

From 'Vilest Beverage' to 'Universal Medicine':

Drinking Water in Vernacular Regimens and Health Guides, 1450-1750¹

1. Introduction: *Is the Water Safe (For Historians)?*

Social historians have too often assumed that in pre-modern Europe, people did not drink the water; it was too unsafe, risky and generally unhealthy.² This

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² Francesco Mantelli and Giorgio Temporelli, *L'acqua nella storia*, (Milan: Franco Angeli, 2007), 152-3; Maurice Aymard, 'Mediterraneo e altri mondi d'acqua', in Vito

assumption is used to account for the most notable difference with our own age in terms of beverages, the amount of alcohol people consumed. There is no doubting that the consumption of alcoholic beverages—wine or beer, and occasionally, cider, according to the region—reached extremely high levels during the early modern period.³ And it is a good thing, too, we are told, since the water might have sickened or killed them. Indeed, it is only when the English started to boil water for their tea, in the eighteenth century, that the risks were countered and mortality rates began to decline.⁴

Teti, ed. *Storia dell'acqua. Mondi materiali e universi simbolici* (Rome: Donzelli, 2003), 350.

³ Richard Unger, *Beer in the Middle Ages and the Renaissance* (Philadelphia: University of Pennsylvania Press, 2004), 128-32 ; Philippe Meyzie, *L'Alimentation en Europe à l'époque moderne: manger et boire, XVe siècle-XIXe siècle* (Paris: Armand Colin, 2010) 110-11. Of course, for the urban and rural poor this was mostly 'small beer' or its wine equivalent, called *piquette* in France and *acquarello* in Italy, a weaker drink made by adding water to previously pressed grapes and allowed to ferment for a few months. See Florent Quellier, *La table des Français: une histoire culturelle (XVe-XIXe siècle)*. Rennes and Tours: Presses Universitaires de Rennes and Presses Universitaires de Tours, 2013), 63-4. To this we must also add the widespread custom, at all levels of society and common since Roman times, of adding water to wine before drinking it.

⁴ According to the hypothesis first proposed by Alan Macfarlane, in *The Savage Wars of Peace: England, Japan and the Malthusian Trap* (Cambridge MA: Blackwell, 1997), p. 157), and supported more recently by Francisca Antman, 'For Want of a

The assumption that the water was always and everywhere perceived as risky is clearly flawed. Contaminated food and water were, of course, a constant problem in the early modern period, the source of both individual suffering and epidemics.⁵ However, before the emergence of germ theory in the nineteenth century, food and water were not necessarily identified as the causes of these afflictions. Too often historians unconsciously project the much deadlier mid-nineteenth-century experience of Asiatic cholera on overcrowded cities back on to previous centuries, with the change of attitudes towards water that resulted.⁶ Early modern Europeans

Cup: the Rise of Tea in England and the Impact of Water Quality on Economic Development', conference paper presented February 2016, available online at: https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=NEUDC2013&paper_id=256.

⁵ The most common label was 'dysentery' or 'flux', identified as a seasonal disease, striking especially in late summer and early autumn. Epidemics of it were quite localised and were linked by contemporaries to particularly hot, dry summers, during which sources of safe water either became unsafe or dried up entirely, forcing local people to source their water elsewhere. See Helene Castenbrandt, 'A Forgotten Plague: Dysentery in Sweden, 1750-1900', *Scandinavian Journal of History*, 39 (2014), 612-39, and David Boyd Haycock, 'Exterminated by the Bloody Flux', *Journal for Maritime Research*, 4 (2002), 15-39.

⁶ Christopher Hamlin has suggested we need to 'reexamine the assumptions we bring to the questions of water quality'. Hamlin, "'Waters" or "Water"?—Master Narratives in Water History and their Implications for Contemporary Water Policy', *Water Policy*, 2 (2000), 315. On nineteenth-century reactions to Asiatic cholera, see

knew, through long experience, which waters were 'best' (as they saw them) and to take certain precautions when it came to the consumption of water—even if the rationale behind them was necessarily couched in a different medical philosophy and even if their efficacy would often be questionable from the perspective of modern bio-medicine. From the time of the Roman physician Paulus Aegineta, doctors were reminded to be 'skilled in the good and bad properties of waters', used in every regimen.⁷ In addition, judging good water quality naturally relied on the senses, as it had done since Antiquity, to determine whether it appeared clear and had no obvious taste or smell—the criteria for what constituted 'good' water (which, it should be reiterated, is not the same thing as present definitions of water purity).⁸ Water should be quick to heat and cool. One also judged a particular water's quality 'by the habit and colour of the people who normally drink it': 'if they are of a lively colour and live a long and healthy life, with bright voice and strong head and chest, one can well see that the water is good'.⁹ Inferior waters were those which were greasy to the touch or

J. N. and J. Hays, *The Burdens of Disease: Epidemics and Human Response in Western History* (Rutgers University Press, 2009), 135-54.

⁷ Paulus Aeginata, *The Seven Books of Paulus Aegineta with a Commentary* (F. Adams, Trans.), London: Sydenham Society, 1844, vol. 1, 64, cit. in Hamlin, 'Waters or Water?', 315.

⁸ Christopher Hamlin, 'Water', in Kenneth F. Kiple and Kriemhild Ornelas (eds), *The Cambridge World History of Food* (Cambridge: Cambridge University Press, 2000), 720–30.

⁹ Giovanni Battista Modio, *Il Tevere, dove si ragiona in generale di tutte le acque, et in particolare di quella del fiume di Roma* (Roma: Vincenzo Luchini, 1556), 11r. Bad

had a pronounced smell, a cloudy appearance or a notable taste, like that of Roman cisterns which ‘tastes of earth and shrimp (as they say)’, suggesting putrefaction.¹⁰

From the late Middle Ages town councils like York’s took measures to ensure water quality and archaeological evidence suggests it had some effect.¹¹ If

Florence’s early water legislation was mainly directed at ensuring adequate fish stocks in the River Arno, Siena put in place a ‘hierarchy of use’, according to which uses of water with greater potential for contamination were kept downstream from uses that required fresh water.¹² In the Comtat Venaissin (as no doubt elsewhere)

waters, conversely, resulted in pale people, with fewer surviving to old age, and those who did suffering from a range of afflictions.

¹⁰ Alessandro Petronio, *Del vivere delli romani et di conserver la sanità* (Rome: Domenico Basa, 1592), 37. Drinking this water caused ‘raucousness, hoarseness and sometimes even toothache’.

¹¹ York was cleaner as a result, although the effect on morbidity seems to have been limited. Gary King and Charlotte Henderson, ‘Living Cheek by Jowl: the Pathoecology of Medieval York’, *Quaternary International*, no. 341 (2014), 131-42.

¹² Richard Trexler, ‘Measures against Water Pollution in Fifteenth-Century Florence’, *Viator: Medieval and Renaissance Studies*, 5 (1974), 455-67, and Michael Kucher, ‘The Use of Water and its Regulation in Medieval Siena’, *Journal of Urban History*, 31 (2005), 504-36. Indeed, Siena’s legislation seems in keeping with Leon Battista Alberti’s town-planning advice, which looks back to Vitruvius, that ‘the best [water] is to be chosen for drinking, and the others are to be allotted to the other uses’, by which he meant for washing, watering gardens, supplying tanners and fullers, for drains and putting out fires—all in that order. Leon Battista Alberti, *The Architecture*

legislation sought to keep fountains destined for drinking water from being used for the washing of clothes or vegetables.¹³ Londoners had a strong sense of a 'moral economy of water', with expectations regarding access rights and proper and improper use.¹⁴ In Venice, public charities were instructed to reject any poor quality drinking water provided them from public wells and inform the Health Magistracy.¹⁵ European towns also took more pro-active measures to ensure clean rivers, such as periodic dredging (to ensure a swift flow).¹⁶ Likewise, in mid-eighteenth-century London, the concern focused on preventing impurities, such as leaves, weeds and mud, that might adversely affect the water's taste and odour (even while cows pastured next to the river and privies were located nearby).¹⁷ That said, the history of

... in *Ten Books* (London: Edward Owen, 1755; *De re aedificatoria*, 1452), book 10, chapter 6, p. 217.

¹³ Patrick Fournier, *Eaux claires, eaux troubles dans le Comtat Venaissin (XVIIe – XVIIIe siècles)* (Perpignan: Presses universitaires de Perpignan, 1999), 60-1.

¹⁴ Mark Jenner, 'From Conduit Community to Commercial Network? Water in London, 1500-1725', in P. Griffiths and M. Jenner, eds. *Londonopolis: Essays in the Cultural and Social History of Early Modern London* (Manchester: Manchester University Press, 2000), 253-5.

¹⁵ Archivio di Stato, Venice, *Sanità: Notatorio*, b. 35, 22 May 1756.

¹⁶ Dolly Jørgensen, 'Local Government Responses to Urban River Pollution in Late Medieval England', *Water History*, 2 (2010), 35-52.

¹⁷ Leslie Tomory, 'The Question of Water Quality and London's New River in the Eighteenth-Century', *Social History of Medicine*, 27 (2014), 488-507.

water control measures before the 'bacterial revolution' of the nineteenth century has yet to be written.

