

New Drugs for the Dutch Republic  
The Commodification of Fever Remedies  
in the Netherlands (c. 1650-1800)

Klein, Wouter

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New Drugs for the Dutch Republic  
The Commodification of Fever Remedies  
in the Netherlands (c. 1650-1800)

Nieuwe Geneesmiddelen voor de Nederlandse Republiek.  
De Commodificatie van Koortsmiddelen  
in Nederland (ca. 1650-1800)

(met een samenvatting in het Nederlands)

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door

Wouter Klein

geboren op 27 mei 1987

te Gouda

Promotoren: Prof. dr. A.H.L.M. Pieters  
Prof. dr. H.G.M. Jorink

*Arcana revelata vilescunt.*<sup>1</sup>

---

<sup>1</sup> "Secrets which have been revealed decline in value." Herman Boerhaave to Joannes Baptista Bassand, 24-06-1728, in: G.A. Lindeboom (ed.), *Boerhaave's Correspondence*, 3 vols. Analecta Boerhaaviana 3, 5 and 8 (Leiden: E.J. Brill 1962-1979), vol. 2, 268-269.



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# Note on Translations, Currency, Weights and Measures

## *Translations*

All translations of quotes, that are not originally in English, have been made by the author. Exceptions are quotes from the correspondence of Herman Boerhaave (in the epigraph, Chapter 5 and the Conclusion), which have been copied from Lindeboom, *Boerhaave's Correspondence*.

## *Currency*

Early modern Dutch currency (e.g. for prices of remedies) is given in *guilders* and *stuivers* (1/20 of a guilder). For contextual purposes: a Dutch skilled craftsman (*meester*) earned approximately 28 *stuivers* per day in the eighteenth century.<sup>2</sup>

## *Weights and Measures*

Early modern apothecaries used their own system of weights and measures, which went back to Antiquity. The following table is specific for Holland.<sup>3</sup>

Name	Ratio					Approx. modern weight in grams
pound ( <i>libra</i> )	1					369,13
ounce ( <i>uncia</i> )	12	1				30,76
drachm ( <i>drachma</i> )	96	8	1			3,85
scruple ( <i>scrupulus</i> )	288	24	3	1		1,28
grain ( <i>granum</i> )	5760	480	60	20	1	0,064

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<sup>2</sup> More precisely, the average wage of a master craftsman fluctuated between 27.11 and 28.70 *stuivers* per day, in the period 1700-1799. See J. de Vries and A. van der Woude, *The First Modern Economy: Success, Failure, and Perseverance of the Dutch Economy, 1500-1815* (Cambridge: Cambridge University Press 1997) 610-611 (Table 12.1).

<sup>3</sup> The table is based on T. Geldof, "Beknopt Overzicht van Gewichten en Medicinale Gewichten", *Bulletin van de Kring voor de Geschiedenis van de Pharmacie in Benelux*, 52 (1976) 3-11, there 7-8.





Map 1. The Dutch Republic in the eighteenth century, with the places that are mentioned in this dissertation.

# General Introduction

## *Problem, Goal and Central Question*

In Umberto Eco's novel *Numero Zero*, which is set in 1992, a group of journalist upstarts invents a mock newspaper, aimed at revealing truths that were supposedly hidden in the past. The newspaper, which is in fact never published, is filled with mundane news items and famous cover-up stories, like Mussolini's alleged escape from execution in 1945. The editorial team goes to great lengths to make the newspaper credible: it even includes an entertainment section with crossword puzzles. While discussing the nature of these puzzles, one editor questions the level of difficulty which the puzzles should have:

'Meanwhile the cryptic crosswords in foreign newspapers have clues that are a puzzle in themselves. Recently, in a French newspaper, I saw "the friend of simples", and the solution was "herbalist", because simples aren't just simpletons, but also medicinal herbs.'

'That's no use to us,' said [chief editor] Simei. Our readers won't know what simples are, nor will they know what a herbalist is or does. Stick with Hitler, or the husband of Eve, or the mother of a calf, and stuff like that.'<sup>4</sup>

In Eco's modern world of mock newspapers, the intended audience is not expected to understand anything about plant-based medicine. Simple drugs (or *simplicia*, as they were called in premodern pharmacy) are not part of our common vocabulary. The average reader, with a certain level of cultural-scientific literacy, has no adequate frame of reference to understand the diverse terminology of plant-based medicine. However different was the situation in the sixteenth, seventeenth and eighteenth centuries, when understanding the meaning of simples was part and parcel of citizen science. In Dutch newspapers from the seventeenth and eighteenth century, we can find a myriad of advertisements about medicine and pharmacy: simple drugs, often with Latin names, that are for sale at auctions; secret remedies from all sorts of producers, also guised in fancy Latin terminology; book publications about every

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<sup>4</sup> U. Eco, *Numero Zero*. Transl. by Richard Dixon (paperback edition; London: Harvill Secker 2015) 53.

imaginable medical topic, and so on. While going through a page of advertisements, an early modern reader must have had a great deal of knowledge to make sense of their contents, to decide if they were of any relevance to him (or her). He/she could come across ipecacuanha (vomiting root from Brazil), that was sold at an auction; **or the 'well-tryed Essentia Universalis Regia', which was presented as a great remedy against 'hot fevers'**. The early modern reader must have had a basic, tacit understanding of what these names referred to, and in which context they might be encountered. **In other words, some 'pharmaceutical literacy'** was required to assess and use the contents of medical advertisements. **The readers of Eco's newspaper would require a whole different sort of pharmaceutical literacy**, in an era when advertised remedies are usually sold as pills or capsules, with accurately measured contents and specific molecular targets, that are accompanied by detailed patient information. Conversely, our modern kind of advertising would have been alien to the early modern reader.

Historical newspapers from the Dutch Republic contain a treasure of information about all sorts of medical and pharmaceutical topics, and medical commodities can be found in the advertisements of almost every issue. Modern medical historians have demonstrated the importance of using advertisements as a means to reconstruct the historical trajectories of diseases and remedies, to reveal patterns in the commodification process of pharmaceuticals over longer periods. This claim has especially been made about medical advertisements from the nineteenth and twentieth centuries, usually on the basis of samples.<sup>5</sup> For the period before 1800, however, very little research has been done.<sup>6</sup> Since many historical newspapers have been digitized recently, medical

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<sup>5</sup> For the Netherlands, the claim was made by F. Huisman, "Patiëntenbeelden in een Moderniserende Samenleving: Nederland, 1880-1920", *Gewina*, 25:4 (2002) 210-225, there 213; and by A. Roersch van der Hoogte and T. Pieters, "Advertenties voor Hypnotica en Sedativa in het Nederlands Tijdschrift voor Geneeskunde, 1900-1940: Historische Veranderingen in de Vorm en Inhoud van een Informatiebron voor Artsen", *Studium*, 3:4 (2010) 139-154. More generally, a similar argument was made by T. Scott, N. Stanford and D.R. Thompson, "Killing Me Softly: Myth in Pharmaceutical Advertising", *British Medical Journal*, 329 (2005) 1484-1487; K. Applbaum, "Pharmaceutical Marketing and the Invention of the Medical Consumer", *PLoS Medicine*, 3:4 (2006) 445-447; and J.A. Greene, *Prescribing by Numbers: Drugs and the Definition of Disease* (Baltimore: Johns Hopkins University Press 2007).

<sup>6</sup> For the Netherlands, the best available research (also on the basis of samples) was again done by Huisman, "Gezondheid te Koop: Zelfmedicatie en Medische Advertenties in de Groninger en Ommelander Courant, 1743-1800", *Focaal*, 21 (1993) 90-130. See also the titles in note 301 below.

advertisements can now be studied on an unprecedented scale. In the Netherlands, millions of historical newspaper pages have been made digitally available in Delpher in recent years, by the National Library. These data have the capacity to change the way we look at the medical past, as has already been demonstrated for the past two centuries.<sup>7</sup> As this dissertation will show, advertisements in digitized newspapers can also shed a new light on central aspects of the early modern medical marketplace, especially commodification processes. Meanwhile, advertisements reveal various other dimensions of the medical world of the Dutch Republic, which will be important themes throughout this dissertation, such as the interaction of entities of diseases and remedies in various domains; ambiguities in language to describe such entities; the competitive commercial mechanisms that operated on the market for remedies and medical practitioners; the importance of advertising for the promotion of remedies; **the discrepancies between 'regular' and 'irregular' medical practices**; and the importance of secrecy in the circulation of medical knowledge.

This dissertation will use fevers and fever remedies (especially Peruvian bark) as a case study to explore the commodification process of remedies in the Dutch Republic. Fever and fever therapy were omnipresent in early modern medical debates, and there was a thriving market for fever remedies as part of the medical marketplace. How new fever remedies found their way into the market is a problem that requires insight into the interconnections between various domains. The interferences of the trajectories in such domains as commerce, medicine and culture, are an important object of study to understand why remedies followed the historical pathways the way they did. In the wake of Harold **Cook's influential *Matters of Exchange***<sup>8</sup>, many scholars have increasingly emphasized the interferences of natural knowledge between different domains: notably commerce, medicine and culture.<sup>9</sup> Meanwhile, the discrepancy in the level of attention given to certain domains has also led scholars to follow a more unilateral approach, in order to redress the balance in favour of a single domain. This resulted in highly important,

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<sup>7</sup> E.g. by S. Snelders e.a., "A Digital Humanities Approach to the History of Culture and Science: Drugs and Eugenics Revisited in Early 20th-Century Dutch Newspapers, Using **Semantic Text Mining**", in: J. Odijk and A. van Hessen (eds.), *CLARIN in the Low Countries* (London: Ubiquity Press 2017) 325-336.

<sup>8</sup> H.J. Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (New Haven: Yale University Press 2007).

<sup>9</sup> The studies I refer to here are given in note 19 below.

detailed studies of e.g. the medical<sup>10</sup> or commercial<sup>11</sup> aspects of remedies and health care in the past. This dissertation, however, stresses that the early modern interactions between the domains of medicine and commerce can fruitfully be studied in tandem from the perspective of the commodification of remedies.

Although commodification is a term that is widely used in studies about the exchange of natural knowledge, few authors have conceptualized what commodification actually is. Fissell and Cooter, borrowing from anthropological studies, have argued that **'commodification' is one of three themes (alongside 'sociability' and 'modes of social difference')** that **"can help us integrate the sites and forms of natural knowledge into larger patterns of historical change."** In their one-dimensional model, they regard the commodification of natural knowledge in the public domain as **"the process by which things become identified as items that can be bought and sold"**. In this interpretation, consumption is more important than production, and demand is more important than supply.<sup>12</sup> Margóczy offers a more elaborate **conceptualization, in which "the seemingly neutral transactions of money against goods turn out to be invested with social, political, and emotional meanings."**<sup>13</sup> His interpretation is useful to explain the commodification of knowledge *within* the domain of science, but not *across* domains like medicine and commerce. In this dissertation, it is precisely these interferences which will be analysed from the perspective of commodification: a process in which new knowledge and goods transform from incidental occurrences in select sources, into products with a certain level of consistency (both in name and in nature) that appear in a variety of contexts, of a commercial and/or cultural character. The implication of this commodification process is that new knowledge and goods will occur in more and diverse contexts over time, which suggests that it should be possible to trace their increasing occurrence in (digitized) heterogeneous sources over the course of time.

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<sup>10</sup> An example is A.-H. Maehle, *Drugs on Trial: Experimental Pharmacology and Therapeutic Innovation in the Eighteenth Century*. *Clio Medica* 53 (Amsterdam and Atlanta: Rodopi 1999).

<sup>11</sup> E.g. H. Deneweth and P. Wallis, "Households, Consumption and the Development of Medical Care in the Netherlands, 1650-1900", *Journal of Social History*, 49:3 (2016) 532-557.

<sup>12</sup> M. Fissell and R. Cooter, "Exploring Natural Knowledge: Science and the Popular", in: R. Porter (ed.), *The Cambridge History of Science, Volume 4: Eighteenth-Century Science* (Cambridge: Cambridge University Press 2003) 129-158, there 157.

<sup>13</sup> D. Margóczy, *Commercial Visions: Science, Trade, and Visual Culture in the Dutch Golden Age* (Chicago and London: University of Chicago Press 2014) 24.

To trace commodification processes of early modern fever remedies, this dissertation will analyse the historical pathways of remedies as drug trajectories. Within historical research, drug trajectories denote developmental processes of remedies, such as growing *economic* importance of a drug because of a steady supply; shifts in *scientific* interest, due to ongoing research in therapeutic efficacy and side effects; and acceptance or rejection of drugs in the *public* domain, for financial, religious, ethical or other reasons. In other words, drug trajectories represent specific aspects of the history of drugs, which can be studied diachronically (i.e. tracing one such aspect over a longer period), or synchronically (i.e. studying and comparing the interplay of different spatial contexts at a given point in time). Studying the history of pharmacy through the perspective of trajectories of individual drugs is a fairly recent approach, that has mostly been applied to remedies from the nineteenth and twentieth centuries.<sup>14</sup> In this dissertation, attention will instead be directed to the early modern period, and especially to the introduction of exotic remedies.

**'Exotic' remedies are understood here as an intellectual construct,** following the work of Ina Baghdiantz McCabe.<sup>15</sup> Although various substances that are discussed in this dissertation, like Peruvian bark, are exotic in the geographical sense of the word (i.e. derived from across the world), **'exoticism' is mainly about European perceptions. In this sense,** medicinal substances from the tropical West Indies could lose their exotic character over the course of time, for instance because they became commodified. When Peruvian bark was shipped into Europe on a regular basis every year, and came to be generally used against various diseases, it shook off its initial exoticism and became a household name in European medicine.

The commodification of remedies through various trajectories was **closely connected to the 'medical marketplace',** where medical goods and services were available for the benefit of the patient, but were also

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<sup>14</sup> T. Pieters, *Historische Trajecten in de Farmacie: Medicijnen tussen Confectie en Maatwerk* (inaugural lecture; Hilversum: Verloren 2004); S. Snelders, C. Kaplan and T. Pieters, "On Cannabis, Chloral Hydrate, and Career Cycles of Psychotropic Drugs in Medicine", *Bulletin of the History of Medicine*, 80:1 (2006) 95-114.

<sup>15</sup> I. B. McCabe, *Orientalism in Early Modern France: Eurasian Trade, Exoticism, and the Ancien Régime* (Oxford and New York: Berg 2008) 4-5. Cf. B. Schmidt, "'Imperfect Chaos': Tropical Medicine and Exotic Natural History", in: O.P. Grell and A. Cunningham (eds.), *Medicine and Religion in Enlightenment Europe* (Aldershot and Burlington: Ashgate 2007) 145-171, which regards the Dutch as the most important mediators of exotic natural history to early modern Europe.

commodities in their own right, with an economic value that can be distinguished from their medical significance. The medical marketplace has rightly been criticized for stressing the economic mechanisms of early modern medicine too much<sup>16</sup>, and yet it can still fruitfully be applied to study the commodification, supply and demand of medical products in the early modern period. Data from digitized newspapers can reinvigorate the medical marketplace as a valuable point of reference for historians of medicine.

The success or failure of exotic remedies as commodities on the medical marketplace in Europe depended on various circumstances. These relate to economic factors, such as the availability of raw materials, price issues, and marketing strategies; to scientific research, trials, and debates; and to public issues of health and the awareness and acculturation of new remedies. This triangular notion is vital for understanding the global exchange of knowledge and goods. As argued by Cook, the quest for natural knowledge can be considered to have been the central focus of intellectual and commercial activity in the early modern period<sup>17</sup>, **and even as the 'big science' of the era.**<sup>18</sup> Cook's argument is part of—and has been an inspiration for—a growing body of modern historical studies in recent decades, all of which emphasize the close connection between various themes: the global quest for natural knowledge (especially medical botany), commercial activities, the material culture of remedies and artisanal medical practices.<sup>19</sup>

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<sup>16</sup> The medical marketplace has rightfully been criticized, e.g. by K. Waddington, *An Introduction to the Social History of Medicine: Europe since 1500* (Basingstoke: Palgrave Macmillan 2011). According to Waddington, historians have fruitfully used the concept of **the medical market to "highlight the economic dimension of medical encounters", and the patient's active role in searching for and choosing specific types of medical care. Still, he argues that "it does have its limitations. The concept is vague and ill-defined. It tends to emphasize conflict and the economic rather than the practical aspects of care assuming as it does that a market model dominated clinical encounters often without attention to how early modern economies or societies functioned. Why particular healers were consulted was not just economically driven"** (ibidem, 170).

<sup>17</sup> Cook, *Matters of Exchange*.

<sup>18</sup> H.J. Cook, "Handel in Kennis: Natuurlijke Historie als de 'Big Science' van de Zeventiende Eeuw", transl. by C. van Heertum, in: E. van Gelder (ed.), *Bloeiende Kennis: Groene Ontdekkingen in de Gouden Eeuw* (Hilversum: Verloren 2012) 23-34. **The idea can be traced earlier, e.g. in S.J. Harris, "Long-Distance Corporations, Big Sciences and the Geography of Knowledge", *Configurations*, 6 (1998) 269-304, who also regards natural knowledge as a focal point of attention in the early modern period.**

<sup>19</sup> R. Wilson, *Pious Traders in Medicine: A German Pharmaceutical Network in Eighteenth-Century North America* (University Park: Pennsylvania State University Press 2000); L. Schiebinger and C. Swan (eds.), *Colonial Botany: Science, Commerce,*

The goal of this dissertation is to expand on these themes in two ways. First, it applies the notion of drug trajectories to an early modern context. More specifically, this dissertation will address various interconnections in the histories of fever and Peruvian bark. The usefulness and historiography of this particular disease and remedy will be discussed in more detail in the **'Case Study'** section below. The spatiotemporal context of the subject is the Dutch Republic between 1650 and 1800. This is the period during which Peruvian bark became the most important remedy against fever. The trajectories of fever and Peruvian bark followed their own course, but they also interfered frequently. The time frame coincides with the discovery of Peruvian bark (around 1640) until the moment when the active alkaloid, quinine, was extracted from it (in 1820). A variety of primary sources will be used, among which newspaper advertisements are the most important new asset for research on early modern medicine **(see the 'Methodology' section below)**.

Second, this dissertation applies a mixed-methods approach, combining traditional and digital methods. The efforts of the Dutch National Library to digitize historical newspapers in recent years has made it possible for the first to study representative numbers of medical advertisements to trace long-term developments in early modern medical advertising. The size of newly digitized material required a more sophisticated, (semi)automatic methodology to trace relevant material, which made it possible to ask new, more complex historical questions.<sup>20</sup> Therefore, two collections of newspaper advertisements were assembled, to trace long-term developments in the histories of fever and Peruvian bark. These data were further evaluated on the basis of existing knowledge, that was gathered by conventional historical method from

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*and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press 2005); Cook, *Matters of Exchange*; R. Dauser e.a. (eds.), *Wissen im Netz: Botanik und Pflanzentransfer in europäischen Korrespondenznetzen des 18. Jahrhunderts* (Berlin: Akademie Verlag 2008); S. Dupré and C. Lüthy (eds.), *Silent Messengers: The Circulation of Material Objects of Knowledge in the Early Modern Low Countries* (Berlin: LIT Verlag 2011); S. Snelders, *Vrijbuiters van de Heelkunde: Op Zoek naar Medische Kennis in de Tropen 1600-1800* (Amsterdam: Atlas 2012); E. van Gelder (ed.), *Bloeiende Kennis: Groene Ontdekkingen in de Gouden Eeuw* (Hilversum: Verloren 2012).

<sup>20</sup> H. Piersma and K. Ribbens, **"Digital Historical Research: Context, Concepts and the Need for Reflection"**, *BMGN / Low Countries Historical Review*, 128:4 (2013) 78-102, there 97, quite rightly stress that digitized newspapers are at the top of the list of obvious historical data sources, but they have certainly not been used before on the same scale as in this dissertation, for research in the medical marketplace of the eighteenth century.



better-known sources, such as medical and pharmaceutical handbooks and personal correspondences. This combination of analogue and digitized sources required an iterative approach of close and distant reading to assess their meaning and relevance. The methodology of collecting data from advertisements, and of linking these to other sources from other domains, will be discussed in the 'Methodology' section below.

Furthermore, the research that resulted in this dissertation has been part of the digital history project 'Time Capsule', at Utrecht University (2013-2017), which formed part of the mixed-methods approach outlined above.<sup>21</sup> The project aimed at the integration of existing, heterogenous, digital data collections (other than the collections of newspaper advertisements, which were newly created during the same period), that are related to the history of medicine, pharmacy and botany. This has resulted in a digital platform of the same name<sup>22</sup>, which allows users to explore these combined (linguistic, commercial, botanical, pharmaceutical etc.) data sources all at once, so that unexpected connections across various data sets may surface, as input for further research. A discussion and a practical example of this innovative approach to the history of medicine, pharmacy and botany is the topic of Chapter 6. Tracing the commodification of remedies was used as a test case to assess the validity of Time Capsule's structure and interface. As such, the system made a fruitful contribution to answer the research questions of this dissertation.

To sum up, it has been difficult, until recently, to trace the interferences between the medical marketplace and other domains. Now that we have a large, digitized collection of newspaper advertisements, we can finally study long-term processes such as the commodification of remedies. Therefore, the central question of this dissertation is: how did promotional campaigns for remedies, and especially advertising in newspapers, contribute to the commodification of new medicines in the Dutch Republic? Fever remedies, especially Peruvian bark, will be used as test cases to investigate this question. This dissertation offers a number of case studies, in which the commodification of fever remedies and Peruvian bark is studied in various contexts: the epistolary culture of the late seventeenth-century Republic of Letters (Chapter 1); the early eighteenth-century trade in *materia medica* in Amsterdam (Chapter 2); the irregular market for fever remedies that is found in advertisements (Chapter 3 and 4); the commodification of fever remedies in the wake of an epidemic (Chapter 5); and the comparative histories of different

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<sup>21</sup> The Time Capsule project, headed by Toine Pieters, was made possible by the Netherlands Institute for Scientific Research (Project No. 314-99-111).

<sup>22</sup> <http://www.timecapsule.nu/>.

medicinal substances, as can be traced in the digital collections that were linked in the Time Capsule platform.

The following sections of the General Introduction will, respectively, address the relevance of fever and Peruvian bark as a testing ground for the commodification process in early modern medicine; the historiographical context of medical advertising, as a source to study the commodification of medicine in the past; the methodology that was applied to construct the two collections of newspaper advertisements, which are central to this research; and the structure of the chapters in this dissertation.

### *Case Study: Fever and Peruvian Bark*

To make sense of fever and Peruvian bark in the early modern period, some introductory remarks on the historical relationship between the two are useful. The most common misconceptions in this history are that **'Peruvian bark' can be equated with quinine, and 'fever' with malaria. Both** assumptions can be found in various studies about the history of malaria and Peruvian bark<sup>23</sup>, which have tried to trace the concepts of 'quinine' and 'malaria' in an era when those words were not yet in use. Quinine, the most important antimalarial alkaloid that is extracted from the bark of *Cinchona* species, was discovered and named by Pelletier and Caventou only in 1820. Malaria was originally an Italian term to describe the miasma or 'bad air' (*mal' aria*, *malaria*, or *male d'aria*) that was thought to cause certain types of fever. As such, malaria is known to have existed at least since the early seventeenth century.<sup>24</sup> Only in the nineteenth century, however, did the term began to be used to signify the specific disease we know today as malaria.<sup>25</sup> Therefore, caution is required when encountering fever or bark in early modern sources. Of course, there were extensive debates about fever in the early modern period, which means that fevers with (retrospectively) clear malarial symptoms can be discerned in early modern sources.<sup>26</sup> The identification of certain fevers

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<sup>23</sup> Examples of such studies are given in notes 36-37 below.

<sup>24</sup> S. Jarcho, *Quinine's Predecessor: Francesco Torti and the Early History of Cinchona* (Baltimore and London: Johns Hopkins University Press 1993) 188-191.

<sup>25</sup> H.A. Skinner, *The Origin of Medical Terms* (2<sup>nd</sup> edition; New York: Hafner 1970) 261-262.

<sup>26</sup> The most elaborate modern interpretations of premodern fever theory are still those by W.F. Bynum and V. Nutton (eds.), *Theories of Fever from Antiquity to the Enlightenment*. Medical History, Supplement 1 (London: Wellcome Institute for the History of Medicine 1981); and Jarcho, *Quinine's Predecessor*, 217-261. More recent contributions include L.G. Wilson, "Fever", in: W.F. Bynum and R. Porter (eds.),

as malaria is often as close as we can get in terms of a medico-historical diagnosis. Retrospective interpretation of medical cases, by using modern constructs of diseases and remedies, will always have a scent of anachronism.<sup>27</sup> The nature of fever in premodern sources is often too ambiguous to allow a unilateral clarification.

In a premodern context, what we would now identify as malaria was one of many illnesses that fell under the umbrella term ‘**fevers**’. Generally regarded as an indisposition that involved an abundance of bodily heat, associated with the heart, fever was thought of as a disease entity in itself, rather than a symptom. Following classical examples (mainly Galen and Hippocrates), distinctions were made according to the intensity of heat in the body and the interval between bouts of fever (paroxysms). Although most textbooks on medicine devoted systematic attention to fevers, a uniform nosological classification was never arrived at. One clear visual representation was made by the Italian physician Francesco Torti (1658-1741), whose *lignum febrium* presented the interrelation of about one hundred types of fever in a tree image (see Figure 1a/1b). Besides the general dichotomy of benign and malignant varieties—recognizable by their bright or dark shading—Torti mainly distinguished the branches of malignant fever that were common in his time. Most fevers were either types of intermittent fever (*febris intermittens*), where paroxysms alternate with periods of remission at regular intervals; or types of continuous fever (*febris continua*), where paroxysms occur uninterrupted on successive days. Intermittent and continuous fevers were further subdivided according to the duration of the interval, i.e. whether the symptoms of day 1 recurred on day 2 (*febris quotidiana*), 3 (*tertiana*), or

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*Companion Encyclopedia of the History of Medicine*, 2 vols. (paperback edition; London and New York: Routledge 1997), vol. 1, 382-411; Maehle, *Drugs on Trial*, Chapter 4; G.F. Gensini and A.A. Conti, “The Evolution of the Concept of ‘Fever’ in the History of Medicine: From Pathological Picture Per Se to Clinical Epiphenomenon (and Vice Versa)”, *Journal of Infection*, 49:2 (2003) 85-87; and C. Hamlin, *More than Hot: A Short History of Fever* (Baltimore: Johns Hopkins University Press 2014). R.M. Packard, *The Making of a Tropical Disease: A Short History of Malaria* (Baltimore: Johns Hopkins University Press 2007) still—and unproblematically—applies the retrospective identification of malaria to fever. A curious contribution that offers an exciting cultural perspective, from a literary point of view, is C. Ward, “‘Cruel Disorder’: Female Bodies, Eighteenth-Century Fever Narratives, and the Sentimental Novel”, *Studies in Eighteenth-Century Culture*, 32 (2003) 93-121.

<sup>27</sup> The notion of diseases as constructs with limited historical value is discussed, for instance, by R.A. Aranowitz, *Making Sense of Illness: Science, Society, and Disease* (Cambridge: Cambridge University Press 1998).

4 (*quartana*).<sup>28</sup> Accordingly, decisions of therapy were made on the basis of the intensity and duration of the fever.

The absence of a static theory for fevers made itself felt when the traditional, Galenic framework was challenged by new approaches to medicine, especially the gradual acceptance of **Harvey's circulation of the blood**, Cartesian mechanism, and the growing importance of new remedies, like Peruvian bark and chemical preparations.<sup>29</sup> These developments in medicine were, in the first place, *additions* to fever theory, because it should be emphasized that changes in fever theory were the effects of these more general shifts in medical knowledge, rather than their causes.<sup>30</sup> Moreover, despite the growing importance of new concepts in medicine, fever theory always retained a flavour of Galenic humoralism. This was even the case with staunch protagonists of iatrochemistry like Thomas Willis (1621-1675), because of the assumption that fever was an internally caused indisposition of the body.<sup>31</sup> In other words, fever theory followed rather than led medical innovations, and was theoretically conservative by nature.

Because fever theory was drifting between tradition and innovation, this could mean either a problem or an opportunity for new fever remedies, like Peruvian bark. Every physician in early modern Europe would agree that the obstruction of the blood, that causes fever, could be removed by a range of remedies.<sup>32</sup> This understanding was favourable to **Europe's pharmaceutical tradition, which had known many native herbs against fevers for centuries.**<sup>33</sup> Peruvian bark, however, was an exotic, bitter substance, that was initially thought to have a counterproductive **effect on fevers, which were similarly interpreted as 'hot' entities** in Galenic humoralism. René Descartes (1596-1650) had also stressed that

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<sup>28</sup> F. Torti, *Therapeutice specialis Ad Febres quasdam Perniciosas, inopinatò, ac repente lethales, una verò China China, peculiari Methodo ministrata, sanabiles* (Mutinae: Typis Bartholomaei Soliani 1712). Torti's notion of fevers is the focus of Jarcho's book, *Quinine's Predecessor*, esp. Chapter 9.

<sup>29</sup> See D.G. Bates, "Thomas Willis and the Fevers Literature of the Seventeenth Century", in: Bynum and Nutton (eds.), *Theories of Fever*, 45-70. Bates distinguishes two 'schools' of fever theory that developed in the seventeenth century: a neoclassical approach that embraced mechanistic philosophy, and a spiritual approach that followed in the footsteps of Paracelsus.

<sup>30</sup> *Ibidem*, 69.

<sup>31</sup> *Ibidem*, 50-52; Jarcho, *Quinine's Predecessor*, 227.

<sup>32</sup> T. Verbeek, "Les Passions et la Fièvre: L'Idée de la Maladie chez Descartes et Quelques Cartesiens Neerlandais", *Tractrix*, 1 (1989) 45-61.

<sup>33</sup> An overview of early modern remedies against malarial fevers can be found in M. Adams e.a., "Malaria in the Renaissance: Remedies from European Herbals from the 16th and 17th Century", *Journal of Ethnopharmacology*, 133:2 (2011) 278-288.



