

## POLYBIUS 10.10.12 AND THE EXISTENCE OF SALT-FLATS AT CARTHAGO NOVA

BENEDICT J. LOWE

DESPITE ITS IMPORTANCE TO THE COURSE OF THE Second Punic War, the siege of Carthago Nova in 209 B.C. remains one of the war's most misunderstood episodes. Following the accounts of Polybius and Livy, ancient historians have tended to favour the view that Scipio was able to capture the city thanks to a tide that opened the approaches to the walls. Considerable difficulties do, however, beset this account, not least the well-attested weakness of tides in the vicinity of Carthago Nova. Scholars, therefore, have attempted to seek alternative hypotheses for the Roman success. It is the premise of this paper that by considering anew both Scipio's tactics and the economic background of the city itself we can suggest a function for the lagoon protecting the city that goes some way towards explaining the anomalies in the ancient accounts.

The year 211 B.C. had been one of crisis for the Roman war effort in Spain with the defeat and death of both Publius and Gnaeus Cornelius Scipio at a disputed location somewhere in the Segura valley.<sup>1</sup> The defeat seems to have been almost total with both armies in disarray and deserted by their Spanish allies. The Romans seem to have lost all territory south of the Ebro River with the possible exception of Saguntum.<sup>2</sup> Considerable credit must be attached to the surviving commanders, L. Marcius and Ti. Fonteius, who were able to withdraw what was left of the army to the north of the Ebro.<sup>3</sup>

Rome seems to have resolved to continue her expansionist policies in the Iberian peninsula with the appointment in 210 B.C. of P. Cornelius Scipio Africanus,<sup>4</sup> the son of the P. Cornelius Scipio who was killed the previous year. The appointment was a radical one. Scipio Africanus himself was only twenty-five years old and

<sup>1</sup>The precise events leading up to the defeats need not detain us here; full accounts are available in Scullard 1970: 32–38; Richardson 1986: 31–42; Lazenby 1978: 125–132. In 212 B.C. the Roman commanders appear to have decided to use Saguntum as a base for an expansion of their operations into Southern Spain. In the course of these Publius appears to have met his end in the upper Guadalquivir valley, perhaps in the vicinity of Castulo, whilst Tipps (1991) locates the death of Gnaeus at Anaor, near the modern town of Lorquí.

<sup>2</sup>The continued loyalty of Saguntum is only surmised on the basis of there being no reference to the recapture of the town: cf. Richardson 1986: 46, n. 71.

<sup>3</sup>L. Marcius in particular seems to have acquired a semi-divine aura through his actions and was singled out for praise by Scipio Africanus the following year. For the citations in support of Marcius, cf. Richardson 1986: 44, n. 58. It may, however, be fair to say that it was the failure of the Carthaginian commanders to make a concerted attempt to drive home their advantage that enabled the Romans to withdraw to the north.

<sup>4</sup>The epithet *Africanus* was only applied following his victories in North Africa, but it is used here since it is the name by which he is most widely known today.

although he had served with his father in the campaign of 218 B.C. in North Italy (Livy 21.46.7–9), he had held no magistracy beyond that of the aedileship.<sup>5</sup> The reasons for the decision are disputed, and Livy seems to be confusing events with the later appointment of Scipio Aemilianus in 151 B.C. Iberian loyalty was largely personal rather than conceptual and the dispatch of Scipio Africanus may have been intended to secure the loyalty of his father's adherents in the peninsula.<sup>6</sup> The move may not have been entirely unopposed as the experienced M. Iunius Silanus was also sent out with *imperium* in order to assist Scipio.<sup>7</sup> So it was that in the autumn of 210 B.C. Scipio Africanus and Silanus with a force of about 10,000 infantry landed at the Greek colony of Emporion and advanced south to join the main force at Tarraco. Scipio seems to have spent the winter bringing the army up to par before embarking during the spring of the following year on a plan that would change the face of the war in Spain.

The Iberian peninsula was, at that point, occupied by three Carthaginian armies scattered across the country: that of Mago was in the Algarve campaigning against the Conii, Hasdrubal son of Gisgo was in Lusitania at the mouth of the Tagus River, whilst Hasdrubal Barca was in the territory of the Carpetani, in the vicinity of modern Toledo.<sup>8</sup> This wide disposition of forces was probably a necessity as Carthaginian rule was not yet sufficiently well established to inspire loyalty, whilst exhaustion of local resources was also a consideration in choosing a base for the winter. Polybius also suggests that personal rivalries within the Carthaginian command encouraged them to remain apart (10.6.5). As it was, all three commanders were at least ten days march from their base at Carthago Nova and it was this delay that Scipio chose to exploit. Leaving Silanus with 3,000 foot and 300 horse<sup>9</sup> to guard the Ebro, Scipio took the remaining forces, numbering about 25,000 infantry and 2,500 cavalry in a rapid march along the coast to Carthago Nova, where they were to be met by the fleet under C. Laelius. Both Livy and Polybius state that the march from the Ebro took only seven days (Livy 26.42.6; Polyb. 10.9.7), which some have seen as impossible, although such speed was necessary to avoid Hasdrubal Barca in the vicinity of Toledo.<sup>10</sup> The move was successful and Scipio was able to catch the Carthaginians off guard.

