to 5000 fish at a time, probably for salting and export. Salt is available in abundance nearby, as is catfish, *Silurus*, the principal freshwater fish preserved by the Romans.<sup>13</sup> Olive mills, in addition to olive pits used as fuel, point to local oil production. Flour mills were also excavated. A pre-Islamic Arabic text praises the wine produced at Androna. In sum, evidence suggests that Androna produced wine, olive oil, grain, livestock and, possibly, fish.

Our second area of excavation was that of two of the four extra-mural reservoirs.<sup>14</sup> While the bath and other buildings within the walled site relied on wells and cisterns for water, the extra-mural reservoirs were used for agricultural irrigation. Together with the subterranean aqueducts (*qanats*, see below) which supplied them, the reservoirs supplemented the water made available by the 250-300 mm rainfall of the semi-arid zone in which Androna was situated, to allow the site to produce, for example wheat in addition to barley. Our partial excavation of the reservoirs helped to establish their capacities, operating mechanisms, and dates, as well as their integration into the adjacent fields. They display both similarities and differences in planning. They are built of massive limestone masonry with cobbled or paved floors. The reservoirs measure 61 m on a side, are shallow (2.5-3 m deep), and were elaborately decorated, perhaps because they served as settings for water festivals such as the *Maiouma*, still celebrated in the sixth century.<sup>15</sup> One of the two reservoirs is just outside Androna, to the south, while the other is about 1.5 km to the northwest. Two further reservoirs lie further away to the north.

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<sup>13</sup> Mundell Mango, 'Fishing in the desert'.

<sup>14</sup> Mundell Mango, 'Baths, reservoirs and water use'.

<sup>15</sup> Mundell Mango, 'Fishing in the desert'.

The walls of the southeast reservoir had a series of large niches, apparently flanked by colonnettes carved with various patterns, which alternated with columns standing on engaged bases. The water delivered by the *qanat* was emptied into a large square settling pool from where it could flow down into the reservoir and/or into two lateral channels which led to adjacent fields.<sup>16</sup> The water that entered the reservoir would eventually be conducted out through a channel on the opposite side. Unfortunately, this outlet channel had been removed, probably in modern times. In 2006 A. Johnson located its path by geophysical survey by magnetometry which traced it for a distance of up to 300 m. from the reservoir. In addition to these various inlet and outlet channels, there is evidence of a long canal in aerial photographs, satellite images and our kite photographs of 2003,<sup>17</sup> which was apparently dismantled in the past 30 years. This ran between the area of the southeast reservoir and the *qanat* lying to the west that leads to the northwest reservoir. There was, additionally, a wadi between the southeast reservoir and Androna itself. The relations among all of these various water conduits require further study. We have carried out two sets of scientific analysis to determine the dates of construction and abandonment of the southeast reservoir. One was a radiocarbon test conducted on charcoal in cement sampled from the reservoir floor. This gave a date in the mid-sixth to mid-seventh century. Further analyses of other samples from the reservoir will help to test this dating. Additional charcoal samples are being sought in the kilns where the cement was produced near the reservoir inlet. Magnetometry revealed that eight or nine of these were built in a straight line presumably at the time of the reservoir's construction. Ideally, Optically Stimulated Luminescence analysis of sediment samples could date the period of the abandonment of the reservoir. These latter analyses have been carried out and informal indications are for a dating range in the eighth to ninth century. These two sets of dates would bracket agricultural production dependent on the irrigation provided by this reservoir which is the closest one to Androna. A late Roman date for the construction and use of the reservoir is supported by the evidence of the broken pottery which had been contained in the waste material used to manure the irrigated field. None of the 600-odd sherds collected on the outlet side of the reservoir were of imported finewares that pre-dated or post-dated the Late Roman period.<sup>18</sup>

The reservoir to the northwest of Androna resembles in many respects the southeast reservoir.<sup>19</sup> It lacked large niches in its walls, but has at fixed intervals a series of engaged decorated

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<sup>16</sup> Mundell Mango, 'Baths, reservoirs and water use'; 'Andarin Oxford landscape study 2006', plan p. 81.

<sup>17</sup> 'Andarin Oxford landscape study 2005', fig. p. 47.

<sup>18</sup> Mundell Mango, 'Bath, reservoirs and water use'.