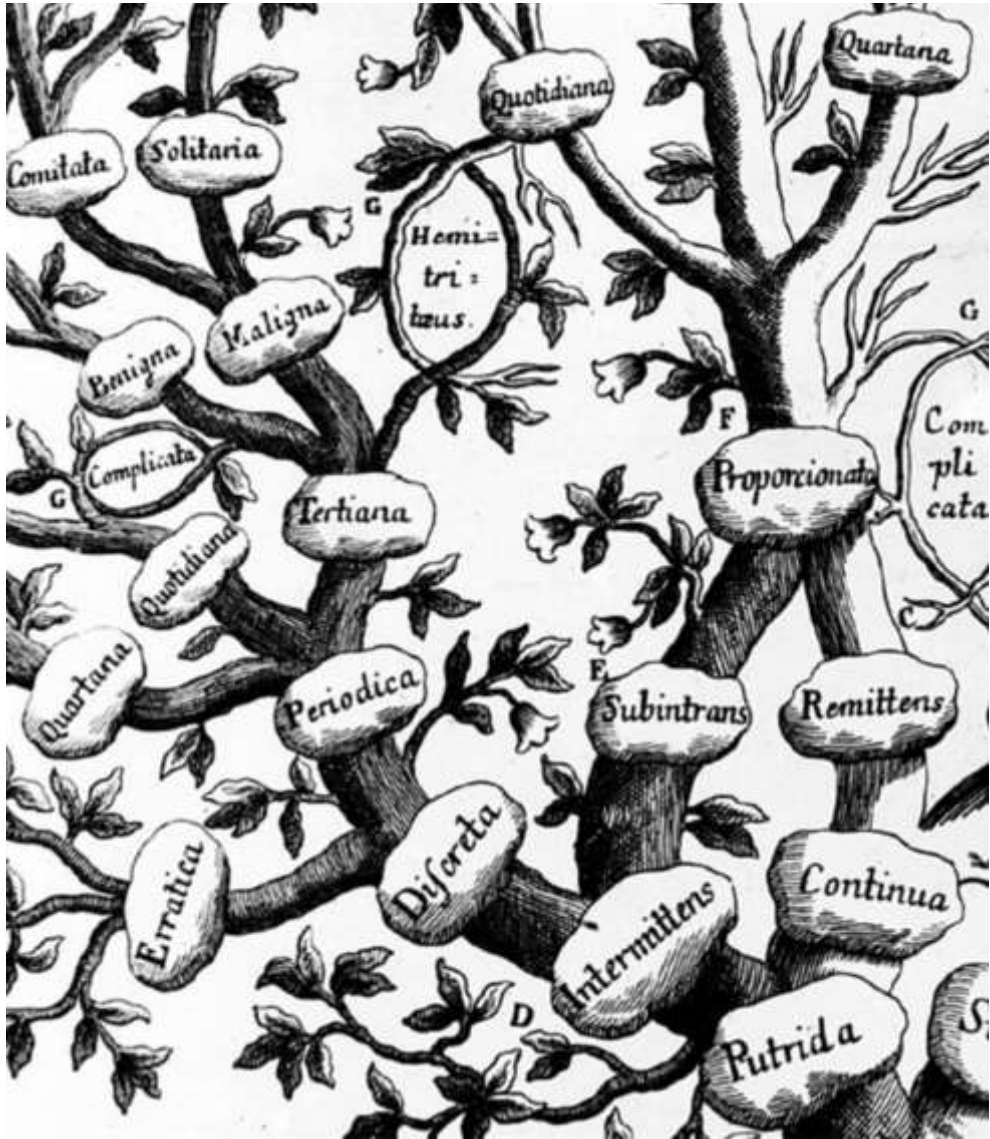


Figure 1b. Detail of Torti's 'fever tree', showing the various types of intermittent and continuous fever.

various remedies could be used against fever. For a later generation of his adherents, however, this principle implied that Peruvian bark could also be successfully used, on cartesian principles, even though Descartes had never mentioned Peruvian bark himself. This created a curious therapeutic configuration: the same principle could guide physicians to use, or not use Peruvian bark. In this way, Peruvian bark could be inserted into a new medical theory, perhaps even as the first choice, but certainly not as the only candidate.<sup>34</sup> The notion of fever had shifted in a way that allowed the use of Peruvian bark.

However, fever was not the only ambiguous entity. The nature of Peruvian bark was also far from evident, from the moment it became known in Europe around 1640. Botanical ambiguity, therapeutic and linguistic confusion with other drug components, nontransparent supply lines, and adulterations all played a role in the shady early days of Peruvian bark on the European medical market. Since no European botanist would study a *Cinchona* tree (which yields the bark that contains quinine) prior to 1737<sup>35</sup>, there is virtually no way of telling what kind of bark European physicians administered to their patients in the late seventeenth and early eighteenth century. Due to these circumstances, it can be argued that the adoption of Peruvian bark in European medical practice resulted only in part from its inherent therapeutic qualities. Non-medical aspects were equally important in this process, such as public acceptance, marketing and availability: factors that reveal the dynamics of the medical market.

Modern studies of Peruvian bark rightly treat the history of the substance as involving three steps of commodification: first, the bark's introduction on the medical marketplace; then, a period of trial and error to establish a substantial 'critical mass' of knowledge and experience; and finally, its consolidation and codification in the medical and pharmaceutical canon. However, many studies of fever/malaria and Peruvian bark/quinine have generally focused on either the first or the

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<sup>34</sup> Jarcho, *Quinine's Predecessor*, 228-231.

<sup>35</sup> Two accounts about *Cinchona* were published around the same time, the most famous of which is the one by M. de La Condamine (1701-1774), "Sur l'Arbre du Quinquina", *Histoire de l'Académie Royale des Sciences, Année 1738*, (1740) 226-243. La Condamine's travel companion to Peru, Joseph de Jussieu (1704-1779), wrote his own account, which was arguably better from a botanical point of view, but never published after La Condamine published his account first. Jussieu's manuscript was only published in the twentieth century: *Description de l'Arbre à Quinquina: Mémoire Inédit de Joseph de Jussieu (1737)* (Paris: Société du Traitement des Quinquinas 1936).

third stage. Myth-busting medical historians have tackled the riddling history of Peruvian bark's transatlantic crossing. Surprisingly, their arguments often end at the point when the bark reached European soil: there is often little attention for the subsequent commercial circulation of Peruvian bark, throughout the continent.<sup>36</sup> More recently, comprehensive studies like those by Jarcho and Maehle have included evidence about commercial and cultural aspects, but these works still focus mainly on scientific experiments that were carried out in an academic setting, once the bark had already shaken off its initial novelty.<sup>37</sup>

The earliest debate about Peruvian bark's properties, in the 1640s, was strongly connected to the Dutch Republic. The debate about Peruvian bark started with a debate about the proper treatment of tertian fever (*febris tertiana*), which highlights the close relationship between fever and bark from the very beginning. The story of Peruvian bark's introduction in Europe is well-known and can be found in all relevant secondary literature. It is sufficient to note here that the fiercest episode in the debate took place after the failed treatment of the Archduke of the Netherlands, Leopold Wilhelm of Austria (1614-1662), with Peruvian bark, in 1652. In the aftermath of these debates, two books, by Roland Sturm and Sebastiano Bado, caused the first 'breakthrough' in the bark's appreciation in medicine and society. Sturm (c. 1600-after 1660), a physician from Delft, wrote his book at the request of the Spanish ambassador in The Hague, who had received samples of bark from the Archduke in 1652.<sup>38</sup> At first, Sturm was reluctant to experiment with the bark, but he altered his views in the wake of a fever epidemic in Delft in 1658. His book did not take a firm stance in favour or against the bark, but described several experiments in detail to argue in which cases the

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<sup>36</sup> J. Rompel, "Kritische Studien zur ältesten Geschichte der Chinarinde", *Jahresbericht des öffentlichen Privatgymnasiums an der Stella Matutina zu Feldkirch*, 14 (1905) 1-62; A.W. Haggis, "Fundamental Errors in the Early History of Cinchona", *Bulletin of the History of Medicine*, 10:3 (1941) 417-459; 10:4 (1941) 568-592; J. Jaramillo-Arango, "A Critical Review of the Basic Facts in the History of Cinchona", *Journal of the Linnean Society of London, Botany*, 53:352 (1949) 272-309; F. Guerra, "The Introduction of Cinchona in the Treatment of Malaria", *Journal of Tropical Medicine and Hygiene*, 80:6 (1977) 112-118; 80:7 (1977) 135-140.

<sup>37</sup> Jarcho, *Quinine's Predecessor*; Maehle, *Drugs on Trial*. The book by M.L. Duran-Reynals, *The Fever Bark Tree* (New York: Garden City 1946), pays more attention to the sociocultural history of Peruvian bark; two significant popular-scientific studies are those by M. Honigsbaum, *The Fever Trail: In Search of the Cure for Malaria* (New York: Farrar, Straus & Giroux 2002); and F. Rocco, *The Miraculous Fever-Tree: Malaria and the Quest for a Cure that Changed the World* (New York: HarperCollins Publishers 2003).

<sup>38</sup> Jarcho, *Quinine's Predecessor*, 38-40.



bark was useful. This opened the possibility of discussing Peruvian bark without resorting to tradition, emotion, or suspicion, as had happened earlier, but rather to determine which aspects of the remedy were problematic. Differences in varieties, and the problem of which quantities were to be used, turned out to be essential topics that required further investigation.<sup>39</sup>

The scientific momentum created by Sturm was complemented in 1663 by Bado's book, which set the stage for the retrospective canonization of the bark's **introduction into Europe**. **Bado (†1676)**, a physician from Genoa, plausibly presented the highly fictionalized story of the Countess of Cinchón, the wife of the Viceroy of Peru, who was presented as the first European to be miraculously cured of fever with the bark. She then freely dispensed the remedy to the poor in Lima and continued this charitable practice upon her return to Europe.<sup>40</sup> This rather manipulative contribution to the debates shows the intersections of medicine, commerce, and society in the commodification of the bark. Bado connected different trajectories in his book, understanding that he had to create positive awareness for this exotic remedy not only among his fellow physicians, but among a multitude of European readers, who otherwise might have reservations.<sup>41</sup>

Despite the positive stimulus provided by these works, medical practitioners could have many reasons to use or not use Peruvian bark: religious convictions, the influence of professional colleagues, personal observations of fever cases, or the changing environment of local epidemics.<sup>42</sup> Therefore, an altogether changing attitude towards Peruvian bark among medical practitioners cannot be deduced from

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<sup>39</sup> R. Sturm, *Febrifugi Peruviani Vindicium* (Delphis: Apud Petrum Oosterhout 1659). The book was simultaneously published in Antwerp, and again in The Hague in 1681. For a discussion of the book's contents, see C. Broeckx, "Notice sur Roland Storms, Docteur en Philosophie et en Médecine," *Annales de la Société de Médecine d'Anvers*, 16 (1855) 5-24; and G.A. Lindeboom, *Dutch Medical Biography: A Biographical Dictionary of Dutch Physicians and Surgeons 1475-1975* (Amsterdam: Rodopi 1984) 1895-1896.

<sup>40</sup> S. Bado, *Anastasis corticis Peruviae seu Chinae Chinae defensio* (Genuae: Typis Petri Ioannis Calenzani 1663). Seven years earlier, Bado had already published a less well-known work: *Cortex Peruviae redivivus, Profligator Februm, assertus ab Impugnationibus Melippi Protimi, Medici Belgae* (Genuae: Ex Typographia Benedicti Guaschi 1656).

<sup>41</sup> This interpretation was most strongly suggested by F.I. Ortiz Crespo, "Fragoso, Monardes, and Pre-Chinchonian Knowledge of Cinchona", *Archives of Natural History*, 22:2 (1995) 169-181.

<sup>42</sup> Bates, "Thomas Willis", 55-64.

publications like these only. The problematic characteristics of fever affected Peruvian bark as soon as the drug was associated with the disease, but mostly on a practical level, not because of theoretical inconsistencies. Questions included: what types of fever should be treated with the bark, at what point during the disease, in what quantity, and with what mode of administration? At the same time, Peruvian bark engendered questions of its own: from which tree(s) was the substance derived (a particularly pressing matter due to the heterogeneous nature of *Cinchona* species<sup>43</sup>), what were the names and characteristics of each variety, and which type of bark should be used against which type of fever? All these issues would be debated until the nineteenth century, and although they were mostly of a scientific nature, they also related to commerce and public acceptance.

Ambiguity and competition in the history of fever and Peruvian bark are not exclusively historical themes: in fact, these issues continue to exist to the present day. Intermittent fevers have traditionally been associated with malaria, especially tertian and quartan fever, and these terms have been part of discourse on malaria ever since Torti's days. Jarcho, for instance, tied tertian and quartan varieties of malaria to specific *Plasmodium* parasites that produce various kinds of malaria.<sup>44</sup> **The terms 'tertian' and 'quartan' for certain types of malaria have persisted** until the present day. The *Farmacotherapeutisch Kompas*, for example, which offers official guidelines for the treatment of disease in the **Netherlands, includes treatment options for 'tertian' and 'quartan' variants** of malaria. Similarly, the *FK* does not mention Peruvian bark as the first remedy of choice against malaria: about a dozen other remedies can also be applied, for various patient groups and various types of malarial parasites.<sup>45</sup> As such, the nature of malaria (which is nowadays especially troubled by global resistance of parasites against the most common

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<sup>43</sup> Currently, some 25 species of *Cinchona* trees are recognized. See L. Andersson, "A Revision of the Genus *Cinchona* (Rubiaceae–Cinchoneae)", *Memoirs of the New York Botanical Garden*, 80 (1998) 1-75.

<sup>44</sup> For example in Jarcho, *Quinine's Predecessor*, xv.

<sup>45</sup> See <https://www.farmacotherapeutischkompas.nl/bladeren/indicatieteksten/malaria>, accessed on 07-03-2018.

remedies<sup>46</sup>) and the competition among antimalarial remedies, continue to be important global health issues.<sup>47</sup>

### *Historiography: Newspaper Advertisements and Medical History*

The use of advertisements on a large scale, for research in medical and pharmaceutical history, is a new approach that has only been made possible by large-scale digitization of historical newspapers. Research on Dutch newspapers has intensified in recent years, mainly thanks to the digitization efforts of the National Library in The Hague. For the eighteenth century, more than 80.000 issues are available. Unfortunately, there are no exact figures to clarify the relationship between the number of newspapers that are available in Delpher, as related to the total number of newspapers that was published nationwide in the past. Still, the digitized issues are distributed quite evenly across the century, which makes this a highly relevant and representative collection (see Figure 2). The most important newspapers are almost fully available, i.e. those of Haarlem, Amsterdam, Leiden, The Hague, Rotterdam, Delft, Middelburg, Groningen and Leeuwarden.

A pressing issue of all research on early modern newspapers is to what extent they reflect the circulation of knowledge in the public domain. To begin with, how many newspapers were printed, and how many people read them? For cities like Leiden, The Hague and Haarlem, c. 4000-5000 copies were printed per issue around the middle of the eighteenth century. Amsterdam produced around 6000 copies.<sup>48</sup> For newspapers that operated on a more regional level, like those of Groningen and Leeuwarden, some 600 copies were printed.<sup>49</sup> Newspapers were affordable for a large audience: both in metropolitan Amsterdam and in

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<sup>46</sup> S.R. Meshnick and M.J. Dobson, "The History of Antimalarial Drugs", in: P.J. Rosenthal (ed.), *Antimalarial Chemotherapy: Mechanisms of Action, Resistance, and New Directions in Drug Discovery* (Totowa: Humana Press 2001) 15-25.

<sup>47</sup> Examples include M. Honigsbaum and M. Willcox, "Cinchona", in: M. Willcox, G. Bodeker and P. Rasoanaivo (eds.), *Traditional Medicinal Plants and Malaria* (Boca Raton: CRC Press 2005) 21-41; I.W. Sherman, *Magic Bullets to Conquer Malaria: From Quinine to Qinghaosu* (Washington: ASM Press 2011); and G. Gachelin e.a., "Evaluating *Cinchona* Bark and Quinine for Treating and Preventing Malaria", *Journal of the Royal Society of Medicine*, 110:1 (2017) 31-40; 110:2 (2017) 73-82.

<sup>48</sup> De Vries and Van der Woude, *The First Modern Economy*, 314-315; J. van Goinga-van Driel, *'Alom te Bekomen': Veranderingen in de Boekdistributie in de Republiek 1720-1800* (Amsterdam: De Buitenkant 1999) 35-38.

<sup>49</sup> M.J. Broersma, *Beschaafde Vooruitgang: De Wereld van de Leeuwarder Courant 1752-2002* (dissertation; Leeuwarden: Friese Pers Boekerij 2002) 39-40.

regional Leeuwarden, they cost half a *stuiver* per issue.<sup>50</sup> The cost of advertising, however, differed significantly from town to town. In Amsterdam, an advertisement of one to four lines cost 36 *stuivers*, plus an additional nine *stuivers* for each extra line.<sup>51</sup> Advertising in Leeuwarden was much cheaper: only 3 *stuivers* per advertisement.<sup>52</sup> Since the most important newspapers were published in the cities of urban Holland, it can be surmised that a great deal of willingness and ability was required from advertisers, to invest in long-term advertising.

Availability and affordability, however, are no guarantees that newspapers really reached a large audience. Literacy was generally high in the Dutch Republic. At the end of the seventeenth century, one in three women could read. Around 1800, this figure had risen to four in five women. Male literacy grew from two in three, to four in five, during the same period.<sup>53</sup> But did all these people read newspapers? Studies of newspaper readership traditionally estimate that each copy was read by about ten people<sup>54</sup>, but readership was probably much larger, for instance because newspapers would lie around in coffee houses for any interested visitor to read.<sup>55</sup> To give one example of estimated readership: if one in ten people could read in Amsterdam, then some 60.000 people could have **read that city's newspaper, or one in four citizens.**<sup>56</sup> However, literacy did not necessarily imply participation in reading culture: many people may have used their reading abilities irregularly, e.g. only if their work demanded it.<sup>57</sup> It may very well be that much more information was

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<sup>50</sup> I.H. van Eeghen, "De Amsterdamse Courant in de Achttiende Eeuw", *Jaarboek van het Genootschap Amstelodamum*, 44 (1950) 31-58, there 45; Broersma, *Beschaafde Vooruitgang*, 38.

<sup>51</sup> Van Eeghen, "Amsterdamse Courant", 43-44.

<sup>52</sup> Broersma, *Beschaafde Vooruitgang*, 39.

<sup>53</sup> M. van der Wal and G. Rutten, "At the Crossroads: Orality and Literacy in Early and Late Modern Dutch Private Letters", in: A.-C. Edlund, T.G. Ashplant and A. Kuismin (eds.), *Reading and Writing from Below: Exploring the Margins of Modernity* (Umeå: Umeå University / Royal Skyttean Society 2016) 197-214, there 199.

<sup>54</sup> M. van Groesen, "Reading Newspapers in the Dutch Golden Age", *Media History*, 22: 3/4 (2016) 334-352, there 339-340.

<sup>55</sup> Van Goinga-van Driel, '*Alom te Bekomen*', 39-40.

<sup>56</sup> That is, assuming that all 6000 copies were distributed in Amsterdam alone, which was probably not the case. The city's population is estimated at 240.000 around 1730, see R. Paping, "General Dutch Population Development 1400-1850: Cities and Countryside", paper presented at 1st ESHD Conference, Alghero, Italy, 2014, 13.

<sup>57</sup> Van der Wal and Rutten, "At the Crossroads", 199.

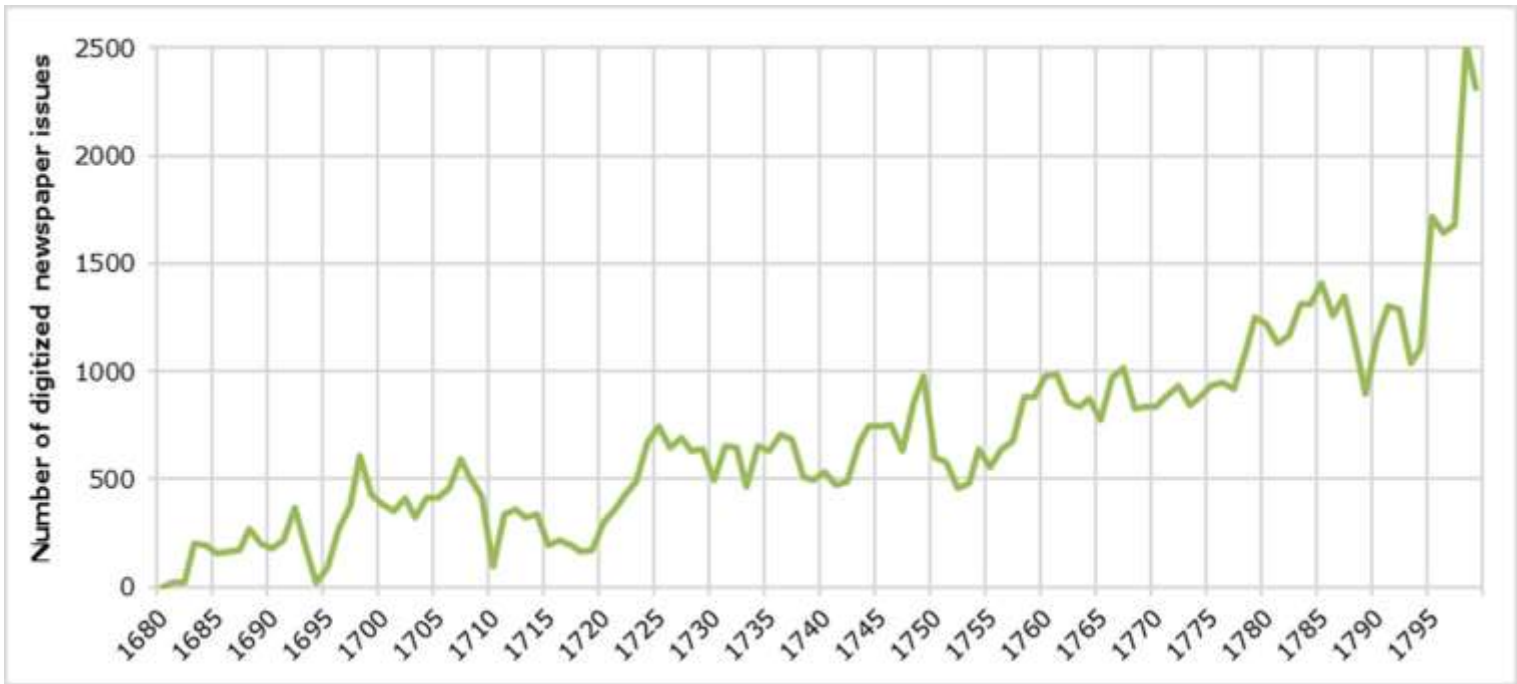


Figure 2. Number of digitized newspaper issues in Delphi, 1680-1799. The timeline in this figure is extended beyond the eighteenth century, so as to include the last two decades of the seventeenth century, in which some advertisements for fever remedies were also published.

exchanged by word of mouth than in print, but the relative importance of each is difficult to determine for the early modern period.<sup>58</sup>

Still, what we can observe is that advertisements were often directed at a general audience, not to a newspaper-reading elite. This suggests that advertisers assumed that their advertisements at least had the potential to reach a literate mass of people. This attitude can be observed in advertisements for remedies as well. An **example is Joris Brunt, 'Mr. Surgeon'**<sup>59</sup> in Amsterdam, who advertised twice in the *Oprechte Haerlemsche Courant* (which was available in many cities), "presenting his service to anyone" in curing various types of fever.<sup>60</sup> Formulas like this indicate that advertisers regarded newspapers as a medium to reach all sorts of potential clients, even beyond their own locality.

The importance of advertising in the eighteenth century can be glanced from any newspaper issue: they swarmed with advertisements. Newspapers were published in the Netherlands from 1618 onwards, usually twice or three times a week. Initially, they consisted of a single sheet, printed on both sides, but the number of pages increased in most cities throughout the eighteenth century, to four, six or eight pages. They contained mostly foreign news, and all remaining space was devoted to advertisements of all sorts: official announcements from municipal authorities; auctions for every imaginable consumer product; book publications; lost and found objects and persons; and also remedies.<sup>61</sup> Consider, for instance, a typical eighteenth-century newspaper issue from 1732 (Figure 3a). This example contains a clustered set of eight, heterogeneous medical advertisements. On the one hand, these advertisements suggest a great deal of competition between remedies, with so many of them occurring on a single newspaper page. And yet, on the other hand, the names of these remedies suggest that each claimed

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<sup>58</sup> But not impossible, as exemplified by R. Aspin, "Testamentary Records of the Sixteenth to Eighteenth Centuries as a Source for the History of Herbal Medicine in England", in: S. Francia and A. Stobart (eds.), *Critical Approaches to the History of Western Herbal Medicine: From Classical Antiquity to the Early Modern Period* (London: Bloomsbury 2014) 149-165, esp. 149-150.

<sup>59</sup> The self-characterization of advertisers for remedies should always be read with caution. Brunt, however, was indeed an official surgeon. He was inscribed as a member of the Surgeons' Guild in 1663, i.e. 29 years before his advertisements (Amsterdam City Archives, 366, inv. no. 245, 113).

<sup>60</sup> *Oprechte Haerlemsche Courant*, 20-11-1692: "Joris Brunt, Mr. Chirurgijn in de oude Bantemer-straet tot Amsterdam, praesenteert sijn dienst aen een yder in 't genesen van continuële, anderen-, derden- en vierden-daegse Koortsen, [...]".

<sup>61</sup> For a more detailed overview of characteristics of early modern Dutch newspapers, see M. Schneider, *De Nederlandse Krant 1618-1978: Van 'Nieuwstydinghe' tot Dagblad* (4<sup>th</sup> edition; Baarn: Het Wereldvenster 1979), esp. Chapters 4-6.

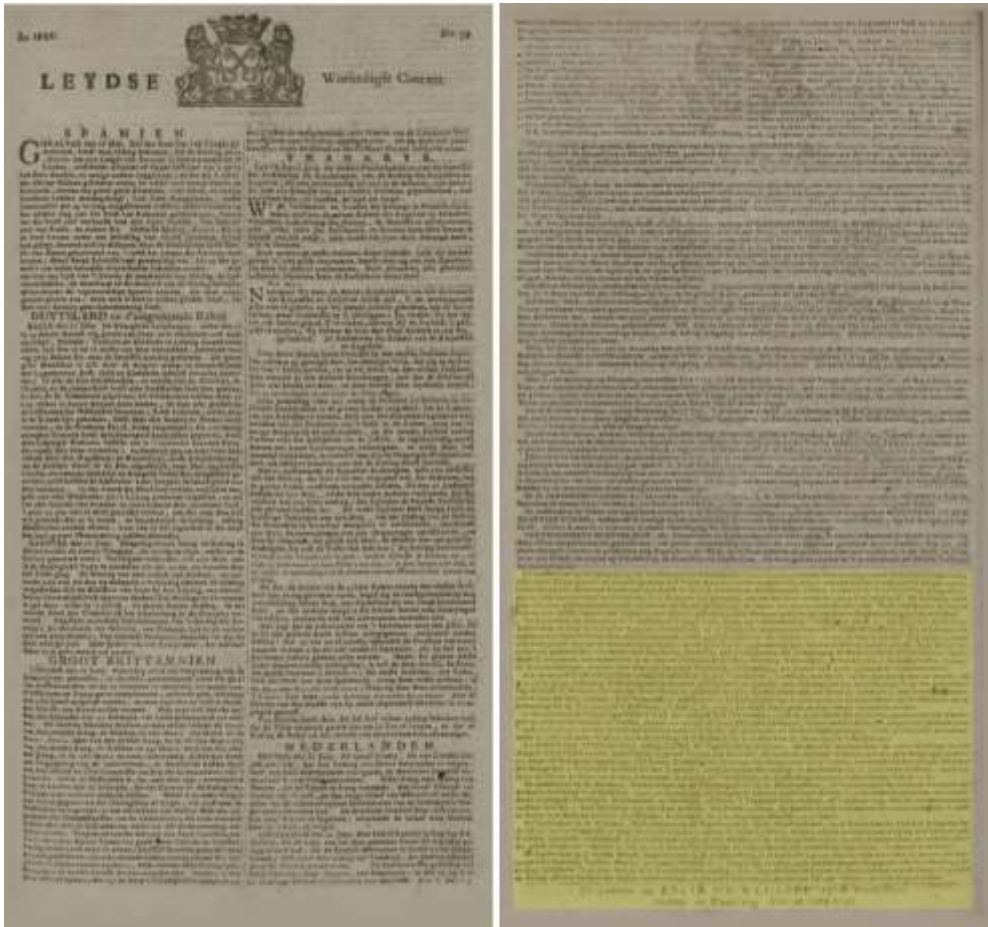


Figure 3a. A typical example of an eighteenth-century Dutch newspaper: the *Leydse Courant* of Wednesday, June 27, 1732. The news sections contain parts about Spain, England, France and the Netherlands, respectively. The advertisements start on the back (in a single column), right below the news section (in two columns). The density of the page's layout is clear to see, including condensed advertisements. These are spread out across the width of the page, and can only be recognized as separate entities by small indentations and, occasionally, the use of capital letters. The highlighted section on the right shows a cluster of eight medical advertisements. See also Figure 3b.

**its own 'niche'** of exchanged by word of mouth than in print, but the relative importance of indications (and thus patients), by framing its qualities in a unique way, to appeal to a specific audience. Thus, we find different remedies for skin, ear, mouth, chest and stomach conditions together (Figure 3b).

Various types of advertisements are useful for medical and pharmaceutical history. There are six categories that occur so frequently, that is useful to discuss them separately.

*Medical books.* Perhaps the largest number of medical advertisements that can be found is about medical books. There is great diversity within this category: medical self-help books, for which a large market existed in the eighteenth century<sup>62</sup>; treatises and pamphlets from all sorts of practitioners, who promoted their own remedies and services<sup>63</sup>; translations of foreign scholarly works, and so on. This category of advertisements has not been studied for this dissertation.

*Public auctions of drug components.* Thousands of advertisements were published in the eighteenth century to announce public auctions of crude drug components, which were organized by professional brokers in Amsterdam. Advertisements of this category were assembled in Database 1, which will be discussed in the 'Methodology' section below. This collection formed the basis of research for Chapter 2.