<sup>5</sup> Cf. Broughton 1951: 336; Lazenby 1978: 132–133. For Scipio's aedileship, cf. Livy 25.2.6.

<sup>6</sup> The nature of Iberian loyalty is discussed by Rodríguez Adrados 1946. Roddaz (1998) has recently argued for the creation of a Scipionic "patrimony" within the peninsula.

<sup>7</sup> Silanus had served in Etruria in 212 B.C. and no doubt was considered a safety net for his inexperienced commander; cf. Richardson 1986: 45–46, n. 68. On his exact status, cf. Sumner 1970: 88; Broughton 1951: 167.

<sup>8</sup> Polyb. 10.7.4–5. On the disposition of the Carthaginian forces, cf. also Livy 26.42.2; App. *Iber.* 6.4.19.

<sup>9</sup> Livy 26.42.1; cf. Polyb. 10.6.7, giving the figure of 500 horse.

<sup>10</sup> I see no reason to adopt the alternative explanation of Sumner (1968: 227) that the time of seven days given by Livy and Polybius refers to the time taken by the fleet to reach Carthago Nova. In fact Polybius 10.11.5 appears to imply that the fleet arrived after the army, a clear impossibility if it took only seven days. On the marching speed of ancient armies, cf. Proctor 1971: 26–34, arguing

Carthago Nova lies on a peninsula protected on three sides by water<sup>11</sup> with the sea to the south, the canal to the west and the Almarjal basin to the north. (cf. Map 1). The town itself spanned the hills of Concepción, El Molinete, Sacro, San José and as far east as Despeñaperros. Polybius, who visited the city in 151 B.C.,<sup>12</sup> states on the basis of his own observations that the walls of the city extended for 20 stades (3,700 m.).<sup>13</sup> The waters of the sea reached the walls along the Cerro de la Concepción whilst those of El Molinete and Monte Sacro were washed by the waters of the lagoon. Although the lagoon is no longer extant, it seems to have been bounded by the roads to Complutum and Tarraco and to have extended as far inland as the necropolis of Torre Ciega. In the west it extended perhaps as far as the Monte Atalaya via the necropolis of San Antón to Los Barreros, Los Dolores and Llagostena. On the northern side it seems to have reached as far as the vicinity of Peral.<sup>14</sup> Upon Scipio's arrival in 209 B.C. this area consisted of a low-lying body of salt water. Fishermen from Tarraco had informed him that it was fordable in places and that the water receded towards evening every day (Polyb. 10.8.6–7; Livy 26.45.7). The water will have drained along a channel protecting the westerly approaches to the city through the area of Santa Florentina, where Fernández Villamarzo discovered a bridge dated to the medieval period recalling that described by Polybius (10.10.13).<sup>15</sup>

Such then was the location of the city at which Scipio arrived in 209 B.C. To defend it the Carthaginian commander Mago possessed 1,000 regular soldiers, whom he placed on Monte Concepción and Molinete,<sup>16</sup> to which were added 2,000 armed citizens (Livy 26.44.2; Polyb. 10.12.2–3). Scipio established his camp on the landward approach to the city to the east in the vicinity of Castillo de los Moros whilst the fleet under Laelius was deployed to blockade the seaward approaches.<sup>17</sup> His immediate tactic seems to have been to induce Mago to undertake a battle outside the walls in which he seems to have been successful: Mago suffered heavy casualties and only just withdrew into the city in time to

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for a daily average march of ca 20 km. On this basis the march from the Ebro to Carthago Nova, a distance of 485 km., will have taken Scipio almost a month.

<sup>11</sup> For the topography of the city, cf. Beltrán 1947: 137; Beltrán 1948; Ramallo Asensio 1989: 19–26; Walbank 1957–79: 2.205–207; Scullard 1970: 48–52.

<sup>12</sup> On the travels of Polybius, cf. Walbank 1957–79: 1.1–6.

