

CHAPTER I

Introduction and Acknowledgements

There is at Constantinople an aqueduct where water comes from the country called Bulgaria. This water flows towards the aqueducts from a distance equal to a voyage of twenty days; and, when it enters the city, it divides itself into three sections: one part goes towards the imperial palace, a second part into the prisons of the Muslims and the third part into the baths of the patricians, and the population of the town drinks from the water which is lightly salted.¹

The surviving remains and history of the Byzantine water supply of Constantinople represent one of the most extraordinary legacies from the ancient world. Not only did the system include the two longest, levelled water channels (from Vize 336 km distant and from Danamandira 215 km away) but it also included some of the greatest and most monumental aqueduct bridges, including the Bozdoğan Kemeri (aqueduct of Valens) within the city with an exceptional length of 971 m (Fig. 2.1). The total length of the three Thracian aqueducts, excluding the channels from the aqueducts in the Forest of Belgrade, amounts to at least 592 km, thus exceeding the maximum length of 520 km from the eleven aqueducts of the city of Rome.² This figure has only been calculated as we prepare the final maps for this publication and it greatly exceeds previous estimates, although quite rightly the late Professor Kâzım Çeçen claimed the Thracian system to be ‘The Longest Roman Water Supply Line’ in his illustrated study published in 1996. This was a Roman achievement even if it exceeded anything constructed in old Rome or the Western Empire and until recently it has not been represented in most studies on ancient aqueducts.³ Perhaps more surprising is that the system did not decline in the ‘dark ages’ of the early medieval period, but after a period of disruption lasting just over a century, it was restored in 767 and continued to be maintained until the late eleventh century. The great sinuous water channels and the majestic bridges of the Thracian water supply did

not just proclaim the ambitions and needs of the late Roman emperors of Constantinople, but also demonstrated the technological achievements of medieval Byzantium recognized by the Arab-Islamic world and by the distant medieval Chinese.⁴

This book aims to develop from previous studies and to provide an archaeological and historical synthesis of both the physical remains and the written sources. Chapter 2 presents an historical overview including an introduction to the topography of the system as a whole, but more detailed discussion of a number of specific topographical aspects is to be found in Chapters 5 and 6. The historical account is supplemented by the collection and translation of the written sources (Appendix 1). Chapters 3 and 4 are concerned specifically with the material remains of the system found outside the city and are largely based on our fieldwork over the past ten years with a record and analysis of many of the main bridges and channels. The following two chapters, 5 and 6, present the evidence for the distribution and storage of water within the city, including the model for the two separate lines of Hadrian and Valens and the implications for the evolution of water provision and its relationship to the later Ottoman system. The next two chapters are both concerned with the remarkable decoration and inscribed stones preserved from the great bridges: Chapter 7 provides an account and analysis of the carved Christian symbols from Kurşunlugerme and the other major bridges (with catalogue), whilst Chapter 8 provides a

¹ From the account of Haroun-ibn-Yahya, an Arab prisoner in Constantinople in the tenth century, Izeddin (1941–46), 61; El Cheikh (2004), 147.

² Aicher (1995), 165.

³ The system does not figure in any of the recent writings of Hodge (1992); (2000); see however Lewis (2001), 193–4.

⁴ El Cheikh (2004), 59–60; see Michael Lewis’s paper in *Late Antique Archaeology* 6 (forthcoming).

detailed catalogue and study of the masons' marks seen in the context of other marks from the early Byzantine world. The final chapter, 9, considers a number of themes concerned with the administration of the water supply, a comparison between Rome and Constantinople, and the literary texts from the city.

EARLIER WORKS

The remains of the Byzantine water supply system within Constantinople have excited interest since before the fall of the city in 1453. Although Buondelmonti's description of the cisterns predates the fall, like a number of other contemporary accounts, it displays an antiquarian interest in the early remains. Barely a century after the Ottoman conquest, Pierre Gilles provided the first 'modern' description of the Byzantine remains, which until today remains fundamental in understanding its topography and buildings.⁵ In two volumes he showed a lively interest in the cisterns within the city, especially his account of the 'discovery' of the Yerebatan Sarayı, and in the aqueducts in the Forest of Belgrade, although significantly he provides only a limited account of the Bozdoğan Kemerı, probably reflecting the limited references in the ancient sources.⁶