If this suggests that it would be unwise to take unclean water almost as a given, it likewise remains all too easy to mistake past cultural value judgements and prejudices against water—in favour of wine, say—for reliable indications of consumption patterns in the population at large. As Paolo Squatriti has noted, the prejudice against water as a beverage may be due not so much to concerns about its poor quality as to biases inherited from classical culture. As a drink of the lower classes, water tended to be described in unflattering terms.¹⁸ Another medievalist, Massimo Montanari, has called this the cultural ambiguity of water. Although precious and indispensable to life, and the source of a rich Christian symbolism, water was also base and common; and being associated with penitence and abstinence, made it a poor drink.¹⁹ A more nuanced view of water and its uses begins to emerge.

Early modern Europeans went to great lengths to ensure a supply of fresh water, for drinking and cooking purposes. Water-works are but one example. One of the delights of modern-day Dubrovnik (Croatia) is the impressive and elegant stone water fountain near the main entrance to the old town. Designed as a simple polygon with sixteen spouts, it was completed in the mid-15th century by the Neapolitan stonemason Onofrio della Cava. The authorities of what was then the city republic of

¹⁸ Paolo Squatriti, *Water and Society in Early Medieval Italy* (Cambridge: Cambridge University Press, 1998), chapter 1.

¹⁹ Massimo Montanari, 'Acqua e vino nel Medioevo cristiano', in Teti, *Storia dell'acqua*, 234.

Ragusa went to great lengths to supply their coastal city with fresh drinking water: employing southern Italian expertise and labourers to build the aqueduct that supplied the water, carefully stipulating the cost and the time required to complete the job, and establishing severe punishments to anyone who interrupted the work or the flow of water. And it was a success, symbolically marking the beginning of the Republic's golden era.²⁰ In addition, for those unwilling or unable to go to the fountainhead, urban water-carriers would bring the water to you. In Naples, this included a naturally sparkling sulphurous water from a spring running under Monte Echia hill in Borgo S. Lucia, known as 'acqua zurfegna'.²¹ Venice's guild of *acquaroli* was founded in 1471 and counted 126 members in 1773, licensed to cart fresh water from the River Brenta in special boats.²² London's 'waterbearers' each had their own

²⁰ Not only were all the works completed on time and on budget, but the completed aqueduct supplied every Ragusan with an estimated cubic metre of potable water per day (at least during winter). Relja Seferović and Mara Stojan, 'The Miracle of Water: Prolegomena to the Early Renaissance Aqueduct of Dubrovnik', *Dubrovnik Annals*, 11 (2007), 49-84

²¹ The sulphurous *acqua zurfegna* was referred to in a commedia dell'arte play: Anon., *Se parlo son Pietra con Pulcinella muto per non divenire asino senza coda* (Naples: Domenico Sangiacomo, 1813 [1796]).

²² Massimo Costantini, *L'acqua di Venezia. L'approvvigionamento idrico della Serenissima* (Venice: Arsenale Editrice, 1984), 83, 92. Rome's *acquaroli* had their own church, Santa Maria della Pace, built in 1480. Giuseppe Bonaccorso, 'Roma e le sue acque potabili nel Cinquecento. La competizione con il Tevere', *Roma moderna e contemporanea*, 17 (2009), 76-7.

regular clientele and established neighbourhoods where they plied their trade, obtaining their water from a particular conduit and dispensing it from special 'tankards'.²³ And, in eighteenth-century Paris, there were almost 2,000 water-carriers bringing water to the houses of Parisians.²⁴

For early modern Europeans, each water was different. The important distinction between our own tendency to use the word in the singular (especially in English), and the pre-modern idea of 'waters', in the plural, echoes a much more profound difference in the way water was perceived. The historian of science Christopher Hamlin and the geographer Jamie Linton have both forcefully suggested how the modern scientific abstraction that is H₂O is radically different from the classical notion of each manifestation of water being unique, in its properties, characteristics and effects.²⁵ Two Roman sources set the tone for the Renaissance understanding of waters: book eight of Vitruvius's *Ten Books of Architecture*, published around 30 BC, and Pliny the Elder's *Natural History*, published a century later. Both authors paid significant attention to the great variety of waters, particularly those drawn from springs, wells, rivers and, occasionally, in the diversity of natural

²³ Ted Flaxman and Ted Jackson, *Sweet and Wholesome Water: Five Centuries of History of Water-bearers in the City of London* (Cottisford: E W Flaxman, 2004), 21; Jenner, 'Conduit Community', 250, 261.

²⁴ Meyzie, *Alimentation*, p. 98. Jean-Pierre Goubert, *The Conquest of Water: the Advent of Health in the Industrial age* (Cambridge: Polity Press, 1989), 22.

²⁵ Hamlin, 'Waters or Water?', 313-25; Jamie Linton, *What is Water? The History of a Modern Abstraction* (Vancouver BC: The University of British Columbia Press, 2010), 73-88.

phenomena such as rain. A third classical work that was fundamental for Renaissance physicians in particular was Hippocrates' *Airs, Waters, and Places*, which likewise treats of 'waters' in their plurality, stressing their various effects on bodies and their influences on the cultures of peoples in different parts of the ancient world. This influence is clearly evident in a 1536 treatise on the wonders of French rivers and springs, by the Lyonnais doctor Symphorien Champier, in which he relates the very different qualities and healing properties of a range of waters.²⁶ This underlying perception of the plurality of waters, and the language that went with it, began to change with the work of Antoine Lavoisier (1783) and the reduction of water—all water—to a chemical compound of oxygen and hydrogen (two terms that Lavoisier also coined).²⁷ The shift was not without its contradictions, however, as we shall see with regard to the work of Friedrich Hoffmann.²⁸

²⁶ Symphorien Champier, 'Petit traicté des fleuves et fontaines admirables', in Claude Champier and Gilles Corrozet, *Le Catalogue des villes, & Cités, Fleuves & Fontaines assises des troys Gaules* (Lyon: S. Gryphius, 1536).

²⁷ Linton, *What is Water?*, 77-8.

²⁸ This unitary vision of water co-existed with ongoing chemical investigations into therapeutic mineral waters, which emphasised their differing and often unique properties, evident even in the work of Lavoisier himself. Bernadette Bensaude-Vincent, 'Eaux et mesures. Éclairages sur l'itinéraire intellectuel du jeune Lavoisier', *Revue d'histoire des sciences*, 48: 1-2 (1995), 49-69. On physicians and the chemical study of mineral waters in the eighteenth and early nineteenth centuries, see Noel Coley, 'Physicians, Chemists and the Analysis of Mineral Waters: "The Most Difficult Part of Chemistry"', in R. Porter, ed. *The Medical History of Waters and*

Given the difficulties inherent in determining the actual material health risks posed by drinking water in the early modern period, with the many variables that this necessarily entails (town vs country, highland vs lowland, the effects of rapid urbanisation and industrialisation, changing epidemiology, etc.), I propose to begin with *attitudes* towards drinking water. 'Drinking' is the operative word here, since I intend to investigate attitudes to both the process and practice of drinking water (as verb), as well as perceptions of the nature and quality of the stuff itself (as adjective). This is part of a larger project on 'water cultures' during the early-modern period. By 'water culture', I mean both material aspects, such as hydraulic engineering or water legislation, and non-material features, such as beliefs and practices. Drinking water, both as substance and as cultural and social practice, is the least studied aspect of water culture. The difficulty for the historian is water's very banality and ambiguity, meaning we have to look harder and in different places for references to it and interpret with care and attention to context. The subject is notable by its absence in the historical literature. In the recent (otherwise superb) multi-volume *History of Water* there is only one reference to 'drinking water' and one to 'potability'.²⁹

In an attempt to rectify this, I am starting with printed dietary regimens and guides to good health and long life. They offer privileged access to the circulation of

Spas (London: Wellcome Institute, 1990; Medical History supplement no. 10), 56-66, and Taiani, R. 1991. 'L'acqua e la sua anima: il contributo della scienza chimica allo sfruttamento delle fonti di acqua minerale nella prima metà del XIX secolo', *Nuncius*, 6:2 (1991), 82-107.

²⁹ Terje Tvedt and Terje Oestigaard, eds., *A History of Water* (London and New York: Tauris, 2011).

knowledge regarding water, in the context of the everyday regulation of food and drink in the maintenance of individual health. This article will attempt to understand the radically changing nature of medical advice on water consumption over the course of the period, a shift suggested in the title, and what it can tell us about the place of water in early modern society. If the discourse on water intertwines element, aliment and medicament, this article will privilege the latter two aspects. To do this, we will be focusing on the discussion of everyday drinking or table waters—what later texts refer to as ‘common’ water—rather than medicinal, mineral or spa waters. The latter were quite a distinct category in the early modern period, the attitudes to which require and merit separate investigation.

The changing medical perceptions of drinking water are evident in the changing nature of health advice. At the beginning of our period, diet was at the heart of staying healthy. In the words of the Spanish doctor and theologian Álvarez de Miraval: ‘almost all of the maintenance of our health consists in the good ordering and administration of food and drink’.³⁰ The field of regimen—disease prevention and the maintenance of good health—brought together an informed reading public, medical authority and food habits and preferences. The early modern regimen was not only a successful literary genre, with works generally published inexpensively and in the vernaculars of Europe; it was also a varied one. Printed advice on eating and drinking for health was subject to a range of conditioning factors, such as social rank and occupation, nation and region, religion and morality, and the reaction to

³⁰ Blas Álvarez de Miraval, *De la conservación de la salud del cuerpo y del alma*. Salamanca: Andres Renaut, 1601), 76, cit. in David Gentilcore, *Food and Health in Early Modern Europe* (London: Bloomsbury, 2016), 1.

change. And, as this suggests, the genre was also a changing one. Regimens underwent the ups and downs of shifting medical philosophies and adapted to evolving foodways in society at large. Indeed, the whole field of preventive medicine underwent something of a revival during the Renaissance, during which time Galen was the key ancient authority and when the focus was on foods and their nature. Indeed, most regimens were written and printed during the Renaissance period, which is the focus of section two.