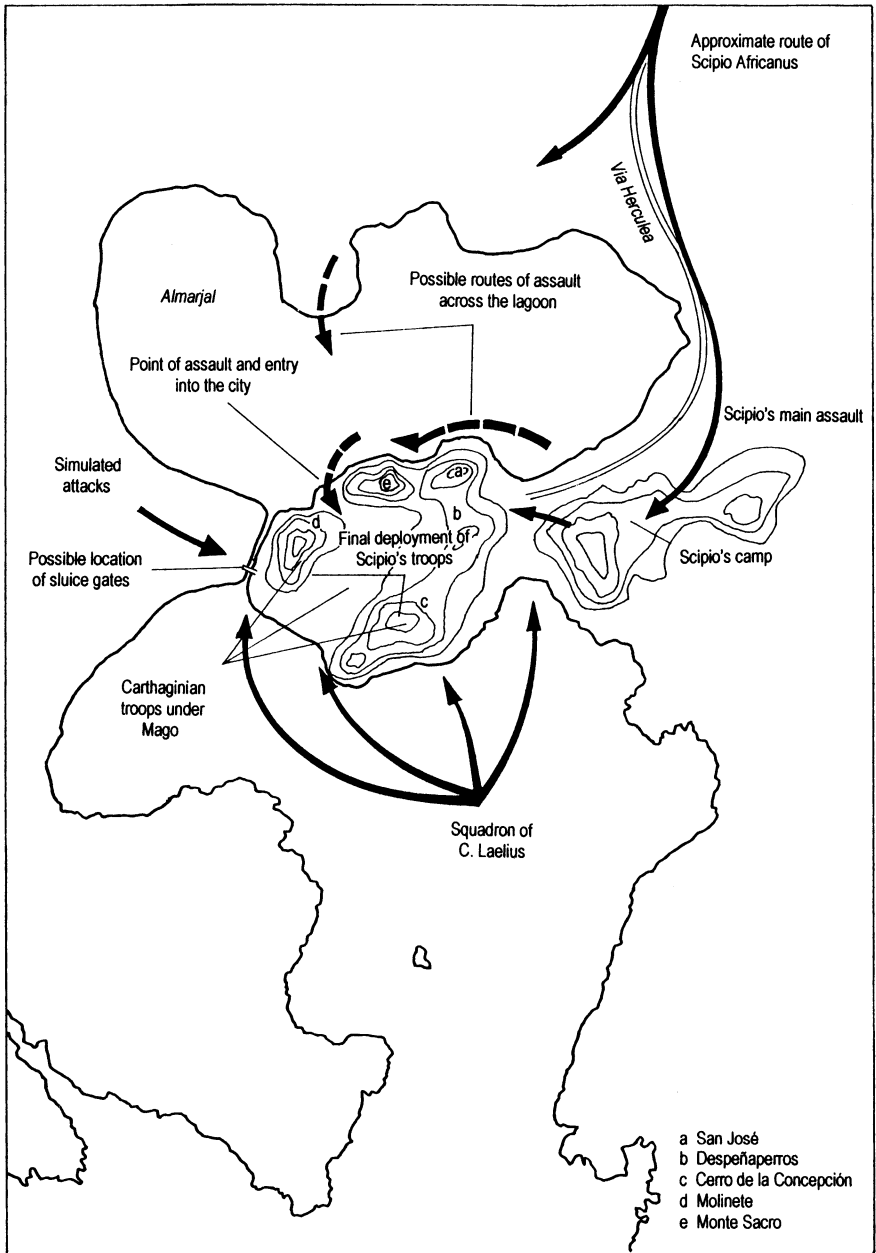
<sup>13</sup> Polyb. 10.1.1. On his personal acquaintance with the geography of the city, cf. Walbank 1957–79: 2.206–207.

<sup>14</sup> Beltrán (1948: 202) notes that the form of the lagoon is preserved to this day at times of heavy rain. On 19 September 1919 he records that the water reached a height of 2.85 m. along the Calle de Carmen.

<sup>15</sup> Cf. Ramallo Asensio 1989: 25.

<sup>16</sup> Cf. Walbank 1957–79: 2.213–214, *contra* Laquer 1921.

<sup>17</sup> It is perhaps worth noting the possibility that the defenses along the base of El Molinete were less substantial and were the initial objective of Mago's later attempt to recover the city: cf. Ramallo Asensio 1989: 24. Remains of a casemate defensive wall have been revealed in the vicinity of La Milagrosa between San José and Despeñaperros: cf. Martín Camino 1994: 317; Martín Camino and Belmonte Marín 1993.



Hypothetical plan of Scipio Africanus' assault on Carthago Nova in 209 B.C.  
after Más García 1979; Ramallo Asensio *et al.* 1992

prevent Scipio's troops from breaking through the gates.<sup>18</sup> Scipio now seems to have attempted to press home his advantage by attacking both the southern and eastern sectors of the walls (Polyb. 10.13.6–11; Livy 26.44.6–45.7). The attack seems to have met with little success until a providential fall of the water level of the lagoon enabled five hundred Roman soldiers to outflank the Carthaginian defenders and attack the undefended walls, presumably between El Molinete and Monte Sacro—a point at which the walls seem to have been weakest.<sup>19</sup> Faced by the breach in his defenses, and insufficient forces with which to contain an attack on multiple fronts, Mago seems to have attempted to hold El Molinete and Concepción before the fall of the latter induced him to surrender (Livy 26.46.8–10).