The next significant discussion of the Byzantine cisterns and aqueducts appeared in Count Andréossy's detailed account of the Ottoman water supply system as part of two works on the city and its environs. He was ambassador at the court of the Sultan in Istanbul from 1812–14.⁷ An artilleryman and one of Napoleon's generals, he was especially interested in hydrology and drainage and he provides a remarkably well-informed description of the Ottoman system with valuable and important insights on the Byzantine system. Although he visited parts of the Ottoman aqueducts in the Belgrade Forest in order to avoid the city during a time of plague, there were as yet no accounts of the long-distance supply in the Thracian forests. The first mention of these in Western accounts of Thrace was in the account of

European Turkey compiled by the French geologist Visquenel; he travelled in the 1840s, but his account, full of detailed geographical and commercial statistics, was published nearly thirty years later. In his description of the country between Vize and Saray, he records the descriptions of bridges and the account of the Mudir of Saray who told of the channels leading to Constantinople; there is no evidence that he visited any remains, although one of his maps illustrates part of the course of the Anastasian Wall near to Kuşkaya.⁸

Until the twentieth century most travellers to Istanbul from the Balkans were more interested in reaching the great city than discovering antiquities in the Thracian forests. At the turn of the nineteenth century the German archaeologist Schuchhardt followed the line of the Anastasian Wall from coast to coast, but made no mention of the aqueducts in the vicinity.⁹ At about the same period the French epigrapher Seure was publishing the Stamoulis collection of Thracian epigraphy collected in Silivri. He included the text of an inscription of Basil II and Constantine VI found near Karacaköy and sensibly suggested that it should be associated with the aqueducts in the vicinity, rather than the Anastasian Wall as Schuchhardt had claimed; the location of the aqueducts is shown on the sketch map illustrating Seure's article in the *Bulletin de Correspondance Hellénique*.¹⁰

Within the city, however, the end of the nineteenth century saw the publication of one of the fundamental studies of the cisterns and Byzantine water supply by Forchheimer and Strzygowski; this remains the basis for all subsequent studies. Forchheimer was a professor of engineering at Aachen and also at the Hendese-i Mülkiye, forerunner of Istanbul Technical University, where Çeçen was later to teach and research in the same field.¹¹ Strzygowski was a Byzantine art historian and professor at Graz with particular interest in architecture. His later reputation was tainted by association with National Socialism, but in the decades before 1900 he made a very significant contribution to the study of the

⁵ Gilles (1561a) and (1561b). The former is published in English translation as Gilles (1988). See the recent discussion by Byrd (2002); Grélois has recently completed a new translation and commentary of Gilles's accounts of Constantinople, Gilles (2007).

⁶ Gilles (1988), 37, 164.

⁷ Andréossy (1818) and (1828); note Forchheimer and Strzygowski (1893) refer to the 1818 volume, whilst we have used the 1828 version; both accounts of the Ottoman water supply appear to be identical.

⁸ Visquenel (1868), 296, pl. 20.

⁹ Schuchhardt (1901).

¹⁰ Seure (1912); see Appendix 1, for the inscription of Basil II.

¹¹ Çeçen (1996a), 225.

archaeology of Constantinople.¹² The combination of engineering expertise with a knowledge of the ancient sources and topography provided a study of exceptional significance and a work that repays careful study. For instance, no location map is provided, but a reference to Stolpe's map of Constantinople is found opposite each plan (see Chapter 6, Concordance of Cisterns), and in the general discussion of cisterns not only are there references to a range of cisterns from around the ancient Mediterranean including Alexandria, but there is a table of the cisterns and *piscinae* of Rome derived from Lanciani's *Topographia di Roma antica*, but without any caption. Significantly they note the reference in the *Patria* to the sources in Bulgaria and associate these with the account of the channels and aqueducts described by Visquenel near Saray;¹³ the structures themselves remained unvisited.