The ascendancy of Paracelsian and chemical medicine in the seventeenth century witnessed a shift to predominantly medicinal solutions to health problems. The main aim became the treating of diseases rather than the maintenance of health. This shift brought with it a marginalisation of the printed regimen: a Paracelsian ‘regimen’ is almost a contradiction in terms. Nonetheless, its chemical focus resulted in some discussion of the different components in waters, and their different properties, as we shall see in section three. In the eighteenth century, mechanical medicine led to the revival of preventive approaches. This brought with it a more generalized interest in food as one element in the broader context of regimen, leading to rebirth of the regimen genre—though in a streamlined format and with discussions of diet taking a much less central role. Drinking water occupies pride of place in the new mechanized view of the body, a transformation we discuss in section four.

2. Water in Renaissance Regimens

From the earliest printed regimens, the inherent ambiguity of water is evident. The Paduan physician Michele Savonarola, in a treatise written around 1452 and printed in 1515, begins his chapter on drinking water by referring to it as the ‘vilest of

beverages', in the sense of base, because it is common to all animals—before, however, dedicating considerable attention to it.³¹ Although water does not provide nourishment, as Savonarola notes, it is nevertheless necessary to life, as a facilitator of digestion and the assimilation of food throughout the body. Indeed, Savonarola was also the author of an important work on the healing springs of Italy (written in 1449 and printed in 1485), in what was already an established genre of medical literature in Italy.³² The sixteenth century witnessed a further development of this literature, with advice books on the uses and virtues of each spa, and of the actual practice of drinking and bathing in the waters.³³ That said, regimen authors always made a clear distinction between healing waters, with their therapeutic and medicinal uses, and the consumption of table water as part of regimen, which lay within the

³¹ Michele Savonarola, *Libreto ... de tutte le cose che se manzano communamente* (Venice: Bernardino Benaglio, 1515), 44.

³² Michele Savonarola, *De balneis et thermis naturalibus omnibus Italiae* (Bologna: Benedictus Hectoris Faelli, 1493 [1485]). Savonarola stressed the need to analyse mineral springs individually, via the senses, and study their differing effects on individual patients, in the context of an emerging practical (as opposed to theoretical) medicine. See Katherine Park, 'Natural Particulars: Medical Epistemology, Practice, and the Literature of Healing Springs', in A. Grafton and N. Siraisi, eds. *Natural Particulars: Nature and the Disciplines in Renaissance Europe* (Cambridge, MA: MIT Press, 1999), 347-67.

³³ Richard Palmer, "'In this our Lightye and Learned Tyme": Italian Baths in the Era of the Renaissance', in R. Porter, ed. *The Medical History of Waters and Spas* (London: Wellcome Institute, 1990; Medical History supplement no. 10), 14-22.

realm of preventive medicine. The fact that water did not nourish the body may explain why some regimen writers ignored it completely. The regimen of the Italian religious exile Guglielmo Grataroli, published in 1555 and translated into English in 1574, says only of water that it is good too 'allaye' wine.³⁴ That said, most Renaissance regimens dedicated considerable space to water, either in the section on 'airs, waters, places', along Hippocratic lines, or else in a more Galenic-inspired discussion of food and drink.

The Manchester physician and school-master Thomas Cogan (1584), put it this way: 'Water is the chiefest of all liquors [liquids] not onely because it is one of the foure elements, but also for that it was the very naturall and first drinke appointed by God to all manner of creatures'.³⁵ He goes on to cite from Genesis, when only water was known. Cogan is rare in mentioning the Bible as a source, placing it before Galen or other ancient authorities. Writing in the same year as Cogan, the regimen of the Bolognese physician Baldassare Pisanelli is more typical in borrowing from Hippocrates, Chrysippus and Eristarchus to note that water is not a food but 'a

³⁴ Gulielmus Gratarolus, *A Direction for the Health of Magistrates and Studentes ... Englished by T.N.* (London: William How, 1574), chapter on wine, no pagination.

³⁵ Thomas Cogan, *The Haven of Health: Chiefly Gathered for the Comfort of Students, and Consequently of all those that Have a Care of their Health* (London: Henrie Midleton, 1584), 206. Cogan is paraphrasing Thomas Elyot here, who however does not mention either God or the Bible. Thomas Elyot, *The Castel of Helth ... wherby every Manne May Knowe the State of his Owne Body, the Preservatio[n] of Helthe, and How to Instructe Welle his Physytion in Syckenes that he be not Deceived* (London: apud Thomae Bertheleti, 1539), 32v.

vehicle of food', 'tempering and thinning food' so that it could be carried throughout the body. Pisanelli adds by way of explanation that water could not nourish the body because it could not be converted into blood. Nevertheless, in addition to helping with concoction and assimilation, water also serves to temper the body's accidental heat, its thirst and the 'fumes that collect around the heart'.³⁶

Pisanelli waxes lyrical on the precious nature of water and 'the infinite benefits it brings us'.³⁷ At the same time, he is all too aware that in the Galenic system of balances, water's qualities as cold and moist, light and non-nourishing, presented problems. Thus for Pisanelli, one should never drink water on an empty stomach, when there is nothing to concoct; if one felt thirsty at night, then moistening one's mouth would have to suffice; one should not drink on a full stomach either, since it prevents the food from 'touching the substance of the stomach'; nor should one drink immediately after exercise or hard labour, because the water 'harms the head, brain, nerves and causes alienation of the mind'. Indeed, the only time when one could drink one's fill was when digestion was complete and the food had 'descended down below'.³⁸

³⁶ Baldassare Pisanelli, *Trattato della natura de' cibi et del bere* (Venice: Giovanni Battista Porta, 1584), 156.

³⁷ *Ibid.*, 158.

³⁸ *Ibid.*, 135. Worst of all was to drink 'large quantities' of water when 'over-heated', according to Luca Antonio Porzio, based on his experience as physician to the Austrian army during the 1684 siege of Vienna. 'Soldiers when afflicted with thirst', Porzio wrote, 'fills their hats or their flasques with water, which they drink off at a single draught; and thus the man, who was perhaps able to have routed great

On the positive side, water did at least have the virtue of being suitable for all ages of people, which could not be said for wine.³⁹ The best water was clear, light and tasteless, emerging from eastward-flowing springs from mid-summer rain showers. River water was to be used only out of necessity and then only from large rivers, far from towns and free from mud. Even water from the same river was generally better near its source, which is what made Cordoba's water better than Seville's, according to Alonso Díez Daza.⁴⁰ The worst were well water and stagnant waters, 'because they are heavy, gross, obstructive and because they enlarge the spleen'.⁴¹ Waters from lakes and ponds were frequently the cause of dysenteries, stomach fluxes, swollen bellies, even plague.⁴² This water ranking, derived from Aristotle, Hippocrates and Galen, was repeated in all of the period's regimens as received wisdom (with notable local exceptions, as we shall see). It was also

numbers of his foes, falls a victim to his own folly and imprudence'. Luca Antonio Porzio [Portius], *The Soldier's Vade Mecum: or the Method of Curing the Diseases and Preserving the Health of Soldiers* (London: R. Dodsley, 1747 [1685]), 9.

³⁹ Pisanelli, *Trattato*, 156. The young were advised to avoid wine, because of their hot complexions; but as one aged, and the complexion got progressively colder, one could drink more wine.

⁴⁰ Alonso Díez Daza, *Libro de los provechos y dannos che provienen con la sola bevida del agua* (Seville: Alonso de la Barrera, 1576), 24r. However, neither waters were as good as those from the eastward-flowing river of his home town, Escacena, not far from Seville (19r.).

⁴¹ Pisanelli, *Trattato*, 157.

⁴² Daza, *Libro de los provechos*, 43v.-46r.

reproduced in the 'receipt books' of the time, like Marmaduke Rawdon's, dating from the middle of the seventeenth century.⁴³

If water was suited to all ages of people, it was not necessarily healthy for all constitutions. Being cold and moist, in Galenic terms, meant that it was harmful to those of cold complexions,⁴⁴ 'for it destroyeth naturall heat, it grieveth the brest, and taketh away the appetite of the stomack'.⁴⁵ For the French physician Nicolas Abraham de la Framboisière, water's cold and moist qualities made it harmful to most people, 'except those whose occupation is to provide refreshment', he noted wryly à propos of water-carriers.⁴⁶ However, according to Pisanelli, these same qualities made water even better than wine for those of hot complexions.⁴⁷ The papal physician Paolo Zacchia, evidently not a great fan of water, admits at one point that people with very 'hot stomachs', 'if their strength allows, will have to content

⁴³ The entry 'Which is the best water', in the *Receipt Book of Marmaduke Rawdon*, (compiled in England c. 1637-61), 17. University of Minnesota Libraries, Owen H.

Wangensteen Historical Library of Biology and Medicine:

<http://umedia.lib.umn.edu/node/691634?mode=basic>.

⁴⁴ Anon., *Regime de vivre et conservation du corps humain* (Paris: Vincent Sertenas, 1561), 28v.

⁴⁵ Cogan, *Haven of Health*, 208.

⁴⁶ Nicolas Abraham de la Framboisière, *Le gouvernement necessaire à chacun pour vivre longuement en santé* (Paris: Michel Sonnius, 1600), 129.