According to Polybius the fall in the water level was caused by the actions of the tide which ebbed each day towards evening (10.14.2), a fact which Scipio learned whilst at Tarraco (10.8.7). Scipio thus timed his attack to coincide with the tidal ebb so as to divert the Carthaginians from their exposed flank (10.14.1–12).<sup>20</sup> Polybius contradicts himself, however, when he says (10.8.7) that “usually (ἐπὶ τὸ πολὺ) there is a recession (ἀποχώρησις) of the water<sup>21</sup> towards evening (δείλῃν ὁψίαν).”<sup>22</sup> His phraseology would seem to point against it being a tide as this would have been of fixed regularity. Had such a tide in fact been responsible, then the Carthaginians would surely have been aware of such an occurrence and taken precautions against it. Equally if the success of his attack depended upon the utilization of the evening tide, why did Scipio waste the morning in costly attacks on the walls?<sup>23</sup> Although it is a popular misconception to describe the Mediterranean as tideless, it is true that the tides that do occur are extremely weak. Carthago Nova is no exception to this with a tidal range of only 0.6 m.<sup>24</sup>

Livy's explanation for the fall differs from that of Polybius in that he suggests that the tide was exacerbated by a north wind (26.45.8). Lovejoy has argued that such a sea breeze arises best under a clear sky and in low pressure, conditions that will have prevailed at Carthago Nova at the time of Scipio's assault.<sup>25</sup> Such winds will have been able to reach velocities of up to 15 to 25 knots that will have been sufficient to pile up the shallow water of the lagoon. One cannot, however,

<sup>18</sup> Polyb. 10.12.4–11; Livy 26.44.3–4. Appian's account (*Iber.* 6.4.21) appears to be muddled, speaking of a series of Carthaginian sallies and making no reference to the attempted Roman break-in: Scullard 1970: 61.

<sup>19</sup> This location is also conjectured by Scullard 1970: 63; cf. also Livy 26.46.2. Polybius (10.14.14) notes that the defenders had been diverted from this sector of the fortifications to more exposed points.

<sup>20</sup> Cf. also App. *Iber.* 6.4.21; Frontinus *Stratagems* 3.9.1.

<sup>21</sup> Lit. “of it” (αὐτῆς) referring to the λίμνη.

<sup>22</sup> Polyb. 10.8.7: ὥς δ' ἐπὶ τὸ πολὺ καὶ γίνεται τις αὐτῆς ἀποχώρησις καθ' ἡμέραν ἐπὶ δείλῃν ὁψίαν.

<sup>23</sup> For these and other doubts, cf. Scullard 1970: 53.

<sup>24</sup> Cf. Lovejoy 1972: 110; Lillo and Lillo 1988: 477; Houston 1966: 38; Walton Smith 1973: 124.

<sup>25</sup> Cf. Lovejoy 1972.

escape the question that if such a wind were a regular occurrence, why then were the Carthaginians not better prepared. Yet if it was rare enough to catch Mago unawares, how could Scipio have placed such an emphasis upon it in his plans?<sup>26</sup>

Recently, A. and M. Lillo have proposed to circumvent the problems posed by the traditional accounts by suggesting that the fall in the water level was the consequence not of natural but of artificial forces.<sup>27</sup> The crux of their argument rests upon the translation of Polybius' problematic depiction of the channel that linked the lagoon to the sea: συμβαίνει δὲ τὴν λίμνην τῇ παρακειμένη θαλάττῃ σύρρουν γεγονέναι χειροπῆτως χάριν τῶν θαλαττουργῶν (10.10.12). W. R. Paton, in his Loeb edition, translated this as: "An artificial communication has been opened between the lagoon and the neighbouring sea for the convenience of shipping." According to A. and M. Lillo, the Greek here does not specify whether the channel itself or the flow of water was under human control.<sup>28</sup> The use of χειροπῆτως is inconclusive. They have suggested that it does in fact refer to the lagoon being drained to benefit the fish-trappers who are still found in the region today.

Polybius (10.8.7) recounts that that the water receded each day towards evening. This has been generally taken to accord with Livy's reference to tidal action;<sup>29</sup> however, tides have a fixed regularity which does not fit with the more variable chronology referred to by Polybius when he states that the level of the lagoon *usually* fell (ἐπὶ τὸ πολὺ). In view of this, Polybius' ἀποχώρησις cannot be taken as meaning a tide, but rather only to indicate the withdrawal of the water. Because of the irregularity of the ἀποχώρησις, the time of day cannot be determined and Polybius need not be contradictory to the accounts of Livy and Appian who place the time of the attack at mid-day.<sup>30</sup> Thus the fall in the water level did not precipitate Scipio's decision to attack across the lagoon but occurred simultaneously with it. According to the hypothesis put forward by A. and M. Lillo, Scipio used his main attack to divert the attention of the Carthaginians, enabling him to capture the watercourse and drain the lagoon by opening the sluice gates located along its course.<sup>31</sup>

More recently Hoyos has made a number of criticisms of this interpretation.<sup>32</sup> First, as to the nature of the channel discussed in Polybius 10.10.12, he notes that the use of θαλαττουργῶν is nowhere confined to "fish-trappers"; in Polybius 10.8.5 we see the word being employed to describe the populace of Carthago

<sup>26</sup> Livy 26.15.8 appears to suggest that the wind was unusually fierce, although from 26.15.9 it is clear that Scipio had included its occurrence in his plans.