The last phase of the Ottoman Empire heralded a decade of warfare in the Balkans from 1912 to 1922, which surprisingly occasioned the first detailed survey of the main aqueduct bridges to the east and west of the Anastasian Wall. A feature of the new Bulgarian state, founded after 1878, was the use of archaeology as a means of defining national identity. This is best shown from the excavations at Pliska, in north-east Bulgaria, the site of the capital of the first Bulgarian state. However the peninsula west of Istanbul, in what is now Turkish Thrace — Trakya, continues to be termed Eastern Thrace by Bulgarians and Greeks, and when the Bulgarian armies advanced on Istanbul in the late autumn of 1912, archaeologists within the Bulgarian army advanced with them. The Bulgarian assault was checked at the fortified Çatalca lines but they remained in occupation until the following summer.¹⁴ One discovery by soldiers digging trenches was the Akalan Hoard, a combined group of gold solidi of Heraclius and gold Avar-type belt fittings, presumably deposited at the time of another unsuccessful siege of Constantinople in 626. The hoard, which is now in the National Museum in Sofia, was published by Filov in *Archäologische Anzeiger* under the title of 'Archäologische Funde im Jahre 1913, Bulgarien!' Akalan lies close to the line of the water channel from Pınarca (see Fig. 2.1) and major aqueducts lie 10 km north, close to Çiftlikköy. Another Bulgarian officer, Oreshkov, seems to have

been based for some time in that village and used his time profitably, perhaps during the truce between December 1912 and February 1913, as he carried out a study of the major aqueduct bridges and the Anastasian Wall, using idle soldiers to clear parts of the forest. The full significance of his work has not been recognized in subsequent studies of the water supply since his account was published in Sofia and in Bulgarian, thus limiting its readership, although it is referred to by Dirimtekin, who reproduced all his drawings of the inscriptions and carvings. Furthermore there is only one drawing of Kurşunlugerme, there are no location maps and his identification of the position of carvings and masons' marks on the major bridges relies on a complex code. Despite these reservations Oreshkov's account provides evidence for carvings otherwise lost or damaged and was an important basis for our study of the masons' marks.¹⁵

Following the foundation of the Turkish Republic, it is understandable that the territories west of the city now became a restricted military zone. However in 1933 Dalman published his seminal account of the Aqueduct of Valens.¹⁶ This provides a detailed study of the structure of the bridge, together with a systematic survey of the historic sources supplemented by Wittek's study of the Ottoman texts. Although Dalman considered structures close to the city, such as the Ma'zulkemer, further survey was restricted. However just over a decade later Dirimtekin, a former cavalry officer and director of the Ayasofya museum for seventeen years, was able to carry out a range of research in the western hinterland of the city, including a study of the Anastasian Wall and other Byzantine monuments, together with two studies dedicated to the water supply and aqueducts. The first article, published in *Cahiers archéologiques* for 1959, gives an account of the aqueducts and channels in the area between Gümüşpınar and Çiftlikköy, with elevation drawings and some photographs, but with a limited sketch map; this was supplemented in 1968 by the publication of the remote bridge at Leylek Kale.¹⁷ Dirimtekin's study was the first to consider the archaeology of the channels and bridges and, although he sometimes fails to draw out the broader conclusions in relation to the narrow and broad channels, it provides an important

¹² Forchheimer and Strzygowski (1893); Kleinbauer (1992), lxxi.

¹³ Forchheimer and Strzygowski (1893), 202–4 (Alexandria), 196–7 (Rome); cf. Lanciani (1880), reference to Visquenel, p. 21.

¹⁴ Gerolymatos (2002), 213–14.

¹⁵ Oreshkov (1915).

¹⁶ Dalman (1933).

¹⁷ Dirimtekin (1959); (1968).

introduction to the complexity and monumentality of the system. Surprisingly both these articles, published in respected European journals, went unnoticed in the broader range of ancient aqueduct studies. It is difficult not to feel that in the 1970s, while the wider classical world was being challenged with the new interest in Late Antiquity by scholars like Peter Brown, followed by Averil Cameron and others, the study of ancient technology continued to focus on the classical Mediterranean and the texts of Vitruvius, and especially Frontinus. To some degree this bias still persists in publications on ancient water technology and society; most recent publications, developing on from Hodge, have either chosen to look in detail at particular problems, such as Ohlig's important study of Pompeii, or continued to assess the archaeology in the light of the major texts. Despite some stimulating studies in this field, there remains a reluctance to develop a fully integrated understanding of infrastructures and their significance for classical and late antique urban history. There is, however, a greater awareness of the importance of water as a subject of study in its own right, although this is more developed for the post-classical periods, see notably the writings of Squatriti on medieval Italy and Coates-Stephens on early medieval Rome; for a more inclusive approach to water and society, not just as an aspect of technology, see the recent study by Rinne on Renaissance Rome.¹⁸