<sup>19</sup> Ibid.; 'Andarin Oxford landscape study 2005', 47-8; 'Andarin Oxford landscape study 2006',

bases which may have also once supported columns. Fragments of two or three different friezes were recovered from the reservoir, one being of Jonah and the Whale, apparently originally placed above the outlet of the reservoir.<sup>20</sup> This reservoir has one lateral channel that branches off the inlet to irrigate a nearby field. On the opposite side of the reservoir, the main outlet channel is more complete compared to that of the southeast reservoir. At floor level a drain hole leads into a lower channel, directly under an open overflow channel. The lower stone channel was traced by trenches at intervals for up to 972 m. In view of the long distance the water was conducted, the question arose as to whether any lateral channels off this line delivered water to the closer fields. By use of magnetometry we discovered that the upper overflow channel turned in a diagonal direction to the northeast. It became obvious that this channel was used to water the nearer fields, together with the nearly parallel diagonal channel that branches off the reservoir's inlet, while the lower outlet channel conducted water further away.

In 2004 we started to examine the function of these two reservoirs within the context of Androna's environmental setting when we embarked on our landscape study, originally suggested by M. Decker. The wider area in which Androna is situated was the subject of a recent Syrian-French survey that encompassed five climate zones extending from the temperate coastal to the desert.<sup>21</sup> In the central semi-arid area with a 250-300 mm rainfall where Androna is situated, published reports show a concentration of hydraulic structures.<sup>22</sup> These structures are the *qanat*/reservoir systems which look like snakes on the Syrian-French survey map. Four of them are in the close vicinity of Androna, and two of them include the excavated reservoirs described above. Dale Lightfoot's study of 67 *qanat* sites in Syria shows that *qanats* are located throughout the country but only in areas of 500 mm or less rainfall. A diagram published in that study illustrates the basic *qanat* layout.<sup>23</sup> Its series of vertical excavated shafts descend to a horizontal tunnel which leads water to the surface from an aquifer. The mouths of the shafts are visible on the surface running in a line.

Within the large Syrian-French survey area, Oxford's small landscape study area around Androna measures only 22 x 14 km. This study area encompasses two different terrains. The part in the middle is flat limestone ground which has the *qanats* and reservoirs. These *qanats* and reservoirs probably irrigated cultivated wheat fields. The limestone would have benefitted the olives

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<sup>20</sup> Mundell Mango, 'Stylite', 334.

<sup>21</sup> Jaubert et al., *Arid Margins*, 5-44; Geyer and Rousset, 'Les steppes arides'.

<sup>22</sup> Jaubert et al., *Arid Margins*, 32-4.

<sup>23</sup> Lightfoot, 'Qanat', 323, 327.

which may have grown on a low hill in the centre, as well as in other areas. To the west of the limestone ground is a basalt hill area running north-south where one sees traces of vine terracing in satellite images and on the ground. The large unirrigated area that extends to the east of Androna may have been steppe pasture land.

For our landscape study we have recorded evidence of the irrigation systems, including those using the two excavated reservoirs, as well as related pottery scatters derived from field fertilization. We have also noted settled and activity sites likewise attested by pottery (collection overseen by S. Randall and J. Stockbridge; material being studied by T. Papaioannou), traces of buildings (planned by S. Greenslade and S. Leppard) and loose finds (recorded by A. McCabe). R. Hoyland is compiling a gazetteer of sites and a history of modern local settlement and agriculture based on local interviews. To compile our maps we have used satellite images interpreted by C. Hritz and L.A. Schachner, combined with aerial photographs taken by Mouterde and Poidebard in the 1930s and with kite photographs taken by R.C. Anderson our architect, particularly in 2003. For surveying on the ground we have used hand held GPS units.<sup>24</sup>

We have now identified at least six groups of *qanats* in our area, two more than illustrated by the Syrian-French survey maps. The *qanats* in the north (group no. 6) flow east to west, while the other five flow south to north, except for secondary branches. A preliminary assessment of the *qanats* was made 1998-99 by A. Wilson, M. Decker and T. Bell. Plotting of *qanats* by satellite imagery and GPS readings on the ground was carried out in 2003-06. In 2006 B. Magee and L.A. Schachner conducted a limited survey of levels for a study of water flow relating to the irrigation systems.<sup>25</sup> For this study we chose *qanat* no. 4 because it is closest to Androna and would therefore represent an original phase of the irrigation installation. This *qanat* also led to the northwest reservoir which delivered water to a property with an imperial boundary stone and it includes an intersection with a short east-west *qanat* branch which would be interesting to study. Within *qanat* no. 4, we recorded the visible features of the shafts and the tunnel between them: for example dimensions (of openings, spaces between them, etc.), and the type of construction such as the basalt masonry seen in several places. We also measured selected lower levels. To illustrate the findings we can look to one satellite image that clearly shows the short east-west branch of *qanat* no. 4 opposite Androna at Samakiyya.<sup>26</sup> Joined to this is our cross section drawing of the branch in which the upper line represents the ground surface where the level was

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<sup>24</sup> 'Andarin Oxford landscape study 2004', 54.