*Remedies.* The examples in Figure 3a/b already demonstrated the variety of remedies that can be found in advertisements. Advertisements for remedies against fevers were assembled in Database 2, which will also be discussed in the 'Methodology' section below. Such remedies can generally be classed as 'secret remedies' because of their undisclosed contents, and they were offered for sale by a range of both regular and irregular practitioners. These concepts will be discussed in detail in Chapters 3 and 4, for which this data set formed the basis of research.

*Job advertisements.* Medical practitioners, especially apothecaries and surgeons, could advertise for vacant positions in their shops, for pupils or employees. An example is Godlieb Stroobach, physician in the village of Spaarndam near Haarlem, who had a position available in 1793, for a pupil in surgery, for one or two years. The apprentice had to be "good at

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<sup>62</sup> Waddington, *Introduction*, 82-83 and 90-91.

<sup>63</sup> Various examples of this category are discussed in J. Salman, "The Battle of Medical Books: Publishing Strategies and the Medical Market in the Dutch Republic (1650-1750)", in: D. Bellingradt, P. Nelles and J. Salman (eds.), *Books in Motion in Early Modern Europe: Beyond Production, Circulation and Consumption* (Cham: Palgrave Macmillan 2017) 169-192.



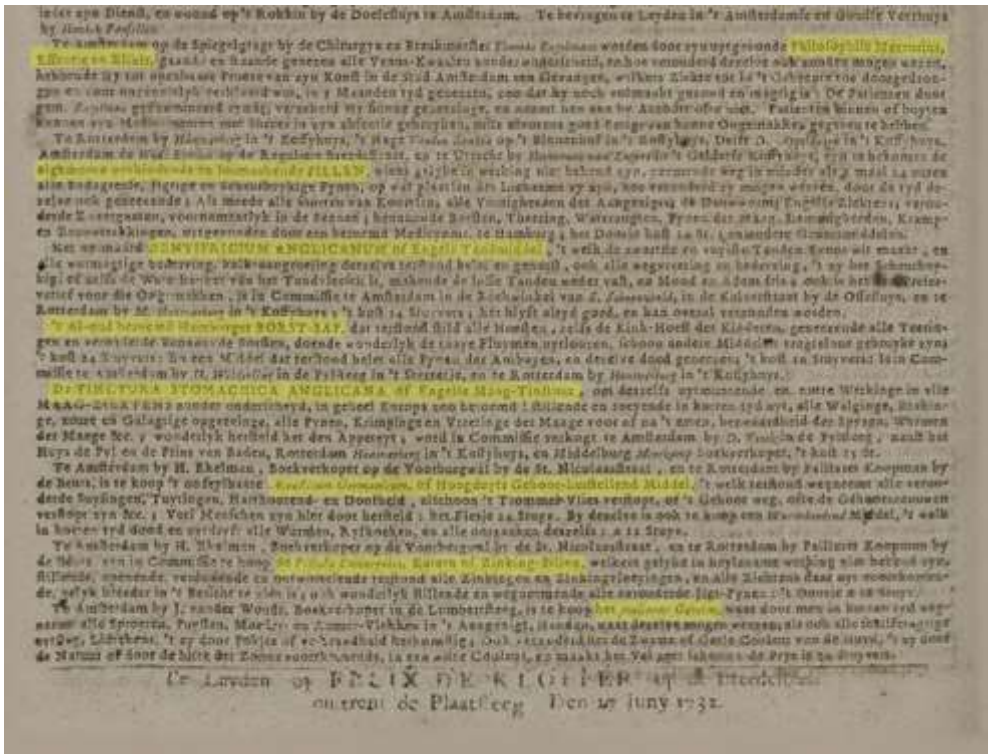


Figure 3b. Zooming in on the highlighted section in Figure 3a shows the diversity of medical advertisements. From top to bottom we find:

1. *'Philosophical Mercurius, Essence and Elixir'*, against venereal diseases (Venus-Kwaalen);
2. *The 'general dissolving and loosening pills'*, mainly against pains associated with podagra, gout and scurvy, and also against fevers;
3. *'Dentifriticum Anglicanum or English dentifrice'*, for conditions of the mouth and teeth;
4. *The 'time-honored, famous Hamburg chest-drink'*, against all kinds of cough and associated stuffiness;
5. *The 'Tinctura Stomachica Anglicana or English stomach tincture'*, for all diseases of the stomach;
6. *'Acousticum Germanicum, or German hearing-recovering remedy'*, against conditions of the ears;
7. *'Pillulae Catharrales'*, catarrh pills;
8. *The 'Italian Secret'*, against all kinds of dermatological conditions.

shaving and bloodletting, of the Protestant religion, and equipped with **good references**". *En passant*, Stroobach also advertised that he still cured fevers, as he had done from 1746 on.<sup>64</sup> This type of advertisements can be very revealing about the dynamics in medical professions across time, especially regarding job opportunities and the transmission of knowledge.

*Sales of apothecary shops.* Early modern apothecaries are often regarded as typical family businesses, which would ideally be passed on to a next generation via a son or son-in-law. At the same time, we can find many advertisements for public sales of apothecary shops. Such advertisements often emphasize that the shops are well-equipped (*welgeconditioneert*) and have a substantial clientele. An example is an advertisement from 1727, for a shop at the **Vismarkt in Leiden**, "where the aloe [sign] hangs out, where business [*nering*] has been done with success for about ten years".<sup>65</sup> Advertisements like this tell a lot about the distribution and continuity of apothecary practices across time and space.

*Death notices.* In the late eighteenth century, we can find announcements of deceased persons, which are often long and have a surprisingly strong emotional character. Moreover, they often include elaborate medical histories of persons who died of illness. An example is Wynand Warneke from Amsterdam, who announced in 1794: "**Because it has pleased the Lord to wrest from me by death, my only, beloved son Cornelis Warneke, as a result of heavy sinking fevers [*zwaare Zinking-koortsen*], after an illness of four weeks, this morning at half past seven, in the blooming age of 21 years and more than four months, [...]**".<sup>66</sup> The

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<sup>64</sup> *Oprechte Haerlemsche Courant*, 02-02-1793: "Een CHIRURGYNS-KNEGT of LEERLING, die goed Scheeren en Aderlaaten kan, van de Protestantsche Religie, en van goede Attestatie voorzien, genegen zynde, zich voor één of twee Jaaren te verhuuren, adresseerde zich ten eersten by Godlieb Stroobach, Genees- en Heelmeester te Spaarndam. De Brieven franco. NB. Door denzelven worden nog alle afgaande Koortzen geneezen, al van 't jaar 1746."

<sup>65</sup> *Leydse Courant*, 01-10-1727: "Te koop een Apotheekers Winkel binnen de Stad Leyden aan de Vismarkt, alwaar de Aloë is uythangende, daar de Neering omtrent tien Jaaren met goed succes gedaan is: Deeze zeer fraaye Winkel van Nooteboome Kassen en Doosen, en Kopere Dekfels op de Potten, met alle de Medicamenten, is aanstonds te aanvaarden. Iemand daar toe geneegen zynde, vervoege zig ten Sterfhuyze in **dezezelv Winkel, ofte aan Cornelis Koning Bode in gem. Stad.**"

<sup>66</sup> *Amsterdamse Courant*, 09-10-1794: "Alzo 't den Heere behaagt heeft, myn eenigste geliefde Zoon CORNELIS WARNEKE, aan de gevolgen van zwaare Zinking-Koortsen, na eene Ziekte van vier weeken, deezn morgen om half 8 uren, in den bloeienden Ouderdom van 21 Jaar en ruim 4 Maanden, door den dood van my te ontrukken, waar van door deezen aan myn Vrienden en goede Bekenden kennis geeve, in verwachtinge van my van verdere Bekendmaakinge en ontvangst van Rouwbeklag te verschoonen."

French administration tried to ban such lengthy announcements from newspapers by imposing taxes, but these were probably hard to implement.<sup>67</sup> Such advertisements have a lot to say about the personal experience and understanding of disease among the general public.

All these categories (except for the death notices) have a strong economic dimension. Together, these categories can reveal structural features of the medical economy of the Dutch Republic: the availability of medical practitioners, medical knowledge and medical products. For this dissertation, two databases were created with advertisements, which relate to the case study that was discussed above: Database 1 with advertisements for public auctions of drug components, that include Peruvian bark; and Database 2 with advertisements for fever remedies. The structure and collection process of these databases will be discussed in the following section.

### *Methodology: Newspaper Advertisements as Digital Data*

The effort of assembling, processing and analysing the data of advertisements for this dissertation has been a long and tedious, yet rewarding and instructive process. The iterative process emanated from the wish to find as much relevant material with the least possible effort. Obvious as this might seem, the cumulative understanding of what **'relevant material' actually entailed made it necessary, during various steps in the process, to reflect on past work, and sometimes to restructure, reanalyse, or even redo past steps once more.** In this section, the construction process of both databases will be explained.

Before describing what I have been searching *for*, a brief explanation should be given of what I have been searching *in*. Newspaper pages in **Delpher are subdivided in sections, which are labelled as 'advertisement', 'news item', 'family message' or 'illustration with text'.**<sup>68</sup> Although researchers have rightly expressed the wish to search in more fine-grained categories<sup>69</sup>, an even more pressing issue for eighteenth-century newspapers is the impossibility to search in individual advertisements. **In fact, both problems are the result of the National Library's choice for mass digitization.** Although this has massive benefits (virtually all available

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<sup>67</sup> Schneider, *Nederlandse Krant*, 114 and 172-173. The French tax was imposed in Holland in 1797, and in other provinces in 1805.

<sup>68</sup> Illustrations with text are absent from eighteenth-century newspapers.

<sup>69</sup> E.g. L. Walma, "Filtering the 'News': Uncovering Morphine's Multiple Meanings on Delpher's Dutch Newspapers and the Need to Distinguish More Article Types", *Tijdschrift voor Tijdschriftstudies*, 38 (2015) 61-78.

newspapers from the eighteenth century are digitally available), it also causes heuristic problems for researchers who want to reach a level of high historical specificity, such as advertisements for medical goods and services.<sup>70</sup>

An example of the distribution of sections in Delpher is shown in Figure 4, for the same newspaper pages as in Figure 3a. Although this issue contains multiple 'news' sections (for various countries), the section of 'advertisements' is presented as one chunk of text.<sup>71</sup> Such chunks might contain between one and over 25 advertisements, including one or more relevant ones: in fact, the example in Figure 4 contains advertisements for a fever remedy and for an auction of drug components, and was therefore included (as the result of different queries) in both Database 1 and 2. **In other words, any section that is labelled as 'advertisements' in Delpher might, in reality, contain a wild diversity of advertising material.** In a way, then, digitization of newspapers means a step back in terms of accessibility: visual markers on the page, that are essential for human readability (such as indentations and the use of capital letters to highlight key words in advertisements) have no equivalent in a digital format.<sup>72</sup>

A practical problem occurs when a single query appears multiple times in a chunk of advertisements, where more than one instance is relevant (e.g. when two advertisements for different fever remedies are **recognized by Delpher**). **In those cases, Delpher's metadata**—which relate to the newspaper issue, page and section—cannot be interpreted as relating to an *individual* advertisement. In other words, those search results had to be reinterpreted, by duplicating the data that related to more than one relevant advertisement. An additional problem occurs when more than one relevant advertisement shows up in a section, where **only one is recognized in Delpher's OCR'd text (e.g. in case of two fever**

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<sup>70</sup> G. Zaagsma, "On Digital History", *BMGN / Low Countries Historical Review*, 128: 4 (2013) 3-29, there 20, addresses the issues involved in mass digitization, as opposed to 'critical digitization'.

<sup>71</sup> This is a clear example of a historical source that has a changing appearance over time, which leads to loss of context when the source is transferred to a digital environment. H. Huistra and B. Mellink, "Phrasing History: Selecting Sources in Digital Repositories", *Historical Methods*, 49: 4 (2016) 220-229, there 221, stress that this is "not an inevitable consequence of digitization, but the result of human choice". The problem pertains especially to the eighteenth century, because newspapers in the nineteenth and twentieth centuries usually present advertisements in separate layout units. The automatic recognition of advertisements in Delpher, however, followed the same procedure for all centuries, which inevitably resulted in significant loss of context for the eighteenth century.

<sup>72</sup> Apart from Huistra and Mellink, "Phrasing History", 21 (mentioned in the previous note), Zaagsma, "On Digital History", 26, discusses loss of context of historical sources in the transfer from physical to digital format.

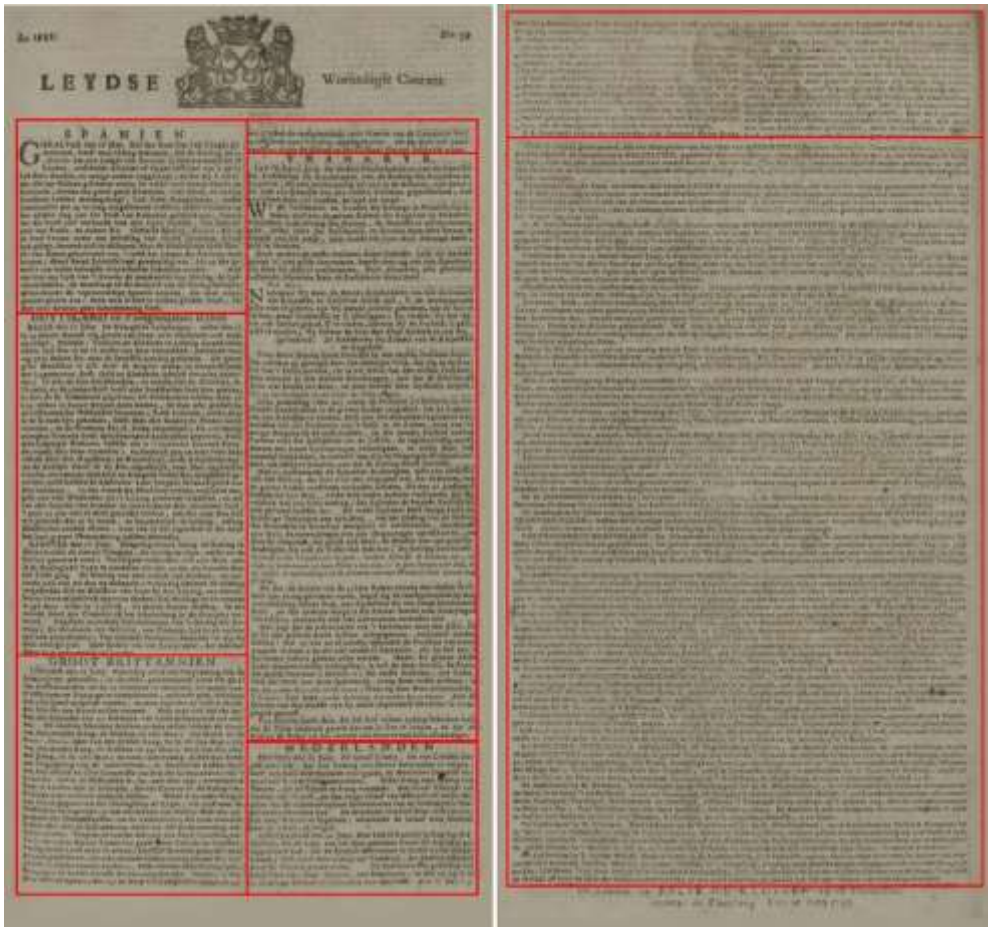


Figure 4. The *Leydse Courant* of Wednesday, June 27, 1732 (the same issue as in Figure 3a), showing the smallest units of newspapers in Delpher, in which users can search. The news sections on the left and top right relate to the countries from which the news derived. The section of advertisements is one chunk of text. Indentations which separate advertisements are not recognized.

remedies, where the word 'fever' is recognized in only one of them). In those cases, as well, the search result had to be duplicated, to study both advertisements individually.

In both Database 1 and 2, all search results from Delpher, including all the metadata, were semi-automatically exported to a database in Microsoft Excel.<sup>73</sup> An identifier was assigned to each search result: one letter and six numbers, in a sequence with intervals of ten (e.g. J356810, **J356820, and so on**). **In this way, duplicate data for 'collateral' search results**, of the kinds that were described above, could be inserted in between (e.g. J356811, and so on).<sup>74</sup> While processing the search results, it did not matter whether such collateral results had actually been recognized by Delpher: pages with one relevant search result were manually screened for more relevant material. Although this proved to be one of the most time-consuming steps in the process, it was of immense value. Data that was assessed in later steps of the search process did not **always have to be checked manually for relevance: if Delpher's permanent identifier of the newspaper page was already present in the database, it had apparently already surfaced in an earlier step of the search process.**<sup>75</sup>

In the following discussion of Database 1 and 2, two other issues should be briefly noted. First, the relationship of search results to the whole available collection of digitized eighteenth-century newspapers in Delpher can be expressed in absolute numbers, or as a relative frequency. The relative frequency is highly valuable to assess the representative nature of a set of search results against the entire collection. Currently, Delpher has a built-in functionality to calculate the relative frequency of search results. However, this functionality did not yet exist when Database 1 and 2 were constructed. Moreover, because search results had to be reinterpreted to enable an analysis of individual advertisements,

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<sup>73</sup> Admittedly, the choice for this approach may not have been the best possible option, **when compared to e.g. the use of Delpher's API for analysing search results. However, the chosen approach did allow me to 'play around' with Delpher's data in a free fashion, which made me aware of desired functionalities for future steps in the iterative process.**

<sup>74</sup> **The benefit of this approach is that 'collateral' advertisements could quickly be retraced, because their identifiers did not end on a zero.**

<sup>75</sup> In other words, it was necessary to assess not only the actual search results, but **also to scan pages for possible 'collateral' material.** L. Putnam, "The Transnational and the Text-Searchable: Digitized Sources and the Shadows They Cast", *American Historical Review*, 121:2 (2016) 376-402, there 387, highlights the usefulness of this approach as "the synergy between term-searching and side-glancing", when she argues that "[...] key historical questions are rarely generated from the micro alone. They come from observing trends across space over decades or more." This side-glancing thus proved to be essential, because it helped to trace 'false negatives' (i.e. relevant material that was not found), which is otherwise very hard to find, as stressed by Huistra and Mellink, "Phrasing History", 223.

as discussed above, it is impossible to calculate relative frequencies in retrospect. Second, the collection in Delpher has grown since the construction of Database 1 and 2. New newspapers were added to Delpher in April 2016 and December 2017. Data for advertisements was collected before and after April 2016, but no issues from the period 1680-1799 were newly added. Therefore, new additions to Delpher have not affected the number of advertisements in Database 1 and 2.

Database 1 contains advertisements for public auctions of drug components in Amsterdam, that include Peruvian bark: the only crude substance that was of true interest for the case study of Chapter 2. A first, quick-and-dirty search in Delpher showed that Peruvian bark was consistently referred to as **'Cortex China'** (or a variant) in such advertisements. To maximize the number of results, then, the singular query **'china'** was used. This gave 4596 results, i.e. 4596 newspaper sections from the period 01-01-1700 until 31-12-1799; that were labelled as **'advertisements'**; and where Delpher recognized the query **'china'** in the OCRred text. It turned out that the word **'china'** could refer to five different entities in newspapers:<sup>76</sup>

- **'Cortex China China'**, i.e. Peruvian bark (always relevant);
- **'Radix China'**, i.e. china root (the root of *Smilax china*, another drug component, so this was always a welcome collateral result);
- **'Semen China'**, i.e. wormseed (the dried flowerheads of *Artemisia china*, another welcome collateral drug component);
- China, the country (irrelevant in cases of e.g. advertisements for travel journals to the East Indies, but sometimes relevant, especially in announcements for auctions of goods from EIC return ships, which often included drug components; especially the Swedish, Danish and Prussian EICs advertised for their yearly auctions in Dutch newspapers);
- Oranges, i.e. *China's appelen* in early modern Dutch (irrelevant<sup>77</sup>).

These were very favourable results: many of them have some relationship to trade in drug components and were therefore deemed relevant. Out of

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<sup>76</sup> In other words, the different linguistic meanings of the query **'china'** reveal that this query contains a lot of **'semantic ambiguity'**, as discussed by Piersma and Ribbens, "Digital Historical Research", 89.

<sup>77</sup> Orange peels (from bitter oranges) occur frequently in auctions of drugs, and were staple drugs in apothecary shops, but they went by a different name (*Oranjeschillen* or *Cortex Aurantiorum*). Sweet oranges are referred to as *Oranje-appelen* in auction records.

4596 results, 2653 (57,7%) related to auctions of drug components in Amsterdam; 23 (0,5%) to similar auctions in other cities; 878 (19,1%) to auctions of goods from return ships of the East India Companies of Sweden, Denmark and Prussia, which included drug components; and 1042 (22,7%) were not relevant. More queries were then performed with other variants<sup>78</sup>; with wildcards<sup>79</sup>; and in other categories in Delpher.<sup>80</sup> During these various steps, new relevant newspaper pages were again manually checked for collateral search results, as described above. Altogether, Database 1 contains 4565 relevant advertisements about the drug trade, relating to auctions of drugs in Amsterdam, in other cities, and by foreign EICs. The quantitative results of these various steps are summarized in Table 1.

After this process, correct full text was generated for all advertisements of auctions in Amsterdam. Relevant entities were semi-automatically extracted from the corrected full text: i.e. the names of brokers and products; the location, date and hour of the auction; and the quantities of products and storage locations, whenever these are mentioned. Based on these new, separated data, advertisements for the same auctions were clustered: the 3544 advertisements for auctions in Amsterdam reflect 920 auctions from the period 1714-1799, most of which included Peruvian bark.

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<sup>78</sup> Relevant variants of 'china' were 'quina', 'quiquina' and 'kina'.

<sup>79</sup> An additional query was performed with the variants from the previous footnote, including an asterisk (\*). This was useful because search results in Delpher do not include instances where the query is part of a longer chain of characters, i.e. the query 'china' will not give the variant 'chinachina' as a result. Moreover, the dense layout of eighteenth-century newspapers means that entire lines of newspaper text are often presented in OCRred text as uninterrupted sequences of characters, without space, which is essentially the same problem.

<sup>80</sup> Categories in Delpher were automatically assigned in Delpher, which means that an 'advertisement' section is sometimes erroneously labelled as 'news' or 'family message'.



		Type of advertisements			
		Auctions in Amsterdam	Auctions in other cities	Auctions of foreign EICs	Irrelevant results
Step in search process	1. Query 'china'	2653	23	878	1042
	2. Query variants, wildcards, and more Delpher categories	332	10	52	5415
	3. Collateral results	559	7	51	24
	Total	3544	40	981	6481

*Table 1.* Results of various steps in the search process for Peruvian bark in eighteenth-century newspapers. The 5415 irrelevant results in step 2 were not all checked manually, because this set contains many duplicates of results from step 1. The odd occurrence of collateral, irrelevant results is explained by the fact that some collateral findings were initially deemed relevant, but later excluded from any of the other three categories of advertisements (e.g. in case of an auction of seemingly relevant products).

Database 2 contains advertisements for remedies, in which fever is mentioned as an indication. The time frame for Database 2 was extended to include the last two decades of the seventeenth century, when advertisements for fever remedies can already be found. Apart from the **query for modern Dutch 'koorts', Delpher offers several historical spelling variants for fever.** Curiously, these turn out to be either highly relevant, or not at all, which indicates that not all historical variants are relevant for research in the eighteenth century. The results for this first step in the search process are summarized in Table 2. Subsequently, the same procedure was applied as for Database 1: pages with relevant results were manually checked for relevant collateral advertisements, which were then inserted in the existing database as duplicate data. As opposed to the process for Database 1, similar advertisements for fever remedies in Database 2 were clustered first, before correct full text was generated for (only) the first and last occurrence of each remedy.<sup>81</sup> Again, relevant

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<sup>81</sup> This was done because many more, virtually identical advertisements were found for fever remedies than for auctions of drug components. The nature of fever remedies in advertisements could mostly be recognized on the basis of the OCRed text.

entities were semi-automatically extracted from the corrected full text: the name/characterization of the remedy; the indicated fever types for which it could be applied; the name, character, city and address of the inventors and/or distributors of the remedy; the price and packaging of the remedy; the inclusion of instructions for use; and the number of years, cities and newspaper titles in which advertisements for the remedy were found.

Variant	No. of results	No. of relevant results	Relevant percentage
koors	29	25	86%
koorts	928	913	98%
koortsen	193	183	95%
koortzen	398	398	100%
kors	103	0	0%
korts	197	2	1%
Total	1848	1521	82,3%

*Table 2.* Results for spelling variants for 'koorts', that were provided by Delpher, in advertisements (1680-1799). **'Relevant results'** are instances where a variant for 'koorts' is indeed about an advertisement for a fever remedy.

Altogether, Database 2 contains 4861 advertisements for 282 fever remedies.<sup>82</sup> This includes several advertisements that were found only in **Kranen's survey of medical advertisements**<sup>83</sup>; plus the relevant results for the historical spelling variants that were provided in Delpher; plus the collateral results that were manually traced in this collection; plus the

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<sup>82</sup> This count is much more ambiguous than in the case of Database 1. First, there are seven advertisements in which more than one fever remedy is promoted, which is not included in Database 2. Second, it happens frequently that multiple historical and/or **OCR variants for 'koorts' occur in the same advertisement, which means that there is** no absolute relationship between the number of search results in Table 2 and the number of advertisements in Database 2. Third, clusters of advertisements for identical remedies could sometimes be about different remedies: the names of remedies and the parlance of advertisements were often copied and reused by various advertisers, so that the advertisements alone offer little convincing evidence, to disentangle or connect similar advertisements in a cluster with certainty.

<sup>83</sup> D. Kranen, *Advertenties van Kwakzalvers & Meesters in de Oprechte Haerlemsche Courant (1656-1733)* (2<sup>nd</sup> edition; Ede: self-published 2008), was consulted for Database 2 as well. Most of the advertisements that he mentions for the period 1680-1799 could be traced in Delpher, except for five.

results (and collateral results) of OCR variants for fever.<sup>84</sup> This last category is especially interesting, because it shows a clear difference with the construction process of Database 1. **For the query 'china', few** OCR variants were found, which were therefore not reused as new queries in follow-up steps of the iterative process. In other words, 'china' proved to be a relatively **strong query**. For the query 'koorts' and its historical variants, however, many different renderings were traced in OCRed text: more than 250 of them, as can be seen in Table 3. Although most of these are obscure combinations of characters, that occur only once or twice, together they added a significant amount of material to the results that were **generated with Delpher's historical spelling suggestions** (i.e. the 1521 results from Table 2). Together with the large number of collateral advertisements that were also found, the 1521 results that comprised the first step of the search process eventually make up only 31,3% of all the advertisements in Database 2.

Although the creation of these two databases has been a time-consuming effort, then, it turns out that a semi-automated, iterative search strategy pays off. It can also be concluded that custom steps in the search process are required, because the quality of queries for **different entities cannot always be assessed beforehand: the query 'china' gave a more consistent collection of search results than 'koorts'**. However, the quality of search results could only be assessed after the relevant search queries had been determined: different variants for Peruvian bark occurred in advertisements for auctions and for fever remedies. The quality of OCRed text is generally too low for eighteenth-century newspapers to do actual research with. It is possible to find a lot of material with simple queries, but to ascertain the quality of search results is a learning process for the historian: the recognition of formulaic fragments of text, that surround a possibly relevant search result in low-quality OCRed text, requires the researcher to develop a trained eye.

Furthermore, although simple queries give highly relevant results, the researcher is required to perform several steps manually: the disentanglement of data about individual advertisements from chunks of OCRed text; the recognition of individual advertisements as belonging to **predefined, custom categories (such as 'fever remedies' or 'auctions of drug components')**; the **generation** of correct text to perform more detailed analysis of the contents of advertisements; and the extraction of

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<sup>84</sup> Needless to add, the same follow-up step in the search process was used as in the case of Database 1: an asterisk was used as a **wildcard**, and the categories for 'news' and 'family messages' were again queried, for erroneously labelled material.

«jrtzen	ko tzen	koom	koorsen	kÖÖrts	kourtzen
cortsen	ko&rtzen	koon	koort	koortsen	koutfca
eootffen	ko.r:fen	koon fen	koort-	kÖÖrtssij	kovrizen
henzen	ko^ ^ ^	koon zen	kÖÖrt sËtl	koortt	ko□en
hoorifen	ko9rtsen	koonaan	koort.en	koorttcn	kportfen
hvortzen	koarizcn	koondij	koort?	koortten	kports
i'.oortfen	koartfcn	koonfea	koorta	koortzcn	kppit/en
icoorfs	koartftn	koonfen	koört'a	koortzea	kt&rtfch
irtfctt	kobrtfcii	koons	koortf	koortzeer	ktorts
jcoonfcn	köbrtfd	koonten	koortfao	koortze-i	ktortzen
jcprtfepe	kobrtfen	koonzcn	koortfcir	koortzeii	<b>k™r!zen</b>
k cor ts	köbrtien	koonzen	koortfcn	koortzen	kuorlzcn
k onzen	kobrtzcn	koop.tsen	koortfcu	koortzén	kuorts
k oortsf.n	kobtts	koor fen	koortfea	kóortzen	kuortzen
k*ortfen	kocrrs	koor fin	koortfen	koortzeo	k□un
k,-r:z,n	koctrfcn	koor tf en	koortfe-n	koortzet»	k□tl
k-.iortzen	koctrfen	koor tfen	koor'tfen	koortzeü	li"ur,tzett'
k^brtfen	koctrzen	koor ts	koor-tfen	kÖÖrtzf.n	moorrjen
k< onzen	koerif,n	koor,l"en	koortfèn	koortzi n	roortfèn
ka<>otff	koertfen	koor.f-ti	koortfeo	koortzm	roortsen
kaart [en	koerts	koor.s	koortferi	koortztn	roortzin
kaort»	koertzen	koor/en	koortfert	koorzen	soortzin
kbccrffcn	kojrtzcn	koorcftn	koortferç	koobtsen	tvcoortfen
kbortfen	komzen	koorden	koortfeu	koobtzen	t□fiu
kcertzen	konrtzen	koorfen	koortfm	kootifeo	Üiortzcr.
kciorts	koo.rfen	koorffen	koortfon	koot'len	uoorts
kco.ifen	koortfcn	koorifed	koortf뵓	kootrs	uoóru
kcortfen	koortfen	koorifen	koortf鮞	koottfen	vczitio
keo: tfen	koortftn	koorifeo	koortien	koottl□	viurvoort
keoris	koortf額	koorilen	koortjen	kootts	X *«>"en
keortfen	kooi tfen	kooris	koortjeç	koottzen	xocrts
keorts	koofen	koorls	koortl	kopit»	xoortien
keortzcn	kooilfen	koorlzen	koortlen	koprtfca	xootif:n
kerortfeo	kooit	koornen	koortl'en	koprtfen	
kior'.zev	kooit feu	koorr.s	koortlén	koprtztti	
kiortzen	kooit»	koorrfcn	koortlén	k-orr	
kit ze	kooitç	koorrfen	kóortlen	kors	
kmortzcn	kooitfea	koörrfen	koortp	kortfcn	
knort zen	kooi-tfeh	koorrfen	koortr	korts	
knort/en	kooitfen	koorrièn	koortren	kórts	
knortfcn	kooitfèn	koorrs	koorts	kortsen	
knortzen	kooitfo	koorzen	koórts	kosrtfen	
knrtzen	kooitieii	koors	koÖrts	kotrtl'en	
knt rs	kooitien	koor-s	kÓorts	kourtlc	
ko nzen	koaits	koörs	kóorts	kourtzcn	

Table 3. OCR variants for 'koorts', that were found in advertisements for fever remedies (1680-1799).

relevant entities (persons, places, prices, indications and so on) from corrected text. Still, the researcher is not left on his own in this strategy. Advertisements of many types, including those of Database 1 and 2, are of a formulaic character, which means that a trained eye can instantly recognize relevant material in OCRed text of generally bad quality. It would be highly desirable, however, if Delpher offered functionalities to address the level of individual advertisements: only then will the customized databases that were discussed in this section really serve a public purpose, in which they can be further assessed, enriched, and reused.