Access to the forests of Thrace became easier after the fall of Communism in Eastern Europe and we were able to obtain our first permit to work on the Anastasian Wall in the summer of 1994. Three years before, Professor Kâzım Çeçen had initiated a programme to survey the same system, following on from his research and publications on the Ottoman system of water supply and capture. The results of Çeçen's study were published in 1996 in a lavishly illustrated book which for the first time presented a map showing the full extent of the line beyond Vize. It was now possible to envisage the reports of water from Bulgaria as reported in the ancient and medieval sources (see Chapter 2). Çeçen used a variety of survey approaches.¹⁹ In the furthest sector, from

Saray to Vize, where the country is open and not too thickly wooded, he and his team were able to record the remains of bridges and channels. As the forest became more dense, especially east of Binkılıç, the line was surveyed from a helicopter, consequently with less evidence for channels and other detail in this sector, although some ground visits were made. In the vicinity of the Anastasian Wall he recorded some channels, but was principally concerned with the great bridges, such as Kurşunlugerme. Further east towards the city the forest becomes less dense and, although the remains of the system have been extensively robbed, he gives an important account of the course of the channel as it approaches the expanding suburbs of the modern Büyükşehir — Megalopolis. Çeçen's account is not restricted to the channels outside the city, it also discusses important evidence for distribution and storage within the city. As an engineer he does not always show a critical awareness of the historical sources or the archaeological structures but Çeçen's great achievement was for the first time to map and illustrate the monumentality of the remains of the fourth- and fifth-century systems, and his great strength was his technical knowledge and his familiarity with the Ottoman works.²⁰

Müller-Wiener's *Bildlexikon* remains the basis for an understanding of the structural remains of the Byzantine and early Ottoman city, and in the introduction to the concordance of cisterns (Chapter 6) we provide a more detailed discussion of how a number of surveys from Forchheimer and Strzygowski onwards can be integrated. From recent studies, the most significant publications on the water supply are by Cyril Mango in the latest edition of *Le développement urbain de Constantinople* and his article devoted to the water supply published in 1995;²¹ our debt to Professor Mango's work is clear throughout this book.

SURVEY METHODS

Compared with the complex and frantic urban conurbation of modern Istanbul, the countryside of Thrace, certainly to the west of Çatalca and

¹⁸ For recent studies of Frontinus, see Evans (1994), Frontinus (2004), and Rodgers (2005); for specific studies, see especially Ortloff and Crouch (2001) and Ohlig (2001), with Wilson (2006); see Leveau's comments on the state of aqueduct studies in 1990, although many of his ambitions remain unfulfilled (1991), especially 149–53; in Rome, see recent studies by Noreña (2006) and Tucci (2006). The significance of Roman infrastructure and building is considered by Dodge (2000) and DeLaine (2002); for Constantinople, see Crow (2007b); for the hydraulic history of the early medieval and later periods in Italy, see Squatriti (1998), (2000), Coates-Stephens (1998), (2003), and Rinne (2005). Studies of Byzantine water are very limited, but see the popular introduction by Kakouris and colleagues (2000).

¹⁹ Çeçen (1996a), 9.

²⁰ Çeçen (1991); (1996a); (1996b); (1999).

²¹ Müller-Wiener (1977); Mango (1995); (2004), 77; see also the survey by Eyice (1979) and Berger's study of Byzantine baths (1982).



FIG. 1.1 Charcoal-burners near Çiftlikköy.

Dağyenice, is sparsely populated and for many hundreds of square kilometres covered with a dense forest extending down to the shores of the Black Sea. There are few villages and forestry is the main occupation, with limited arable farming in clearances. Beyond Saray the landscape opens into a more dispersed woodland, although for the most part the line of the aqueducts remains within the forested hills to its final springs at Pazarlı. Much of this forested landscape is carefully managed with a regular regime of coppicing down to ground level every twenty-five years controlled by the Turkish Forestry Service. The trees are mostly deciduous, oak with lime and hazel, and are mainly cut for firewood, and in particular charcoal, which is sold to the many grills and kebab shops of Istanbul (Fig. 1.1).²² When we started fieldwork over ten years ago, camels were still used to carry the timber from the forests to the charcoal stances outside the villages but they have become increasingly rare and are now only retained as pets. Tractors and trailers have replaced them with resulting damage to some of the archaeological remains. A consequence of this regime is that the forest is very dense and there is no grazing apart from black buffalo. There are trails in places, but often they do not correspond to the mapped paths. We cannot be sure how far this has been the character of the woodland in past centuries. Certainly grazing by

goats and allowing the trees to grow taller would have created more open woodland.

