

# Snow and Ice in Antiquity. Supply, Preserving, Trade, Consumption

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In Antiquity, snow and ice were a consumer item with multiple uses, from the luxurious to the therapeutic, and from the preparation of food to its preservation. Due to its intrinsically volatile nature, this item is destined to escape archaeological analysis and is noted mainly in literary sources. Here we offer a synthesis of the ways in which snow and ice were stored, used and consumed in the Greek and Roman worlds. We include the prehistoric evidence and all elements of continuity throughout the Mediterranean area until the spread of mechanical cooling techniques in the twentieth century.<sup>1</sup>

The union between snow and wine constitutes the most substantial chapter in a long-lasting history, in terms of the quantity and variety of the evidence. The beginning of this evidence dates back to the second millennium BC. The royal archive of Mari documents how, in eighteenth-century BC Mesopotamia, ice was an object used exclusively by the sovereign. It was collected by specialized workers under his direct control and used to chill the wine for royal court meals and banquets. Sometimes it was given by the king, together with the wine itself, as an élite item for visiting foreign delegations.<sup>2</sup>

In the Greek world the attestations are much later. The first certain mention is provided by the epigram 88 Page, attributed to Simonides of Ceos by Callistratus (*Miscellanies*, book VII, FGr 348 F 2, Ath., 3.125 c–d).<sup>3</sup> This composition, extemporized during the course of a summer convivium, provides useful clues to the ways in which snow was consumed in a symposium context in the late Archaic age. In the final lines of the epigram the poet turns to the slaves in charge of the wine and exhorts them to pour snow into his cup so that he may raise toasts with well-chilled wine together with the other guests.

The custom of mixing snow and wine is confirmed over time in passages from various literary works. The play by Strattis entitled ‘Men Who Keep Cool’ was probably designed to deride decadent people who dedicated themselves to leisure and luxury.<sup>4</sup> From this, we learn that in late Classical Athens “no one would be willing to drink warm wine, but quite the opposite, wine that is chilled in a well and mixed with snow”.<sup>5</sup> Xenophon (*Memorabilia*, 2.1.30), in relating the story of Herakles and the contest of Vice and Virtue, tells us of a charge that Virtue brings against Vice. This is the frenetic search for snow in summer in order to chill fine wines and make her drinks tastier. In an episode recounted by Athenaeus (13. 579), the courtesan Gnathaena is offended by the paucity of the gifts offered to her by a client: poor-quality fish and snow. In order to avoid news of this spreading and diminishing her prestige, she orders her servant to mix snow and wine in the krater without being seen, thus providing a pleasant surprise for the palate of her guest, the comic poet Diphilus.

As in Greece, in Rome the union of snow and wine also continued solidly over the centuries. As early as the first Imperial Age,<sup>6</sup> Seneca and Martial testify<sup>7</sup> that the craze for “cold drinking” had gone to the extreme. As a result, only a prohibition from a physician was able to dissuade the most ardent drinkers from consuming chilled wine. Martial, on the other hand, puts into verse in various epigrams<sup>8</sup> his own passion for *grand crus* enhanced by the addition of snow or ice; the poet shared this attitude with other personages of the Roman élite dedicated to the luxuries and the pleasures of a refined table.

Proof of the continuity of the phenomenon comes in the “Panegyric to the Emperor Theodosius” (XII [II] 14,1). In it, Pacatus Drepanius praises the sober style of the emperor, who abstained from the *luxuria* of those accustomed to inverting the order of the seasons by using ice in the summer to chill the Falernian wine. A century later, Sidonius Apollinaris, in a letter probably written in the summer of 465,<sup>9</sup> invites his friend Domitius to join him in his villa at Aviticus to taste *decocta* that were so chilled as to render the chalices opaque and that gave the shivers even to those people most under the influence of the wine.

As well as being mixed with wine, snow and water from snow were drinks much appreciated throughout Antiquity for their intrinsic pleasantness, for the chilling effect on the body stressed by heat or intense thirst, and for the relief provided from the effects of excessive drinking and eating.