⁴⁷ Pisanelli, *Trattato*, 156.

themselves with pure water', at the most mixing in a little 'light wine'.⁴⁸ In the case of heating illnesses, water could be drunk by all, without harm.⁴⁹

Much of this advice was taken straight out of the ancient authorities dear to Renaissance medicine. But medical authors were faced with a quandary: how did this advice, which emerged out of the Mediterranean, apply to Northern Europe? This is where local experience and preferences in matters of diet confronted the received wisdom of the ancients. Cogan dedicates an entire chapter to the question: 'whether or no it bee as wholesome for English men to drinke water, as for them that dwell in other countries'. Referring back to 'Eliot in his Castill' (i.e. Elyot's *Castel of Helth*), Cogan hypothesises that water might be safe to drink amongst people accustomed to drinking it from infancy and that in moderate quantities. He gives the example of Cornwall, which although it 'be in a very cold quarter, yet many of the poorer sort, which never or very seldom drinke other drink than pure water, be notwithstanding strong of body, and live and like well untill they be of great age'.⁵⁰ However, the Bath physician Tobias Venner, writing some thirty-five years after Cogan, did not agree. Water might be 'profitable and familiar' to those living in hot countries, where it is 'the most ancient drinke'; but for those living in cold countries 'it is in no wise agreeable'. With his fellow Englishmen in mind, Venner notes how water 'doth very greatly deiect [lessen] their appetite, destroy the naturall heat, and overthrow the strength of the stomacke, and consequently, confounding the

⁴⁸ Paolo Zacchia, *Il vitto quaresimale ... ove insegnasi, come senza offender la sanità si possa viver nella Quaresima* (Rome: Pietro Antonio Facciotti, 1636), 215.

⁴⁹ *Ibid.*, 195.

⁵⁰ Cogan. *Haven of Health*, 207; cf. Elyot, *Castel of Helth*, 33r.

concoction [digestion], is the cause of crudities [raw humours in the stomach], fluctuations [of fluids] and windiness in the body'.⁵¹ The Parisian physician Jean Bruyérin-Champier did not go that far, but he could not help but notice that in mountain regions like Savoy and the Alps, where water was the most common drink, it is 'without doubt' the cause of goitre, another idea with ancient antecedents.⁵²

A second example of the process that Thomas Olsen has termed the 'domestication' of Galen,⁵³ comes in the form of drinks chilled with ice or compacted snow. The ancients regarded meltwater as the worst water of all, as Bruyérin-Champier comments, but 'snow' brought down from the mountains had become fashionable amongst the Italians and Spanish to mix with wine in summer. He regarded the practice as 'most objectionable', citing the example of duke of Mantua,

⁵¹ Tobias Venner, *Via Recta ad Vitam Longam, or a Plaine Philosophical Discourse of the Natures, Faculties and Effects of all Such Things, as by Way of Nourishments and Dietetical Observations, Make for the Preservation of Health* (London: Edward Griffin, 1620), 24.

⁵² Jean Bruyérin-Champier, *De re cibaria libri XXII omnium ciborum genera, omnium gentium moribus et usu probate complectentes* (Lugduni: Sebast. Honoratum, 1560), book XVI, ch. 10; *L'alimentation de tous les peuples et de tous les temps jusqu'au XVIe siècle*, trans. Sigurd Amundsen, Paris: Intermédiaire des Chercheurs et Curieux, 1998), 509.

⁵³ Thomas Olsen, 'Poisoned Figs and Italian Sallets: Nation, Diet and the Early Modern English Traveler'. *Annali d'Italianistica*, 21 (2003), 233-53.

fat and corpulent, who died after a few months of drinking it.⁵⁴ Venner advised against 'snow-waters', not only because they were made from the 'grosser part' of the matter (the 'thinner part' becoming clouds), but because they were 'over cold' and so 'cause rheumes and greatly hurt the sinews'. The habit might be agreeable 'for some bodies' in hot countries and in hot seasons, according to Venner, 'but in our northerne countries, it is at no hand to be allowed'.⁵⁵

For their part, Spanish and Italian physicians likewise used Galenism to accommodate (indeed, justify) the new custom. In a chapter dedicated to the question, the Toledan physician Francisco Nuñez de Oria referred to Avicenna on the dangerous effects of cold drinking, harmful to the nerves of the chest and the source of pains in the chest and stomach; however, since wine was hot by nature, wine chilled by snow would not be harmful.⁵⁶ Pisanelli, like Nuñez de Oria, also devoted an entire chapter of his regimen to cold-drinking, but, writing fifteen years after him, was prepared to go much further in support of the custom. Pisanelli suggested that because cold drinking 'gave very great pleasure', it must have had a purpose, in the way that Nature 'bestowed great pleasure on the act of coitus, so that

⁵⁴ Bruyérin-Champier, *De re cibaria*, book XVI, ch. 10; *L'alimentation de tous les peuples*, p. 509. In fact, the view of the ancients was more nuanced than Bruyérin-Champier suggests. See Xavier de Planhol, *L'eau de neige: le tiède et le frais: histoire et géographie des boissons fraîches* (Paris, 1995), 215-24.

⁵⁵ Venner, *Via recta*, 10-11.

⁵⁶ Francisco Nuñez de Oria, *Regimiento y aviso de sanidad, que trata de todos los generos de alimentos y del regimiento* (Medina del Campo: Francisco del Canto, 1586 [1569]), 324r. and 325v.

it would be done for the multiplication of the species'. This function was to temper the heat during the summer season, 'hot beyond measure', and provide necessary moisture. Cold drinking was literally a life-saver. In Sicily, before the introduction of snow consumption 'some twenty years ago'—Pisanelli is writing in 1584—'great quantities' of people would die each summer from pestilential fevers, caused by hot drinking, now no longer the case. In Messina alone, thousands of lives had been saved. 'In conclusion, cold drinking removes and clears the misty fumes and vapours which multiply, because of the great heat of the air, and concentrate around the heart, and in a certain sense suffocate it, just as a fresh breeze dissolves the thick and heavy fog which forms and settles in valleys during cold nights'.⁵⁷

Cold-drinking was then a hot topic.⁵⁸ In Spain, no fewer than two books dedicated to the subject were written in the same year in which Nuñez de Oria's dietary was published, 1569, and three more in the following decade. As so often in the realm of food and drink, physicians found themselves having to react to a new practice that was already well entrenched.⁵⁹ In order to regain their medical authority, they reacted by complicating the issue, laying down the conditions and practices for safe and healthy cold-drinking. In a three-way dialogue, Luis de Toro presented the different medical views about the new fashion and its health risks, cautiously concluding that moderate cold-drinking was permissible in summer in hot areas for men, though not for women (because of their colder and moister

⁵⁷ Pisanelli, *Trattato*, 159-62.

⁵⁸ Surveyed in de Planhol, *L'eau de neige*, 226-33.

⁵⁹ Gentilcore, *Food and Health*, 182-3.

temperaments).⁶⁰ From his base in Seville, Francisco Franco decided that cold-drinking was not only safe but necessary during the extreme heat of summer; he even extended this privilege to healthy women. However, he advised packing the snow around the beverage vessel rather than putting it directly in the glass.⁶¹

Two years later, Nicolás Monardes, another Seville native, agreed that it was probably better not to consume the snow itself, but use it to chill other drinks. Whilst agreeing with Galen that snow-water was heavier than rainwater, Monardes nevertheless concluded that the difference in composition was slight, noting how melt-water was customarily drunk in Germany, Spain and even more in the New World without harm.⁶² In his short treatise, appended to the enlarged 1571 edition of his exploration of New World materia medica, first published in 1565, Monardes makes frequent reference to Galen, demonstrating how, in addition to chilling drinks

⁶⁰ Luis de Toro, *Discursos o consyderaciones sobre la materia de enfriar la bebida*, J. Sanz Hermida, ed. (Salamanca: Universidad de Salamanca, 1991), 276. The Spanish books on the subject are discussed in Justo Hernández, 'A New Renaissance Medical Controversy: Sixteenth-Century Polemics about Cold-Drinking', in D. Collard, J. Morris, E. Perego, eds., *Food and Drink in Archaeology 3* (Southampton: Prospect Books, 2012), 47-54.

⁶¹ Francisco Franco, *Tractado de la nieve y del uso della* (Seville: Alonso de la Barrera, 1569), 3v., 11r.-v., 14v.-15r.

⁶² Nicolás Monardes, *Primera y segunda y tercera partes de la Historia medicinal de las cosas que se traen de nuestras Indias occidentales, que sirven en medicina ... Tratado de la nieve y del beber frio* (Seville: Alonso Escrivano, 1574), 197r. and 199v.

and fruit, snow was also used there to keep fish.⁶³ Moreover, far from unbalancing the humours, cold-drinking actually tempered the liver, attenuated bodily heat, excited the appetite and quenched thirst.⁶⁴

Five years later, Daza was more circumspect. Though also from Seville, in his treatise dedicated to distinguishing between ‘good and bad waters’ and the health effects of each,⁶⁵ Daza warned that only those used to cold-drinking could do it safely—and only during summer, if they were of a warm constitution and were not elderly. He advised against consuming snow- and ice-water because of their heaviness; the solution being to boil the water before cooling it with snow.⁶⁶ Finally, in the longest of the four books, the Catalan physician-botanist Francisco Micón (Frañesc Micó) was the most enthusiastic supporter of cold-drinking. In his evangelically-titled *Alivio de los sedientos* (‘relief of the thirsty’), Micón insisted that cold-drinking was not only healthy, with few long-lasting effects on the constitutions of healthy people, but advocated it as a cure for many diseases and expressed surprise that physicians should even speak against the practice.⁶⁷

Italian physicians were slower off the mark, even though the fashion apparently originated (or was first revived) in the courts of Renaissance Italy. The

⁶³ Ibid., 190r.