The mixed methods approach that was discussed in this section contains essential lessons for all digital scholarship in history. Studies about early modern medical advertising are generally based on samples of data (e.g. a certain newspaper and/or certain years).<sup>85</sup> In the digital era, the number of possible sources can be greatly increased, yet researchers still need custom queries to browse through big data collections, like **Delpher's newspapers**. The evaluation of search results requires a continuous movement between close and distant reading, to optimize recall and precision. The quantitative output of a digital system is not automatically the same as the qualitative input that is used by the historian to construct his narrative: there is an ongoing dialectic between the researcher and the digital tool, a process in which search results are indications (not facts) for potential use in a narrative.

### *Structure of the Dissertation*

This dissertation offers case studies of various dimensions of fever and bark in a frame narrative, in which Chapters 1 and 5 encapsulate the other chapters methodologically. The running theme through all chapters is the process of commodification that took place for fever remedies, and especially for Peruvian bark, between 1650 and 1800. Chapter 1 is an investigation of various contexts in which Peruvian bark occurred in the second half of the seventeenth century: before the remedy was publicly accepted around 1680. This research is mainly based on letters, which reveal scarce but precious information about processes of knowledge circulation, well before Peruvian bark evolved into an accepted commodity. Chapters 2, 3 and 4 go on to explore Peruvian bark and fever remedies in a more diachronic way. Chapter 2 addresses the issue of Peruvian bark as a true commodity. It does so from the perspective of professional brokers in drugs, a largely unknown group of commercial intermediaries, who gradually became an indispensable part of the global

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<sup>85</sup> This goes for all the studies that are mentioned in note 301 below.

chain of medicinal substances. The records they have left radically alter our understanding of the availability of drug components in the early modern period. Chapter 3 moves to another segment of the medical market, and focuses on the linguistic aspect of secret fever remedies: the ways in which all sorts of medical practitioners used medical terminology in their advertisements, to appeal to a large audience. Chapter 4 extends the argument, by emphasizing the commercial possibilities which advertising for remedies might have for advertisers, especially regarding the geographical reach of their products. On both a local and a national level, advertisers had various reasons to get involved with advertising, which could transform the scope of their practice. Chapter 5 offers another, synchronic case study, like Chapter 1. It does so by combining the material, linguistic and geographical dimensions of the previous chapters, to explore the causes and effects of epidemic fever for the commodification of fever remedies. The impact of the fever epidemic of 1727-1728, which has left preciously little testimony in primary sources, is shown to have made a substantial imprint on fever remedies on opposite ends of the medical market: with regard to imports of crude substances, as well as for secret fever remedies, that can be found in advertisements. Finally, in Chapter 6, attention is diverted to another drug component, asafoetida ('devil's dung'). **The aim of this chapter is to explore the methodological challenges of comparing different medical commodities, by means of a combined traditional and digital approach.**

# Chapter 1. The Hidden History of a Famous Drug: Tracing the Medical and Public Acceptance of Peruvian Bark in Early Modern Western Europe (c. 1650-1720)<sup>86</sup>

## Introduction

On November 13, 1663, the Dutch scientist Christiaan Huygens (1629-1695) wrote to his brother Constantijn (1628-1697) about his worries concerning their brother Lodewijk (1631-1699), who was stricken with fever:

I pity our feverish brother [*le frere febricitant*], because once I have had a taste of it [i.e. fever] as well. Still, he can invest his hope in Kin kina, of which we have seen a good effect in Signora Anna recently.<sup>87</sup>

The fragment will not surprise historians of medicine: fever was a common disease in the early modern period, and Peruvian bark had been known for over twenty years when the letter was written, as was discussed in the General Introduction. Despite the common nature of both the disease and the remedy, however, the letter leaves us in the dark about most of the essential features of this case: the nature of the fever; the experience of the patient; the choice for a practitioner; the therapeutic process; the choice for and application of certain remedies, and so on. The isolated **mention of Peruvian bark in Huygens's** letter is intriguing, but at the same time, the historical data of this case appear to be rather inadequate for a narrative about Peruvian bark in the Dutch Republic. A medico-historical analysis of sources like Huygens's letter will not likely tell the whole story. Therefore, this chapter argues that understanding the eventual success of Peruvian bark on the European medical market cannot be understood with reference to medical science alone. It will do so by evaluating several

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<sup>86</sup> An abridged version of this chapter, co-authored by Toine Pieters, was published in *Journal of the History of Medicine and Allied Sciences*, 71: 4 (2016) 400-421.

<sup>87</sup> Christiaan Huygens to Constantijn Huygens Jr., 30-11-1663, in the ePistolarium. Most of the letters that were used for this chapter can be found in the ePistolarium, developed in the CKCC Project at Huygens ING: <http://ckcc.huygens.knaw.nl/epistolarium/>.

sources that increase our understanding of two other fundamental pillars: commerce and society, as was discussed in the General Introduction.

Letters like the one by Christiaan Huygens do not easily lend themselves to a medical analysis. They do, however, provide a window on the historical landscape, by giving glimpses of various trajectories. Huygens's letter gives no information about the precise nature of fever, nor about any remedies that may have been applied, but it demonstrates the contemporary understanding of the close relationship between fever and bark. Likewise, it is presumed that Peruvian bark could be purchased somewhere, and that people might have been willing to do so. In other words, the three dimensions of medicine, commerce, and society are all represented in the letter. This multifunctionality makes letters like Huygens's invaluable for historical research. It was written at a time when knowledge about the bark's appearance and properties, and experience with its medicinal uses, were only rudimentary, making this a seminal stage in the drug's commodification process. This stage occurred mostly 'under the radar', as the necessary primary sources are heterogeneous and scattered across physical and digital collections and institutions. Therefore, the eventual outcome **of Peruvian bark's interconnecting** trajectories—success or failure on the medical market—was by no means as certain as scholars of the bark's introduction or codification would have us believe. The eventual adoption of the bark in pharmaceutical practice was the result of this intermediate stage. This cannot be credited exclusively to medical innovation. The hidden history of Peruvian bark is as much a history of commercial opportunities and cultural susceptibility.

This chapter starts by showing how the familiar approaches for studying drug trajectories, as were discussed in the Introduction, provide insufficient points of reference for analysing the conception of Peruvian bark and fever in letters, like the one written by Huygens. The second paragraph follows the research thread from Huygens's letter to the medical world of late seventeenth-century Paris. The available correspondence is analysed to get a grip on the interaction of medicine, commerce, and culture at the royal court of Louis XIV. In the final paragraph, three personae are introduced to illustrate some of the contexts in which fever and Peruvian bark figured prominently, to exhibit the diversity of discourses on the contested remedy. In this way, the lasting appearance of Peruvian bark on the medical market is shown to have been the result of commercial and sociocultural activities, as much as medical debates and trials.



### 1.1. Huygens and Peruvian Bark: Interferences of Drug Trajectories and their Consequences for the Individual Patient

The problems pertaining to fever and Peruvian bark affected the medical community all over Europe. Even Bado's publicity book of 1663, which was discussed in the General Introduction, was still written by one physician and addressed to another, which indicates the close connection between the bark's trajectories in medicine and society at the time. To what extent are these discussions still relevant if we narrow the scope of research to an individual patient? Do we gain clearer insight into people's experience with Peruvian bark, if its use can be related to an actual case study? In other words, was it obvious for Christiaan Huygens to use his letter as a way to transfer knowledge about Peruvian bark, by linking it to his brother's disease? This paragraph analyses the nature of the disease **to which Huygens's letter refers**.

#### *The Illness of Lodewijk Huygens*

The course of events is as follows. When Lodewijk Huygens fell ill, he was on a journey to sell some of the pendulum clocks that his brother Christiaan had invented. Suddenly, Lodewijk stopped corresponding with his brothers. On September 20, 1663, Constantijn Jr. complained to Christiaan that he had not heard from Lodewijk in over two weeks, whereas the three brothers normally sent letters to each other on a weekly basis. Constantijn was aware of the reason behind the epistolary silence: apparently, Lodewijk had lingered in Middelburg (in the province of Zeeland) to court a lady.<sup>88</sup> It was there, surrounded by the swampy marshes of the Walcheren peninsula, that he was stricken with fever.

It appears that Lodewijk was still in good health when he left Zeeland at the end of October. He promised Christiaan that he would take care of **the payment for one of Christiaan's clocks**.<sup>89</sup> However, Constantijn replied the following week that the transaction had not yet been arranged, because Lodewijk still had his head full of air from Zeeland (*la teste pleine de vent de Zelande*).<sup>90</sup> Although this remark may have been intended as a tongue-in-cheek reference **to Lodewijk's romantic** endeavours, the mention of 'kin kina' in **Christiaan's letter of November 30** reveals that Lodewijk was really ill. The disease did not incapacitate him at first, because he continued his efforts to sell clocks for his brother. Apparently,

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<sup>88</sup> Constantijn Huygens Jr. to Christiaan Huygens, 20-09-1663, in the ePistolarium.

<sup>89</sup> Christiaan Huygens to Constantijn Huygens Jr., 02-11-1663, in the ePistolarium.

<sup>90</sup> Constantijn Huygens Jr. to Christiaan Huygens, 08-11-1663, in the ePistolarium.

**the disease was no extraordinary cause of concern for Lodewijk's brothers** either, since they did not often mention his health condition in their letters during those days.<sup>91</sup> On December 20, Constantijn commented on a company of friends, who had visited Lodewijk in his room in The Hague, which suggests that Lodewijk was bedridden at the time.<sup>92</sup> Nevertheless, the illness receded before the end of the year. On December 28, Christiaan wrote to Lodewijk to congratulate him with his recovery.<sup>93</sup> The romance that had started it all, however, eventually did not work out.

As explained in the General Introduction, it is tempting to regard Lodewijk's fever as an instance of malaria, which would make Christiaan's remark about Peruvian bark more obvious. Does it make sense to try and identify the kind of fever that Lodewijk was suffering from? The letters about his condition at the end of 1663 provide no answer to the question. However, in his letter of November 30, Christiaan relates Lodewijk's condition to his own previous experience with fever, which probably relates to an instance of tertian fever in June 1662.<sup>94</sup> Lodewijk himself was similarly struck by successive fevers again in both February and May 1664, the last of which was a tertian fever as well.<sup>95</sup> Therefore, tertian fever is the closest diagnosis we can make.

### *Fevers in the Dutch Republic*

Because the connection between the historical notion of fever and modern malaria is far from straightforward, we cannot simply equate the two. We need more information to substantiate such a claim, before we can make any inferences about the possible beneficial use of Peruvian bark in Lodewijk's case. First, the circumstances suggest that Lodewijk's fever was the kind of malaria that we know to have been endemic to the province of Zeeland, as well as to the other coastal provinces of the Dutch Republic. Sixty years later, the Amsterdam physician Willem van Ranouw (1673-1724) discussed how tertian fevers were most common in spring and autumn, and were generally associated with swampy areas.<sup>96</sup> The city

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<sup>91</sup> Constantijn Huygens Jr. to Christiaan Huygens, 22-11-1663, in the ePistolarium; Constantijn Huygens Jr. to Christiaan Huygens, 06-12-1663, in the ePistolarium; Christiaan Huygens to Lodewijk Huygens, 15-12-1663, in the ePistolarium.

<sup>92</sup> Constantijn Huygens Jr. to Christiaan Huygens, 20-12-1663, in the ePistolarium.

<sup>93</sup> Christiaan Huygens to Lodewijk Huygens, 28-12-1663, in the ePistolarium.

<sup>94</sup> Christiaan Huygens to Robert Moray, 09-06-1662, in the ePistolarium.

<sup>95</sup> Constantijn Huygens Jr. to Christiaan Huygens, 01-05-1664, in the ePistolarium.

<sup>96</sup> [W. van Ranouw], "Zesde Verhandeling van de byzondere Natuurlyke Historischryvers, en in dezelve de Natuurlyke Historie van de Kina-Kina", *Kabinet der natuurlyke Historien, Wetenschappen, Konsten en Handwerken*, 6 (1722) 470-563,

of Middelburg on the Walcheren peninsula, where Lodewijk had been dwelling, was particularly hazardous in this respect<sup>97</sup>, as is also apparent from the *Chroniik van Zeelandt* (Chronicle of Zeeland), published in 1644. The author felt the need to attenuate the common opinion about the notorious fevers in Zeeland, by emphasizing that they were not as bad as everyone seemed to think:

Yes, the Zeeland fevers have almost become proverbial and frightful to neighbouring peoples by now. However, just like truth has no greater enemy than prejudice, it is certain that many healthy and long-living inhabitants, both native and foreign, can testify about the good stature of this sky. And the examples of others, who were born elsewhere or with a weak body, or who have weakened their powers by intemperance, and who became subject to fevers and other diseases on these islands, should not be put forward.<sup>98</sup>

Secondly, because malaria was endemic in 'brackish provinces' like Zeeland, the Dutch may have had a certain immunity to the malaria that was prevalent in their regions.<sup>99</sup> **Lodewijk's situation conforms to** only one of the three criteria for identifying epidemic *fever* as epidemic *malaria*,

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there 505. No modern studies pay special attention to fevers in Zeeland in the early modern period, although L.J. Bruce-Chwatt and J. de Zulueta, *The Rise and Fall of Malaria in Europe: A Historico-Epidemiological Study* (Oxford and New York: Oxford University Press 1980) 106-116, briefly discuss Dutch malaria in this period. Endemic Dutch malaria, and its disappearance, in the nineteenth century have been studied by H.A. Seventer, *The Disappearance of Malaria in the Netherlands* (dissertation; Amsterdam: Universiteit van Amsterdam 1969). Very old, but still very useful, are the **articles by N.H. Swellengrebel and P.J.J. Honig, "Bijdrage tot de Geschiedenis der Malaria in Nederland", *Nederlandsch Tijdschrift voor Geneeskunde*, 69 (1925) 2538-2555; 70 (1926) 1104-1120; 70 (1926) 1864-1875; 72:1 (1928) 38-47.**

<sup>97</sup> The danger of fever in Zeeland was well-known, even though it rarely occurs as a separate discursive theme in early modern medical publications. Jean Raymond (1728-1773) and Gerard de Wind (1730-1800), two physicians in Middelburg, both wrote tracts about fevers in Zeeland; see J. Raymond, *Dissertatio inauguralis exhibens Descriptionem Februm intermittentium autumnalium quotannis Mittelburgi et in Vicinis Seelandiae Batavae Locis grassantium* (Duisburgi ad Rhenum: Stanno Fr. Ad. Benthon 1767); G. de Wind, "Dissertatio de Aëre Zelandico / Verhandeling over de Zeeuwsche Lucht", transl. by L.C. de Freitag, *Verhandelingen uitgegeeven door het Zeeuwsch Genootschap der Wetenschappen te Vlissingen*, 13 (1786) 451-493; See also Lindeboom, *Dutch Medical Biography*, 1596 (Raymond) and 2180 (De Wind).

<sup>98</sup> M.Z. van Boxhorn, *Chroniik van Zeelandt, eertijds beschreven door d'Heer Johan Reygersbergen, nu verbeterd, ende vermeerderd*, 2 vols. (Tot Middelburch: By Zacharias ende Michiel Roman 1644), vol. 1, 116-117.

<sup>99</sup> J.J. van der Kaaden, "Geschiedenis van de Inheemse Malaria in Nederland", *Infectieziekten Bulletin*, 14:11 (2003) 388-393, there 389.

that were mentioned by Brouwer: fever occurring in autumn, with symptoms reoccurring in spring. The other two criteria do not apply: the simultaneous occurrence of fever in more than one brackish province (Groningen, Friesland, Holland and Zeeland); and a previously hot and dry summer, often combined with floods.<sup>100</sup> The summer of 1663 was rainy, but not particularly hot.<sup>101</sup> In the autumn of 1663, the weather was turbulent, with storms and snow. There were outbreaks of the plague in the autumn of 1663 and this was much worse in the summer of 1664, but there were no outbreaks of fever, and none in Zeeland.<sup>102</sup> If Lodewijk had malaria, he was not a victim of an epidemic.

Thirdly, because of this immunity, Zeeland fevers were not always fatal when left untreated. It may be that Lodewijk's fever simply vanished, which would make it unnecessary to apply Peruvian bark. Willem van Ranouw maintains that 'a true and pure tertian' can often be left untreated, because it is likely to disappear by itself.<sup>103</sup> Similarly, in their study of medicine in early modern France, Brockliss and Jones list malaria as one of the most important infectious diseases of the country in terms of disease incidence, but with a high survival rate.<sup>104</sup> It has been argued that because of building activities in the Netherlands, one *Anopheles* mosquito species was gradually replaced by another, that was no carrier of *Plasmodium* parasites.<sup>105</sup> Van Ranouw asserted that it would not be beneficial to administer Peruvian bark in all cases, again because most autumnal tertian fevers disappeared by themselves. Still, he observed that the bark was helpful in certain tertian fevers, and he administered it himself in several cases.<sup>106</sup> Caution was required when identifying a fever, however: Van Ranouw warned that an untreated instance of tertian fever could evolve into a quartan fever, which was not as malicious, but harder to cure.<sup>107</sup> Here, he hinted at a central difference in the understanding of

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<sup>100</sup> H. Brouwer, "Malaria in Nederland in de Achttiende en Negentiende Eeuw", *Tijdschrift voor Sociale Geschiedenis*, 9:2 (1983) 140-159, there 141.

<sup>101</sup> J. Buisman, *Duizend Jaar Weer, Wind en Water in de Lage Landen, Deel 4: 1575-1675* (Franeker: Uitgeverij Van Wijnen 2000) 578-585.

<sup>102</sup> Buisman, *Duizend Jaar, Deel 4*, 586-590.

<sup>103</sup> Van Ranouw, "Zesde Verhandeling", 471.

<sup>104</sup> L.W.B. Brockliss and C. Jones, *The Medical World of Early Modern France* (Oxford: Clarendon Press 1997) 44 (Table 1a).

<sup>105</sup> Packard, *The Making of a Tropical Disease*, 53.

<sup>106</sup> [W. van Ranouw], "Vyfde Verhandeling van de byzondere Natuurlyke Historischryvers, en in dezelve de Natuurlyke Historie en 't gebruik en misbruik van de Kina", *Kabinet der natuurlyke Historien, Wetenschappen, Konsten en Handwerken*, 6 (1722) 279-380, there 304-306.

<sup>107</sup> *Ibidem*, 318-319.

tertian and quartan fevers: the first was deadlier, while the second would last longer. Constantijn Huygens Sr. was aware of this as well, as **demonstrated in a 'Spanish proverb'** (*Spaans gezegde*) that he translated: **"Autumn fevers, either lengthy or deadly."**<sup>108</sup> Disconnecting tertian and quartan fever from lethal malaria helps to explain why fever was not always described in terms of fear and danger in the early modern period. In fact, sometimes they were described downright casually.<sup>109</sup>

Where does this leave us if we want to relate Lodewijk's condition to Peruvian bark? Apart from the circumstances outlined above, it is unknown if, how, and by whom Lodewijk's disease was treated in November 1663. When he became sick again in February 1664, there was no suitable remedy available, which indicates that Peruvian bark had not been administered in November, or to no good effect.<sup>110</sup> The identification of this instance of tertian fever as malaria would surely strengthen the claim that Peruvian bark might have been beneficial, but only the real (i.e. *Cinchona*) bark, unadulterated, in sufficient quantity, and for a sufficient amount of time. All these aspects, however, were still hotly debated at the time. Moreover, there is no evidence that apothecaries in The Hague, where Lodewijk was residing during his illness, were already using the bark in 1663.<sup>111</sup> Disappointingly, we should not expect any involvement of the Jesuits, who were such important intermediaries for Peruvian bark in other parts of Europe. There was a community of Jesuits in The Hague in the seventeenth century, as in most Dutch cities<sup>112</sup>, but we do not know about any apothecaries among them, nor can we connect them to the thirty or so apothecaries who were practicing in The Hague around this

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<sup>108</sup> C. Huygens Sr., *Gedichten, Deel 6: 1656-1661*. Ed. by J.A. Worp (Groningen: J.B. Wolters 1896) 135: "Najaers Coortsen noodtelick / Of heel lang, of doodtelick."

<sup>109</sup> An example is the satirical piece "Praise of quartan fever", written under the pseudonym of G.M. Insulanus, "Lof van de Derden-Daagse-Koortse", in: *Veeler Wonderens Wonderbaarelijck Lof*, 3 vols. (t'Amsterdam: By Samuel Imbrechts 1664), vol. 2, 128-185.

<sup>110</sup> Philips Doubleth to Christiaan Huygens, 28-02-1664, in the ePistolarium: "Le frere Louis a repris feu depuis quelques jours au tant presque que jamais, [...] mais remede n'ij a."

<sup>111</sup> Peruvian bark is absent from the pharmacopoeia of The Hague of 1659. The next edition (which did include the bark) was only published in 1738. See also the Appendix.

<sup>112</sup> P. Begheyn, *Gids voor de Geschiedenis van de Jezuieten in Nederland 1540-1850 / A Guide to the History of the Jesuits in the Netherlands 1540-1850* ([Nijmegen]: Valkhof Pers, [Amsterdam]: Nederlands Instituut voor Jezuieten Studies, [Rome]: Institutum Historicum Societatis Iesu 2006) 35.

time.<sup>113</sup> If the Huygens brothers wanted to obtain Peruvian bark, they would have had to look elsewhere—presumably abroad.

## 1.2. Paris as a Hub of Knowledge on Peruvian Bark (c. 1650-1680)

The case of Lodewijk Huygens is one among many. Early modern Dutch correspondence swarms with references to disease—often fevers—in similar contexts: i.e. with little or no information about the nature of the disease or treatment, and with very brief descriptions about the context in which the disease took place.<sup>114</sup> Still, Christiaan Huygens's reference to Peruvian bark is a rare encounter with the new drug in an early modern letter, and this certainly has to do with the fact that he was in Paris when he wrote it. This paragraph connects the illness of Lodewijk Huygens to what his brother Christiaan saw and heard when he was in Paris in 1663 and 1664.

### *Christiaan Huygens's Encounter with an Exotic Remedy*

While he plunged himself in the courtly and academic life of Paris between October 1663 and May 1664, Christiaan Huygens encountered all there was to see and hear in terms of novelties. On one occasion, he was at the house of Anna Bergerotti, who was part of a select company of singers, that enjoyed great popularity at the royal court during the 1650s and 1660s. She was also well-known to the Huygens family, who amicably refer to her as '**Signora Anna**'.<sup>115</sup> Christiaan had heard her sing twice when

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<sup>113</sup> I am grateful to Peter van den Hooff and Frank Bouman, for providing a list of apothecaries in The Hague around the middle of the seventeenth century. The digital database from which these apothecaries were extracted is currently in progress, and is based on A.I. Bierman, M.J. van Lieburg and D.A. Wittop Koning, *Biografische Index van Nederlandse Apothekers tot 1867* (Rotterdam: Erasmus Publishing 1992). The original index only mentions one year of residence for each apothecary, which makes it hard to draw up a definite list of practitioners who were active in the exact year 1663. The digital version will connect the names of practitioners to as many archival records as possible.

<sup>114</sup> In the ePistolarium (see note 87), many instances of fever can be found using search queries like '**koorts**', '**coorts**', '**kors**' and '**korts**' (in Dutch), '**fièvre**' and '**fièbvre**' (French), '**febris**' and '**febres**' (Latin). Besides this corpus of scholarly correspondence, thousands of letters written by ordinary Dutch people can be found in the archives of the High Court of Admiralty in Kew. A small portion of these letters has been digitized and can be found on <http://brievensbuit.inl.nl/> and <http://www.gekaaptebrieven.nl/>.

<sup>115</sup> Even the basic facts about Bergerotti's life are largely unknown, but most can be derived from letters in the correspondence of Constantijn Huygens Sr. In Jean Loret's poetic, epistolary journal about French court life, she appears several times, for the first time in May 1655. See J. Loret, *La Muze Historique ou Recueil des Lettres en Vers*. Ed., ann., gloss. and index by C.-L. Livet, 4 vols. (Paris: P. Daffis 1857-1878), plus the

he was in Paris in 1660-1661.<sup>116</sup> There is a letter written to Bergerotti by **Christiaan's father Constantijn**, who celebrated her performance (which he had not yet heard at the time).<sup>117</sup> The Huygens family developed a friendly relationship with Bergerotti, who appears numerous times in their letters.

It was to her situation that Huygens referred when he suggested that his ill brother might benefit from Peruvian bark, as quoted at the beginning of this chapter. On November 30, the day he wrote his 'bark letter', Huygens witnessed Bergerotti's recovery from fever by means of Peruvian bark. Another account of her recovery, written by Sebastien Chièze (1625-1679) on the same day as Huygens's letter, clearly shows the sudden, miraculous impact that Peruvian bark could still have on observers at this time. Recounting his visit to Bergerotti the day before—and unaware that she had taken Peruvian bark—Chièze found her "at nine in the evening eating and drinking, when I believed I would see her trembling with quartan fever."<sup>118</sup> Both Huygens and Chièze immediately correlated the experience to Lodewijk Huygens's illness and suggested the application of the bark in his case.

At first sight, it does not seem strange that both letter writers acknowledged the similarities between the cases of Lodewijk Huygens and Anna Bergerotti, nor that they agreed on the usefulness of Peruvian bark for both. Chièze did not hesitate to put the cases of Bergerotti and Lodewijk on an equal footing, when he reminded Lodewijk that "**it is said that fevers are not that easily expelled when they have taken possession of a body.**"<sup>119</sup> However, at closer inspection, the cases were quite different. As we have seen, Lodewijk Huygens's case was probably an isolated instance of endemic tertian fever, that was likely to disappear by itself. Bergerotti's case, however, was a quartan fever (as indicated by

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accompanying *Index Alphabétique des Noms* (Paris: Honoré Champion, 1891). Some references to Bergerotti are also made by L. Abadie, "Anne de La Barre (1628-1688): **Biographie d'une Chanteuse de Cour**", *Revue de Musicologie*, 94: 1 (2008) 5-44. De La Barre was part of the same company of singers as Bergerotti.

<sup>116</sup> C. Huygens, "Journal de Chr. Huygens. Le voyage à Paris et à Londres de 1660-1661", in: *idem, Oeuvres Complètes*. Ed. by J.A. Vollgraff, 22 vols. (The Hague: Martinus Nijhoff 1888-1950), vol. 22, 521-576, there 538 and 557.

<sup>117</sup> Constantijn Huygens Sr. to Anna Bergerotti, 26-04-1663, in the ePistolarium.

<sup>118</sup> University Library, Leiden, Codices Hugeniani 34, letter 41: Sebastien Chièze to Lodewijk Huygens, 30-11-[1663]: "[el Quinchina, qui fit hyer des merveilles à la Sig.<sup>ra</sup> anna que je trouvoy] à neuf heures du soir mangeant et beuvant lors que je la croyois voir tremblant sa fievre quartaine."

<sup>119</sup> *Ibidem*: "[...] on dit que les fievres ne deslogent pas si facilement quand elles sont en possession d'un corps."

Chièze) which, moreover, may have been the 'aftershock' of a fever epidemic, that swept the French court between March and August 1663. Christiaan Huygens was in Paris at that time as well, and must have seen the many diseased courtiers and staff members. The most notable victim was the queen-mother, Anne of Austria, who only recovered with great difficulty.<sup>120</sup>

Although we cannot be sure that Anna Bergerotti fell victim to the epidemic in 1663, her illness of 1664 makes this likely, especially because she started drinking tea (another exotic drug that was gaining prominence) as a general health preservative at some point in between. Christiaan Huygens, who first encountered tea **at Bergerotti's house, later** adopted this habit from her.<sup>121</sup> Nevertheless, the difference between the cases of Lodewijk Huygens and Anna Bergerotti, which would be very important from a medical perspective, went unnoticed by the two letter writers. What is evident from this case study, then, is that the shades of meaning of a multifaceted concept like fever were of little importance to the average observer. When it came to the personal experience of disease, even an educated mind like Christiaan Huygens did not bother to reflect on the particularities of different types of fever treatment: he wrote about Peruvian bark simply because he wanted his brother to get better. In other words, the ambiguous nature of fever theory enabled a new, contested remedy to 'work its way up' on the medical market and acquire recognition as a useful drug, even without the help of medical practitioners.

A drawback to this interpretation is that we do not know who prescribed or administered the bark to Bergerotti. It is hard to imagine her using the bark without first consulting a medical professional. Her social status would make this unthinkable. Thankfully, we know more about medical personnel in court circles than for any other social environment. The Parisian medical scene has often been portrayed as an environment characterized by enmities: between adherents of traditional medicine and innovative empiricists;<sup>122</sup> between Parisian followers of

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<sup>120</sup> Loret's account of the epidemic is scattered throughout his *Muze Historique*, vol. 4 (pp. 33, 41, 45, 48-49, 50, 52, 54-55, 55-56, 60, 61, 69, 72 and 88). S. Perez, *La Santé de Louis XIV: Une Biohistoire du Roi-Soleil* ([Paris]: Perrin 2010) 50, identifies the epidemic as measles.