<sup>25</sup> 'Andarin Oxford landscape study 2006', 78-80.

<sup>26</sup> 'Andarin Oxford landscape study 2004', 54 with figure.

taken at the upper opening of 17 shafts, while the lower level was taken at the bottom of two shafts (nos. 1, 3), giving their depth but also their relative incline and water flow from east to west. The survey of *qanat* no. 4 extended to the northwest reservoir where another cross section drawing illustrates the delivery point of water into the shallow reservoir which inclines slightly towards the outlet side where the water left at the two levels described above, the upper one extending to nearby fields, the lower continuing for at least one kilometre.

As mentioned earlier, the landscape study has examined, in addition to the irrigation systems at Androna, any traces of settlement or activity areas. As just noted, the lower outlet channel of the northwest reservoir extends nearly a kilometre to the northwest, i.e. to within a short distance of Umm al-Jurun, which lies at about 3 km from Androna. Situated there was the property 'of the martyr Jacob', which is identified by an imperial boundary stone set up in the names of Justinian and Theodora, therefore between 527 and 548.<sup>27</sup> The stone, relocated and studied by C. Mango, was first discovered in the 1950s at 500 m north of remains seen in R.C. Anderson's kite photograph. This shows a mounded area which is probably the collapsed martyrium of the Martyr Jacob. Strewn across the mound is a variety of architectural material including a fragment of a Proconnesian marble slab with a cross. Also possibly related to Jacob the Martyr is the body of a reliquary which may come from this site. Scattered about the mound and adjacent areas are large oblong vats, mills and troughs which suggest agricultural activity. The destination of the northwest reservoir irrigation channel at the Martyr Jacob's property suggests that agricultural activities there may be linked directly to Androna itself and to initiatives originating there as represented by the creation of the extensive *qanat*/reservoir systems.<sup>28</sup> There may have been other links close to Androna, for example between Jacob and the anonymous stylite who once sat on his column placed 300 m outside the north wall of Androna. An olive mill found by the fallen column suggests agricultural activity also at that site.<sup>29</sup>

Within the central area of the landscape study, to the south of Jacob's property at Umm al-Jurun, lies a rectilinear structure of unknown function at the modern village of Samakiyya just 1 km to the west of Androna. The east-west branch of *qanat* no. 4 discussed earlier appears to terminate within this structure which was probably the centre of an activity requiring a supply of water. A lack of other contemporary buildings or loose architectural and agricultural finds elsewhere at Samakiyya suggests that it was not a settlement but an activity or processing area. Four kilometres

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<sup>27</sup> *IJLS*, no. 1675<sup>ter</sup>.

<sup>28</sup> 'Andarin Oxford landscape study 2004', 55; 'Andarin Oxford landscape study 2005', 47-8.

<sup>29</sup> Mundell Mango, 'Stylite'.



further west, on the far side of the limestone hill from Androna and Samakiyya lies Homeh situated at the intersection of three branches of *qanat* no. 3. This site preserves the most numerous traces of buildings, including door jambs, two lintels with Greek inscriptions and column capitals, as well as agricultural equipment and relatively copious amounts of pottery, almost all Late Roman.<sup>30</sup>

To the west of the central area, at the outer limits of the landscape study area, stands the basalt *djebel*, where vines were cultivated. Najam al-Zuhur, which lies against the *djebel*'s east flank, at ca. 7 km west of Androna, had the largest number of loose agricultural loose finds that we recorded in 2005, in particular mills, troughs, vats (some quite large) and perhaps rollers. There were, in addition, a few architectural pieces, including one with a Greek inscription. A lintel with a Syriac inscription was found northwest of the site. The pottery collected (nearly 700 sherds) resembles that found at the other sites, that is mostly Late Roman for the fine wares. Given the character of these various finds, one may suggest that Najam was a processing centre between the field cultivation and plantations of the limestone plain and the *djebel* where vines grew. Further up on the *djebel*, to the south of Najam, are the remains of Stabl Antar. The central part of Stabl Antar was planned by Butler in 1905. It has a Greek lintel inscription of 577 and is thus contemporary in period with important buildings at Androna such as the *kastron* and bath built by Thomas in 558-ca 560. Stabl Antar was originally described as a fort by Butler and by Mousterde and Poidebard, but has been more recently identified by M. Decker as a walled farm. Large vats and other containers lie on the property and to the south of this central area are traces of vine terracing visible in satellite images and on the ground as lines of basalt boulders.<sup>31</sup>