Dexicrates says in the play entitled *The Self-Deceivers* (fr. 1): “If I am drunk, I also drink snow”.<sup>10</sup> “In summer snow is a sweet drink”, writes the poet Asclepiades.<sup>11</sup> Seneca, in various passages, stigmatizes the custom that arose among the decadent élite of turning to snow and ice to contrast the effects of continuous alimentary excesses.<sup>12</sup> And Paulinus Petricordiae recalls in the *Life of Saint Martin* (3.109–113) how, after having eaten with Magnus Maximus, the servants took golden vases that contained ice and chilled liquids in order to quench the thirst of the diners.

In Rome, snow was used in the kitchen in preparing savoury dishes to be served chilled, such as the *sala cattabia apiciana*,<sup>13</sup> but also as an ingredient in preparing the refined “sorbets” of spelt and honeyed wine.<sup>14</sup> Snow was used for tasting well-chilled and fine foods such as oysters<sup>15</sup> and probably used to keep milk fresh.<sup>16</sup> Layers of snow kept meat from rotting:<sup>17</sup> mixed with hay this favored the process of desiccation.<sup>18</sup>

In order to have snow available throughout the year, techniques of preservation developed already in prehistory were perpetuated through the centuries due to their effectiveness. In the second millennium BC, in the Kingdom of Mari (and probably also at Ur), just as in Mediterranean countries up to the mid-20<sup>th</sup> century, snow was stored in semi-subterranean rooms clad with brick, or in conical holes covered with branches.<sup>19</sup> It is supposed that the same practice was also used in Greece, based on a passage from the *Histories of Alexander* by Chares of Mytilene.<sup>20</sup>

During the Roman Empire the storage function was perhaps fulfilled by ditches lined with stonework (without plaster), which have been identified in geographical areas

naturally appropriate for the gathering of snow, such as Cantabrian Spain (Juliobriga Villa), Pyrenean France (Mountmaurin).<sup>21</sup> Semi-hypogeous structures are known from urban centres such as Augusta Emérita and Augusta Raurica.<sup>22</sup>

In storerooms, snow was wrapped in hay and enclosed in rough cloths, a technique used up to the mid-twentieth century.<sup>23</sup> From here, the snow was transported on mules to the centres of consumption to be sold at prices that presumably varied according to the distance from the areas of supply, the current season, but above all the purity and the consistency, from solid ice to snow water.<sup>24</sup> These were all elements that must have come together to determine the market value of an item that tended to be élite in nature. Therefore, it was a target for the gibes of moralists, such as Xenophon and, above all, Pliny and Seneca. Yet, as sources indicate, snow was easily substituted with refrigeration instruments that were much more accessible and economic, such as fountains, wells and cisterns.<sup>25</sup>

Considering the means of preservation, transport, and storage, refrigeration by direct contact was probably limited to the use of snow of a particular purity. However, there was no way of assuring this, and those who prudently sought to avoid consuming snow through direct contact made use of *ad hoc* containers.

In Greece this function was fulfilled by the *psykter*,<sup>26</sup> of which today we know only the two variants that date from the Archaic age. The first is an amphora with two separate compartments: an internal one for wine, and an external one for snow. The second example is a mushroom-shaped vase, characterized by a flattened spherical body with a lid; it contained snow and maintained its properties over time and was appropriate for floating within the krater, thanks to its high cylindrical foot. Various vase representations depict this variant within a calyx-krater, while a symposiast or a servant dips a ladle into the krater or into the *psykter* itself.<sup>27</sup> Apparently this was done so as to taste, prudently, the wine refrigerated by indirect contact, or to collect the quantity of snow useful in chilling the drink to the preferred degree.

New techniques were developed in the Roman world. Martial, who in several epigrams sings the praise of snow dissolved in cups of fine wine and ice broken up in drinks, also mentions the custom of filtering snow through a colander (*colum nivarium*) for the costliest wines, and through a linen filter bag (*saccus nivarius*) for lesser-quality wines.<sup>28</sup>

Besides, the *sitis ingeniosa* – to borrow Martial’s own words (14,117.2) – had come up with a truly effective indirect refrigeration technique. This consisted in thrusting a glass vessel containing water already sterilized by boiling into the snow. Pliny the Elder (*N.H.*, 31,33.40) emphasized that this gave “a pleasant coolness without the injurious qualities of snow”,<sup>29</sup> and he attributed the discovery of this method to the Emperor Nero.<sup>30</sup>