<sup>121</sup> Christiaan Huygens to Constantijn Huygens Jr., 16-11-1663, in the ePistolarium; Christiaan Huygens to Lodewijk Huygens, 01-02-1664, in the ePistolarium.

<sup>122</sup> T.W. Keeble, "A Cure for the Ague: The Contribution of Robert Talbor (1642-81)", *Journal of the Royal Society of Medicine*, 90:5 (1997) 285-290, there 285; Jarcho, *Quinine's Predecessor*, 59-60.



Galen's teachings and Hippocratic practitioners from Montpellier; by extension, between Catholics from the capital and Protestants for the province (a significant observation in the preamble to the revocation of the Edict of Nantes in 1685<sup>123</sup>); and between the Jesuits and everyone else.<sup>124</sup> The diversity of medical views is reflected in the variety of medical practices that could be found in court circles, but at the same medical practitioners partook in courtly culture, and were concerned about their social standing. Therefore, in the turmoil of medical activity at court, there was hope for new remedies and their stakeholders to gain prominence.

### *Public Acceptance of Peruvian Bark in Paris*

Some fifteen years after Huygens **witnessed Anna Bergerotti's recovery**, Peruvian bark experienced a wave of public appreciation at the French court. The importance of medical practice at court was indissolubly connected with care for the King and his relatives. The royal family had a large number of medical staff members, who were principally selected for their medical competence: a career path that distinguished them from other courtiers.<sup>125</sup> However, there was ample opportunity for irregular practitioners to gain the King's attention. In the case of Peruvian bark, it was Robert Talbor's (1642-1681) secret remedy that caused a watershed in public awareness around 1680. While it was still unknown that the central ingredient of his remedy was Peruvian bark, Talbor successfully cured Charles II of England in 1679.<sup>126</sup> As a consequence, the King sent him to the court of Louis XIV, where his *remède anglois* caused a significant hype.<sup>127</sup> The successful application of his remedy to the French Dauphin, Dauphine, and several French noblemen meant Talbor's definitive breakthrough as a successful practitioner on both sides of the Channel. Louis XIV's personal physician, Antoine D'Aquin (1629-1696, in

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<sup>123</sup> Brockliss and Jones, *Medical World*, 92 and 330-333.

<sup>124</sup> For example, J. Wright, *The Jesuits: Missions, Myths and Histories* (London: Harper Perennial 2005) 134-135 and 147, repeats the familiar theme of general resistance against Jesuit pharmaceutical practices.

<sup>125</sup> L. Bernard, "Medicine at the Court of Louis XIV", *Medical History*, 6:3 (1962) 201-213, there 202.

<sup>126</sup> For Talbor, see Jarcho, *Quinine's Predecessor*, 49 and 64; Keeble, "A Cure for the Ague"; and R.E. Siegel and F.N.L. Poynter, "Robert Talbor, Charles II, and Cinchona: A Contemporary Document", *Medical History*, 6:1 (1962) 82-85.

<sup>127</sup> H.J. Cook, "Markets and Cultures: Medical Specifics and the Reconfiguration of the Body in Early Modern Europe", *Transactions of the Royal Historical Society*, 21 (2011) 123-145, there 134. Based on the fact that Charles II sent Talbor to Paris, Cook seems to attach greater value to London than Paris as a focal point in the bark's commodification process.

office from 1672 to 1693), could no longer do without the *remède anglois* after two kings had given their blessing to it. D'Aquin was soon in touch with Talbor about disclosing the secret remedy, so he was probably aware of the inclusion of Peruvian bark as early as 1679.<sup>128</sup> When Louis XIV ordered that the contents of the remedy be published **after Talbor's death** in 1681, the praise was transferred to the central ingredient. However, several prominent physicians had mixed feelings about the bark's sudden popularity. At the instigation of D'Aquin, for instance, the disclosing book deliberately presented the bark as an ordinary herb, not a specific remedy.<sup>129</sup> Likewise, the English physician Richard Morton (1637-1698) disliked the fact that the bark had now come to be associated with empiricism, which at the time was still a sobriquet for unsubstantiated medical practices that applied panaceas.<sup>130</sup> Still, high society in Paris soon followed the example of the royal family in its praise of the bark, as it often did with regard to medical novelties.<sup>131</sup>

Yet back in 1663, Peruvian bark was not yet the remedy of choice for malignant fevers that it would become in later decades. Treating a public figure like Anna Bergerotti with the bark would surely have been a precarious undertaking for a practitioner who lacked either experience with the remedy, and/or the confidence of his patient and the public. Therefore, the person responsible for Bergerotti's treatment must have been a reliable medical practitioner in Paris, who was operating in the same royal and scholarly circles. This is where the Jesuits come into focus again. Their presence in French society was much more prominent than it was in the Netherlands or England. Although there may have existed general suspicion of Jesuit activities in French society, Louis XIV publicly supported them. He needed the Jesuits to provide education as a civilizing mechanism for the great number of noblemen attending the court. The king's confessors were Jesuits, as they had been since the days of Henry IV.<sup>132</sup> The students of the most prominent Jesuit school in Paris performed

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<sup>128</sup> S. Perez, "Louis XIV et le Quinquina", *Vesalius*, 9:2 (2003) 25-30.

<sup>129</sup> The book was written by Nicolas de Blégnny, *Le Remède anglois pour la Guérison des Fievrés; publié par Ordre du Roy. Avec les Observations de Monsieur le Premier Medecin de sa Majesté, sur la composition, les vertus, & l'usage de ce Remède* (A Paris: Chez l'Autheur. Et La Veusve d'Antoine Padeloup 1682).

<sup>130</sup> Maehle, *Drugs on Trial*, 237.

<sup>131</sup> Brockliss and Jones, *Medical World*, 288-289.

<sup>132</sup> M. Fumaroli, "Between the Rigidist Hammer and the Deist Anvil: The Fate of the Jesuits in Eighteenth-Century France", in: J.W. O'Malley e.a. (eds.), *The Jesuits II: Cultures, Sciences, and the Arts, 1540-1775* (Toronto, Buffalo and London: University of Toronto Press 2006) 682-690, there 682-684.

plays and ballets on a regular basis, which were attended by many courtiers and the aristocracy, and the King was often present as well.<sup>133</sup> Still, although they were accepted in court circles, it is unclear to what extent the Jesuits participated in medical and scientific activities. It is generally believed that they were excluded from the Académie Royale des Sciences (founded in 1666) and were personally disliked by its founder Colbert, but there is no strong evidence for that.<sup>134</sup> We do not know about any official Jesuit medical practitioners at the court itself.

It would be strange to argue that the commodification of 'Jesuits' bark' took shape in Paris if there were no Jesuits involved. Already in 1653, Guy Patin (1601-1672), the influential gadfly on the medical scene in Paris (and a vehement opponent of Peruvian bark), maintained that the bark arrived in Paris from Lyon and Italy by way of the Jesuits.<sup>135</sup> Thus, the Jesuits were essential for introducing the remedy into the tense medical environment of Paris, but perhaps not at the top level of courtly medical practice. Their apothecary shop in the Rue Saint-Antoine was the centre of their distribution activities. The shop was also a cause of concern for local apothecaries, because the Jesuits sold a whole range of medicines, instead of just their own secret remedies, as they did in other places.<sup>136</sup> Apparently, however, this competition did not stop other practitioners from visiting the Jesuits in the Rue Saint-Antoine, and probably with good reason. Proof of their attraction is provided by the manuscript collection (*Portefeuille*) of the court physician Noël Vallant (1632-1685), whom we will encounter again later on. At one point, we find an account of someone marvelling at a batch of newly arrived Peruvian bark in the Jesuits' apothecary shop. The anonymous author was amazed to find that the entire batch was of high quality. Even more stunning was the fact that when the Jesuit apothecary let him chew on a sample, he found that its taste was only slightly bitter, which caused the visitor to doubt the adequacy of his senses, because the bark was known for its bitterness.

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<sup>133</sup> R.M. Isherwood, *Music in the Service of the King: France in the Seventeenth Century* (Ithaca and London: Cornell University Press 1973) 320-324.

<sup>134</sup> F. Hsia, "Jesuits, Jupiter's Satellites, and the Académie Royale des Sciences", in: J.W. O'Malley e.a. (eds.), *The Jesuits: Cultures, Sciences, and the Arts, 1540-1775* (Toronto, Buffalo and London: University of Toronto Press 1999) 241-257, there 241-257.

<sup>135</sup> Guy Patin to Charles Spon (April 8, 1653), which can be found with the search query 'quinquina' on <http://www.biusante.parisdescartes.fr/patin/>.

<sup>136</sup> P.-E. Le Maguet, *Le Monde Médical Parisien sous le Grand Roi, Suivi du Portefeuille de Vallant, Conseiller du Roi, Médecin de son A. R. Mme de Guise et de Mme la Marquise de Sablé* (Paris: A. Maloine 1899) 532-533n2.

However, other customers who were present in the shop shared his experience. After happily leaving the shop with half an ounce of bark, the author urged his readers to drop their reservations against the remedy: "I tell this to show that one should not make a big thing out of what the majority of people says."<sup>137</sup> The event happened on March 20, 1681. Talbor's *arcanum* was not yet generally known to contain Peruvian bark, and apparently, there was still significant prejudice and suspicion about the bark. The incident should, of course, be understood as an isolated experience: the *Cinchona* tree was still unknown, so the type and quality of bark must have varied over time. Nevertheless, the story is significant from a commercial point of view. Apparently, Peruvian bark could be purchased in substantial quantities from the Jesuits in Paris.

Another contextualization of the Jesuits' apothecary shop in Paris also points to its strong impact on medical practice in courtly and academic circles. In 1658, a thesis was published at the University of Paris, entitled *An feбри quartanae Peruvianus cortex*: whether Peruvian bark is useful in quartan fever. The thesis was defended by Louis Gallais, under the supervision of Bertin Dieuxivoie, a town physician connected to the university.<sup>138</sup> The thesis was written in favour of the bark, and may have been intended as a reply to another thesis from 1656, defended by François Boujonier, which was firmly opposed to the bark.<sup>139</sup> If so, it is no surprise that Dieuxivoie's opinions met with a negative response from the medical community in Paris.<sup>140</sup> He managed to continue as a successful physician, however, and even became dean of the Faculty of Medicine in 1682. Whether his home address remained the same during all these years is unknown, but in a list of municipal physicians, we find him living in the Rue Saint-Antoine in 1684. In fact, in this list of one hundred physicians, five lived on the Rue Saint-Antoine, more than in any other street. It hardly seems a coincidence that a medical practitioner, who was

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<sup>137</sup> Le Maguet, *Monde Médical*, 532-533: "Je remarque cecy pour monstrier qu'il ne faut pas dire un grand fondement sur ce que la plus part des gens disent."

<sup>138</sup> L. Gallais, *An feбри Quartanae Peruvianus cortex?* (Lutetiae: s.n.1658).

<sup>139</sup> F. Boujonier, *An febribus intermittentibus inutilis Chinchinae pulvis* (Lutetiae: s.n. 1656), written under supervision of Daniel Arbinet. The importance of the thesis was downplayed by J. Rempel, "Der Arzt Baldo und die Chinarinde", *Pharmaceutisch Weekblad*, 69:16 (1932) 382-398, there 395. Cf. P. Delaunay, "La Fontaine et les Médecins: La Querelle du Quinquina. De Dieuxivoie à Blégnny", *Bulletin de la Société Française d'Histoire de la Médecine*, 3 (1904) 129-152. The relationship between the theses of Boujonier and Gallais remains somewhat of a mystery, because even though both were written around the same time at the Medical Faculty in Paris, their supervising committees included different Faculty members.

<sup>140</sup> Jarcho, *Quinine's Predecessor*, 63; Delaunay, "La Fontaine et les Médecins".

a protagonist of the use of Peruvian bark, lived in the same street where the Jesuits' apothecary shop distributed this substance. Of course, the residential proximity of physicians and Jesuits is no guarantee that one made extensive use of the other's services. The same list from 1684 describes the physician Michel de la Vigne as living right across the street (*vis-à-vis les Jésuites*).<sup>141</sup> De la Vigne had been part of the evaluating committee of Boujonier's thesis from 1656, which disapproved Peruvian bark. Still, the fact that some of the central figures in the earliest debates on Peruvian bark in Paris were still living at walking distance of the Jesuit's apothecary shop almost thirty years later, at least suggests that many more physicians must have known about Peruvian bark at the time.

Could there be reasons why we cannot retrace many more encounters with Peruvian bark? To acquire a higher level of understanding from the same type of sources, the correspondence of Constantijn Huygens Sr. is of great value. As one of the most important political representatives of the Dutch Republic, he corresponded with many high-ranking officials at the French court, including the medical staff. Within this 'medical network' (which was largely conveyed from Constantijn to his son Christiaan<sup>142</sup>), we encounter several practitioners that provide a unique insight in the circulation of medical knowledge in the French capital: Antoine Vallot (1594-1671), who preceded D'Aquin as the King's personal physician from 1652 until his death, Moyse Charas (1618-1698), court apothecary and chemist, and Antoine Menjot (c. 1615-1696), another court physician from 1660 onwards.<sup>143</sup>

### 1.3. Three Practitioners, Three Contexts: The Diversity of Discourse on Peruvian Bark

In no way do the medical and sociocultural contexts of Vallot, Charas and Menjot provide an exhaustive analysis of possible occurrences of Peruvian bark. They do, however, shed a new light on the dynamics of the medical scene in Paris, and how the drug's medical and social trajectories experienced a transformation from resistance to appreciation. In this

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<sup>141</sup> Le Maguet, *Monde Médical*, 203-207. For no apparent reason, Dieuxivoye appears twice in this list.

<sup>142</sup> E. van Meerkerk, "The Correspondence Network of Christiaan Huygens (1629-1695)", in: C. Berkvens-Stevelinck, H. Bots and J. Häselser (eds.), *Les Grands Intermédiaires Culturels de la République des Lettres: Études de Réseaux de Correspondance du XVIe au XVIIIe Siècles* (Paris: Honoré Champion Éditeur 2005) 211-228, esp. 222-223.

<sup>143</sup> B. Haeseker, *'Vileine Hippocraten': Geneeskunde in Dichtvorm door Constantijn Huygens (1596-1687)* (Rotterdam: Erasmus Publishing 2010) 188-190.

paragraph, each man is introduced, with special emphasis on their supposed involvement with Peruvian bark.

#### *Various Medical Practitioners at the French Court*

Given the importance of the court as the driving force for the acceptance of medical novelties, the use of Peruvian bark by the King's personal physician would be the clearest indicator of the drug's appreciation in its medical trajectory. However, before Robert Talbor's ascent on the medical scene, the evidence is circumstantial at best. Antoine Vallot is a difficult candidate to evaluate. Considering that Peruvian bark was not a well-known remedy during Vallot's term of office, it would be striking to discover that the royal physician used the bark himself. Between the 1650s and 1670s, there were few physicians or illustrious patients who would lend testimony to the bark's efficacy. The failed treatment of Archduke Leopold Wilhelm in 1652 must still have been on the mind of many physicians, and the successful treatment of prominent patients in London and Paris only occurred after Vallot had died. In the official account of the King's health issues, the bark is not mentioned before Louis XIV himself was successfully treated with it in 1686. Some censorship may be involved here, however, because the King occasionally read the report himself.<sup>144</sup> Later, in the eighteenth century, Vallot was thought to have used controversial remedies like Peruvian bark, as well as tartar emetic (*l'émétique*) and laudanum, both of them chemical compounds inherited from Paracelsus's *materia medica*.<sup>145</sup> Vallot's use of these remedies is dubious, however, because the same story circulated about his predecessor, François Vautier, who had already died in 1652—even before the first quarrel about the bark broke out after the unsuccessful treatment of Archduke Leopold Wilhelm.<sup>146</sup> In short, no conclusive evidence exists that can tie Vallot to the use of Peruvian bark in court circles.

The same conclusion presents itself for Vallot's successors, since their actions were not only scrutinized by the medical community in Paris, but

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<sup>144</sup> *Journal de la Santé du Roi Louis XIV de l'Année 1647 à l'Année 1711 Écrit par Vallot, D'Aquin et Fagon, Tous Trois ses Premiers-Médecins, avec Introduction, Notes, Réflexions Critiques et Pièces Justificatives*. Ed. and ann. by J.-A. le Roi (Paris: Auguste Durand 1862) 172-173.

<sup>145</sup> J. Astruc, *Mémoires pour Servir à l'Histoire de la Faculté de Médecine de Montpellier* (A Paris: Chez P. G. Cavelier 1767) 381-382.

<sup>146</sup> L.-M. Chaudon and A.-F. Delandine, *Dictionnaire universel historique, critique et bibliographique. Neuvième Édition, 18 vols.* (Paris: De l'Imprimerie de Prudhomme Frères 1810-1812), vol. 17, 450-451 (for Vallot) and 513 (for Vautier).

by all of court society. The King's personal physicians were also involved in factional struggles at court, and they were generally criticized and ridiculed for their behaviour and methods of treatment.<sup>147</sup> Even after Louis XIV gave his approval to Peruvian bark, none of them dared to publish their views on the bark under their own name. The book that disclosed Talbor's remedy was written by Nicolas de Blégnny (1652-1722), who was a medical fortune seeker like Talbor. It was De Blégnny who included D'Aquin's experiences with the bark.<sup>148</sup> D'Aquin's successor, Guy-Crescent Fagon (1638-1718, in office between 1693 and 1715), did not have his name printed in his book about the bark, which claimed that the remedy was no longer as popular as it had been in Talbor's days, several years before.<sup>149</sup>

The court apothecary Moyses Charas operated in a different context. Having studied in Orange, he was a friend of the Huygens family. He was certainly involved in treating a tertian fever of Lodewijk Huygens, with Peruvian bark, in 1684.<sup>150</sup> Whether Charas was already as receptive to the new remedy two decades earlier is hard to tell, but he was probably not subject to the same sense of suspicion that was common among many of his fellow apothecaries in Paris. His scientific interest in new methods of treatment seems to have prevailed over his commercial distrust of Jesuit remedies, and his therapeutic outlook had a significant international

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<sup>147</sup> L. Brockliss, "The Literary Image of the Médecins du Roi in the Literature of the Grand Siècle", in: V. Nutton (ed.), *Medicine at the Courts of Europe, 1500-1837* (London and New York: Routledge 1990) 117-154.

<sup>148</sup> See note 129. For De Blégnny and his pioneering medical journalism, see Brockliss and Jones, *Medical World*, 624-627 and 646-648; and D.A. Kronick, '*Devant le Déluge*' and Other Essays on Early Modern Scientific Communication (Lanham and Oxford: Scarecrow Press 2004), Chapter 1.

<sup>149</sup> [G.-C. Fagon], *Les admirables Qualitez du Kinkina, confirmées par plusieurs Experiences, et la Maniere de s'en servir dans toutes les fièvres pour toute sorte d'âge, de sexe, & de complexions* (A Paris: Chez Martin Jouvenel 1689); the book and its subsequent editions are anonymous, but often attributed to Fagon, e.g., by Jarcho, *Quinine's Predecessor*, 71.

<sup>150</sup> Christiaan Huygens to Constantijn Huygens Jr., 22-09-1684, in the ePistolarium. The bark may not have cured Lodewijk indefinitely this time, because he contracted tertian fever several times in the ensuing months. See Christiaan Huygens to Constantijn Huygens Jr., 23-04-1685, in the ePistolarium. The friendly relationship between Huygens and Charas dated back to the quarrel over the county of Orange, which was occupied by Louis XIV after the death of stadtholder William II in 1650. The Charas family came from Orange, and Constantijn Huygens Sr. was the ambassador of the interests of the young William III, and as such charged with the negotiations for retaining the county for the Dutch Republic. See F.W. Felix, "Moyse Charas, Maître Apothicaire et Docteur en Médecine", *Revue d'Histoire de la Pharmacie*, 90: 333 (2002) 63-80, there 66-67.

orientation. The celebrated royal apothecary was ousted from the French court in 1679 because of his Protestantism and his suspicious experiments on the medicinal properties of viper flesh. Charas's expatriation coincided with an invitation from England to treat 'a person of quality' in London, which brought him into English court circles.<sup>151</sup>

Charas moved to London around the same time as Talbor moved to Paris, but Charas had already been using his own formula with the bark against quartan fevers since 1677 at the latest.<sup>152</sup> Still, the bark does not appear in his pharmacological masterpiece, *Pharmacopée royale galénique et chymique*, which was first published in 1676.<sup>153</sup> Only the final edition (from 1753) has three recipes that contain the bark.<sup>154</sup> Peruvian bark had evidently not yet found its way to the pharmaceutical literature of the 1670s, except for some pharmacopoeias, but clearly the bark was already in use in court circles.<sup>155</sup> Although Charas was somewhat atypical for a metropolitan apothecary, his example shows that Peruvian bark was also used by apothecaries, despite the sense of hostility towards the Jesuit suppliers. However, whether apothecaries like Charas had any involvement in the actual administration of the bark to court attendants remains inconclusive.

A third context further develops our understanding of the ways in which Peruvian bark became known in the French capital. Antoine Menjot, another court physician, had a particular interest in fevers. He published a book about malignant fevers himself, which appeared in numerous editions throughout the 1660s. As in the case of Charas's books, however, Menjot's work contained solidified knowledge that was common to

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<sup>151</sup> Felix, "Moyse Charas", 68, mentions the invitation; K. Dewhurst, *John Locke (1632-1704): Physician and Philosopher: A Medical Biography: With an Edition of the Medical Notes in his Journals* (London: Wellcome Historical Medical Library 1963) 55, mentions the expulsion. Cf. E.L. Furdell, *The Royal Doctors 1485-1714: Medical Personnel at the Tudor and Stuart Courts* (Rochester: University of Rochester Press 2001) 184.

<sup>152</sup> M. Charas, "Nouvelle Preparation de Quinquina & la maniere de s'en servir pour la guérison des fièvres", *Mémoires de l'Académie Royale des Sciences*, 10 (1730) 92-98. On p. 93, Charas says that he had been using Peruvian bark "depuis plus de quinze ans".

<sup>153</sup> Idem, *Pharmacopée royale galénique et chymique* (A Paris: Chez l'Auteur 1676).

<sup>154</sup> Idem, *Pharmacopée royale galénique et chymique. Nouvelle Edition* (A Lyon: Chez les Freres Bruyset 1753) 83 and 142.

<sup>155</sup> The London pharmacopoeia, which included Peruvian bark in its edition of 1677, has often been regarded as a crucial step towards acceptance of the remedy. However, the bark was already mentioned earlier in the pharmacopoeias of Utrecht, 1664 (p. 8, where it curiously appears among the roots, instead of the barks) and Brussels, 1671 (p. 9). See also the Appendix.



handbooks—not contested medical territory like Peruvian bark.<sup>156</sup> Still, **Menjot’s knowledge about fever must have been quite esteemed.** In a letter to Menjot, Constantijn Huygens Sr. discussed his concerns about **his son’s new condition** (*la nouvelle indisposition de mon Fils*), who was again troubled by fevers (*febriculae*).<sup>157</sup> Constantijn may have relied on **Menjot’s expertise in this case, which** was probably about Lodewijk again.<sup>158</sup>

How can we know if Menjot was involved with Peruvian bark at all? The evidence here is indirect. Menjot was a visitor of the *salon* of his niece, Madeleine de Souvré, Marquise de Sablé (1599-1678). The *salon* was mainly known for its debates on moral issues, but the Marquise had a keen interest in medical issues as well. Menjot was not the only physician in the Marquise’s entourage, which also included her secretary and personal physician, Noël Vallant, whom we encountered earlier. Vallant and Menjot were probably on good terms, but Vallant was more inclined to favour remedies, that were derived from nonprofessional practitioners, than the traditionally minded Menjot.<sup>159</sup> The Marquise herself shared Vallant’s curiosity: she was, for instance, very optimistic about a cordial water that she had experienced as an excellent cure for all sorts of fevers.<sup>160</sup>

### *French Salons as Centres of Knowledge Exchange*

The importance of *salons*, like that of the Marquise de Sablé, for the exchange of knowledge in the Republic of Letters, can hardly be overestimated. Christiaan Huygens, for instance, was a frequent participant in various *salons* when he was residing in Paris<sup>161</sup>, and it is very likely that he discussed fevers and Peruvian bark on several

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<sup>156</sup> A. Menjot, *Febrium malignarum Historia et Curatio* (Parisiis: Apud Gasparum Meturas 1660). Other editions were published in 1662 and 1665.

<sup>157</sup> Constantijn Huygens Sr. to Antoine Menjot, 23-01-1676, in the ePistolarium.

<sup>158</sup> **Huygens owned a copy of the 1662 edition of Menjot’s book.** See *Catalogus Variorum & Insignium in omni Facultate & Lingua Librorum* (Hagae-Comitis: Apud Abrahamum Troyel 1688) 40.

<sup>159</sup> M. Scholtens, Antoine Menjot: *Docteur en Médecine, Ami de Pascal, Réformé au Temps des Persécutions: Études Historiques et Psychologiques* (Assen: Van Gorcum & Comp./Dr. H.J. Prakke & H.M.G. Prakke 1968) 39.

<sup>160</sup> Scholtens, *Antoine Menjot*, 37. This remark is derived from a *Discours* by the Marquise, written in Vallant’s hand with corrections by the Marquise, the full text of which can be found in N. Ivanoff, *La Marquise de Sablé et Son Salon* (dissertation; Paris: Les Presses Modernes 1927) 109-120.

<sup>161</sup> H. Brown, *Scientific Organizations in Seventeenth Century France (1620-1680)* (Baltimore: Williams & Wilkins Company 1934) 232-234.

occasions. In early 1664, for example, we find him partaking in discussions about Willis's views on fermentation of the blood as a cause of fever, in the private academy hosted at the home of Pierre Bourdelot (1610-1685).<sup>162</sup> Thomas Willis had already included a brief account of his experiences with the bark in the second edition of his book on the cause and cure of fevers, published in 1660.<sup>163</sup> Not long thereafter, Huygens had met Willis on his journey to London.<sup>164</sup> Therefore, Huygens was probably well aware of Peruvian bark when he travelled to Paris. Sometime after **the meeting at Bourdelot's**, Huygens was present at the *salon* of Melchisédec Thévenot (c. 1620-1692), a direct predecessor of the Académie Royale des Sciences, which was founded in 1666. During the meeting, the astronomer Adrien Auzout (1622-1691) discussed possible remedies for quartan fever, without mentioning Peruvian bark as a candidate.<sup>165</sup> When Auzout later visited Ole Borch (1626-1690), a traveling Danish scholar who was also present at the *salon's* meeting, the astronomer's reasons for his interest in fever treatment became apparent: Auzout had just recovered from a quartan fever, not by way of any remedy he had proposed at the *salon*, but by using Peruvian bark.<sup>166</sup> Perhaps Huygens had suggested the remedy to Auzout, based on his encounter with Willis and his experience with Anna Bergerotti. More important, however, is the observation of two astronomers discussing medical issues, in the *salon's* open environment of knowledge exchange. The relationship between scholarly discussions about fevers and remedies on the one hand, and the personal experience of disease and treatment on the other, points to the fluid transition in these *salons* of medical issues into social ones, and vice versa.

The *salon* of which Menjot was a member also draws our attention to some significant personal relationships. The most frequent visitors came from various backgrounds: university-trained scholars, aristocrats, Protestants (like Menjot and Vallant), Jesuits, Jansenists, and even

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<sup>162</sup> O. Borch, *Olai Borrichii Itinerarium 1660-1665: The Journal of the Danish Polyhistor Ole Borch*. Ed., introd. and index by H.D. Schepelern, 4 vols. (Copenhagen: C.A. Reitzels Forlag, and London: E.J. Brill 1983), vol. 3, 223-224.

<sup>163</sup> T. Willis, *Diatribae duae Medico-Philosophicae* (Londini: Typis Tho. Roycroft; Impensis Jo. Martin, Ja. Allestry, & Tho. Dicas 1660) 143-144; cf. Jarcho, *Quinine's Predecessor*, 46-47.

<sup>164</sup> Melchisédec Thévenot to Christiaan Huygens, 07-05-1661, in the ePistolarium. The **encounter is absent from Huygens's own account of his journey to London, in the *Oeuvres Complètes*, vol. 22, 566-576.**

<sup>165</sup> Borch, *Itinerarium*, vol. 3, 383.

<sup>166</sup> *Ibidem*, vol. 3, 404: "Visitavit me Dn. Ausou sanatus à 4tanâ per gannanaperidem seu chinchinam."

atheists.<sup>167</sup> Their differences did not stop them from participating in the *salon's* meetings. This shatters the image of Paris as the conservative stronghold of Galenic medicine. The Marquise facilitated a free exchange of ideas, and Peruvian bark may have benefited from this. Even though the *salon* was not exclusively devoted to scientific or medical issues, it provided a platform for practitioners like Vallant and Menjot to acquaint themselves with new knowledge of remedies, like Peruvian bark. It is even possible that Vallant and Menjot were the ones to introduce their Parisian acquaintances to Peruvian bark. They could well have acquired knowledge of the bark as students in Montpellier. There is a letter from a Jesuit apothecary to Vallant, who studied in Montpellier between 1650 and 1655<sup>168</sup>, to encourage Vallant to return to his *alma mater*, when he had a hard time establishing his own clientele in Paris, after having moved there in 1657.<sup>169</sup> Menjot, who was some fifteen years older than Vallant, might also have learned about Peruvian bark, from the same apothecary, during his own student days.<sup>170</sup>

**The importance of Montpellier for the bark's transfer to Northern Europe** is not self-evident. Many eminent physicians in Paris had a medical degree from Montpellier (Vautier, Vallot, Menjot and Vallant among them<sup>171</sup>), but there is little to suggest that they brought their knowledge of therapeutic novelties like Peruvian bark with them. If they did, it was only in Paris that they put this knowledge to practical use. For instance, we find some noteworthy occurrences of the remedy in Vallant's *Portefeuille*. In two places, there are elaborate discussions about the treatment of quartan fever, and Peruvian bark features prominently in them. The sections are dated January 14 and September 26, 1676, thus predating Talbor's arrival in Paris and the ensuing hype about the *remède anglois*. The accounts describe in some detail when to use the bark, in what quantity, and with what additional ingredients.<sup>172</sup> What the examples of Huygens and Vallant indicate is that, again, Peruvian bark was already in vogue in scholarly circles Paris, well before Talbor's arrival

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<sup>167</sup> Scholtens, *Antoine Menjot*, 40-46.