<sup>27</sup> Cf. Lillo and Lillo 1988: 477–480.

<sup>28</sup> Cf. Lillo and Lillo 1988: 477–478.

<sup>29</sup> Livy 26.45.8. Lillo and Lillo (1988: 479) note that there is no corresponding reference to a high tide.

<sup>30</sup> Livy 26.45.8; App. *Iber.* 6.4.20.

<sup>31</sup> Cf. Lillo and Lillo 1988: 478. Livy's silence as to the existence of the sluice gates is due to his ignorance of the topography of the site.

<sup>32</sup> Cf. Hoyos 1992.

Nova. Hoyos's own suggestion, however, that the canal was built to allow the passage and sheltering of "sea-users," by which he presumably means shipping of some form, is rendered invalid by the fact that according to Polybius the lagoon was shallow enough for a man to be able to wade across.<sup>33</sup> In fact, the word θαλαττουργός is also employed by Polybius (6.52.1) when speaking of the Carthaginians' skill at matters relating to the sea, and θαλαττουργός is most usually employed in a more general sense to denote someone who is busy on the sea;<sup>34</sup> it does not afford any stricter qualification. Yet Polybius uses it in favour of the more usual ἀλιεύς.<sup>35</sup> Evidently he is seeking to designate an activity not normally associated with fishing that would have taken place upon the lagoon. I will argue below that Polybius' deliberate use of this word alludes to another form of marine activity, salt production. This activity is said to have necessitated the linking of the sea with the λίμνη, which is usually taken as referring to the area of the ancient lagoon.<sup>36</sup> It may, however, be equally taken as referring not to a natural body of water but to an area of standing water left by the sea and may even have connotations associated with λιμναστέα, or irrigation.<sup>37</sup>

Equally problematic is the tidal action mentioned by Polybius at 10.8.7, which Hoyos has no choice but to accept even though the weakness of tides in the area of Carthago Nova has long been recognized. Although the tidal range will have been sufficient to inundate the lagoon, the water level will have remained shallow unless artificially retained. Polybius (10.14.7–8), however, refers to a deep and strong current running through the channel as the water recedes. To bring about the required pressure to achieve this effect a considerable depth of water will have to have accumulated. This could only have been achieved by the location of sluice gates along the channel. Polybius 10.10.12, therefore, would be better understood as referring to the linkage of a body of water with the sea by means of an artificial channel, the flow of which was controlled for the benefit of a work-force in some way related to marine activities on this pool. With this in mind, we must now turn our attention to Scipio's tactics.

At some point during the assault Scipio delivered a speech in which he speaks of the Roman attack receiving the divine aid of Neptune.<sup>38</sup> Scullard has suggested that the invocation of Neptune referred to the aid that the assault was going to receive from the fleet.<sup>39</sup> It is significant that the fleet plays a prominent role only in the account of Livy (26.44.10), whilst both Polybius (10.12.1) and

<sup>33</sup> Cf. Hoyos 1992: 127; Polyb. 10.8.7. Beltrán (1947: 140–141) has suggested that the fishermen knew a route across the lagoon that could be crossed even at a relatively high water level.

<sup>34</sup> For the use of θαλαττουργός to mean "one who is busy on the sea," cf. Charon Lampsacenus 17 (*FGrH* 262); Xen. *Oik.* 16.7; cf. also Strabo 6.1.1; Maximus of Tyre 223; Hippocrates *Vict.* 3.68; Themistius *Orations* 24.305d.

<sup>35</sup> On the use of ἀλιεύς to designate fishermen, cf. *Od.* 12.251, 22.384; Pl. *Ion* 539e.

<sup>36</sup> *Il.* 21.317 uses λίμνη to mean a pool of standing water left by the sea; cf. also Pl. *Crit.* 114e.

<sup>37</sup> Cf. *BGU* 91.5.

<sup>38</sup> Polyb. 10.11.7; any references by Livy are presumably lost.

<sup>39</sup> Scullard 1970: 59.

Appian (*Iberica* 6.4.20) speak of it only as blockading the harbour. It seems more probable, therefore, that Scipio's invocation of Neptune was intended to protect his deployment of five hundred men on the approaches of the lagoon and the mounting of his assault at a time coincident with that of the main attack on the city.