⁶⁴ Ibid., 199r.

⁶⁵ Daza, *Libro de los provechos*, 7r.

⁶⁶ Ibid. 69r, 110r.

⁶⁷ Francisco Micón, *Alivio de los sedientos, en el qual se trata la necesidad que tenemos de beber frio y refrescado con nieve* (Barcelona: Diego Galaan, 1576), 78v.-79v., 88r.-v.

professor of botany Andrea Bacci may be the first to discuss the practice and provide medical advice, in 1558, in the context of his book on water and its consumption;⁶⁸ but, the first work in Italian specifically dedicated to cold-drinking was a translation of Monardes's short treatise. Of course, the fact that it appeared just two years after the Spanish edition does suggest an interest in the topic, especially in Rome, given the dedication to pope Gregory XIII.⁶⁹ Relating the literature to domestic practices, Sandra Cavallo and Tessa Storey note that by the middle of the century nobles were already having snow delivered to their own private pits incorporated into their palaces. By the early seventeenth there were thirty-nine authorised 'snow shops' in Rome, which is more or less when explorations of the practice by Italian physicians began to appear in print.⁷⁰ Physicians in Italy made up for lost time, publishing eleven books on the subject between Nicolò Masini's critical *De gelidi potus abusu* of 1587 (one of the few written in Latin) and Alessandro Peccana's much more favourable *Del bever freddo* of 1627.⁷¹

⁶⁸ Andrea Bacci, *Del Tevere ... libri tre, ne' quali si tratta della natura e della bontà dell'acque e specialmente del Tevere* (Venice: s.n., 1576 [1558]), 148-74.

⁶⁹ Nicolás Monardes, *Trattato della neve e del bere fresco, raccolto per M. Giovan Batista Scarampo dal trattato del Monardo* (Florence: Bartolomeo Sermartelli, 1574 [1573]).

⁷⁰ Sandra Cavallo and Tessa Storey, *Healthy Living in Late Renaissance Italy* (Oxford: Oxford University Press, 2013), 222.

⁷¹ de Planhol, *L'eau de neige*, 227. Nicolò Masini, *De gelidi potus abusu* (Caesena: apud Bartholomaeum Rauerium, 1587); Alessandro Peccana, *Del bever freddo ... con problemi intorno alla stessa materia* (Verona: Angelo Tamo, 1627).

If Spanish and Italian physicians in particular ended up supporting what was fast becoming a widespread custom, in contrast to their Northern European counterparts, it is interesting how standardised guidelines regarding which type of water was best could also be tempered by the author's own origins. Let us consider two normally suspect sources of water: rain water and river water. Rain water was potentially good, but easily 'corrupted' according to the air and the season.⁷² Collecting it and storing it in cisterns made it even worse. Cistern-water was amongst the worst for 'alimentary uses', because it was 'shut up from the air' (Venner),⁷³ or because it was in contact with the earth (for Nuñez de Oria).⁷⁴ However, for the Venetian resident Tommaso Rangoni cisterns served to 'purge' rain-water. They made it 'agreeable, without taste and colour, indeed sweet and limpid and light'.⁷⁵ Rangoni seems to be making a virtue of necessity here, since Venetians depended on cistern-water for all their fresh-water needs. In a city that was surrounded by water but thirsty—'Venixia è in acqua et non ha acqua', in the words of the chronicler Marino Sanudo—every square (*campo*), each with its characteristic well-head, was in fact the top of a giant underground cistern, where rainwater was filtered

⁷² Daza gives the example of a servant to the viceroy of Naples, the duke of Alcalá, who died from drinking too much rainwater during a fever, recommended to him by a 'foolish doctor'. Daza, *Libro de los provechos*, 31r-v.

⁷³ Venner, *Via recta*, 10.

⁷⁴ Nuñez de Oria, *Regimiento*, 343v.

⁷⁵ Tommaso Rangoni, *Come il serenissimo doge di Vinegia, il S. Sebastian Veniero e li Venetiani possano viver sempre sani* (Venice: Marco Bindoni, 1577 [1558]), 7v.

through sand and clay.⁷⁶ In fact, the ‘perfectly purify’d’ quality of Venice’s well water seems to have been widely recognised.⁷⁷ Rangoni’s words acknowledge the numerous techniques that early modern Europeans used to access their water and to make it potable and safe, at least according to their own understanding of those terms.

The same accommodation process could be said of the positive attitudes to river water shown by physicians, who invariably end up favouring the qualities of their local rivers, even when this meant taking precautions. Bruyérin-Champier notes how ‘The great mass of Parisians, from the poorest to the richest, and all outsiders, drink water from the Seine’.⁷⁸ If Parisian enthusiasm for the water of the Seine went unquestioned until the end of the eighteenth century, Roman doctors were a little more circumspect when it came to their local river, the main source of the city’s drinking water before the major water works programme begun towards the end of

⁷⁶ Marino Sanudo, *Cronachetta* (ed. Rinaldo Fulin; Venice: Visentini, 1880), 63, cit. in Costantini, *L’acqua di Venezia*, 10. Techniques for the provision of fresh water to the city were the subject of numerous patents: Giuseppe Ceredi, *Tre discorsi sopra il modo d'alzar acque da luoghi bassi. Per dacquar terreni. Per levar d'acque sorgenti. Per Mandar l'acqua da bere alle città* (Parma: Seth Viotti, 1567), pp. 11, 15, 33, 49, 52.

⁷⁷ Porzio, *Soldier’s Vade Mecum*, 58. For alternative views of the city’s water, see Robert Davis, ‘Venetian Shipbuilders and the Fountain of Wine’, *Past & Present*, no. 156 (1997), p. 62.

⁷⁸ Bruyérin-Champier, *De re cibaria*, p. 504.

the sixteenth century.⁷⁹ Bacci devoted an entire treatise to ‘the method to cleanly obtain water from the Tiber, purge it and drink it fresh, and of its usefulness and effects’.⁸⁰ His 1558 work borrowed from another, by a Calabrian doctor resident in Rome, Giovanni Battista Modio (1556), who had in turn made use of another by Alessandro Petronio (1552).⁸¹ For Petronio, with the necessary precautions, especially storage in earthenware jars for six months to allow the silt to settle, it became ‘the best of Rome’s waters’.⁸² Likewise, the Lisbon physician Fernando

⁷⁹ On medical attitudes towards the Seine, see Agatha Euzen and Jean-Paul Haghe, ‘What Kind of Water is Good Enough to Drink? The Evolution of Perceptions about Drinking Water from Modern to Contemporary Period’, *Water History*, 4 (2012), 233-4; and towards the Tiber, see Bonaccorso, ‘Roma e le sue acque potabili’, 73-6.

⁸⁰ Bacci, *Del Tevere*, 38.

⁸¹ Modio, *Il Tevere*. Petronio, personal physician to Pope Gregory XIII, published his city-based regimen in Latin in 1581; the Italian edition, *Il vivere delli Romani*, appeared in 1592, seven years his death. The section on Rome’s water was based on his earlier treatise, *De aqua Tiberina, opus quidem novum sed ut omnibus qui hac aqua utuntur utile ita et necessarium* (Rome: Valerio and Luigi Dorico, 1552). Modio dissents from the other two authors concerning the water quality of the Tiber, encouraging Pope Paul IV to restore the city’s ancient aqueducts (Modio, *Il Tevere*, 60r.). See also the discussion in Bonaccorso, ‘Roma e le sue acque potabili’, 74-6.

⁸² Petronio, *Vivere delli romani*, 41, 46. According to Bacci, it met with such favour that ‘popes of our own times, some of whom, most careful in their way of living, have lived past eighty years and more, never wished to drink any water other than that of our own [river Tiber] and they had it brought with them wherever they travelled’.

Solis da Fonseca praised the water of the river Tagus, famed for its keeping qualities.⁸³ Later on, the Halle physician Friedrich Hoffmann recommended water from the Rhine and Rhone rivers as ‘nearly equal in lightness to rain-water’, which, when stored in earthen jars, allowing their sediments to deposit, ‘become pure and excellent’.⁸⁴

As these references suggest, waters were often seen to benefit from some sort of treatment before consumption. The French engineer and mathematician Jacques Bresson noted that any water filtered between layers of pure sand, silt and clay would be of good quality, emerging tasteless and odourless.⁸⁵ The Neapolitan army doctor Luca Antonio Porzio devised several water filtration devices, including a river-going ‘machine’ whose different compartments, filled with pebbles and sand, would draw off water, filter it and make it safe for use.⁸⁶ Rawdon’s receipt book advises to ‘let water stand two or three houres in a thing before you use it to settle

(Bacci, *Del Tevere*, 211; see also Modio, *Il Tevere*, 8v.). This may seem excessive, but Galenic ideas about regimen advised against sudden changes in diet.

⁸³ Fernando Solis da Fonseca, *Regimento pera conservar a saúde e vida* (Lisbon: Geraldo da Vinha, 1626), 27.

⁸⁴ Frederick [Friedrich] Hoffmann, *An Essay on the Nature and Properties of Water. Shewing its Prodigious Use and Proving it to be an Universal Medicine* (London: L. Davis and C. Reymers, 1761), 19-20. Translation of his *Dissertatio solemnis medica de aqua medicina universali*, 1712.