<sup>168</sup> Le Maguet, *Monde Médical*, 442-443.

<sup>169</sup> Ibidem, 446-447. The letter was written by Père Rochette, "apothicaire et religieux du Collège des Jésuites de Montpellier".

<sup>170</sup> Although they might both have known Rochette, Menjot may not have known Vallant as a student in Montpellier. Vallant only commenced his studies in 1650, whereas Menjot had moved to Paris around 1645. The year is deduced from Scholtens, *Antoine Menjot*, 33, who maintains that Menjot went to Paris around the age of 30.

<sup>171</sup> Chaudon and Delandine, *Dictionnaire*, vol. 17, 450-451 (Vallot) and 513 (Vautier); Ivanoff, *La Marquise de Sablé*, 46n1 (Menjot) and 47n3 (Vallant).

<sup>172</sup> Le Maguet, *Monde Médical*, 463-465.

in 1679. Apparently, new remedies were as much a part of *salon* discussions as any other topic.

### Conclusion: Commodification Precedes Codification and Understanding

The analysis of various contexts demonstrates the constant interaction of the medical, commercial, and cultural trajectories of Peruvian bark. For the three individuals discussed above, the interaction with Peruvian bark was wrapped up in the dynamics of court life and scholarly culture in Paris. The circumstances of these practitioners could stimulate or discourage the use of the bark. Vallot would have had to be reticent about his opinions on Peruvian bark, and not just because of a possible loss of face in the medical community, as a result of his association with a controversial remedy. Moreover, he had to uphold his personal position in the highly competitive setting of French court culture. His successors had to deal with the opposite situation: when the bark enjoyed significant popularity, they could hardly avoid its use, even though the properties of the bark were still largely shrouded in mystery. Meanwhile, an experimental practitioner like Charas did not wait for anyone's approval of the remedy. He produced his own formula, thereby familiarizing himself with the bark at a stage when public adherence to it could still give rise to suspicion within the medical community, as Charas himself experienced. Those who were less inclined to favour new remedies, like Menjot, were still likely to encounter Peruvian bark at some point. *Salon* gatherings could be breeding grounds for new knowledge to trickle into the minds of a substantial portion of courtly and scholarly society in Paris: people who came from very different backgrounds. The proximity of these, and many other contexts in the French capital, created an environment where many different people could easily encounter many different novelties, as exemplified by the interaction of physicians and Jesuit apothecaries in a single street. Paradoxically, however, these interactions have not left many traces for the historian. At first sight, a journey along many unsubstantiated interactions of people with Peruvian bark appears like a historical hodgepodge. At the same time, it is highly plausible that enigmatic encounters like these have made historical personae aware of the growing significance of new medical knowledge and commodities.

What is evident is that fever theory was stable by appearance, but dynamic enough to allow new remedies to enter the loopholes in the framework and establish their own unique position. This is what happened to Peruvian bark, which did not fit into a purely Galenic system, but could appeal to those who adhered more to a blend of Galenic and mechanistic

medicine. New remedies adapted to a framework that was reinventing itself, without doing away with traditional notions altogether.<sup>173</sup> At the same time, practical considerations for using Peruvian bark often prevailed over theoretical ones. The personal experience of disease, and hope for a practical applicability of new remedies, were common characteristics of medical professionals and their patients alike. Without understanding the therapeutic details of the remedy, and without widely accepted written testimonies of its usefulness, adherents and opponents accommodated to a new situation in which the bark could no longer be ignored. Accumulated knowledge and experience alone provided a sense of credibility. Already before 1680, it had become unimaginable that the bark would disappear again from the medical market.

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<sup>173</sup> As has been argued by Cook, "Markets and Cultures", for Peruvian bark and other exotic substances. The relationship between remedies and changing medical theory has been explored in detail by S. Klerk, *Galen Reconsidered: Studying Drug Properties and the Foundations of Medicine in the Dutch Republic ca. 1550-1700* (dissertation; Utrecht: Faculteit Bètawetenschappen Fisme 2015).

## Chapter 2. Brokers in Amsterdam and the Drug Trade: Essential Intermediaries on the Medical Market in the Eighteenth Century<sup>174</sup>

### Introduction

The previous chapter highlighted some of the contexts in which Peruvian bark could be found, with an emphasis on Paris in the second half of the seventeenth century. It was observed that knowledge about Peruvian bark surfaced on quite some occasions, even though the actual presence of the bark is often hard to prove. In this chapter, however, Peruvian bark will be analysed not with regard to circulation of knowledge, but as a commodity. For that, we must jump in time and space, to eighteenth-century Amsterdam. This chapter analyses the early modern drug trade from the point of view of professional brokers in Amsterdam: intermediate figures, whose activities and connoisseurship helped successfully to channel the global flow of *materia medica* to local customers, notably druggists and apothecaries.

From the early eighteenth century onwards, small groups of brokers (*makelaars*) **within the Brokers' Guild** (*Makelaarsgilde*) of Amsterdam start to occur in sources as recognizable, self-identified groups of specialized go-betweens for certain products. One such a group were brokers in drugs (*makelaars in drogerijen*). They mainly organized public auctions of crude drug components, that were imported into Amsterdam from across the world. Throughout the century, the responsibilities and activities of brokers remained virtually the same, but the scale increased significantly: both the number of brokers in drugs, and the number of auctions they organized, grew tremendously over the course of the eighteenth century. Moreover, the sustained advertising practice of these brokers, who announced each auction in various Dutch newspapers, reveals the origin of a supralocal—perhaps even national—market for *materia medica*. In sum, the focus on the drug trade from the perspective of brokers; the diachronic approach to trade in *materia medica*; and the emphasis on advertising as a precursor to modern pharmaceutical publicity, are all largely unexplored aspects of the history of pharmacy.

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<sup>174</sup> An early version of this chapter was presented at the conference 'Materia Medica on the Move, 2<sup>nd</sup> Edition', Artis Library, Amsterdam (October 5, 2017). I thank all the attendants for their critical remarks and suggestions.

The global trade in medicaments has enjoyed a lot of scholarly interest in recent years. It has been argued that the drug trade developed into a separate, global commercial flow in the early modern period, mainly at the hands of 'specialist wholesale merchants' and missionary orders, depending on their geographical locality.<sup>175</sup> Several studies have investigated the flow of medical commodities from across the world to local consumers in Europe, and the networks that facilitated this.<sup>176</sup> The Dutch Republic has received little attention in this respect. The pioneering work of D.A. Wittop Koning is still valuable to study the drug trade of the seventeenth century.<sup>177</sup> The work of A.M.G. Rutten has done much to spark the interest in the flow of medicaments in the Dutch Atlantic economy of the eighteenth century.<sup>178</sup> However, no studies have attempted to explore long-term developments in the availability and consumption of *materia medica* in the Dutch Republic. No records of either merchants or druggists and apothecaries can offer a comprehensive image of trade in medical commodities: for this, we should turn our attention to brokerage. But first, two issues should be clarified: what exactly are drugs, and what exactly are brokers?

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<sup>175</sup> H.J. Cook and T.D. Walker, "Circulation of Medicine in the Early Modern Atlantic World", *Social History of Medicine*, 26:3 (2013) 337-351, there 344.

<sup>176</sup> Wilson, *Pious Traders in Medicine*; P. Chakrabarti, *Materials and Medicine: Trade, Conquest and Therapeutics in the Eighteenth Century* (Manchester: Manchester University Press 2010); P. Wallis, "Exotic Drugs and English Medicine: England's Drug Trade, c. 1550-c. 1800", *Social History of Medicine*, 25:1 (2012) 20-46; T.D. Walker, "The Medicines Trade in the Portuguese Atlantic World: Acquisition and Dissemination of Healing Knowledge from Brazil (c. 1580-1800)", *Social History of Medicine*, 26:3 (2013) 403-431; S. Gänger, "World Trade in Medicinal Plants from Spanish America, 1717-1815", *Medical History*, 59:1 (2015) 44-62; C. Fertig and U. Pfister, "Coffee, Mind and Body: Global Material Culture and the Eighteenth-Century Hamburg Import Trade", in: A. Gerritsen and G. Riello (eds.), *The Global Lives of Things: The Material Culture of Connections in the Early Modern World* (London and New York: Routledge 2016) 221-240; J. Wimpler, *The Sun King's Atlantic: Drugs, Demons and Dyestuffs in the Atlantic World, 1640-1730* (Leiden and Boston: Brill 2017); C. Griffin, "Russia and the Medical Drug Trade in the Seventeenth Century", *Social History of Medicine*, 31:1 (2018) 2-23; J.W. Veluwenkamp and W. Scheltjens, "Baltic Drugs Traffic, 1650-1850. Sound Toll Registers Online as a Source for the Import of Exotic Medicines in the Baltic Sea Area", *Social History of Medicine*, 31:1 (2018) 140-176.

<sup>177</sup> D.A. Wittop Koning, *De Handel in Geneesmiddelen te Amsterdam tot Omstreeks 1637* (dissertation; Purmerend: J. Muusses 1942). Cf. note 194 below.

<sup>178</sup> A.M.G. Rutten, *Dutch Transatlantic Medicine Trade in the Eighteenth Century under the Cover of the West India Company* (2<sup>nd</sup> edition; Rotterdam: Erasmus Publishing 2000); idem, *Blue Ships: Dutch Ocean Crossing with Multifunctional Drugs and Spices in the Eighteenth Century*. Transl. by J. Wormer (Rotterdam: Erasmus Publishing 2008). Rutten's works are mainly concerned with the flow of medicaments to the Dutch colonies in the Atlantic, not with the provision of remedies to the Dutch Republic.

First of all, what is meant by 'drugs'? Throughout this chapter, the word 'drug' is used as the equivalent of the premodern Dutch word *drogerijen*. This word has a double connotation, as both 'dried goods' and 'medicinal substances'.<sup>179</sup> The first meaning is most pertinent here. Many substances that were used in pharmacy were derived from native or European plants, that did not require a global commercial chain to reach Dutch apothecaries. *Drogerijen* from tropical regions, however, were best processed, shipped and stored as dried substances. As many of the exotic products, that poured into Europe in the early modern period, had some medical application—or were even exclusively used in medicine—the word *drogerijen* began to be used for medicinal substances only, in practice.

Nevertheless, there were some fuzzy edges to the concept. Some of the biggest products (in terms of trade volume) were hardly used in pharmacy, or certainly not in the quantities that we find in trade records. One example is vanilla (*banillen* in early modern Dutch), which could be used against fevers, rheumatism and nervous disorders.<sup>180</sup> However, vanilla was not used in pharmacy very much, and not any more by the early nineteenth century.<sup>181</sup> Similarly, isinglass (called *huisenblas*, *bereidseel*, *vislijm* or *ichthyocolle*), a collagen made from the swim bladder of sturgeons, was used in pharmacy for certain plasters, but more prominently in beer and wine production. Nicolas Lémery (1645-1715) maintained that French isinglass mainly came from Muscovy and was acquired from the Dutch, which explains the large volumes we find for this substance in auction records.<sup>182</sup> Some products were traded in such large quantities that they had a separate commercial chain. Examples include indigo, a highly valued pigment, for which another group of specialized brokers was active in Amsterdam; and—especially important for pharmaceutical purposes—opium.<sup>183</sup> In practice, of course, which products were available at auctions was also dependent on what

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<sup>179</sup> <http://www.etymologiebank.nl/trefwoord/drogerij>.

<sup>180</sup> Rutten, *Dutch Transatlantic Medicine Trade*, 120.

<sup>181</sup> M.N. Beets, *Woordenboek van Droogerijen*, 4 vols. (Te Amsterdam: bij G. J. A. Beijerinck 1825-[1856]), vol. 1, 660.

<sup>182</sup> N. Lémery, *Woordenboek of Algemeene Verhandeling der enkele Droogeryen* (Te Rotterdam: By Jan Daniel Beman 1743) 357.

<sup>183</sup> Some opium does occur in public auctions, but the volumes are too modest to allow a reasonable comparison with trade volumes that were available on the global market, as described e.g. by H. Derks, *History of the Opium Problem: The Assault on the East, ca. 1600-1950* (Leiden and Boston: Brill 2012), esp. **Appendix 2, "The Dutch Opium Import, 1678-1816", 753-755.**



merchants had to offer, which explains the incidental occurrences of products like ivory, tropical woods, tea and coffee.

Second, what do we mean by brokers? In the global flow of knowledge and goods in the early modern period, brokers can be found everywhere. A 'broker' is often regarded as someone who assumed a role as intermediary, to procure certain information or products on someone **else's behalf. They have certainly been regarded as such in modern research about early modern medicine and pharmacy.**<sup>184</sup> Because of the omnipresence of these informal go-betweens, we would almost forget that 'broker' was also a formal profession in the early modern period. Many brokers (*makelaars*) were active in the Dutch Republic, and **Brokers' Guilds** existed in several cities.<sup>185</sup> The nature and activities of professional brokers in drugs in Amsterdam are the subject of paragraph 2.2.

Even though political and economic upheaval in the eighteenth century greatly hindered a stable supply of non-European *materia medica* to the Dutch Republic, brokerage in drugs presents a remarkable case of economic prosperity, against the general picture of economic decline in the eighteenth-century Dutch Republic (which will be discussed in paragraph 2.1 below). These brokers maintained a steady, flourishing practice, and they continued their involvement in the drug trade with **success until (and after) the Brokers' Guild was abolished in 1811. This** begs the question: how did the brokers in drugs of Amsterdam manage to transform the trade in *materia medica* into a specialism, and how were they able to maintain this thriving niche market during and beyond the eighteenth century?

This chapter consists of three paragraphs, which investigate the drug trade from general to particular. The first paragraph discusses the nature of public auctions in eighteenth-century Amsterdam. Which sources do we have; how and why were these auctions organized; who participated in the organization; which procedures were followed; and how were transactions completed? The practice of auctions of *drogerijen* is compared with the description of auctions in *De Koophandel van Amsterdam* (The Commerce of Amsterdam), an important trade manual

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<sup>184</sup> E.g. in F. Egmond, "Apothecaries as Experts and Brokers in the Sixteenth-Century Network of the Naturalist Carolus Clusius", *History of Universities*, 23:2 (2008) 59-91; and, more generally, in S. Schaffer e.a. (eds.), *The Brokered World: Go-Betweens and Global Intelligence, 1770-1820* (Sagamore Beach: Science History Publications 2009).

<sup>185</sup> <https://dataverse.nl/dataset.xhtml?persistentId=hdl:10411/10101>, Database Dutch Craft Guilds, accessed on 09-08-2017. **The database lists Brokers' Guilds in Amsterdam (1612-1811), Rotterdam (1631-1811) and Enkhuizen (1639-1695) in the province of Holland; Middelburg (<1545-1829), Vlissingen (1663-1804) and Sluis (1380-1572) in Zeeland; and Venlo (>1400-?) in Limburg.**

by Jacques Le Moine de l'Espine. This paragraph shows a great deal of continuity. The nature of public auctions changed little over the course of the eighteenth century. Behind this procedural stability, however, we can observe how specific practices transformed the brokerage of drug components into a specialized niche market, characterized by quantitative growth. These practices are the topic of the second paragraph. How did a group of brokers in drug components evolve into a solid unit of intermediaries, who tacitly came to be regarded as an indispensable part of the commercial chain? In the third and final paragraph, the practices of brokers are illustrated with a case study of Peruvian bark, which occurs frequently in the records of auctions. Peruvian bark travelled through many places and people before it went through the hands of brokers in Amsterdam. How did local and global developments condition the supply of Peruvian bark? Drawing mainly from the advertisements that announced the auctions where it was sold, this paragraph shows that brokers in drugs succeeded in facilitating a steady supply of Peruvian bark, even though their grip on the global chain of commerce was limited, and even though Peruvian bark was hotly debated in the Spanish empire and beyond for its botanical, medicinal, commercial and imperial status.

## 2.1. Auctions of Drugs in Eighteenth-Century Amsterdam: Continuous Procedures and Intensifying Practices

This paragraph analyses, **first, the Brokers' Guild of Amsterdam, and the** large amount of unexplored primary sources which their activities have left. Then, the paragraph goes on to investigate the nature of public auctions, that were organized by the brokers.

### ***The Brokers' Guild of Amsterdam***

Professional brokers had been active in Amsterdam since the fourteenth century, but they had been prohibited to practice from 1495 onwards. They were again allowed in 1530, on the condition that they were **appointed by the city's magistrates**.<sup>186</sup> An official ordinance was issued in 1612, although the word 'guild' only appeared for the first time in a declaration that was drawn up by the brokers themselves in the same year.<sup>187</sup> Brokers soon transformed into a much-appreciated group of go-betweens, essential to facilitate the transit of goods that entered Amsterdam. Their main business was the organisation of public auctions

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<sup>186</sup> J. Wagenaar, *Amsterdam, in zyne Opkomst, Aanwas, Geschiedenissen, Voorregten, Koophandel, Gebouwen, Kerkenstaat, Scholen, Schutterye, Gilden en Regeeringe. Negende Stuk* (Te Amsterdam: By Isaak Tirion 1766) 188-189.

<sup>187</sup> *Ibidem*, 189.

of all sorts of consumer products, although a significant number of brokers was involved in the even more important financial market of Amsterdam. After the French invasion of 1795, the authorization for organizing public auctions shifted from the municipal to the French authorities, and later to the Dutch king. The guild was formally abolished in 1811, but many brokers retained their position and practice with success. Public auctions of various products continued to be organized well into the twentieth century. Furthermore, brokers could have ancillary positions in commercial firms, where they operated—on their own, or with partners—as entrepreneurs for the products in which they specialized.<sup>188</sup> The occupational organization of brokers continued beyond the eighteenth century as well. Most importantly, the fund for the social protection of guild members endured, which was supervised by the Managers of the **Former Brokers' Guild** (*Overlieden van het Voormalig Makelaarsgilde*), **later the Commissioners of the Brokers' Office** (*Commissarissen van het Makelaarskantoor*). **The Brokers' Office** (*Makelaers Comptoir*) on the Nieuwezijds Voorburgwal was the headquarters of the guild since 1633. The archive of the guild was stored there until it was transferred to the Amsterdam City Archives in 1829, where it can still be found today.<sup>189</sup>

To study the day-to-day activities of brokers, we can rely on three sources: archival material, newspaper advertisements and price currents. Each of these sources has received too little consideration from historians, yet together they offer a very rich and accurate picture of commercial activity in eighteenth-century Amsterdam. They provide the basic constituents for a new, detailed narrative **about Amsterdam's urban economy** in the eighteenth century, as can be seen in Table 4. Because these sources are so little known, each of them is first introduced in some detail.

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<sup>188</sup> An example is the firm of Gerrit de Vos, broker in drugs from 1775 until his death in 1823. His company was established in 1775, he was joined by broker Gerardus de Vries (1786-1868) in 1807, and their successors continued their business well into the twentieth century. See D.H. Roodhuyzen de Vries (comp.), *G. de Vries & Zonen 1775-1950: Gedenkboek Uitgegeven ter Gelegenheid van het 175-Jarig Bestaan van de Vennootschap*. Introd. by C.P. van Eeghen (Amsterdam 1950).

<sup>189</sup> <https://archieff.amsterdam/inventarissen/overzicht/366.nl.html>, Introduction to the **Archive of the Guild and Brewer's Association** (*Archief van de Gilden en het Brouwerscollege*), accessed on 09-08-2017.

	<b>Mayor's Archive</b>	Ads	Price currents
Brokers	+	+	-
Dates and hours	+	+	-
Auction locations	+	+	-
Storage locations	+	+/-	-
Product names	+	+/-	+
Amounts	+	+/-	-
Prices (valued by brokers)	+/-	-	+
Prices (paid by buyers)	+/-	-	-
Buyers	+	-	-
Conditions (discounts etc.)	+	-	-

*Table 4.* Data features of the most important sources on the drug trade, by brokers in eighteenth-century Amsterdam.

#### *A Wealth of Unexplored Primary Sources*

It is astonishing that the brokers of Amsterdam have received so little attention from historians, considering the massive record which their activities have left in the archives. The archive of the **Brokers' Guild** itself (which is not considered in this chapter) is the largest among all the guild archives of Amsterdam.<sup>190</sup> **Besides this collection, the Mayor's Archive** (*Archief van de Burgemeester*), which can also be found in the Amsterdam City Archives, contains the records of public auctions that were organized by brokers in and beyond the eighteenth century. **Within the Mayor's Archive, separate archives of brokers' activities have been preserved** for voluntary auctions of houses, lots and bonds; of wood; and of ships.<sup>191</sup> Most important for the present purpose is the archive that contains many thousands of auctions for every imaginable consumer product, which demonstrate both the breadth and size of commercial activities in the city. This archive contains some hiatuses for the 1720s and 1730s, but offers an almost complete picture of the market economy of Amsterdam from

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<sup>190</sup> Ibidem.

<sup>191</sup> Respectively: Amsterdam City Archives, 5068 (Archief van de Burgemeesters: willige verkopen (veilingen van huizen, erven en obligaties)); 5070 (Archief van de Burgemeesters: verkopen van houtwaren door makelaars); and 5071 (Archief van de Burgemeesters: scheepsverkopen door makelaars).

1736 onwards.<sup>192</sup> As can be seen in Table 4, the records of these auctions contain many basic data features, useful to study transactions on a micro level. Nevertheless, only a handful of studies have been written about the activities of brokers of Amsterdam.<sup>193</sup>

The archival data is complemented by data from newspaper advertisements, which announced the same auctions that can be found in **the Mayor's Archive. The brokers of Amsterdam advertised frequently in all the important newspapers of cities in the province of Holland.** These announcements contained the basic elements of scheduled auctions: day, hour, and location of the auction; the brokers who organized it; and the most important products that would be sold (see Table 4). Because a substantial number of eighteenth-century newspapers has been digitized, advertisements provide an easy point of access for researchers to explore the wealth of material that public auctions have to offer. Moreover, data from advertisements can fill the gaps in the archival data for the early decades of the eighteenth century: many auctions, for which no archival record has survived, can be traced in newspaper advertisements.

Finally, invaluable information about commodities in eighteenth-century Amsterdam is provided by price currents. Brokers were the ones who determined the standard prices of the products in their domain, which were published every week in price currents. Hundreds of price currents have survived, but they have never been studied in detail for the history of *materia medica*. Although this source offers important financial data about the transactions that are found in the archive and advertisements, the price currents will be left out of consideration in this chapter.<sup>194</sup>

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<sup>192</sup> Amsterdam City Archives, 5069 (*Archief van de Burgemeesters: verkopeningen van koopmanschappen door makelaars*). The archive consists of two sections: the records of public auctions for the period 1721-1808 (inv. nos. 1-190); and the books with registrations of these same auctions for the period 1749-1813 (inv. nos. 191-221).

<sup>193</sup> The few studies devoted entirely or in part to the early modern history of brokers in Amsterdam include: H. Malsen, *Geschiedenis van het Makelaarsgild te Amsterdam 1578-1933* (Amsterdam: Ten Have 1933); T. Stuart, *De Amsterdamsche Makelaardij: Bijdrage tot de Geschiedenis onzer Handelwetgeving* (dissertation; Amsterdam: Spin 1879); Roodhuyzen de Vries (comp.), *G. de Vries & Zonen 1775-1950*.

<sup>194</sup> The price currents were the basis of the classic work of N.W. Posthumus, *Nederlandsche Prijs-geschiedenis*, 2 vols. (Leiden: Brill 1943-1964), which lists the early modern price development of many products. The most complete inventory of extant issues of price currents can be found in J.J. McCusker and C. Gravesteijn, *The Beginnings of Commercial and Financial Journalism: The Commodity Price Currents, Exchange Rate Currents, and Money Currents of Early Modern Europe* (Amsterdam: Nederlandsch Economisch-Historisch Archief (NEHA) 1991). Although drugs (*drogerijen*) occur as a separate category of products in most price currents, they were left out of consideration by Posthumus, probably because of their relative insignificance

Public auctions had a more local character than the activities of trading companies, which operated on a continental or global level (as was discussed in the General Introduction). The drug components that were auctioned in Amsterdam were mainly purchased by local druggists and apothecaries, and thus intended for a local market. It is therefore much easier to determine the actual supply and demand of certain medical substances for practitioners and patients in the city itself, than it would have been if we were to limit ourselves to e.g. port cities, where the possible redistribution of commodities to other countries largely obscures the actual need for and consumption of these products.<sup>195</sup> Another, related benefit of using public auctions is that it allows us to disentangle the actual medical appliance of non-European natural substances from other potential uses. Many colonial products were not only used as medicaments, but also as e.g. pigments, dyes, ingredients for perfumery, foodstuffs, or recreational drugs. It is only when these products were sold to druggists or apothecaries that we can regard them as drug components per se. Together with the magnitude of the available sources, these features make it possible to study long-term developments in the trade in medicinal substances, many of which were exclusively used in medicine.

### *Positioning Advertisements in the Economy of the Dutch Republic*

The use of advertisements to study the economic history of the Dutch Republic, with special attention to imports of crude drug components, is not a self-evident move. Therefore, a brief historiographical digression is required to position advertisements in Dutch economic history, on two levels. First, the apparent success of brokers must be correlated to the general image of the Dutch economy in a global, eighteenth-century perspective. Second, the choice to focus on brokers in Amsterdam for the

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in terms of trade volume. Posthumus provided his research material for research on the Dutch drug trade by Wittop Koning, *Handel in Geneesmiddelen*. However, Wittop Koning only analysed the prices of drugs for the rather arbitrary period of 1609-1637. No systematic work has been done on prices of drugs in the Dutch Republic ever since, although some scattered findings were published by Wittop Koning, "Bijdragen tot de Pharmaceutische Prijsgeschiedenis", *Bulletin van de Kring voor de Geschiedenis van de Pharmacie in Benelux*, 17 (1958) 1-38; idem, "Bijdragen tot de Pharmaceutische Prijsgeschiedenis II: Een Viertel Inventarissen van het Pharmaceutisch Bedrijf van A. d'Ailly uit de Jaren 1799-1802", *Bulletin van de Kring voor de Geschiedenis van de Pharmacie in Benelux*, 28 (1961) 1-20; and A.M.G. Rutten, "Farmaceutische Prijsgeschiedenis van de Westindische Compagnie", *Pharmaceutisch Weekblad*, 127:10 (1992) 260-262.

<sup>195</sup> An approach taken e.g. by Wallis, "Exotic Drugs and English Medicine".

import of exotic substances must be explained, with reference to the position of the Dutch trading companies for the East and West Indies. After all, these companies operated more clearly on a global level than brokers, who worked for a national market at best.

Despite efforts of economic historians, the general image persists that the eighteenth century was an era of economic decline for the Dutch Republic, as compared to the Golden Age that preceded it. De Vries, **however, has argued that we should speak of 'relative and qualitative decline' for certain trades and industries, rather than about general and/or absolute economic decline.**<sup>196</sup> Although he does not refer to the drug trade or drug manufacture, by druggists or apothecaries, he does observe success in several business in Amsterdam, that were closely related to drug manufacture, like the paints and chemicals industries.<sup>197</sup> Because these industries used many of the same substances that were also staple products in apothecary shops, it could be hypothesized that the drug trade and drug manufacture might have experienced similar success. De Vries regarded foreign competition as the main cause of difficulties in many industries in the eighteenth century.<sup>198</sup> If this is the case, then several branches were nevertheless capable of retaining or renewing a position of economic significance, by means of specialisation and differentiation, as Voorthuysen maintained.<sup>199</sup> As will be argued in this chapter, the brokers in drugs of Amsterdam procured medicinal substances to a national market at best, which means that foreign competition would not have been problematic for their success. Likewise, it will be argued that they **created their own 'niche' market and their own specialized product knowledge.** This could have been their means of survival in an economy of decreasing commercial activity. If economic decline stimulated specialisation in certain branches of the economy, then we regard brokerage in drugs—the choice to focus on a specific type of products and to develop practical connoisseurship of those products—as an exemplary case.

If the drug trade is expected to have maintained itself in an otherwise unfavourable economic environment, then why should we focus on brokers instead of the East and West India companies? The local activities of brokers can be expected to reflect much smaller transactions than trading companies, that operated on a global level. Moreover, these

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<sup>196</sup> J. de Vries, *De Economische Achteruitgang der Republiek in de Achttiende Eeuw* (2<sup>nd</sup> edition; Leiden: Stenfert Kroese 1980).

<sup>197</sup> *Ibidem*, 90 and 98.

<sup>198</sup> *Ibidem*, 98-100 and 172.

<sup>199</sup> W.D. Voorthuysen, *Koopman Amsterdam: Beknopte Economische Geschiedenis van Amsterdam 1200-1795* (Amsterdam: Aksant 2001) 153-154.

companies themselves have left substantial primary material about the flow of commodities, which might be more transparent about the global ramifications of trade in medicinal substances than the records of brokers. However, data from public auctions has some important benefits when compared to more conventional sources to study the early modern drug trade, such as port registers, or cargo and auction lists of trading companies, like the Dutch East and West India Companies.

To begin with, the West India Company (*Westindische Compagnie*, or WIC) was not a grand supplier of drug components to the Dutch Republic in the eighteenth century. The original Company (founded in 1621) was lifted in 1674 and resurrected in the following year, after which it was mainly concerned with the maintenance of the Dutch West Indian colonies.<sup>200</sup> Among the commodities that were transported back to the Dutch Republic in the eighteenth century (such as are listed in trade manuals) we find no medicaments at all.<sup>201</sup> However, the Company did bring in some goods that were staple products in apothecary shops, especially West African substances like gum arabic and melegueta pepper.<sup>202</sup> Most medicinal substances from the Atlantic world, however, came from Spanish territories, and were thus shipped into Europe not by the Dutch themselves, but probably only redistributed from Spain to other parts of Europe (cf. paragraph 2.3 below).