Of greater significance is the failure of Mago to allow for the risk of an attack from this quarter. It is likely that the Carthaginians lost control of the waterway early on in the engagement as one of Scipio's first maneuvers will have been to isolate the city by surrounding it on all sides. If the geography of the city as discussed above is correct, then the sluice gates were located along the water channel in the area of Santa Florentina. Faced by his own shortage in manpower, Mago was unable to defend the channel itself, and may have depended upon the troops located within the citadel of El Molinete to secure the approaches on this side of the city. It is in this light, however, that we can better understand Scipio's tactics earlier in the day both in attempting to draw the Carthaginians out from their defenses and to divert their attention towards the eastern approaches to the city and away from the exposed northern walls.

In considering the mechanism of Scipio's crossing of the lagoon, insufficient consideration has been placed upon the possibility raised by Beltrán that the lagoon was more widely fordable than is generally believed.<sup>40</sup> Polybius clearly states that it was shallow and fordable in a number of places and this will have encouraged Scipio to look for an avenue of attack from this side.<sup>41</sup> Whether or not Mago had considered the risk of attack from the north will remain unclear as Scipio's assault from the East will have diverted all available Carthaginian troops to combat this threat.

If then, the lagoon was a low-lying body of water open to inundation by the sea, can we envisage a translation for θαλαττουργοί? This may perhaps be found in the use of the lagoon in the production of salt. Although few authors refer to the mechanics of acquiring salt, the principal resource utilized in the Iberian peninsula seems to have been the sea.<sup>42</sup> Seawater would be drawn into shallow basins, concentrated, and evaporated by heat, leaving a residue of salt.<sup>43</sup> Any low-lying coastal area subject to regular inundation from the sea will, therefore, have been an ideal area for salt production: for example, bays, river mouths, deltas, marshes, and coastal lagoons; and a number of such locations are noted in this regard in the environs of Carthago Nova.<sup>44</sup> It seems likely, therefore, that the Almarjal lagoon surrounding the city will have been similarly utilized.

<sup>40</sup> Cf. Beltrán 1947: 140–141.

<sup>41</sup> Polyb. 10.8.7; cf. also Walbank 1957–79: 2.194.

<sup>42</sup> Pliny *NH* 30.86; Palladius 3.19.

<sup>43</sup> Rutilius Namatianus *De reditu suo* 1.476–8.

<sup>44</sup> Cf. *Ora Maritima* 460. Modern *salinae* are located at Pinel, La Mata, Torrevieja, and Cotorillo, as well as the important salt mine of Egelasta to the north, the salt of which was praised by Pliny *NH* 31.39.80; cf. also Cato (*ap.* Aul. Gel. 2.22); Sidonius *Epistle* 9.12; cf. Fumanal and Viñals 1989.



A prerequisite for such use will have been the ability to control the inundation and draining of the lagoon by means of sluice gates. Although no traces of them have been found at Carthago Nova, sluice gates were used elsewhere along the eastern coast in conjunction with salt flats and fish traps, colloquially known as "Baños de la Reina."

Although there has been some debate as to their function, the "Baños de la Reina" seem to have served as storage tanks for fish.<sup>45</sup> The most widely known of these is located adjoining the fish saltery at Punta de l'Arenal (Xabía).<sup>46</sup> They consist of a large rock-cut basin through which water can circulate by means of two rock-cut canals linking it with the sea. This arrangement allows water to enter the tank through the larger of the two channels with high tide and its departure through the second. By closing the exit it is possible to fill the basin and the slots for a sluice gate are clearly visible.<sup>47</sup> Their operation required a tidal flow sufficient to bring about the circulation of the water. A closer parallel can be seen a short distance to the south of the fishery at Punta de l'Arenal where a no longer extant salt lagoon of Las Salinas was located. These salt flats were provided with seawater by means of a large rock cut channel measuring approximately 2 m. by 3–4 m. in depth that extends for 100 m. through the sediment that has accumulated between the lagoon itself and the sea. In order to retain the seawater within the lagoon and thus bring about its evaporation, sluice gates were located on the seaward approaches to the channel, the grooves for which clearly survive until the present.<sup>48</sup> Although the dating of the remains is uncertain, they have traditionally been given a Phoenicio-Punic origin.<sup>49</sup>

The Phoenician communities of the Iberian peninsula have long been recognized as exploiting the resources of the sea.<sup>50</sup> Quantities of fish bones have been found within the colony at Toscanos, whilst finds of murex shells from Toscanos, Almuñécar, and Morro de Mezquitilla testify to the production of purple dye.<sup>51</sup> Although such fish could be consumed either fresh or dried, the principal technique of preservation seems to have been by salting and by the fifth century B.C. a number of Greek sources refer to the existence of a salting industry within the Iberian peninsula.<sup>52</sup> This has now been confirmed archaeologically

<sup>45</sup> Pliny *NH* 9.19.1; Columella *RR* 8.7; cf. Schulten 1927: 227, describing them as baths.

<sup>46</sup> Martín 1970: 144–145; Martín and Serres 1970: 14.