For fieldwork in this forest certain years are better than others and over the decade of our survey we have seen some areas opened by the felling, especially at Nikol Dere near Belgrat, and watched as each year particular monuments become more difficult to view due to continued growth. We were told that the valley of Kurşunlugerme will be cleared in about another ten years and that should provide an opportunity for renewed survey of the tunnels and other structures.

Villagers, especially at Aydınlar, told us stories of taller trees in the past, also of great fires in the forest and of the use of timber for the railway built in the 1870s from Istanbul to Sofia. But folk memory in the majority of these communities is limited. Before the First World War, the population was a mosaic of Greek- and Bulgarian-speaking Christians and Muslim Turks. From accounts such as Oreshkov it seems likely that many will have been Rum or Orthodox Greek-speakers. Old wooden houses in Karacaköy still retain nineteenth-century Greek painted inscriptions, but the Christian populations were moved to northern Greece after 1922, to be replaced by the present villagers, who had in their turn been moved into eastern Thrace from Muslim communities in Serbia and Bulgaria.²³ Like the Anastasian Wall, many of the aqueducts to the east

²² Byfield (1995).

²³ See below Chapter 9, p. 218. Pre-1914 Aydınlar (formerly Alaton) unusually was a mixed Christian and Muslim village, where in 1997 we met an old man who recalled taking refuge in Istanbul as a child in 1912–13, to return to a village destroyed by the retreating Bulgarian armies. The pattern of villages may also have changed during the nineteenth century; Çiftlikköy does not appear on Kiepert's map of Thrace (1877) and Oreshkov (1915) notes how the village was a new creation drawing together dispersed hamlets.

of Kuşkaya are today referred to as *kale*, Turkish for castle. However, on the west side of the wall ridge the suffix *-germe*, something that is stretched, is preferred.²⁴ We were not told of any specific stories or superstitions, but overwhelmingly there was pride amongst most villagers we visited in the great monuments hidden in their forests. Indeed, just like the Mudir of Saray in 1847, it seems to be common knowledge that the system leads to Istanbul, although we did not hear that the springs were sourced from the Danube as the quotation opening this chapter relates.²⁵

In summary the main approaches for the survey of the water supply system are as follows:

1. Identifying and mapping the major monuments and the principal channels, in part based on previous surveys by Dirimtekin and Çeçen, but also informed by local villagers and by local archaeologists, especially by M. Akif Işın, Director of the Tekirdağ Museum, who showed us sites between Vize and Saray in 1997 and 2002.
2. Detailed survey of individual monuments, such as Kurşunlugerme, and also more intensive survey and recording of neighbouring channels.

Our interest in the monuments of the western hinterland of Constantinople began with the survey of the Anastasian Wall started in 1994, starting on the high ridge which runs from the main Saray–Çatalca road towards Kuşkaya. From here we took the opportunity to visit the main aqueducts to the west and east of the Wall, especially as there remained a question as to what extent the Wall protected the main aqueduct sources. In 1995, while the survey of the Wall continued, we made a deliberate attempt to investigate the great bridge at Kurşunlugerme and to investigate the channels with the assistance of a team using GPS from Istanbul Technical University (ITU). At the same time staff in the Department of Geology in ITU kindly allowed us to make photocopies of the Turkish 1:25,000 maps. Over the next three seasons, 1996–98, the main focus of the survey remained the Anastasian Wall, although we continued to investigate sites such as Pınarca, the sources at Papu and Hasan Dede Çiftliği, the bridges and channels near Aydınlar, and the extension of the line from Saray to Vize. A preliminary review of our research on both the Wall and the water supply appeared in 1997.²⁶