The story is more complicated for the East India Company (*Verenigde Oostindische Compagnie*, or VOC), which transported many commodities that were used in medicine (among other things), and which held a *de facto* trade monopoly for several of these, like cinnamon.<sup>203</sup> However, the active role of the VOC as a procurer of new, exotic natural substances is still very much disputed territory among historians. On the one hand, they have emphasized that the VOC was first of all a trading company, which

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<sup>200</sup> H. den Heijer, *Geschiedenis van de WIC: Opkomst, Bloei en Ondergang* (4<sup>th</sup> edition; Zutphen: Walburg Pers 2013) 9-10.

<sup>201</sup> J. Le Moine de l'Espine, *De Koophandel van Amsterdam, naar alle Gewesten des Weerelds. Tweede Deel. Met alle naauwkeurigheid opgesteld, en beschreven, door Isaac le Long (t'Amsterdam: By Andries van Damme, en Johannes Ratelband 1727)* 663-679.

<sup>202</sup> J. Postma, "West African Exports and the Dutch West India Company", *Economisch en Sociaal-Historisch Jaarboek*, 36 (1973) 53-74, there 58 (Table I). Postma's sources list both '[melegueta] pepper' and 'cardemom', which usually refer to the same product, that was known in apothecaries as *Cardamomum majus* (i.e. greater cardamom, melegueta pepper, or 'grains of paradise'). For gum arabic and melegueta pepper, cf. Rutten, *Dutch Transatlantic Medicine Trade*, 121-122.

<sup>203</sup> F. Gaastra, *Geschiedenis van de VOC: Opkomst, Bloei en Ondergang* (11<sup>th</sup> edition; Zutphen: Walburg Pers 2012) 54-55.



means that new substances that were of cultural or scientific value were only of interest to (and commercialized by) the VOC if financial benefits could be expected. As such, the VOC directors were generally reluctant to involve themselves in activities like bioprospecting for medicinal plants, which were often of little economic significance.<sup>204</sup> On the other hand, there is evidence that the VOC has shown an interest in exploring new medicinal plants<sup>205</sup>, **but no thorough analysis of the company's practices** in this regard has ever been undertaken. This is a surprising blank spot, given the fact that extensive studies of this kind do exist for other major powers in the early modern world, notably England<sup>206</sup> and Spain.<sup>207</sup> A detailed inquiry in VOC policies and activities of bioprospecting is therefore highly desirable. However, the importance of purely medicinal substances in VOC records can be expected to be of minor significance in terms of trade volume, as compared to bulk products. In contrast, public auctions of drugs in Amsterdam were mainly about medicinal substances (which were, moreover, clearly intended for the domestic market). This means that public auctions offer a relatively modest, but much more fruitful source than trade company records, to study the drug trade in the Dutch Republic.

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<sup>204</sup> K. van Berkel, "Een Onwillige Mecenaz? De VOC en het Indische Natuuronderzoek", in: idem, *Citaten uit het Boek der Natuur: Opstellen over Nederlandse Wetenschapsgeschiedenis* (Amsterdam: Uitgeverij Bert Bakker 1998) 131-146; similar ideas are expressed in idem, "Empire without Science? The Dutch Scholarly World and Colonial Science around 1800", in: P. Boomgaard (ed.), *Empire and Science in the Making: Dutch Colonial Scholarship in Comparative Global Perspective, 1760-1830* (New York: Palgrave Macmillan 2013) 89-108. Cf. K. Davids, "Dutch and Spanish Global Networks of Knowledge in the Early Modern Period: Structures, Connections, Changes", in: L. Roberts (ed.), *Centres and Cycles of Accumulation in and around the Netherlands during the Early Modern Period* (Zürich and Münster: LIT Verlag 2012) 29-52; and idem, "The Scholarly Atlantic: Circuits of Knowledge between Britain, the Dutch Republic and the Americas in the Eighteenth Century", in: G. Oostindie and J.V. Roitman (eds.), *Dutch Atlantic Connections, 1680-1800: Linking Empires, Bridging Borders* (Leiden and Boston: Brill 2014) 224-248.

<sup>205</sup> P. Baas, "De VOC in Flora's Lusthoven", in: L. Blussé and I. Ooms (eds.), *Kennis en Compagnie: De Verenigde Oost-Indische Compagnie en de Moderne Wetenschap* ([Amsterdam]: Balans 2002) 124-137; P. Boomgaard, "For the Common Good: Dutch Institutions and Western Scholarship on Indonesia around 1800", in: idem (ed.), *Empire and Science in the Making: Dutch Colonial Scholarship in Comparative Global Perspective, 1760-1830* (New York: Palgrave Macmillan 2013) 135-164.

<sup>206</sup> A. Winterbottom, *Hybrid Knowledge in the Early East India Company World* (Basingstoke: Palgrave Macmillan 2016).

<sup>207</sup> D. Bleichmar, *Visible Empire: Botanical Expeditions and Visible Culture in the Hispanic Enlightenment* (Chicago and London: University of Chicago Press 2012); M.J. Crawford, *The Andean Wonder Drug: Cinchona Bark and Imperial Science in the Spanish Atlantic 1630-1800* (Pittsburgh: University of Pittsburgh Press 2016).

*The Practice of Public Auctions in Amsterdam*

As mentioned in the Introduction of this chapter, public auctions in eighteenth-century Amsterdam show a lot of continuity. The earliest auctions of drugs, for which advertisements offer evidence, took place in 1711. Two auctions in that year, co-organized by Arnoldus de Jager (who would always partake in auctions of *drogerijen* in later years) were in fact auctions of goods from Muscovy, including isinglass.<sup>208</sup> After a hiatus in auction data of some years, Arnoldus de Jager occurs again in 1714, this time for an auction of only *drogerijen*.<sup>209</sup> After that, auctions consisting exclusively of *drogerijen* start to occur increasingly more often.

The organizational procedure of these auctions deserves some clarification, because this reveals the important role of brokers in the settlement of transactions. We can trace the different steps of the auction process in the trade manual of Jacques **le Moine de l'Espine (+1696)**, who worked for some time as a merchant in Amsterdam.<sup>210</sup> His most important work, *De Koophandel van Amsterdam* ('The Commerce of Amsterdam'), was first published simultaneously in French and Dutch in 1694. The short treatise was expanded in later, posthumous editions, especially by Isaac le Long (1683-1762).<sup>211</sup> Even though this final edition (of 1801-1802) had grown to four volumes, the contents of many sections in the work did not change very much with each new edition.<sup>212</sup> In general, the work lagged behind on actual events in global commerce, and as such it is only of limited use to reconstruct the role of Amsterdam in global trade throughout the eighteenth century.<sup>213</sup> This is no obstacle for the current analysis, however, because auction procedures show a great deal of continuity. The present discussion draws mainly from the edition of 1727,

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<sup>208</sup> For both auctions, three advertisements were found in newspapers. The auctions took place on August 18 and September 17, 1714.

<sup>209</sup> *Oprechte Haerlemsche Courant*, 11-08-1714. The auction took place on the 15<sup>th</sup>.

<sup>210</sup> P.C. Molhuysen and P.J. Blok, *Nieuw Nederlandsch Biografisch Woordenboek*, 10 vols. (Leiden: Sijthoff 1911-1937), vol. 6, 489-490, in the DBNL.

<sup>211</sup> After the *editio princeps* of 1694, Dutch editions were published in 1704, 1714 (the first edition compiled by Le Long), 1715, 1719, 1724, 1727, 1734, 1744, 1753, 1763, 1780, and 1801-1802.

<sup>212</sup> An extensive analysis of differences across editions was made by L. Jansen, '*De Koophandel van Amsterdam: Een Critische Studie over het Koopmanshandboek van Jacques le Moine de l'Espine en Isaac le Long*' (dissertation; Amsterdam: Nieuwe Uitgevers-Maatschappij N.V. 1946).

<sup>213</sup> *Ibidem*, 232-233 and 350-353.

which contains, for the first time, an extensive description of the organization of public auctions.<sup>214</sup>

To begin with, brokers were intermediaries. The initiative for auctions came from sellers. Anyone who had goods to sell in Amsterdam could team up with a broker to organize a public auction. But why would anyone involve a broker to begin with? The quickest transaction was always to sell goods directly to interested buyers without intermediaries, that is 'out of hand' (*uit de hand*). The costs of such transactions would be relatively modest: mainly customs duties, weighing, and transport within the city until payment had been completed. The costs of organizing a public auction would be much more substantial. *De Koophandel van Amsterdam* gives an example: the costs of an auction of brandy (*brandewijn*), that is to realize 4000 guilders, would cost almost 160 guilders to organize. Some of the costs would be fixed rates, like the registration of the auction with the city authorities, or the rent of an inn for the auction to take place (both rated at approximately 10 guilders). Many other costs would depend on the number of parcels that were sold at an auction, like the commission for brokers and for the auctioneer (which varied from product to product); **or on the seller's willingness and ability to propagate the auction, which** determined the number of placards, notices and newspaper announcements that would be printed.<sup>215</sup> Whatever the outcome of an auction, the organization by official brokers always meant a significant financial investment for a seller. *De Koophandel van Amsterdam* maintained that any seller who is capable of selling goods on his own, *uit de hand*, will certainly do so, rather than having a public auction organized.<sup>216</sup>

On the other hand, involving a broker could have great advantages. Any quarrels that might arise between buyer and seller could be settled by a broker, whose judgment about a transaction would be decisive in legal matters.<sup>217</sup> This was perhaps the main reason for many sellers to involve a broker, not only in case of public auctions, but also for

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<sup>214</sup> Le Moine de l'Espine, *Koophandel*, 154-175. The 1727 edition was presented as the second volume to the 1724 edition. Both editions contained the same chapters, but the edition of 1727 expanded on the topics that were only briefly touched upon in 1724.

<sup>215</sup> Ibidem, 173-174.

<sup>216</sup> However, numerous auctions of drugs were small, with sometimes as few as ten parcels. This suggests that the official procedures, as outlined by Le Moine de l'Espine, were not always rigorously followed.

<sup>217</sup> Ibidem, 174.

transactions *uit de hand*.<sup>218</sup> Another important consideration for a seller was the higher gain that could be made at an auction. Brokers might know more potential clients than a seller did; they had a good market understanding of the profits that could be realized from certain products; and they took care of most practical matters of auctions. *De Koophandel van Amsterdam* mentions especially the potential higher profits, because of the danger of disappointment when an auction did not realize as much money as expected. To avoid a great financial loss, sellers could decide to cancel an auction halfway through, in which case they only had to pay the variable rates for the parcels that had been sold.<sup>219</sup> Besides, to increase their profits, sellers could also decide to sell certain products *uit de hand* before the auction took place; or they could withhold certain products from an auction, if they felt that more could be gained from them at a future occasion. Despite the risks of public auctions, then, sellers had quite some options to increase their profit, up until—and even during—the auction itself.

Following the organization of an auction from start to finish reveals the great number of people that had to be involved to make it happen, and thus the desirability in many cases to involve brokers.<sup>220</sup> A seller could approach one or more brokers, depending on the nature and volume of his goods. He could solicit for a broker six days a week, between 11 a.m. and noon, at the Bourse of Amsterdam. Brokers were stationed at the pillars that had been designated for their commercial specialism, like specific products or certain trade regions (Figure 5). Once the seller and broker had come to an agreement about the conditions for an auction, the broker became the first contact point for everything relating to the auction. The auction was announced to and registered by the city **authorities, who sanctioned the brokers' activities (as opposed to the activities of unofficial brokers or *beunhazen*, the great number of which posed a substantial problem to the city and the Brokers' Guild throughout the early modern period).**<sup>221</sup> The day, hour and location of the auction were noted down in registration books.<sup>222</sup> The city authorities stipulated **that an official auctioneer and one of the town's secretaries be involved** in the auction. Then, the brokers had a number of placards, notices and advertisements printed, as desired by the seller. The placards (*biljetten*) would be dispersed and posted across Amsterdam by a town official who

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<sup>218</sup> *Ibidem*, 257-258.

<sup>219</sup> *Ibidem*, 174.

<sup>220</sup> **The following section largely follows the discussion in *Le Moine de l'Espine, Koophandel*, 154-175.**

<sup>221</sup> Malsen, *Geschiedenis*, esp. 27-28, 29, 41-43 and 54.

<sup>222</sup> Amsterdam City Archives, 5069, inv. nos. 191-221. Cf. note 192.

was specifically assigned for this task (the 'city poster' or *stads-aanplakker*). One copy would be posted at the bourse by a clerk.

The notices (*notities*) described the batches, or parcels, into which the goods were divided for individual transactions. Usually, this was a manageable unit of a specific product (e.g. 'two chests of Peruvian bark'). The notice was used by brokers before the auction, to determine the profits that certain products should realize. These were based on the current market value, for which the brokers were also responsible (and which were published every week in price currents, as discussed above). During the auction, the notice was filled in further with the name of the buyer and the price that was eventually paid (see Figure 6). This could differ substantially from the predetermined rate, if bidding took place: *De Koophandel van Amsterdam* remarks that the prices after bidding could increase sixfold.<sup>223</sup> Meanwhile, advertisements were published in the newspapers of cities in Holland, especially Amsterdam, Leiden, Haarlem and The Hague. These could be published up to six weeks in advance of an auction (see Figure 7).

It is important to note that the seller remained largely invisible, once brokers got in command of the auction, until the seller finally settled the transactions after the auction. The goods at an auction were anonymized, so as not to influence potential buyers. This happened in placards, notices and advertisements, all of which directed the reader to the broker for any further inquiries. Prospective buyers could inspect the goods at warehouses or other storage locations, as described in the notices, on the day prior to the auction and on the auction day itself. Brokers involved persons to act as guardians (*oppassers*), to make sure that parcels would not be rearranged, spoiled or stolen. Sellers were themselves present at the auction of their goods, but again they were invisible for the audience, as brokers would have arranged a secluded space for them to attend the auction.<sup>224</sup>

Auctions usually took place in the late afternoon, so that shopkeepers could be present, without having to close during office hours. For most of the eighteenth century, there were nine different auction locations in **Amsterdam. Auctions of drugs generally took place in the 'Brackish Ground', a former monastery located in a narrow street in the city centre, called the Nes (Figure 8). The inn was used for auctions of "all sorts of drugs [drogerijen], pigments, spices, dried fruits, olive oil, soap, and**

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<sup>223</sup> **Le Moine de l'Espine**, *Koophandel*, 162.

<sup>224</sup> *Ibidem*, 157-158 and 160.

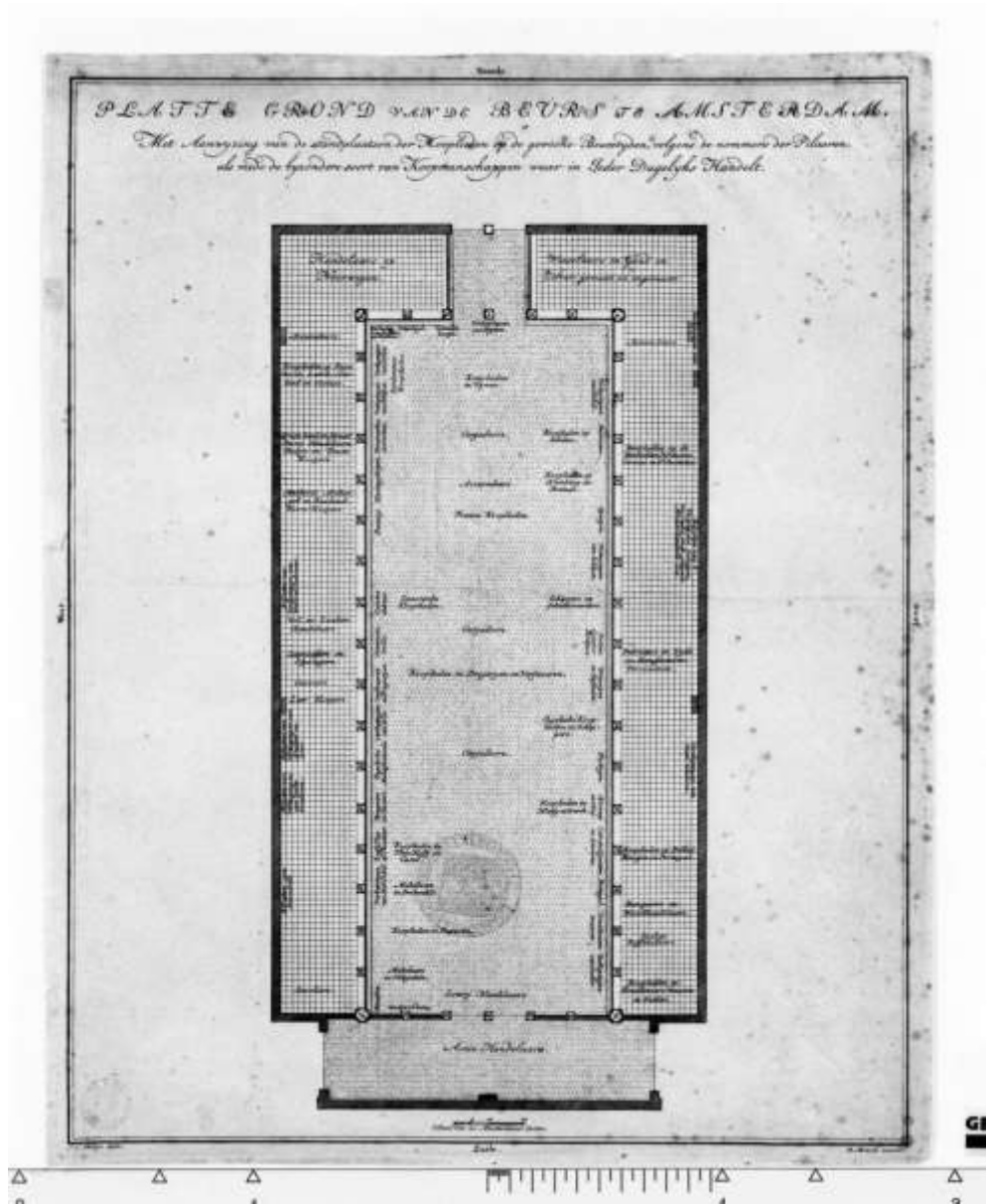


Figure 5. Floor plan of the Bourse of Amsterdam by Jan Caspar Philips (1700-1775). The designated locations of merchants and brokers who were specialized in certain products or countries are indicated. Merchants in drugs and pigments (*Kooplieden in Drogeryen en Verwaaren*) are located at the centre, flanked on the left and right by the pillars (nos. 35 and 13, respectively) where the brokers in drugs and pigments could be found.

**various piece goods and merchandize**".<sup>225</sup> At the beginning of the century, auctions of drugs also took place on the nearby Singel, in the Burg, but the Brackish Ground became the permanent location for such auctions somewhere in the 1720s.<sup>226</sup>

During an auction, brokers would sit next to the auctioneer, who would read aloud the products to be sold and the conditions for selling them. After receiving verbal confirmation from the audience that all had understood the conditions, the auction would start. Different bidding procedures could be used for different products. The auctioneer could raise the price until the highest bid of a prospective buyer (called auctioning *bij opbod* or *bij opslag*); he could start at a high price and lower **it until a buyer would, literally, call it 'his'** (auctioning *bij afslag* or *bij afmijning*); or an auctioneer could combine these approaches, to raise a price that had initially been determined *bij opbod* to an even higher rate. For drugs, however, it can be expected that not much bidding took place in most cases. Drugs were a particular category of products, that only appealed to people who were knowledgeable about the nature and the value of medicinal substances, like brokers, sellers (i.e. certain merchants) and buyers (druggists and apothecaries). Therefore, the prices that we find for transactions of drugs in auction records were usually within reasonable limits: the prices for *drogerijen* that were paid by buyers often did not diverge very much from the wholesale prices that were predetermined by brokers.

After a parcel had been sold to the highest bidder in one of these ways, the buyer received a coin (*blokpenning*) as a warrant for his purchase, the equivalent of the value of the goods. The transactions were completed on the day after the auction. A buyer brought his *blokpenning* to the warehouse where his goods were stored, where he would negotiate the **conditions of payment with the seller, or the seller's representative**. In order to apply discount regulations, an official town weigher (*stadsweger*) was involved to confirm the weight of the goods, either at one of **Amsterdam's Weigh Houses, or at a balance brought to the warehouse**, to save transport costs. When buyer and seller had come to an understanding, the deal was closed. Buyers could have up to six weeks to fulfil their payment, dependent on their credit reputation. This proves again the importance of trust in sealing transactions.<sup>227</sup>

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<sup>225</sup> Le Moine de l'Espine, *Koophandel*, 168-169: "allerley Drogereyen, Verfwaaeren, Specereyen, gedroogde Vruchten, Olye van Olyven, Zeep, en veelderley Manufacturen en Koopmanschappen."

<sup>226</sup> *De Koophandel van Amsterdam* of 1727, the first edition to describe all auction locations in detail, no longer lists *drogerijen* among the items auctioned in the Burg.

<sup>227</sup> Le Moine de l'Espine, *Koophandel*, 170-172.

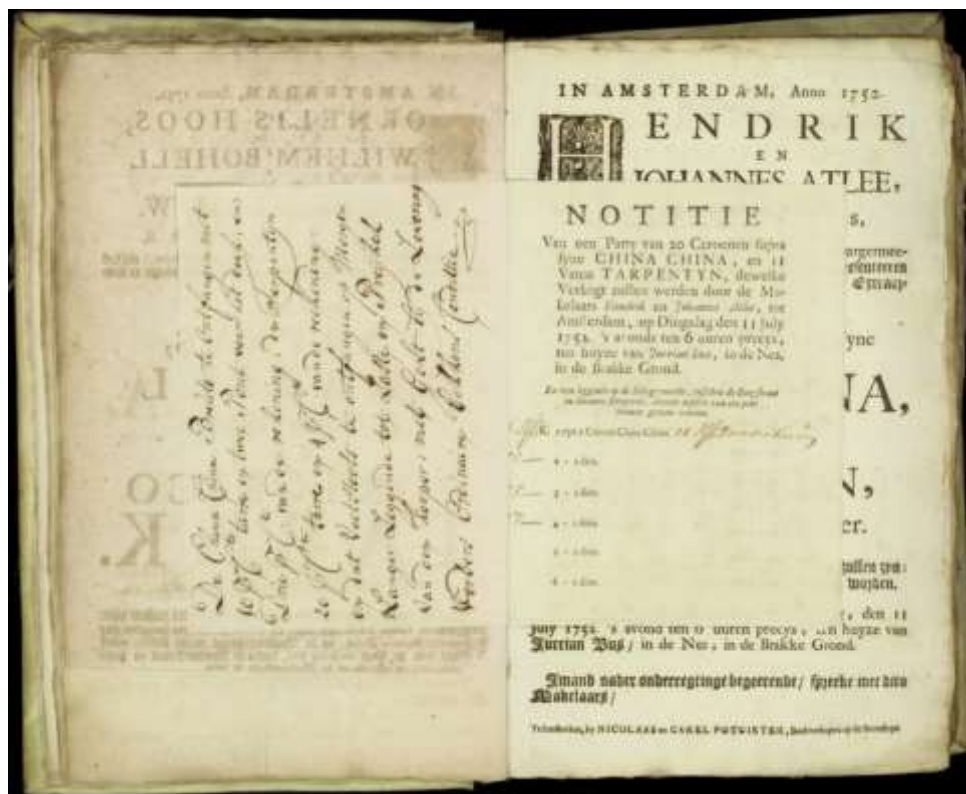


Figure 6. Archival record of a public auction of drug components in Amsterdam, held on July 11, 1752, which consisted of Peruvian bark and turpentine. On the right, in the back, the placard is visible, which was posted throughout the city before the auction. In front of the placard is the first page of the notice, which starts with a summary: the main products to be sold (Peruvian bark and turpentine), the names of brokers, plus the day, hour and location of the auction. Then follow the parcel numbers and product names. Written to the left of the product name is the estimated price by brokers, on the right is the price that was paid by the buyer, and his name. In this case, parcels 2-6 were not sold, or withheld from the auction. On the left, are the handwritten conditions, notably the discount regulations for each product, which were read aloud during the auction.

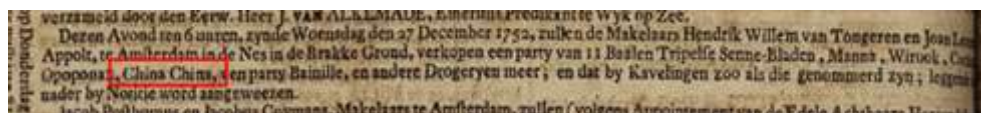


Figure 7. Example of an advertisement for an auction of drug components (the same as in Figure 6). Peruvian bark ('China China') is highlighted. All advertisements for auctions share the same features: plain text, stretched out across the width of the page, without headers or special fonts, and containing only practical information.



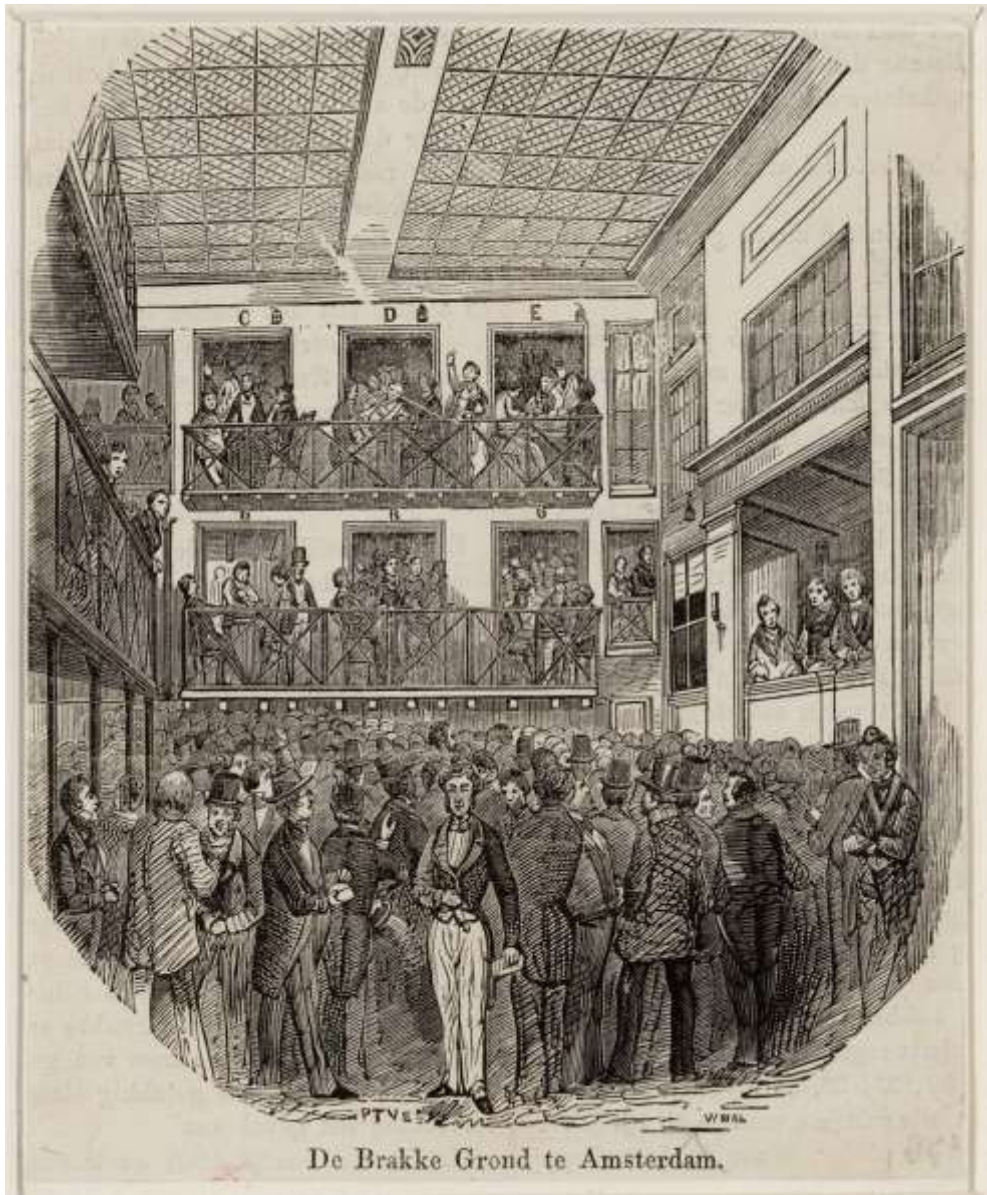


Figure 8. Mid-nineteenth-century impression of an auction in the 'Brackish Ground' (Brakke Grond) in the Nes in Amsterdam.

The broker received a fee (*courtage*) for his mediation, from the seller. This was a fixed percentage for each sold parcel, which differed per product. Sellers always had to pay *courtage* in cash, even when they had given the brokers permission (*commissie*) to buy some of the products themselves, which happened a lot during auctions of drugs. In other words, sellers could not pay brokers in kind, by offering them a share of **the products**. **By means of this guild regulation, the broker's neutrality** would not be compromised.<sup>228</sup>

Brokers in drugs, like in many other businesses, continued to use this procedure for auctions in unaltered form, throughout the eighteenth century. This does not mean, however, that nothing changed. The success of procedural continuity is shown by the gradual increase of the frequency of auctions; of the mutual collaboration of brokers; and of their position as connoisseurs in the domain of *materia medica*. Since not every trade experienced a similar success, the continuity of practices cannot account on its own for the sustained prosperity of this type of brokerage. The lasting appeal of brokers in drugs as essential intermediaries should be explained by other factors as well. In the next section, a diachronic dimension will be added to explore these ingredients of **the brokers'** success in more detail.

## 2.2. Brokers in Drugs: Intermediaries between Global and Local Drug Trade

In this paragraph, various aspects are discussed to demonstrate how brokers in drugs developed into an important group of intermediaries. The quantitative growth of their numbers, and of their activities, coincided with a qualitative dimension. They evolved into a separate, recognizable group of brokers, especially because of their self-presentation as connoisseurs of medicinal substances, and because of the recognition they received as such from their clients. This was strongly connected to their advertising practices, and their position as trustworthy intermediaries in the global flow of drug components.