Nero’s method, known as *aquae coctae* or *decoctae*,<sup>31</sup> like the *psykter*, indeed possessed the evident advantage of calming the worries of many who appreciated the pleasures of cold drink, but felt that direct consumption of snow or water from snow was harmful for one’s health, even when boiled.<sup>32</sup> In fact, snow and ice, in the classification of the

different types of water on the basis of their healthiness, occupy opposing positions in the various schools of medicine. Pliny states (*N.H.*, 31, 21.31–32) that “Some physicians grant a high position to rain-water, seeing that it has been able to rise and to be suspended in the atmosphere. Therefore, they also prefer snow and ice even more than snow, as though its texture were rarefied to the utmost, for, they say, snow and ice are lighter than water, and ice much lighter. [...] Not a few physicians however themselves maintain that hail and snow, on the contrary, make very unhealthy drink, since there has been taken from it what was its thinnest part”.<sup>33</sup>

Among critics of the consumption of chilled drinks in general, and especially of snow and ice, the most important came from Aristotle<sup>34</sup> and the Hippocratic school.<sup>35</sup> Even as early as his treatise on *Airs, Waters, Places*, waters deriving from snow and ice were considered the most noxious of all; this consideration persisted in the opinions of Hippocrates’ followers up to and beyond the Renaissance. According to Galen, chilled drinks provoked coughs, bleeding, and inflammation. They were considered beneficial only in cases of haemorrhage, cholera, diarrhoea, or fevers with colic, and were particularly prescribed in treating persistent fevers. Two centuries later, Oribasius stigmatized drinks deriving from snow and ice and limited their use to treatments for inflammations, fevers, and haemorrhages.

In late Republican Rome, Celsus<sup>36</sup> affirms that Asclepiades of Bithynia greatly changed the way of curing, and he successfully opposed the theories and therapies of Hippocrates. Unlike the school of Kos, which allowed the use of snow, ice, and chilled drinks only for a limited number of pathologies, among the principal therapeutic instruments used by Asclepiades were baths and cold water. The latter should be kept constantly as cold as possible for some diseases.<sup>37</sup> Thanks to the effectiveness of his cures or, as Pliny malignly puts it (*N.H.*, 26, 8.14), above all due to the pleasant nature of his therapies (e.g. massages, walking, wine and cold water, hot and cold baths, hot-air-baths), “Asclepiades brought round to his view almost all the human race, just as if he had been sent as an apostle from heaven”. Already very famous in his lifetime, Pliny continues that “he preferred, according to Marcus Varro, to win for himself the surname of “cold-water giver” (*frigida danda*).<sup>38</sup>

As one of the most respected physicians of late Republican Rome, Asclepiades vaunted among his patients and friends the members of the élite, such as the orator Licinius Crassus. He attracted many followers to the city from across the Mediterranean area.<sup>39</sup> Indeed, Asclepiades’s therapeutic movement produced many respected disciples over the following centuries.<sup>40</sup> Following his death, proof of the school’s prestige came from the fact that some of Asclepiades’s followers became affirmed physicians at the imperial court. Artorius for example, was a physician and friend of Augustus.<sup>41</sup> But above all was Antonius Musa,<sup>42</sup> who saved the emperor from a serious condition through the administration of cold drinks and cold baths, and even received the honour of a statue alongside the one dedicated to Aesculapius (Suet. *Aug.* 59.1). Becoming established as a physician to the Roman élite, Musa treated, among others, one of the main exponents of

Maecenas' literary circle, Horace, prescribing for him in midwinter baths at the Chiusi and Gabii thermae, famous for the chill of their waters (*Epist.* 1,15. 2–10).<sup>43</sup>

Later, in the Neronian age, a very famous and rich physician was Charmides,<sup>44</sup> who condemned warm baths and persuaded people, as Musa had already done, to bathe in cold water even during the winter frosts. Pliny writes (*N.H.*, 29, 5.10) that “Charmides plunged his patients into tanks, and we used to see old men, consular, actually stiff with cold in order to show off”.<sup>45</sup>