Limited use of GPS in the vicinity of Kurşunlugerme in 1995 enabled us to relate the pattern of channels to the 1:25,000 maps and showed, for instance, how many of these were marked on the modern maps as paths. With the use of a Trimble GPS borrowed from the British Institute of Archaeology at Ankara 1998, Richard Bayliss was able to establish the relative elevation across the system and to demonstrate that the narrow channels at Hasan Dede Çiftliği formed part of the high-level system of narrow channels constructed for the fourth-century Aqueduct of Valens. 1999 witnessed the tragic and catastrophic earthquake at İzmit; the full season was cancelled, although a brief reconnaissance was made in the autumn. Up to this point we had received funding from a number of bodies, especially the BIAA, British Academy, Newcastle University and other sources, and the Fiat Foundation and Tofaş Cars had supported the fieldwork on the Anastasian Wall. From 2000, however, we were fortunate enough to receive a major research grant from the Leverhulme Research Trust for further fieldwork in Thrace and Istanbul on the water supply system; more importantly this enabled Richard Bayliss to be employed full time as a research associate, to develop the survey and establish a research framework integrating map and other spatial data for the system. A major achievement was the identification of a series of British army maps of Thrace in the British Library and the Bodleian. These are based on earlier Ottoman 1:25,000 maps and were revised during the Second World War. Unlike the 1:25,000 copies we had received from ITU, these had the advantage of being in colour and we were able to have them digitized. In the following account of the water supply system, especially in Chapter 3, the British revision of the Ottoman maps is referred to as the ‘War Office 1:25,000’, while the Turkish map copies, which were revised in the 1970s by the Genel Harita Müdürlüğü, are termed the ‘Turkish 1:25,000’. The War Office topographical data form the basis of the contours shown on the detailed maps of the course of the system in this volume, and digital copies of the original coloured maps showing the line of the channels will be deposited with the library of the BIAA in Ankara for consultation. Also, from 2000 Newcastle formed part of the AHRB Centre for Byzantine Cultural History with Queen’s Belfast and Sussex Universities; Jonathan Bardill was

²⁴ The etymology of *-germe* is unclear; it probably derives from the verb *germek*, to stretch, meaning ‘stretched across’.

²⁵ See Visquenel (1868), 302–3, for the Mudir of Saray and the Danube source — he was told this story *c.* 1847.

²⁶ Crow and Ricci (1997).

appointed as research fellow in 2001, based in Newcastle, and during this period he completed his monograph on the brickstamps of Constantinople,²⁷ as well as contributing to our fieldwork from 2002 to 2005. We were able to extend the Leverhulme Grant from late 2003 to 2005 and Bardill took over the research associate post for that period (his contract ending in June 2005), during which he made a very significant contribution, especially from his broad knowledge of the history and topography of Byzantine Constantinople. Although Bayliss left Newcastle in 2003 to work in the private sector, he has remained involved on a part-time basis and has been able to complete almost all the drawings and maps for this publication, as well as participating in fieldwork in 2005. All three authors have contributed to a greater or lesser degree in all the core chapters, 2–6; 7 and 8 are identified as single-authored works, whilst the introduction and discussion, 1 and 9, are by default the work of James Crow who has edited the final volume with the valuable assistance of Claire Nesbitt. Jonathan Bardill was able to provide valuable and perceptive comments on the final draft of the text.

During the period of the Leverhulme awards we were able to complete a number of major surveys, especially at Ballıgerme and Kurşunlugerme, where we were able to use a Trimble DR200+ Reflectorless Total Station to produce a plan and elevation, combining measurements taken by the Trimble with rectified photography and field measurements. A similar survey was also undertaken at the Fildamı reservoir outside the city. Another significant change in the survey methodology after 2000 was the use of a hand-held Garmin GPS with a barometric altimeter. We have found that the greater resolution now available for such small GPS enabled us to carry out survey much more rapidly than previously, despite less precision with regard to elevation data. Where possible we have checked this against known map-referenced elevations.

One final component of the survey deserves special mention. From 1997 Professor Paolo Bono of the Department of Earth Sciences, Rome University, La Sapienza participated almost annually until 2002, together with other young Italian geologists, Guissepe Naso, Ilaria Leschiutta, Marco Bono, and Carlo Percopo. Bono is a hydro-geologist who brings an understanding not just of rocks, but of water. Working with his geological team provided a different understanding of and insight into the water

channels and especially the water sources which we hope is reflected in this report.

ACKNOWLEDGEMENTS

All three authors wish to record their gratitude to the many who have shown interest and have assisted us in a wide variety of ways in Turkey, Britain and elsewhere. We are particularly grateful to the Turkish Ministry of Culture for permission to carry out the field work in Thrace and for the interest from the three directors of the Istanbul Archaeological Museums over the period, Dr Alpay Pasinli, Dr Halil Özek and Dr İsmail Karamut, and the director of the Tekirdağ museum, Mr Mehmet Akif Işın, who was our guide in 1997 and 2002 to the aqueducts and channels in his region. For any field project in Turkey a key member of the team is the representative of the General Directorate of Monuments and Museums. From 1994 these have been: Nurhan Ülgen, Dr Remzi Yağcı, Tevfik Göktürk, Ertuğrul Danık, Solmaz Gülsen, Sena Mutlu, Nilüfer Atakan, Cevdet Sevinç (both 2000), Nilüfer Aydın, Emel Ballık (both 2001), Mustafa Demirel, Neslihan Günder (both 2002), Fahriye Bayram, Aliye Usta, and İlknur Subaşı. We are enormously grateful for all their efforts and the interest and general good humour they have shown to us. In the towns of Silivri and Çatalca we wish to thank the Kaymakams for their politeness and the manner in which they were prepared to welcome us with little advanced notice. In Silivri we would especially like to mention the interest and assistance shown by Özcan Işıkler and his staff in the Silivri Belediye.