⁸⁵ Jaques Besson, *L'art et science de trouver les eaux et fontaines cachées sous terre* (Orléans: Pierre Trepperel, 1569), 77-8.

⁸⁶ Porzio, *Soldier's Vade Mecum*, 60-6.

and then straine it'. For mixing with wine 'stilled' water was best—probably meaning water that had been filtered or allowed to settle.⁸⁷

Water might also be boiled prior to consumption, a not uncommon practice, to judge by our Renaissance medical authors. The rationale behind this has nothing to do with our own ideas about water purity, however, and in any case the relative usefulness of boiling was widely debated. Countering the idea that 'cooked water is more gross than uncooked water', and therefore 'more harmful', Savonarola felt he was going out on a limb to suggest it might even be lighter, and therefore healthier, because the 'heavy parts' settle to the bottom (following Avicenna).⁸⁸ However, he admits that the jury was still out on this. And, indeed, if the French *Regime de vivre* advised against boiling water, which, far from making it 'subtler', actually made it heavier, cloudier and 'more gross',⁸⁹ Nuñez de Oria wrote that boiling 'corrected and rectified the malicious qualities of water', making it clearer and purer, since the 'gross and earthy matter' settled to the bottom.⁹⁰ For his part, Bruyérin-Champier was confident that boiling was the best remedy for bad or 'spoilt' waters, a precaution he recommended taking especially with unknown waters, such as when travelling (echoing Avicenna).⁹¹ Porzio found a middle ground, praising the virtues of 'warm

⁸⁷ 'Which is the best water', *Receipt Book of Marmaduke Rawdon*, 17.

⁸⁸ Savonarola, *Libreto*, 46.

⁸⁹ *Regime de vivre*, 28r.

⁹⁰ Nuñez de Oria, *Regimiento*, 346r.

⁹¹ Bruyérin-Champier, *De re cibaria*, book XVI, ch. 12; *L'alimentation de tous les peuples*, 512-13.

water'.⁹² The debate continued nonetheless. Pierre Noguez wrote that although 'many people' stated that boiling spring or river water improved it, making it lighter, it could actually concentrate the 'crudities' (solids) the water contained. The simple solution was to cover the pot, preventing evaporation.⁹³ Otherwise, medical authors agreed that just as useful was to drink the water with vinegar (as the Romans had done), powdered *bolus armenus* (a red clay from Armenia, used as an astringent), sweet almonds, clear white wine,⁹⁴ skimmed honey,⁹⁵ or five or six pepper-corns.⁹⁶

3. *Water in Chemical and Mechanical Medicine*

As noted above, the rapid flow of the river Rhine allowed it 'to excel the waters of all other rivers, for internal medicinal uses', according to Hoffmann.⁹⁷ For a follower of mechanical medicine like Hoffmann, flow was the key, in bodies of water as in the human body itself. The iatromechanical model of medicine, which would predominate from the early eighteenth century, held that water was vital for the

⁹² By 'warm', Porzio meant 'as warm as one can drink it'. Porzio, *Soldier's Vade Mecum*, 36-7, 77.

⁹³ Pierre Noguez, ed. and trans. *Traité des vertus medicinales de l'eau commune où l'on fait voir qu'elle prévient & guérit une infinité de maladies, par les observations tirées des plus celebres medecins* (Paris : Guillaume Cavelier, 1725), lxxxix.

⁹⁴ De Oria, *Regimiento*, 343v.

⁹⁵ *Regime de vivre*, 29.

⁹⁶ *Thresor de santé*, 59.

⁹⁷ Hoffmann, *Nature and properties of water*, 19.

maintenance of health. If the body was a hydraulic machine, consisting of solid and fluid particles, 'flow' was essential to the working and good health of the organism.

But I am getting ahead of myself. What about the chemical medicine of the late sixteenth and seventeenth centuries? What did the followers of the Swiss physician Paracelsus have to say about drinking water as part of diet? The answer is, very little. Paracelsus's assertion that there were 'many thousand different kinds of water in the element aqua', might have had a familiar ring, consistent as it is with the classical idea that different bodies of water had different properties and characteristics.⁹⁸ (The element water was quite different from ordinary water.) Familiar too might be the idea that water was 'the matrix [womb] of all creatures', both producing and composing natural objects, with its origins in Aristotelianism. The principles underlying Paracelsus's philosophy were quite different, however. In particular, doing away completely with Galenic ideas of varying qualities and degrees, he considered the element water to be simply damp, rather than (as it was for the Galenists) a 'complexion' made up of varying degrees of damp and cold.⁹⁹

Paracelsus did touch on water and disease: for example, writing on the medicinal potential of certain mineral waters and on the causal link between drinking water and goitre—both of which he shared with some Galenic physicians, as we have seen.¹⁰⁰ But he was silent on the matter of water in the maintenance of health.

⁹⁸ Paracelsus, 'Three Books of Philosophy to the Athenians', discussed in Walter Pagel, *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance* (Basel: S. Karger, 1982 [second edition]), 92.

⁹⁹ Pagel, *Paracelsus*, 93, 96-8.

¹⁰⁰ *Ibid.*, 201.

For his followers, Paracelsian medicine represented a shift away from regimens, and the notion of preventive medicine that lay behind them. The only Paracelsian who has much to say about drinking water is the French doctor Joseph Duchesne; but then, Duchesne was no typical follower of Paracelsus, arguing that the true chemical physician should appreciate the work of Hippocrates and Galen, whilst realising that much had been discovered since their time.¹⁰¹ Duchesne's regimen of 1620 is traditional in structure, covering the six non-naturals. Its treatment of water is also fairly traditional. However, more than a Galenic physician would have done, Duchesne devotes attention to the consistency and make-up of waters, suggesting how this explains their different properties and effects. He stresses how important it is to consider where the different waters originate and pass through. Thus the waters of the Loire and the Seine are silty because of the lands over which they flow. This makes them good for fattening horses and cooking legumes, like all good waters, Duchesne argues; but for drinking, they are best filtered by cisterns, so they will lose their silt in the process.¹⁰² He differs with Hippocrates – and, by consequence, most of his Renaissance predecessors – by suggesting that water can be nourishing, giving the example of fish who get fat by living in simple water. Of course, he

¹⁰¹ Allen Debus, *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries* (Mineola, NY: Dover, 2002 [1977]), 150.

¹⁰² Joseph Duchesne, *Le pourtraict de la santé. Où est au vif représentée la reigle universelle et particuliere de bien sainement et longuement vivre* (Paris: Claude Morel, 1620), 237 and 239.

concludes, this nourishment is nothing like that of wine and *breuvages vineux*, like brandy.¹⁰³

A radically different approach to water is only noticeable with the rise of mechanical medicine and attempts to integrate it with chemical medicine. This is most apparent in the regimen of Louis Lémery, the *Traité des aliments* of 1702, translated into English four years later. Lémery was a physician and chemist, but sought to reconcile this with the emerging mechanical philosophy. This is evident in his idea that water ‘removes and washes away the impure and gross things that stick to the solid parts’. It does this by ‘assum[ing] to itself the gross and tartarous salts it finds in its passage’ through the body, and these are then evacuated in the urine, sweat ‘or other ways’.¹⁰⁴ His chemical approach is evident in his discussion of the nature of water, noting how even the purest of water contains some ‘other principle mixed with it’, which varies greatly from water to water. For instance, Seine river water contains ‘a little salt’, making it ‘laxative and softning’, according to Lémery. As a result, ‘country people, when they first come to Paris, feel the effect of it presently, for it usually purges them after they have drank of it’. (We might be tempted to explain these effects differently.) Using the new aerometer, which determined the relative density of liquids, Lémery weighed water from the Seine and found it to be ‘as light as any spring water’, though admittedly, ‘never no clear and limpid’.¹⁰⁵

Most novel of all, perhaps, is Lémery’s enthusiasm for water as a beverage. Several previous medical authors had suggested that people could live quite well

¹⁰³ *Ibid.*, 244.

¹⁰⁴ Louis Lémery, *A Treatise of Foods in General* (London: Andrew Bell, 1706), 278.

¹⁰⁵ Lémery, *Treatise of Foods*, 284.

without wine and beer. Cogan (citing Elyot), as we have seen, gives the example of Cornishmen. And the French physician Laurent Joubert posited, 'by way of enquiry', that one might live 'comfortably, healthily and long', regardless of one's age, place or time of year, by abstaining from wine. 'Do we not say: he is as strong as a Turk?', Joubert asked. Although 'by order of Mohamet' they abstain from wine, in terms of 'agility, dexterity, force and other bodily characteristics', Turks are the equal of Christians.¹⁰⁶ And, Joubert continued, even in our own mountain regions, 'the poor drink nothing but pure water and yet live longer and are less prone to disease than lowland-dwellers'.¹⁰⁷

But L  mery went further still. He divided beverages into two types: water, 'which Nature hath abundantly supplied us with', and 'compound or made drink' (wine, beer, cider, etc). Given that the 'true characteristic of a good drink' was 'to

¹⁰⁶ Laurent Joubert, *Premiere et seconde partie des erreurs populaires, touchant la medicine et le regime de sant  * (Paris: Claude Micard, 1587), part II, 2-3. The Frenchman Nicholas de Nicolay, geographer to Henri II, travelled to Istanbul in 1551, and wrote that 'their most usuall and common beverage is that which is natural unto al beasts in the worlde, too witte, fayre and cleare water' (*The Navigations into Turkie* [London: Thomas Dawson, 1585], 90v.; French original, 1567-8). Eric Dursteler has argued that this was a slur, equating Turks with animals; but it could also just as easily be interpreted as a favourable judgement. Dursteler, 'Bad Bread and the "Outrageous Drunkenness of the Turks": Food and Identity in the Accounts of Early Modern European Travellers to the Ottoman Empire', *Journal of World History*, 25 (2004), 206.