Various scholars<sup>46</sup> have linked the importance given to water in the therapeutic practices of Asclepiades' school to the striking spread of thermalism in imperial Rome. In the same way, we may suppose that the widespread use of cryotherapy initiated by Asclepiades and continued through the successes of Musa and Charmides must have been among the causes for the contemporary spread of the consumption of snow among the élite reported in the sources. In particular, the use of constantly cold drinks by avid, ill-looking consumers of snow and ice, as well as the custom of taking baths in the snow (as described by Seneca with irony and moral criticism as *luxuria* in *Naturales Quaestiones* 4b,13. 8–10) seem appropriate to Asclepiades's and Charmides's precepts. Namely: 8. “They are not satisfied even with snow but look for ice, as though it had a more reliable cold because of its solidarity; and they melt it by pouring water over it repeatedly. The ice is not taken from the surface but is dug out from a covered layer in order that it might have more strength and its cold last longer. 10. [...] You will see skinny youths wrapped in cloaks and mufflers, pale and sickly, not only sipping the snow but actually eating it and tossing bits into their glasses lest they become warm merely through the time taken in drinking! 11. [...] that snow, in which you are even swimming, has come to such a pitch, by constant use, and daily slavery of the stomach that it takes the place of water”.<sup>47</sup>

Most commentators have seen in Seneca's words an allusion to Nero's “snow fever” and to his *aquae decoctae*.<sup>48</sup> Leaving a detailed examination of this topic for future research, we limit ourselves here to some brief observations that seem to indicate a therapeutic background for Nero's cryophilia.

M. Alba Calzado<sup>49</sup> had already suggested that the custom of taking warm baths in winter and baths in the snow in summer (Suet. *Nero* 27.2), generally attributed to the Emperor's bizarre and lustful nature, can however be traced back to the medical precepts of the period that were followed by the better-off classes. An analogous origin may be put forward for the *aquae decoctae*. Pliny (*N.H.* 31,40) calls this a “most clever discovery” by Nero, and presents it “as a pure scientific fact”.<sup>50</sup> This is based on Aristotle's observation<sup>51</sup> that water previously purified by boiling could be cooled to a greater degree and that it was healthier. Thanks to the *sitis ingegnosa* of the emperor, Nero's method<sup>52</sup> could be used by those who could afford large quantities of snow. This method increased not only the healthiness of the water, but also its degree of refrigeration to the utmost by embedding the glass jar in the snow. This produced ice-cold water that was more or less sterilized and could be safely mixed with wine or also drunk by itself to satisfy the

“voluptas frigoris”. Alternatively, it could be used as a therapeutic instrument, according to the medical precepts of the time.

### Notes

<sup>1</sup> On snow in the ancient world: Turcan Déléani 1964; De Planhol 1995, 155–162; Dalby 2000, 248; Giovannetti 2013; Schneider-Schwarz 2017. References to its use in the modern age and the contemporary world in De Planhol 1995, 24–150; Giovannetti 2013, 136–138; Schneider-Schwarz 2017, 165.

<sup>2</sup> Finet 1996.

<sup>3</sup> D. L. Page, in Dawe-Diggle 1981, 301 f. in addition to expressing some doubts on the true attribution of the epigram, also reports U. Wilamowitz’s thesis according to which the composition alludes to a snow-cellar in the foothills of Olympus; see also Olson 2006, 96 f. n. 131.

<sup>4</sup> Fiorentini 2006, 265–279; Fiorentini 2017, 215–227.

<sup>5</sup> Verses quoted in Ath. 3.124c: Olson 2006, 93; Fiorentini 2006, 274–275; Fiorentini 2017, 222 f.

<sup>6</sup> The *terminus post quem* is suggested by the lack of testimony in authors such as Cicero, Horace and Virgil: Turcan Déléani 1964, 691 f.; De Planhol 1995, 158–160.

<sup>7</sup> Seneca, *Epist.*, 9.78.23; Martial, 6.86.

<sup>8</sup> Martial, 5.64; 9.2; 9.22; 9.90; 12.17.

<sup>9</sup> *Epist.* 2,2. 11–12.

<sup>10</sup> Ath. 3.124b: Olson 2006, 90 f.

<sup>11</sup> Gow-Page 1965, 44.

<sup>12</sup> Seneca De Ira, II. 25.3–4; De Prov., 3.13; *Epist.* 78.23, 95.20–21, 119.3; Nat. Quaest. 4b.13.

<sup>13</sup> Apicius, De re coquinaria, 4.126–127.