Surveys such as this are not the work of the lone scholar, and we have been helped by an enthusiastic and often highly talented group of students and postgraduates from Newcastle and other UK universities and from Bilkent University in Ankara. We would especially wish to thank Aimée Lawrance, Theo Crow, Ed Davis, Lorraine Kerr, Maeve Jackson, Rowan Hindley, Mike Tabona, Naomi Belshaw, James George, Tom Crow, Harry Fraser, Alex Crow, Jonathan Shipley, Emiliano Agrillo, Laura Casella, Harun Kaya, and Ayşe Salaman. In addition, we would like to thank colleagues and friends who have participated in the project: Brian Williams, Liz James, Tony Eastmond, Mark Gillings, Mark Jackson, and Claire Nesbitt, who was able to take over the survey in Richard Bayliss' absence.

²⁷ Bardill (2004).

In Istanbul I would wish to acknowledge the support of friends and colleagues, especially Alessandra Ricci, who was co-director of the Anastasian Wall Survey till 1999 and has continued to show an interest in the project, Caroline and Andy Finkel and Andy Byfield, who provided local support and access to the international press. Thanks also to interested visitors and friends, amongst others to Bob Ousterhout, Annie Pralong and Anthony Bryer, and to ARIT tours, who remained cheerful despite appalling mud, and to Kristin Romey of *Archaeology Magazine* and Malcolm Billings of the BBC World Service. Public lectures have provided the opportunity for debate and questions and we are particularly grateful for invitations to address the Dumbarton Oaks Symposium on Constantinople in 1998, to participate in Istanbul lectures to ARIT and the 550th centenary of Istanbul University, and to Luke Lavan for organizing Late Antique Archaeology seminars in Rome, Oxford, and Sienna. For advice and assistance with the Longinus inscription from Elkaf Dere we express our thanks to Charlotte Roueché and Mustafa H. Sayar.

Special thanks are due to the British Institute of Archaeology at Ankara, to the directors, Roger Mathews and Hugh Elton, and particularly to the London and Ankara Secretaries, Gina Coulthard and Gülgün Girdivan, whose diplomacy and tact allow projects such as this to succeed. The British Institute has also been a regular and generous financial supporter of the Thracian project; sponsorship and support has also been received from the Arts and Humanities Research Board, British Academy, University of Newcastle upon Tyne, and Fiat/Tofaş Cars; above all we should acknowledge the generous support and continuing interest from the Leverhulme

Research Trust over a number of years which enabled the results of the research and fieldwork to be brought to publication.

We are grateful to the Roman Society for supporting the publication of this volume and to Professor Christopher Smith and Dr Lynn Pitts for their comments and encouragement. We have received a grant from the Hugh Last Fund of the Society and further publication costs have been met from the Gertrude Bell Fund, School of Historical Studies, Newcastle University. I was given research leave over a semester and a half and I would like to thank many of my colleagues in Classics and Archaeology for responding to questions ranging from Greek terminology to ancient technology; in particular I would like to mention Kevin Greene, John Moles, Tony Spawforth, Donald Hill, and Sam Turner, as well as the support of my Heads of School, Jeremy Boulton and Tim Kirk. Outside Newcastle, the AHRB Centre for Byzantine Cultural History provided not only the accurate and enthusiastic translation resources of Dirk Krausmüller and Bob Jordan, but an interest in text and visual culture which has spilled over into this project, for which I am especially grateful to Liz James and Margaret Mullett.

My colleagues and I thank the people of Trakya, who, without exception, have taken an interest in our research and have given help, guidance and friendship at every opportunity. Finally I would like to thank my family, and especially my wife Judy, who have tolerated my absences over long periods and without whose continuing support this project could not have been achieved.

James Crow
Newcastle upon Tyne, January 2007