¹⁰⁷ Joubert, *Erreurs populaires*, pt II, 3.

quench thirst, to cool and to moisten', water was the healthier of the two. It was 'more wholesome and agreeable to our constitutions, since it fully supplies all our needs in the nature of drink'. By contrast, 'made' drinks were originally invented 'to gratify the nicety of taste', so that 'less care was taken to make these drinks wholesome than pleasant'. They might nourish, but they produce other effects, such as causing thirst and heat, and were particularly pernicious when used immoderately.¹⁰⁸ That said, water could cause 'ill effects' too, either by drinking too much of it or by drinking poor quality water. Drinking too much water 'incumbers and weakens the bowels, especially if the party be fasting, for then it operates immediately upon the solid parts'.¹⁰⁹ And if drunk too cold, 'it may coagulate the liquors [liquids] of the body'.¹¹⁰

The differences separating the Galenic revival and mechanical medicine are particularly evident in the work of George Cheyne. Like Venner, Cheyne was a doctor based in Bath (though a Scot by origin and education), yet their ideas about water could not have been more different. One hundred years after Venner advised Englishmen against drinking the water, in preference for wine and beer, Cheyne stressed that 'water alone is sufficient and effectual for all the purposes of human wants in drink'. Indeed, far from seeing wine and beer as superior beverages, Cheyne remarks that 'happy had it been for the race of mankind [that] other mixt and

¹⁰⁸ Lémery, *Treatise of foods*, pt II, 276.

¹⁰⁹ *Ibid.*, 278. Lémery's mechanical language may be new, but his conclusion is the same.

¹¹⁰ *Ibid.*, 279.

artificial liquors had never been invented'.¹¹¹ The problem lay in excess consumption: 'wine is now become as common as water; and the better sort scarce ever dilute their food with any other liquor'. As a result, 'their blood becomes inflamed into gout, stone, and rheumatism, raging fevers, pleurises, small pox, or measles ... their juices are dried up; and their solids scorch'd and shrivel'd'.¹¹² Cheyne's recommendation? 'A pint of middling, light wine a day', which may not sound like much of a sacrifice, though for the 'tender, studious or contemplative', he suggests 'three glasses of water with a spoonful of wine at the great meal'.¹¹³

4. *Water as 'Universal Medicine'*

Hoffmann seems to have been the first early modern author to propose 'common water' as a 'universal medicine in preventing and curing diseases'.¹¹⁴ He did so in one of the many 'dissertations' he published in Latin on a wide range of topics over the course of his lifetime. It is distinct from his better-known work on the

¹¹¹ George Cheyne, *An Essay of Health and Long Life* (London: George Strahan, 1724), 42-3.

¹¹² *Ibid.*, 44.

¹¹³ *Ibid.*, 47, 60. He was more typical of the dietaries in recommending that people cut down on drink during the meal, but was more liberal with his advice for afterwards.

¹¹⁴ Hoffmann, *Nature and Properties of Water*, 2-3.

chemical constituents of different mineral and sparkling waters.¹¹⁵ That said, both works share Hoffmann's lifelong determination to link theory and practice, ideas and treatment in medicine—evident in the twelve volumes of medical case histories he left.¹¹⁶ Water makes a regular appearance in these cases.

If Hoffmann has been regarded by historians as jettisoning Galenic explanations but retaining its therapeutic practices, his enthusiastic use of water suggests an area in which he made a radical departure.¹¹⁷ As noted above, the properties of drinking water are seen by Hoffmann in a mechanistic guise. The principles of mechanics lie behind the prevention and treatment of disease and water is crucial in the smooth operation of the body's mechanical processes. For Hoffmann, common water was 'universal' in being suited to all complexions and

¹¹⁵ Friedrich Hoffmann, *Disputatio inauguralis medica sistens methodum examinandi aquas salubres* (Halle: Chr. Henckelii, 1703). Discussed in Coley, 'Physicians, Chemists and the Analysis of Mineral Waters', 57.

¹¹⁶ Florian Steger and Maximilian Schochow, 'Medizin in Halle: Friedrich Hoffmann (1660-1742) und das Wechselspiel von Theorie und Praxis', *Sudhoffs Archiv. Zeitschrift für Wissenschaftsgeschichte*, 99:2 (2015), 127-44.

¹¹⁷ The Galenic context of Hoffmann's ideas and medical practice are studied in detail, at least in terms of his treatment of pleurisy and pneumonia cases, in Ingo Wilhelm Müller, *Iatromechanische Theorie und ärztliche Praxis im Vergleich zur galenistischen Medizin: Friedrich Hoffmann, Pieter van Foreest, Jan van Heurne* (Stuttgart: Franz Steiner, 1991).

ages.¹¹⁸ It kept the blood fluid, increased the appetite, cleansed the intestines, carried nourishment throughout the body, maintained alertness, and kept the teeth cleaner, thus preventing disease. ‘Drinkers of water’, Hoffmann suggested, ‘provided it be pure and excellent, are more healthy and longer lived, than such as drink wine or malt liquors’.¹¹⁹ In addition to prevention, water also cured disease. The main acute ‘distempers’ were fevers, and water was the best remedy in all of these; and as for ‘chronical diseases’, these were caused ‘by an obstruction of the viscera or an over-charge and foulness of the juices’, the removal of which water is ideally suited to bring about.¹²⁰ In sum, ‘various authors’ have testified how drinking water has cured ‘the obstructions of the menses, the head-ach, inflammations of the eyes, colds, rheums, inflammations, the gout, the cholic, etc.’¹²¹

In a short book entitled *Febrifugum Magnum: or Common Water, the Best Cure for Fevers and Probably the Plague*, the London clergyman named John Hancocke came to much the same conclusion.¹²² Hancocke was certainly well-read in the medicine of the time, citing Pitcairne, Cheyne, Sydenham, van Helmont,

¹¹⁸ Hoffmann, *Nature and Properties of Water*, 39-40. Hoffmann’s recommendation that water was suited to both young and old was new, since Galenic medicine had always regarded wine as better for the elderly, water being considered overly cooling.

¹¹⁹ *Ibid.*, 28.

¹²⁰ *Ibid.*, 33-4.

¹²¹ *Ibid.*, 36.

¹²² John Hancocke, *Febrifugum Magnum: or Common Water, the Best Cure for Fevers and Probably the Plague* (London: R. Halsey, 1723).

Borrelli, amongst others, though curiously not Hoffmann. However, more important for Hancocke was his own personal experience of disease and its treatment. His book is short and to the point and is written in a non-medical language the public must have found refreshing. Rather than give fever sufferers 'hot medicines' to make them sweat out the fever, Hancocke had found that a pint of cold water—given in good time and with the patient in bed—was far more effective. And because fever was associated with a wide range of 'distempers', water was a potential cure-all. In Hancocke's experience, cold water drinking was also effective for asthma, 'surfeit' (indigestion), heartburn, vomiting, *cholera morbus*, cholic, nose-bleeds, the stone, rheumatism, gout and, by extension, plague.¹²³

Hancocke's book was not without its critics, such as the doctor James Gardner¹²⁴ – who pointed to the fact that not all water was equal, diseases were complex things and concluded that churchmen should stick to theology – as well as its satirists, such as the pseudonymous author of *Flagellum: or, a dry answer to Dr*

¹²³ *Cholera morbus* does not here refer to 'Asiatic' cholera, which did not reach England until 1831, but any of a range of acute gastrointestinal disorders, otherwise referred to as 'fluxes' or 'dysenteries'. On later confusion between the cholera morbus and Asiatic cholera, see David Rousseau and David Boyd Haycock, 'Coleridge's Choleras: Cholera Morbus, Asiatic Cholera, and Dysentery in early Nineteenth-Century England', *Bulletin of the History of Medicine*, 77 (2003), 298-331.

¹²⁴ John Gardner, *Remarks upon the Reverend Dr Hancocke's Febrifugum Magnum* (London, 1723).

*Hancock's wonderfully comical liquid book.*¹²⁵ They had reason to be worried:

Hancocke's book was reprinted five times in 1723, and then again in 1724 and 1726, and was translated into French, Dutch and Italian.¹²⁶ He followed it up with a more detailed exploration of the subject in 1726.¹²⁷

Mark Jenner has interpreted the English reaction to Hancocke's work as that of the medical elites against untrained empiricism, and there is certainly ample evidence of that.¹²⁸ However, Hancocke's ideas were also widely shared within those very elites, not only in England but throughout Europe. A cluster of similar books on the curative effects of 'common water' were written by doctors in Italy and France around the same time.¹²⁹ As if to compensate for Hancocke's dilettantism,

¹²⁵ Gabriel John [Defoe?], *Flagellum: or, a Dry Answer to Dr Hancock's Wonderfully Comical Liquid Book, which he Merrily Calls Febrifugum Magnum* (London, 1723).

¹²⁶ Mark Jenner, 'Quackery and Enthusiasm, or Why Drinking Water Cured the Plague', in O. P. Grell and A. Cunningham, eds. *Religion Medici: Medicine and Religion in Seventeenth-Century England* (Aldershot: Scolar Press, 1996), 317, 318.

¹²⁷ John Hancocke, *Febrifugum Magnum, Morbifugum Magnum; or the Grand Febrifuge Improved* (London: J. Roberts, 1726).