<sup>14</sup> Plinius the Younger, *Epist.* 1.15 (alica cum mulso et nive); see André 1961, 218.

<sup>15</sup> Pliny, N.H., 32. 21. 64.

<sup>16</sup> Philostratus the Elder, *Imagines*, I, 28–29 (psykters full of milk). For the use of snow in conserving milk and its derivatives, see Schneider-Schwarz 2017, 173.

<sup>17</sup> Plut., *Symp.* 8,5 (725 a–b).

<sup>18</sup> Geop. 19. 9, 1–2.

<sup>19</sup> De Planhol 1995, 155 f.; Finet 1996, 83–85.

<sup>20</sup> FG rH 125 F 16; Ath.3.124c. For snow-cellars at the foothills of Olympus, *supra*, nt. 3.

<sup>21</sup> De Planhol 1995, 162; Giovannetti 2013, 135.

<sup>22</sup> Alba Calzado 2003 (Augusta Emérita); Schneider – Schwarz 2017 (Augusta Raurica). The snow-cellar function proposed by E. Salza Prina Ricotti for the underground tunnels of the Villa Adriana was confuted in Fahlbusch 2008. On the hypothetical destination of other archaeological contexts for the storage of snow, see Giovannetti 2013, particularly 135 f.

<sup>23</sup> De Planhol 1995, 165; Giovannetti 2013, 135.

<sup>24</sup> The difference in the prices of snow and ice is highlighted by Seneca (Nat. Quaest., 4b. 8) and Pliny (N.H., 19.19.55).

<sup>25</sup> On refrigeration techniques in Antiquity, Forbes 1958, 108–118.

- <sup>26</sup> Drougou 1975; Vierneisel 1990; Acovitsioti Hameau – Lesch 1996, 87–89; Trombetti 2011, with bibliography.
- <sup>27</sup> See Vierneisel 1990, 261, figg. 41.6–41.7.
- <sup>28</sup> Martial, 14.103 (*colum nivarium*); 14.104 (*saccus nivarius*).
- <sup>29</sup> Jones-Andrews 1956, 400–403.
- <sup>30</sup> Same attribution in Pliny, N.H., 19,55, and Suetonius, Nero 48. On decocta, see Juvenal 5,49–50; Ath. 3,121e; Dio Cassius 63,28.5.
- <sup>31</sup> On Nero’s method of aquae decoctae, see *infra*, 5, nt. 52.
- <sup>32</sup> Gell., 19,5; Macrobius, Sat., 7,12, 24–27.
- <sup>33</sup> Jones-Andrews 1956, 294–297.
- <sup>34</sup> Aristotle’s theory is reported in Gell., 19,5.6–10; Macrobius, Sat., 7,12. 26.
- <sup>35</sup> On the matter, see De Planhol 1995, 215–222, with bibliography.
- <sup>36</sup> Celsus, De Medicina, 1: “Asclepiades medendi rationem ex magna parte mutavit”; s. De Planhol 1995, 158, 217.
- <sup>37</sup> Celsus, De Medicina, 4.26.
- <sup>38</sup> Jones 1963, 274 f.
- <sup>39</sup> Nutton 2004, 167–170. 190.
- <sup>40</sup> Vallance 1990; Vallance 1993.
- <sup>41</sup> Marasco 1997, 280 n. 8; Marasco 1998a, 248 f.
- <sup>42</sup> Michler 1993; Marasco 1997, 280; Marasco 1998b, 247 f.; Marasco 1998b, 270–272.
- <sup>43</sup> Marasco 1998b, 272; Marasco 2004, 21.
- <sup>44</sup> Marasco 1997, 282; Marasco 1998b, 269.
- <sup>45</sup> Jones 1963, 188 f.
- <sup>46</sup> e.g., Stok 1992, 44; Heinz 1996, 2424–2426. 2430.
- <sup>47</sup> Corcoran 1972, 68–71.
- <sup>48</sup> Berno 2003, 148, nt. 16, 330 f.; Gauly 2004, 109 f. with bibliography.
- <sup>49</sup> Alba Calzado 2003, 451.
- <sup>50</sup> Citroni Marchetti 1991, 215 f.
- <sup>51</sup> *Metereologica*, 1.12.17.
- <sup>52</sup> See Dalby 2001, 76; Dalby 2003, 347.

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