<sup>47</sup> Similar basins have been found at La Isleta de Campello and Calpe: see Figueras Pachero 1934: 34; Cavanilles 1795.

<sup>48</sup> Cf. Martín and Serres 1970: 92; Cavanilles 1795: 280.

<sup>49</sup> Cf. Figueras Pachero 1945.

<sup>50</sup> Strabo (3.2.7) praises the coasts of Andalusia for their wealth of marine life, whilst ps.-Aristotle (*De mirabilibus auscultationibus* 136) mentions the voyages of Gaditanian fishermen lasting for as long as four days.

<sup>51</sup> Cf. Aubet 1993: 264; Schubart, Niemeyer, and Pellicer Catalan 1969: 149.

<sup>52</sup> Cf. García del Toro 1978: 28–32. The earliest of these references is Eupolis, writing in the mid-fifth century B.C., who says πότερ' ἦν τὸ τάριχος Φρύγιον ἢ Γαδεϊρικόν (fr. 186 Edmonds). From the beginning of the fourth century Antiphanes remarks: τάριχος ἀντακαῖον εἴ τις βούλετ' ἢ Γαδεϊρικόν,

following the excavation of the so-called “Punic Amphora Room” at Corinth,<sup>53</sup> where a large quantity of Punic amphorae were found associated with the remains of filleted fish. Analysis of the fabric of the vessels showed that they were produced along the Straits of Gibraltar either in Northwestern Morocco or in Southern Spain,<sup>54</sup> where kilns have been dated as early as the sixth century B.C.<sup>55</sup> Recent excavations in the Bay of Cadiz have identified a number of Phoenician sites that engaged in the production of salted fish. The most important is found at Las Redes (Fuentebavía, Puerto de Santa María, Cadiz), in operation from the fifth century B.C. to the end of the third century B.C.<sup>56</sup>

Carthago Nova itself was highly regarded for its fishing industry during the Roman period. Of the sauces produced here, *garum sociorum* was the most important, being widely attested within the literary sources and attracting a market as far away as Rome (Pliny *NH* 31.43, 93–94).<sup>57</sup> In recent years a number of sites used in the preparation of salted fish have been identified in the vicinity of the city.<sup>58</sup> The excavation of a possible Punic fish-sauce factory on the Calle Serreta may confirm that this production predated the Roman period.<sup>59</sup> By the

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Βυζαντίας δὲ θυννίδος ὀσμαῖσι χαίρει (fr. 77, Edmonds); cf. Βυζάντιόν τε τέμαχος ἐπιβακευσάτω Γαδειρικόν θ' ὑπογάστριον παρεισίστω (Nicostratus, frs. 4, 5, Edmonds). Aristophanes speaks of the Ταρτησία μύραινα (*Ran.* 473).

<sup>53</sup> Cf. Maniatis *et al.* 1984.

<sup>54</sup> The amphorae from the adjoining levels were dated to ca 460–440 B.C. on the basis of associated finds of glazed material and those found here appear to have been related to Mañá-Pascual A-4 vessels from the site of Kuass in Morocco.

<sup>55</sup> Cf. López Pardo 1990. Occupation levels on the site appear to go back as far as the seventh century B.C.

<sup>56</sup> Cf. Muñoz Vicente, De Frutos Reyes, and Berriatua Hernández 1987. On the Punic salting industry in the Iberian peninsula, see also De Frutos Reyes, Chic, and Berriatua Hernández 1988. Cf. also Etienne 1970: 297–299; Ferreira 1968; Tsirkin 1979: 549–550; Edmondson 1987: 105–107; Curtis 1991a; Curtis 1991b: 46–48; García y Bellido 1942: 84–93. Further factories have been located in the Plaza de Asdrúbal and the Avenida de Andalucía, Cadiz, whilst the remains of a single tank, partially destroyed have been found at the junction of Avenidas García de Sola and de Portugal: cf. Muñoz Vicente, De Frutos Reyes, and Berriatua Hernández 1987: 488–490. On the chronology of the Phoenician fish factories, cf. Ruíz Gil 1991. The fishery at La Manuela is dated to the late-sixth to the end of the fourth centuries B.C. with evidence of continued occupation during the third century B.C.; that of Castillo de Doña Blanca dates from the fifth to the third centuries B.C.

<sup>57</sup> See also Mart. 13.102; *contra* Sen. *Ep.* 95.25. On *garum sociorum*, see Etienne 1970. Strabo (3.4.6) refers to the existence of a large-scale fish-salting industry near Carthago Nova on an island a short distance from the coast, which was known as Scombraria after the scomber fish that was caught there and from which the finest fish sauce was considered to be made. Claudius Ptolemaeus also refers to the existence of Scombraria (11.6.14). Athenaeus (*Deipn.* 3.121) reiterates the description given by Strabo. Cf. also Galen 12.637; Dioscurides *De materia medica* 1.54.