As stated earlier, the studied evidence suggests that Androna was deliberately expanded by large-scale irrigation, possibly in the sixth century. It is possible that many of the small sites near Androna may have grown up as part of its own agricultural expansion.<sup>32</sup> While pottery scatters and loose agricultural finds at thirteen sites explored suggest Late Roman processing activity, there are relatively few remains of buildings indicating settlement. None of these sites was densely settled, in contrast to Androna itself. Stabl Anar, Homeh, Najam al-Zuhur, Umm al-Jurun and Abu Hanatej<sup>33</sup> preserve Greek lintel or other inscriptions of the period, capitals or other traces of building which, however, are low in numbers with only a handful at each site. Three of the four

<sup>30</sup> 'Andarin Oxford landscape study 2005', 48 and fig. p. 49

<sup>31</sup> 'Andarin Oxford landscape study 2004', 55; 'Andarin Oxford landscape study', 2005', 48-9; Butler, PUAES, 63-64; Prentice, PUAES, no. 947; Mousterde and Poidebard, *Limes*, 174-5.

<sup>32</sup> 'Andarin Oxford landscape study 2006', map p. 79; Mundell Mango, 'Byzantine settlement expansion'.

<sup>33</sup> 'Andarin Oxford landscape study 2004', 55.

reservoirs have the remains of a single large building beside them. We have seen that Stabl Antar is a single farm complex and Sammaqiyya may be only an activity centre.<sup>34</sup> There may be three religious establishments in the area including the stylite's column,<sup>35</sup> a possible monastery to which a lintel with Syriac inscription<sup>36</sup> may belong, and Jacob's martyrion at Jurun.<sup>37</sup> The latter may have been a pilgrimage site, situated on the Roman road linking Androna and Abu Hanatej, the next stop on the Antonine Itinerary. At none of the other sites is there evidence of a village church which one would expect to find in this area in this period.<sup>38</sup>

As also stated earlier, Androna itself was both densely settled and an exceptionally large village of 256 ha within its walls. Questions of population numbers and required sustaining areas of agriculture are too complex to explore here.<sup>39</sup> Our work to date suggests particular types of exploitation of land immediately around the site: vines on the *djebel*, olive plantations within the limestone area which also had wheat cultivation in irrigated areas; the unirrigated area to the east of Androna may have been pasture land. Although densely settled, Androna probably engaged in surplus production. Clearly its wine circulated, being well known. In answer to the question that arises as to the market for its produce we can look to the one obvious market that lay to the north, the east and the northeast, namely the army garrisoned on the eastern frontier. If this were the case, were the *qanats* and reservoirs installed by the Byzantine army as part of a defensive scheme to create a 'limes of Chalcis' following the Persian sack of Antioch in 540, as proposed by Mouterde and Poidebard?<sup>40</sup> If so, one would expect epigraphic evidence to support this hypothesis, given the high number of inscriptions surviving from this period in Syria, including the approximately 50 Greek inscriptions found at the site of Androna itself.<sup>41</sup> However, none of the people mentioned in the inscriptions there, except for two church officials, a *chorepiskopos*, and an *anagnostes* (lector),<sup>42</sup> has an official or honorific title, including Thomas who built both the *kastron* and bath in ca.560. In the inscription over the *kastron's* main portal, Thomas associates himself with those who "give of their riches".<sup>43</sup> Perhaps he represents an entrepreneurial private sector involved in agriculture on a

<sup>34</sup> 'Andarin Oxford landscape study 2004', 54; 'Andarin Oxford landscape study 2005', 47.

<sup>35</sup> Mundell Mango, 'Stylite'.

<sup>36</sup> 'Andarin Oxford landscape study 2005', 48.

<sup>37</sup> *Ibid.*, 47-8.

<sup>38</sup> I thank Prof. Rainer Warland for raising this essential question in discussion following my lecture.

<sup>39</sup> See Mundell Mango, 'Byzantine settlement expansion'.

<sup>40</sup> Mouterde and Poidebard, *Limes*, 229-40.

<sup>41</sup> See note 3 above.

<sup>42</sup> Griesheimer, 'Occupation', 139 no. 22; Strube, 'Vorbericht', 92.

<sup>43</sup> *IGLS*, no. 1682.

grand scale.

To conclude: the economic value of water to Andarin is demonstrated by the site's large size and dense settlement, and by its richly decorated buildings. Water available from the Byzantine bath well continued to be exploited in the Umayyad period within the then disused bath for industrial purposes, such as the metal workshop installed in the *tepidarium* being studied by C. Salter. In the same period this same well water was also used in the new bath built nearby.<sup>44</sup> To what extent the large external water supply system, apparently installed in Late Antiquity continued to function is as yet unclear, but further evidence may emerge to answer this important question.

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<sup>44</sup> Mundell Mango, 'Baths, reservoirs and water use'.

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