¹²⁸ Jenner, 'Quackery and Enthusiasm'.

¹²⁹ In Italy: Niccolò Lanzani, *Vero metodo di servirsi dell'acqua fredda nelle febbri ed in altri mali sì interni come esterni* (Naples: Io. de Bonis, 1723); Niccolò Crescenzo, *Ragionamenti intorno alla nuova medicina dell'acqua* (Naples: Gennaro Muzio, 1727); Virgilio Cocchi, *Il buon uso dell'acqua fredda nelle malattie, tante interne quanto esterne* (Perugia: Costantini, 1735). In France, in addition to Philippe Hecquet's *Explication physique et mechanique des effets de la saignée et de la*

was the strictly academic treatise which offered 'Argumentations around the new water medicine', published in Italian by the Neapolitan professor of physic Niccolò Crescenzo. In 370 dense pages, Crescenzo methodically outlines how to tailor different temperatures of water, in different quantities, to treat a wide range of illnesses. Articulated in this way, the variables made up a 'method' or 'medicine'. At one end of the spectrum were small amounts: thus, for stomach complaints, a small amount of cold water was to be taken on an empty stomach first thing in the morning; whereas for nerve complaints, a small amount of hot water, 'taken like coffee', was the recommended remedy. At the other end, large amounts of cold water, taken for a week without any food, constituted the 'water diet', which was intended for acute illnesses, such as fevers.¹³⁰ Water as remedy may have been known to the ancients, he admits; 'however, the method to give it in very great quantities, for several days, and without any food, is new'. So new, Crescenzo

boisson (Chambery, 1707), there were two collections: Pierre Noguez, ed. and trans. *Traité des vertus medicinales de l'eau commune où l'on fait voir qu'elle prévient & guérit une infinité de maladies, par les observations tirées des plus celebres medecins* (Paris : Guillaume Cavelier, 1725); Benedictus Boudon, ed. *Les vertus medicinales de l'eau commune, ou recueil des meilleures pièces qui ont été écrites sur cette matière* (Paris: Guillaume Cavelier, 1730; two vols). Noguez's own edited volume, with its translation of Hancock, was also published in English, for good measure: *The physical use of common water, recommended from France* (London: J. Roberts, 1726).

¹³⁰ Crescenzo, *Ragionamenti*, 347, 349, 353.

argues, that ‘the water method’ is easier for non-doctors to appreciate than doctors, steeped as they are in their ‘ideas against water’.¹³¹

In the substantial preface to his French translation of Hancocke and other works on the health benefits of water, Pierre Noguez argued that ‘at least six-tenths of the world’ knew no other drink than common water and were the healthier for it, echoing Joubert’s recommendation of almost two hundred years earlier.¹³² And Noguez’s complaint against wine-drinkers, unable to switch to water and so condemning themselves to lives of ill health, is reminiscent of Cheyne.¹³³ It is because medicine is so accustomed to searching for what is ‘difficult and rare’ that it has long ignored a remedy ‘as simple and as common as water’; but if we were to look to experience, Noguez suggests, we would see that ‘there is almost no malady that water has not cured’.¹³⁴ He proceeds to discuss its powers in both healthy and sick individuals, and, borrowing from Hoffmann, refers to water as ‘the universal

¹³¹ Ibid., 343.

¹³² Pierre Noguez, ed. and trans. *Traité des vertus medicinales de l'eau commune où l'on fait voir qu'elle prévient & guérit une infinité de maladies, par les observations tirées des plus celebres medecins* (Paris : Guillaume Cavelier, 1725), xvii-xviii.

Joubert’s fraction was even smaller, wine-drinkers being confined to Europe: and ‘if all the world was a city, such as Paris, Europe’s part would consist of just one house or two’. Joubert, *Erreurs populaires*, 2-3.

¹³³ Ibid., xxxvii-xxxviii.

¹³⁴ Ibid., xvii, xix.

medicine': 'the most useful, effective, most pleasurable, easiest and least disagreeable of all remedies'.¹³⁵

Never had water had it so good—assuming that the water itself was of good quality. The crucial thing for both Crescenzo and Hancocke, perhaps no small detail, was that the 'common water' used in their treatments had to be clean and pure.¹³⁶ For Niccolò Lanzani it had to be 'without taste, colour and odour', which made rainwater the best, as it had been from the time of Hippocrates and Galen.¹³⁷ Noguez agreed—for which reason mineral waters might be effective in treating *specific* medical conditions, but they were not suitable as an everyday drink.¹³⁸ And this is an important distinction: these were not books about specific mineral or spa waters, which had an emerging tradition of its own, prescribed by physicians in the treatment of particular conditions according to the nature of the water.¹³⁹

But what if the common water was bad? Daza is one of the few regimen authors to comment on the effects of bad water, noting the link between lake and

¹³⁵ *Ibid.*, lx.

¹³⁶ 'Clear and sweet' for Hancocke (*Febrifugum magnum*, p. ii) 'la più leggiera e la più cristallina' (the lightest and most crystalline) for Crescenzo (*Ragionamenti*, p. 370).

¹³⁷ Niccolò Lanzani, *Vero metodo di servirsi dell'acqua fredda nelle febbri ed in altri mali sì interni come esterni* (Naples: Io. de Bonis, 1723), 146.

¹³⁸ Noguez, *Vertus medicinales de l'eau commune*, lxx-lxxx.

¹³⁹ Pascale Cosma-Muller, 'Entre science et commerce: Les eaux minérales en France à la fin de l'Ancien Régime', *Historical Reflections / Réflexions Historiques*, 9:1-2 (1982), 249-62.

pond water, summer heat and increased 'dysenteries and stomach fluxes called bloody'.¹⁴⁰ Two centuries later, the Scottish naval surgeon John Lind also remarked on how 'the drinking of bad water' was 'highly blamed' for causing seasonal 'fluxes' in Europe. However, he argued that other factors must come into play in the West Indies because 'the use of good water alone' was not always enough to prevent them.¹⁴¹ For Porzio, the cause was marshland. Drinking from low-lying water sources or muddied wells certainly caused soldiers on campaign to sicken; but worse still was their setting up camp on marshland near rivers, which when dry in summer 'render the adjacent air contagious to every animal'.¹⁴² John Pringle concurred. Writing from his experience gained as physician-general to the British army in Flanders in 1744, the cause of dysentery might be identified as the 'corrupted water of marshes'. In this case, however, the threat was not from drinking the water but from inhaling the miasmas it generated—a notion of causation with a long history.¹⁴³

¹⁴⁰ Daza, *Libro de los provechos*, 43v.

¹⁴¹ James Lind, *An Essay on the Diseases Incidental to Europeans in Hot Climates* (London, 1777), 7, cit. in David Boyd Haycock, 'Exterminated by the Bloody Flux', *Journal for Maritime Research*, 4 (2002), 21.

¹⁴² Porzio, *Soldier's Vade Mecum*, 17-18.

¹⁴³ John Pringle, *Observations on the Diseases of the Army* (5th edition, London: A. Millar, D. Wilson, T. Durham and T. Payne, 1765), 84, cit. in Boyd Haycock, 21. On the concept of miasmas and their link to epidemics, see Carlo Cipolla, *Miasmas and Disease: Public Health and the Environment in the Pre-Industrial age*, trans. E. Potter (New Haven CT: Yale University Press, 1992).

5. *Concluding Remarks*

If water's very banality means that it is often invisible in the written evidence, the regimens provide ample evidence of the importance of drinking water and of changing practices and attitudes over the course of the early modern period. They do this on three levels. First of all, the printed vernacular health guides of the early modern period give ample evidence of water drinking (as part of a healthy regimen targeted at disease prevention and living a long life). If Renaissance medical authors were circumspect in their attitude towards drinking water, this was tempered by a widespread tendency to adapt their advice to suit local circumstances, constraints and preferences when it came to water use. Medical advice was both shaped by and, in turn, shaped ideas relating to different local conditions (river water), practices (cisterns; boiling and filtering) and fashions (cold-drinking).

Secondly, perceptions of the links between drinking water and health changed in the process. Differences about the nature of water—the healthiest kinds, how and when to drink it—reflect the changing nature of regimens, from the Galenic revival through to chemical and finally mechanical medicine. We have seen how water went from being considered the 'vilest of beverages' in the mid-fifteenth century, the consumption of which, though necessary, had to be carefully regulated, to a 'universal medicine' three hundred years later, able to prevent and cure disease. The guarded approval and practicality evident in Renaissance regimens led to a welcoming of water in chemical medicine, which turned into unbridled enthusiasm for water's curative benefits with mechanical medicine. In the process, wine gave way to water as the preferred healthy drink—at least, for medical authors such as Cheyne,

no fan of 'made' beverages like wine and beer. 'Bad' water might engender disease, they agreed, but this was more than offset by the healing virtues of 'good' water.

Finally, there is evidence of the more generalised shift in perception from a pluralistic to a singular view of water, although this is not without its contradictions. Thus we go from the 'waters' of the Galenic Renaissance physicians, where each body of water was different, possessing its own distinct qualities, to the singular water, as in the 'common' water of Hoffmann. For the Galenic physician there would have been no such thing as a 'common' water with 'universal' effects. Hoffmann's specific usage brings us a step closer to the unitary abstract concept of water as H₂O, ushered in by Lavoisier—even whilst Hoffmann continued to recognise the distinct natures of different therapeutic mineral waters—a contradiction which would continue throughout the eighteenth century and into the next.