<sup>58</sup> Las Mateas (Los Nietos), Castillico, Galifa, Escombreras, El Mojón (Puerto de Mazarrón), El Castellar, Aguilas, La Azohía, and Santa Lucia, although there is little indication as to the dating of these sites. Cf. García del Toro 1978; Ramallo Asensio 1989: 136–144.

<sup>59</sup> Martín Camino and Roldán Bernal 1991; López Castro 1994: 78–79. Sixty per cent of the vessels found are of Carthaginian origin, with Mañá C and D amphorae present. Ebusitanian forms are well represented also with imitation Campanian vessels and PE 16, PE 17, and PE 22 amphorae.

time of Scipio's seizure of the city in 209 B.C., it would appear that it possessed an important fishing industry.

In order to support such a considerable fishing industry, the existence of areas devoted to production of salt would have been required in the immediate vicinity of the city. The area of the Almarjal basin will have been ideal for this purpose as a low-lying waterlogged area with an ample supply of salt water. This would explain why Polybius used the rarer term *θαλαττουργοί* seeking to include not only fishermen but also others involved in "activities on the sea," namely those who engaged in the production of salt and salt fish.

In that case Polybius would be correct in attributing Scipio's success to his own forethought rather than the fortuitous assistance of Neptune. By inquiring of the fishermen at Tarraco, Scipio was able to learn that Carthago Nova was protected by a low-lying salt marsh, which although fordable will have exposed anyone attempting to cross it to fire directed from the city walls. On arriving at the city, therefore, he decided upon a more direct assault along the landward approach. However, seeing that the Carthaginians were both undermanned and concentrating their available troops to face his own assault, he decided to gamble that the Carthaginians would not notice an outflanking maneuver across the salt flats. In order to achieve the necessary surprise, Scipio's troops needed to cross the salt lake both quickly and quietly, which would only have been possible when the water level had been drained sufficiently by the opening of the sluice gates located on the Santa Florentina canal. Livy is thus surely to be preferred to Polybius in placing Scipio's prayer to Neptune immediately prior to this (26.45.9) as the Roman general sought divine aid to allow his troops to reach the walls unobserved. With the defenders concentrating their attention upon the eastern walls of the city, Scipio's plan was successful; his detachment was not observed as they crossed the salt flats. In seeking a further fall in the water level, whether

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Mañá-Pascual A4 fish-sauce amphorae produced in the colonies of the South coast also occur as well as Campanian A wares from Italy: see Martín Camino and Roldán Bernal 1991: 22–24. Although clearly serving an industrial function, a direct association with the fishing industry is less certain and references by the excavators elsewhere refer to the remains merely as houses: see Martín Camino 1994: 319. The complex seems to have been destroyed by fire during the final capture of the city in 209 B.C.

Mañá-Pascual A4, Ebusitanian PE22, Carthaginian Mañá D and Mañá C amphorae have been found within the fish factory on the Calle Serreta. Mañá-Pascual A4 vessels have been identified at Kuass during the fifth to third centuries B.C.: see López Pardo 1990: 22. They appear to have developed from the production of Mañá A 2/3 and Molina-Huertas VI vessels and were produced in the Bay of Cadíz from the sixth century B.C., where they seem to have supplied the fish factories in the vicinity: see Ramón Torres 1987: 196; De Frutos, Chic, and Berriatua Hernández 1988: 300. Mañá C2b amphorae are a late form of Punic amphora dated to the period ca 125–50/30 B.C.: see Guerrero Ayuso 1986: 170–172. They are found at a number of sites along the coasts of Spain and seem to have been associated with the shipment of fish products; those at Cerro del Mar have been found containing fish bones and a number of sherds have been found associated with fish tanks at the same site as well as at Baelo. A *titulus pictus* upon an example from Castro Pretorio appears to read *hal(lex) soc(iorum)* (CIL XV 4730). The reading is uncertain; it might also read *hal(lex) coc(tiva)*. On the use of Mañá C1a amphorae to carry salted meat, see Wagner 1978: 305–331.

by the actions of tide or wind, historians have sought to explain away the fact that the lagoon was not an impediment to any attacking troops and was a danger only in that it will have forced attackers into an exposed approach to the walls. Mago, however, faced with too few troops and an overwhelming assault on the eastern walls of the city was forced to decide between a definite and a possible threat. Although not unaware of the danger presented by leaving the northern walls undefended, he must have gambled that Scipio's troops were fully deployed to the east and that his own meagre resources were better utilized in this regard. Scipio, on the other hand, by diverting attention to the east was able to outflank the Carthaginians, and thus, albeit inadvertently, to provide the earliest evidence for the existence of salting activities at Carthago Nova.

DEPARTMENT OF CLASSICS AND ANCIENT HISTORY  
THE UNIVERSITY OF DURHAM  
38 NORTH BAILEY  
DURHAM DH1 3EU  
ENGLAND

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