### *The Transformation of Brokers into Connoisseurs*

To talk about 'brokers in drugs' implies that these brokers can somehow be identified as connoisseurs of *materia medica*. The strongest evidence for this is when brokers self-identify as 'brokers in drugs'. They did so only from 1725 onwards, when the oldest known list of names (*naamlijst*) of brokers in Amsterdam was published. Brokers provided their name,

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<sup>228</sup> Ibidem, 170.

residence and specialism for the publication of these booklets, which were published almost every year, for most of the eighteenth century. In the *naamlijst* of 1725 we find three brokers in drugs (*makelaars in drogerijen*): Arnoldus de Jager, Hendrik Atlee and Pieter Pekstok Junior.<sup>229</sup> Of course, there had been brokers before them, who devoted most of their energy to *materia medica*. Some specialized knowledge about this type of products was already esteemed at least in the seventeenth century. For instance, David van den **Berch, who was a member of the Brokers' Guild** from 1644 until his death in 1675<sup>230</sup>, is described as a broker in drugs as early as 1661.<sup>231</sup>

The emergence of brokers in drugs as a separate group of **connoisseurs within the Brokers' Guild**, however, is only evident from around the same time as the earliest available *naamlijst* of 1725. Not the **brokers'** way of self-presentation, but their day-to-day practices reveal that most clearly. Arnout van Tongeren (guild member between 1709 and 1724<sup>232</sup>) was probably the earliest broker in Amsterdam to increasingly focus his attention on auctions of drug components, at the beginning of the eighteenth century. Initially, he was involved in auctions of other global products as well, like coffee and tea. Especially from 1720 onwards, we encounter his name in advertisements for auctions of drug components, that were (co-)organized by him. His example shows that the emergence of connoisseurship in *materia medica* and advertising for public auctions occurred simultaneously. This aspect will be explored in more detail below.

Van Tongeren had died before the publication of the oldest known *naamlijst* of 1725, which means that De Jager, Atlee and Pekstok are the earliest examples we have of self-identified brokers in drugs. De Jager, whom we already encountered before, was a guild member from 1716 until his death in 1729.<sup>233</sup> Whenever his name occurs in auction records, he was indeed involved in auctions that included *drogerijen*. In fact, his name is mentioned in advertisements for auctions as early as 1711 and 1714, so even before he became a guild member.<sup>234</sup> Likewise, Hendrik

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<sup>229</sup> *Lyste der Namen en Woonplaatsen van de Makelaars* (Tot Amsterdam: By Gerrit Bos 1725) 15 and 18.

<sup>230</sup> Amsterdam City Archives, 366, inv. no. 1071, 35.

<sup>231</sup> S. H[art], "Rembrandts Geslachte Os Getaxeerd", *Maandblad van het Genootschap Amstelodamum*, 56: 7 (1969) 161. The reference concerns a notary document, where the value of several goods is assessed, including *drogerijen*.

<sup>232</sup> Amsterdam City Archives, 366, inv. no. 1071, 14.

<sup>233</sup> Amsterdam City Archives, 366, inv. no. 1071, 15.

<sup>234</sup> See notes 208-209.

Atlee handled almost exclusively in drug components from the moment he entered the guild in 1717, until his death in 1756. Pekstok, on the other hand, is described in 1725 as a broker in coffee, tea and drugs, which suggests that *drogerijen* had not yet become the exclusive domain of specialized brokers. Pekstok would later switch to property and bonds.<sup>235</sup> Although very little is known about the background and **education of these brokers, Pekstok's career track as a broker suggests** that knowledge of *materia medica*—or any other commodity, for that matter—was acquired in practice, and that it was possible for brokers to switch to a different type of products.

The example of these three men is indicative of the emergence of connoisseurship in drug components in eighteenth-century Amsterdam, but not every broker in drugs described himself as such. For many brokers, we can simply observe, in records from the **Mayor's Archive**, that they were involved in auctions of the same type of products over and over again. This goes for *drogerijen* as much as for many other products. We can trace 'brokers in drugs' in all editions of the *naamlijst*, but they often left out the nature of their connoisseurship. For example, Johannes Atlee (active between 1738 and 1780) never had his specialism mentioned in the name lists of brokers, although he collaborated closely with his father Hendrik Atlee, and his colleagues, from the moment he joined the guild. Many of his colleagues did not mention their specialism either, but their unique knowledge increasingly separated them from other types of product knowledge. This is supported by the fact that these brokers collaborated mainly with each other, and that the auctions they organized usually consisted of drug components only. In fact, there is almost a one-on-one relationship between the brokers and their products: whenever we encounter any of these brokers, drug components are usually being sold; conversely, whenever we come across drug components, one or more brokers in drugs usually occur. Throughout the century, the drug trade was a thriving business: increasingly more auctions were organized as the eighteenth century progressed. As a result, more people were employed as broker in drugs, as can be seen in Figure 9. When Arnout van Tongeren organized auctions in the 1710s, he was mainly working on his own. In 1720, there were three brokers in drugs: Van Tongeren, De Jager and Atlee. In the following decades, there were usually six or seven, but their number had increased to ten by 1780. A few years later, the number reached thirteen brokers in drugs, all of whom were involved together in most auctions of *drogerijen*.

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<sup>235</sup> *Lyste der Namen en Woonplaatsen van de Makelaars* (Tot Amsterdam: By Gerrit Bos 1730) 13-14.

The brokers in drugs were a tightly knit group, which is not only shown by their level of collaboration. There were many family ties among their ranks, especially father-son relationships. We already encountered Johannes Atlee, whose father Hendrik was also a broker in drugs. The son **of Arnout van Tongeren, Hendrik Willem, also followed in his father's** footsteps, as did the sons of Zacharias Händler (Jan Hendrik and Zacharias Jr.) and those of Johan Joost Ristenpatt (Harmanus and Jan). Although most brokers were guild members and active brokers until they died, some resigned their function after several active years, like Jan van Berkom (1746) and Harmanus Ristenpatt (1796). Like so many guild activities, the brokers in drugs operated on the basis of seniority: the broker who had been in office for the longest time was always mentioned first. Furthermore, they had a policy of recruiting one or two new, junior brokers every few years. Junior brokers usually stuck with the specialism of drugs, but not **always. Barend ter Maat joined the Brokers' Guild in 1783**; then practised in one or more specialisms, including drugs (we find him in advertisements for auctions of drugs in 1785-1786), perhaps to explore what would fit him best; and finally, he moved to loans, bonds, real estate and inheritances.<sup>236</sup> This was an exception, however: the brokers in drugs gradually increased their number, and new members of the group usually continued to work as brokers in drugs until they died.

**The brokers' success was not only** a matter of self-presentation. It is likely that their intermediate position was genuinely esteemed by both the merchants who had goods to sell, and the druggists who wanted to buy **these goods. This has everything to do with brokers' neutralizing effect in** commercial relationships, which were based on trust. One of the central themes in the previous paragraph was the fact that sellers were deliberately omitted from the practical organization, in the weeks leading up to an auction. This practice reveals the importance of trust in trade relationships, which is arguably the most difficult dimension to study about early modern commerce. The records that have been left by brokers in Amsterdam contain massive data on things that can be quantified. This obscures the fact that a great deal of early modern trade depended on the trustworthiness of buyers and sellers. This had more to do with reputations than with the actual flow of goods and money. In the words of Xabier Lamikiz:

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<sup>236</sup> *Lyste der Naamen en Woonplaatsen van de Makelaars* (Te Amsterdam: By de Wed. Pieter Mortier [1787]) 25. Ter Maat was not a broker in drugs anymore in 1787, but in the four years before that his specialism is not entirely clear. In Figure 9, he is regarded as a broker in drugs during his early-career years as a broker (1783-1786).

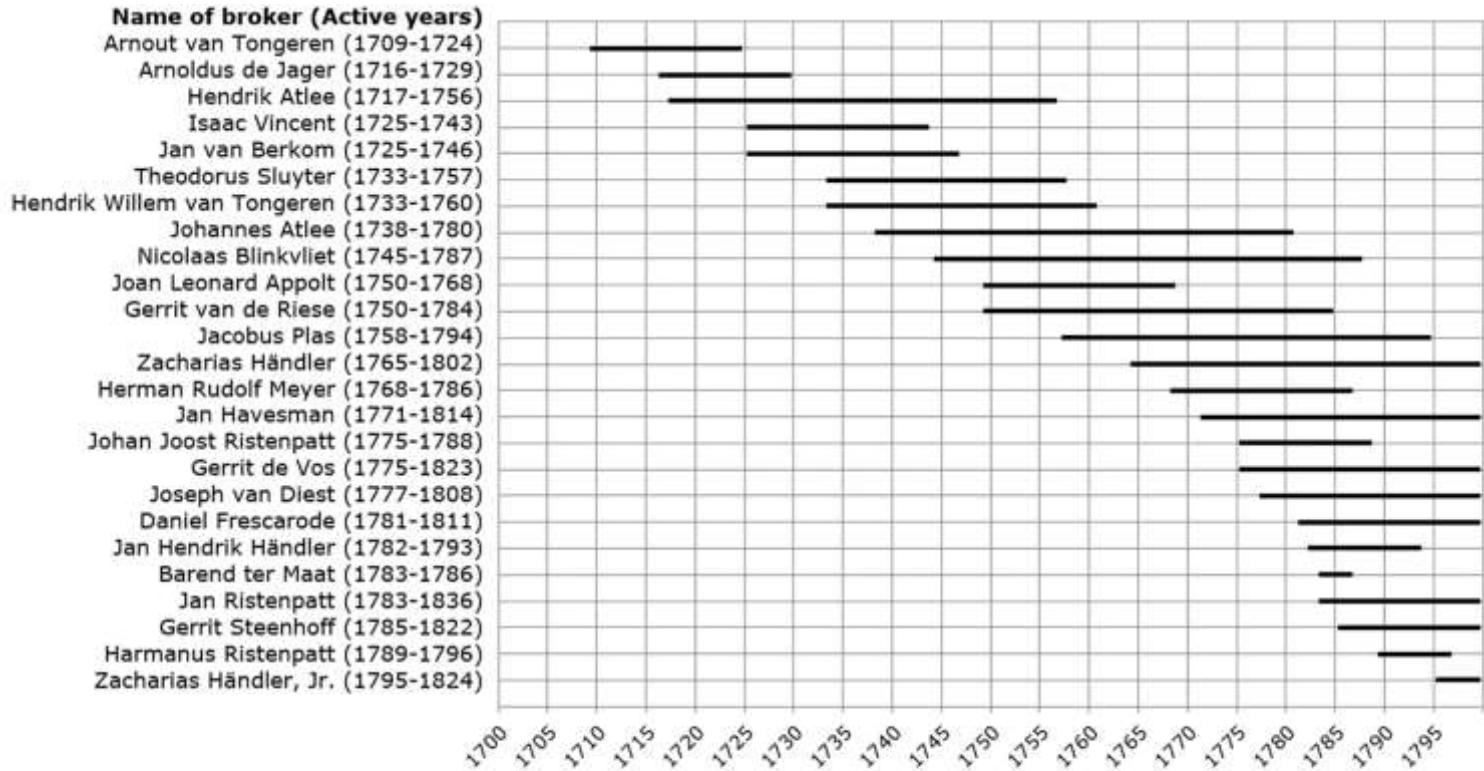


Figure 9. Brokers in drugs in Amsterdam, 1700-1799. The names of relevant brokers were extracted from advertisements for public auctions, that included Peruvian bark: one of the biggest drugs (*drogerijen*) in terms of volume, and hence a reliable indicator for drug brokerage more generally. Not all of these brokers self-identified as brokers in drugs in the lists of brokers that were published each year, but their involvement in the Peruvian bark trade makes them recognizable as such. The data about the active years of these brokers was found in the registration books of members of the Brokers' Guild (Amsterdam City Archives, 366, inv. nos. 1071-1072).

[T]rust is usually treated as an unimportant epiphenomenon, the implication being that trade would have existed without it. Other elements such as supply, demand, capital, infrastructure, instruments of credit and the law are seen as the main influences on the operation of trade. But it was trust that performed the role of combining all these elements, thereby constituting a prerequisite for the creation of trade.<sup>237</sup>

The implication is that many trade relationships were based on oral agreements and tacit understanding. Written contracts could be a safeguard against, or solution for commercial quarrels, but as such they could also be regarded as an act of distrust.<sup>238</sup> The latter interpretation was probably dominant in early modern trade, as the Amsterdam City Archives contain relatively little evidence in notary documents about quarrels between buyers and sellers of drugs, where a broker was involved.<sup>239</sup> The involvement of brokers might therefore be interpreted as a preventive measure, to forestall any issues that might arise between buyers and sellers. Brokers could neutralize personal tensions and promote a pragmatic, business-like settlement of transactions. Apparently, a broker was an acceptable intermediary for both parties to render a written agreement unnecessary. In this way, the potential hazards of trust relationships in trade were successfully bypassed.

#### *Brokers Maintain their Central Position by Means of Advertising*

Over the course of the eighteenth century, demand for medicinal substances increased. This is an important observation, given the supposed economic decline of the Dutch Republic during this period, and the fact that drugs are not a basic necessity of life. As a result of growing demand, the number of brokers grew as well, because there were more goods to sell and more and bigger auctions to be organized. This is substantiated by the data for auctions that included one particular product, Peruvian bark. Arguably the most important non-European *drogerij*, that was exclusively used in medicine, the febrifuge Peruvian

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<sup>237</sup> X. Lamikiz, *Trade and Trust in the Eighteenth-Century Atlantic World: Spanish Merchants and their Overseas Networks* ([London]: Royal Historical Society, and Suffolk: Boydell Press 2010) 182.

<sup>238</sup> *Ibidem*, 162.

<sup>239</sup> Currently, the claim is based on the small number of index cards for the Notary Archives (Amsterdam City Archives, 30452, inv. nos. 3-250), which cover c. 10% of the material in the Notary Archives. The names of brokers in drugs (which have been listed in Figure 9 above) occur about two dozen times in relation to quarrels about the nature and quality of products. A more sustained claim, in this respect, can be made once the Notary Archives have been digitized.

bark had been known in Europe since the 1640s. When the brokers in drugs of Amsterdam emerged as a specialised group in the early eighteenth century, the use of Peruvian bark had already been firmly established in pharmaceutical practice for some decades (see Chapter 1). This chapter uses the data for public auctions of drugs from Database 1, **which was described in the 'Methodology' section of the General Introduction: data from 3544 advertisements, for 920 auctions, between 1714 and 1799.** Given the ubiquity of Peruvian bark in early modern medicine and pharmacy, the auctions that included this substance provide a representative cross section of general developments in auctions of drugs (Figure 10).

The diachronic development of auctions that included Peruvian bark is shown by the red line in Figure 10. The blue line indicates the number of advertisements that were published for these same auctions. Usually, the mean number of advertisements for each auction is quite stable, i.e. the number of auctions and of advertisements followed the same pattern. Only between c. 1775 and 1790, comparatively less advertisements were published for auctions. A more important observation from Figure 10, however, is the fluctuating number of auctions throughout the century. After a modest beginning in the 1710s, the number of auctions swings between three and twelve auctions per year until the middle of the century, after which there are alternating years of very many or very few auctions. It is highly interesting to discover what caused these shifts from year to year. Because the frequency of auctions of Peruvian bark has to do with both global developments in economics and politics, and with factors that are specific for a product like Peruvian bark, the rest of this paragraph will investigate the processes underlying the commercial fluctuations in auctioning.

For the period before brokers in drugs appear on stage as a recognizable group of specialists, it is unclear if and how Dutch druggists and apothecaries were regularly procured with pharmaceutical substances. Despite the central position of Amsterdam in global trade, it is still a question whether the city really had the largest share in supplying *materia medica* to druggists and apothecaries—to the Dutch Republic as a whole, but even to the city of Amsterdam itself. The abundance of data **in the Mayor's Archive does reveal that Amsterdam played an important** role, but the absence of data for other cities makes it hard to evaluate its relative significance—even more so for the period before the 1710s, when there are few data overall. It is still unclear which other cities may have been centres of drug redistribution, but certainly none has left as much archival material as Amsterdam. When brokers in drugs started advertising for their auctions, therefore, they were either tapping into a



new, much larger market than Amsterdam; or they applied it to sustain, facilitate and inform a network that was already in existence. Whatever the case, advertising for auctions was not a new thing for brokers in Amsterdam: brokers in other specialisms already advertised for public auctions around the turn of the eighteenth century. Nor were the brokers in Amsterdam the first to advertise for auctions of drugs. In fact, the very first advertisements for auctions of drug components are from Rotterdam. Here, the broker Franco Cordelois organized various auctions before 1710, usually of glasswork, paper and sometimes *drogerijen*. In 1707 he organized an auction consisting exclusively of medicinal substances, which was advertised in the *Opregte Leydse Courant*.<sup>240</sup> It is possible that brokers in Amsterdam copied this practice, to extend their reach to potential customers in other cities.

Advertisements are not only the medium through which we can observe the intensification of drug brokerage in eighteenth-century Amsterdam: advertising itself provides the clue to the success of brokers. As mentioned in paragraph 2.1, brokers could not be paid in kind for their services, but they frequently occur as buyers themselves, at the same auctions of which they were the organizers. We do know the names of most of the buyers at auctions, whose names were written down in the notice (*notitie*) during the auction. Most of these names are recognizable as either druggists of Amsterdam, or brokers in drugs. Brokers in drugs did not have their own shops, so it can be inferred that whenever they appear in the role of buyer, they did so on behalf of clients, either from Amsterdam or from other places. The names of these clients are mostly unknown. If we look at the auctions during the quarter-century period of 1725-1750, no less than 35,4% of all parcels was bought by brokers on behalf of their clients.<sup>241</sup> For the same period, 524 newspaper advertisements for auctions of drugs were found, only 233 of them in the *Amsterdamse Courant* (44,5%). Most advertisements were published in the newspapers of Haarlem, Leiden and The Hague. Although all four

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<sup>240</sup> *Opregte Leydse Courant*, 28-03-1707: "FRANCO CORDELOIS, Makelaar, zal Woensdag den 30 Maart 1707 tot ROTTERDAM verkoopen, verscheyde soorten van Droogeryen, als Petro de Porco, Drop van Zoethout, Aloës, Margaritae, Bereydsel, Rad. China, Rad. Jalappe, Gom Elemni, Rad. Galanga, en zo als verder by de Catalogen is uytgedrukt, welke Goederen leggen op de Gelderse Kaay, ten Huyze van WILLEM MERKES, alwaar **twéé Dagen te vooren van een yder kunnen werden gezien.**"

<sup>241</sup> This number is the result of a preliminary exploration of the records for auctions of drugs in: Amsterdam City Archives, 5069, inv. nos. 2-24. In this sample, records were found for 120 auctions, comprising 13713 parcels. Names of buyers are absent for 1841 parcels (13,4%), brokers occur 4856 times as buyer (35,4%) and 7016 parcels were bought by other buyers (51,2%).

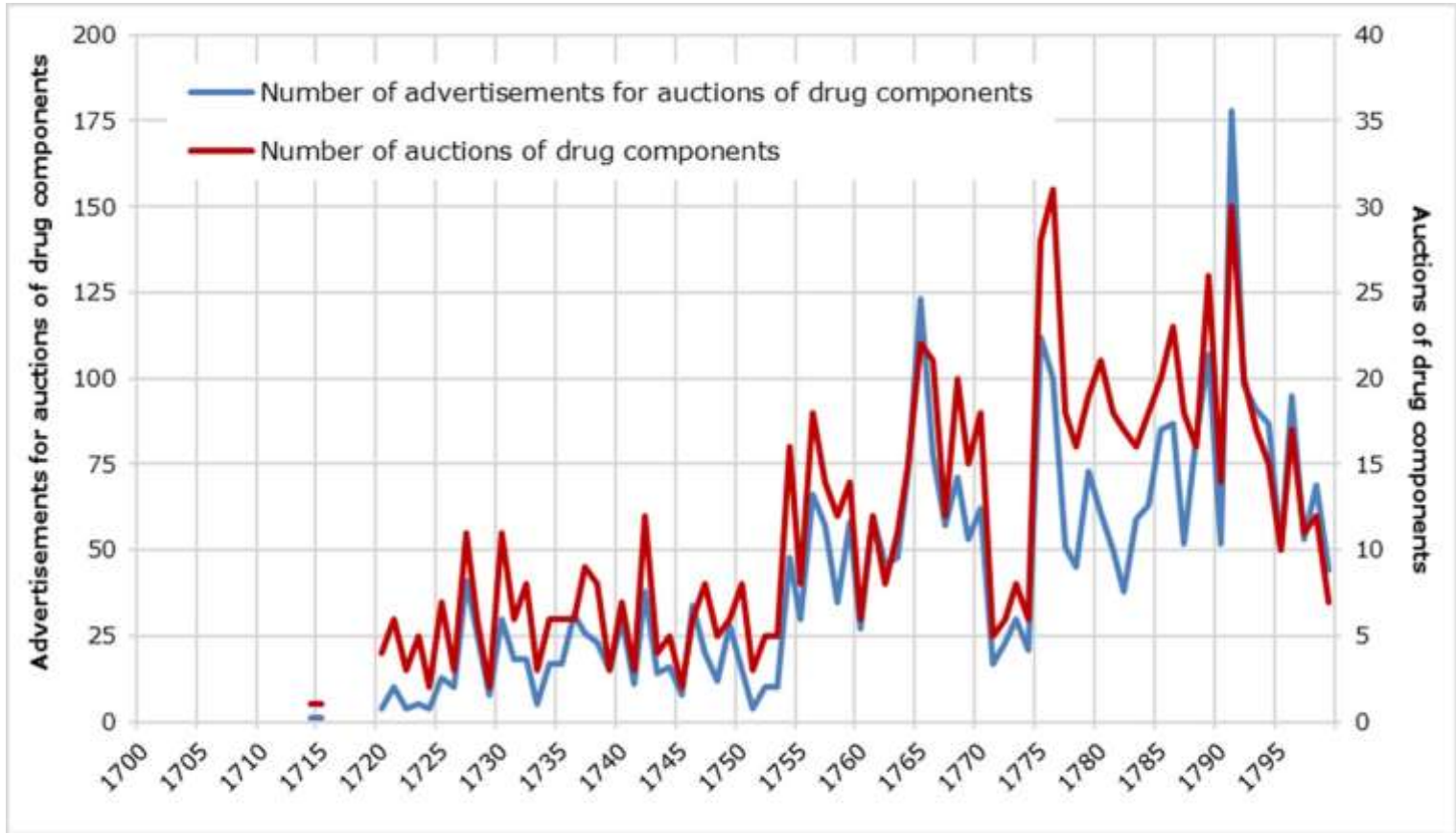


Figure 10. Public auctions that include Peruvian bark, in Amsterdam (1700-1799), plus the number of advertisements for these same auctions, as can be found in Dutch newspapers.

newspapers were to some extent available on a supralocal level, the preponderance of advertising outside of Amsterdam is significant. It allowed brokers to quickly inform their clients about newly arrived products and correspond about desired items. Druggists in Amsterdam and other places, who were unable to attend the auctions of *drogerijen* in Amsterdam themselves, could thus acquire products by using brokers as their intermediaries.<sup>242</sup> In this way, brokers became highly desirable go-betweens for buyers and sellers alike.

### 2.3. Reconstructing the Global Chain of Commerce: Trade in Peruvian Bark

As the previous paragraph has shown, brokers in Amsterdam were able to procure druggists and apothecaries with medicinal substances, on a regular basis, both in the city itself and beyond. Advertising allowed them to create and maintain a central position in this commercial network, on a national or at least supra-local level. Still absent from the current **discussion are the global ramifications of Amsterdam's drug trade. To** what extent were they an integral part of the global chain of commerce? Although the example of Peruvian bark is representative to determine the scale of drug brokerage in Amsterdam across the eighteenth century, its global commercial trajectory complicates the picture we have arrived at so far. The supply of bark required a global chain of intermediaries, that was hardly visible for brokers in Amsterdam—let alone their clients—and brokers could hardly influence global trade developments. In this paragraph, the global supply of Peruvian bark is explored from two angles: first, the transition from a system in which the Jesuits controlled the global supply of bark to one in which the Spanish state regulated—and Amsterdam brokers redistributed—the European import of Peruvian bark; and second, the mechanism of the Spanish supply chain, and the position of Amsterdam brokers within that system.

#### *Brokers Supersede the Jesuits as Commercial Intermediaries in Europe*

In the previous paragraph, the emergence of the drug trade in early eighteenth-century Amsterdam was demonstrated by the activities of brokers. Trade in Peruvian bark proved to be a valuable point of departure

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<sup>242</sup> The general practice seems to have been that brokers purchased parcels on behalf of clients in other cities, but buyers could come to Amsterdam themselves as well. Le Moine de l'Espine remarks that, for this purpose, newspapers should timely announce the postponement or cancellation of an auction, to avoid that buyers would travel to Amsterdam in vain. See Le Moine de l'Espine, *Koophandel*, 164-165.

for interconnecting the global and local dimensions of the early modern drug trade more generally. This section will also devote considerable attention to the role of brokers in Amsterdam. But first, we must account for the seemingly sudden disappearance of the Jesuits from the supply chain of Peruvian bark before the emergence of brokers in drugs.

In commerce, the greatest challenge for Peruvian bark's successful commodification was the cumbersome supply route from Peru to Europe, which was initially controlled by the Jesuits. Their pharmacies in Lima and in Rome, where Cardinal Juan de Lugo (1583-1660) was the central figure, were instrumental in the early global distribution network.<sup>243</sup> Because of the Jesuits' near-monopoly, the bark may have been hard to obtain outside of Rome, even within the confines of the Italian peninsula.<sup>244</sup> Furthermore, a range of names was used to describe the bark: Van Ranouw still mentioned ten distinct names in 1722.<sup>245</sup> The Jesuits' importance was readily apparent here, since a version of 'Jesuit's bark' was the common name to refer to Peruvian bark in most European languages.<sup>246</sup> Harold Cook has argued that the availability of the bark improved in the 1670s, when efforts to circumvent the Jesuits proved successful.<sup>247</sup> This had a positive effect on prices as well, as shown by Patrick Wallis.<sup>248</sup> However, the problem of adulteration, evident for Peruvian bark and many other exotic drugs, persisted, so commercial interests mainly focused on diminishing the number of intermediaries.<sup>249</sup>

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<sup>243</sup> Most of the works mentioned in note 37 highlight the importance of the Jesuit **apothecary shops on both sides of the Atlantic**. See also S.J. Harris, "Confession-Building, Long-Distance Networks, and the Organization of Jesuit Science", *Early Science and Medicine*, 1:3 (1996) 287-318; S. Anagnostou, *Missionspharmazie: Konzepte, Praxis, Organisation und wissenschaftliche Ausstrahlung*. Sudhoffs Archiv, Beiheft 60 (Stuttgart: Franz Steiner Verlag 2011) 343-348; and L. Martín, *The Intellectual Conquest of Peru: The Jesuit College of San Pablo, 1568-1767* (New York: Fordham University Press 1968) 97-102.

<sup>244</sup> S. Barker, "Malaria and the Search for its Cure in Granducal Tuscany", *Medicea*, 5 (2010) 54-59, there 55.

<sup>245</sup> [W. van Ranouw], "Vierde Verhandeling van de byzondere Natuurlyke Historischryvers, en in dezelve de Natuurlyke Historie van de Kina-Kina", *Kabinet der natuurlyke Historien, Wetenschappen, Konsten en Handwerken*, 6 (1722) 92-176, there 140.

<sup>246</sup> S. Anagnostou, "Jesuits in Spanish America: Contributions to the Exploration of the American Materia Medica", *Pharmacy in History*, 47:1 (2005) 3-17, there 4.

<sup>247</sup> Cook, "Markets and Cultures", 133.

<sup>248</sup> Wallis, "Exotic Drugs and English Medicine", 36.

<sup>249</sup> S. Boumediene, S., "L'Acclimatation Portuaire des Savoirs sur le Lointain: Les Drogues Exotiques à Séville, Cadix et Livourne (XVIe-XVIIe Siècles)", in: P. González Bernaldo and L. Hilaire-Peréz (eds.), *Les Savoirs-Mondes: Mobilités et Circulation des*

Finally, because of the unclear botanical provenance, confusion arose with other drug components, with similar medical properties, geographical origins, or linguistic associations.<sup>250</sup>

In the days of Christiaan Huygens, the Jesuits were still the essential intermediaries in the global trade of Peruvian bark, as we saw in Chapter 1. Now that we shifted from late seventeenth-century Paris to eighteenth-century Amsterdam, the commercial situation is different. Dissatisfaction **had risen in Europe over the Jesuits' commercial practices, when demand** for Peruvian bark had increased tremendously around the turn of the eighteenth century. The Jesuits seem to have applied a humanitarian distribution model, whereby they charged high prices for those who could afford it, in order to continue distributing Peruvian bark to the poor as well.<sup>251</sup> A small Dutch handbook about *materia medica*, written in 1705 by Feyo Johannes Winter, maintains that the best Peruvian bark was obtained from Rome, which suggests that the Jesuits were still involved in the Peruvian bark trade at that moment.<sup>252</sup> In 1717-1718, the Spanish state moved the *Casa de Contratación*, the Spanish house of trade with the Indies, from Seville to Cádiz.<sup>253</sup> As all American trade had to funnel through Cádiz henceforth, the Spanish state acquired a stronger grip on transatlantic trade. Meanwhile, Mediterranean trade began to be dominated by the Dutch, and this must have affected the Peruvian bark trade as well.<sup>254</sup> According to the *Koophandel van Amsterdam*, most goods imported into Cádiz in the early eighteenth century eventually ended up in Amsterdam.<sup>255</sup> Somewhere in the process, the Jesuits seem to have been silently forced out of the supply chain.

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*Savoirs depuis le Moyen Âge* (Rennes: Presses Universitaires de Rennes 2015) 133-145.

<sup>250</sup> An example of the first two problems is Peruvian balm, derived from *Myroxylon* species, see e.g., Maehle, *Drugs on Trial*, 224. The greatest linguistic confusion occurred with the **China root**; see A.E. Winterbottom, "Of the China Root: A Case Study of the Early Modern Circulation of *Materia Medica*", *Social History of Medicine*, 28:1 (2015) 22-44.

<sup>251</sup> Jarcho, *Quinine's Predecessor*, 205.

<sup>252</sup> F.J. Winter, *Kenteekens en Keur Van voorname Gewassen en Mineralen, Met der selver bysonderste Nuttigheden. Als ook de Tyden Op welke men de Vegetabilia bequaamst behoorde op te nemen, ende tot hunne Wintersche gebruiken te bewaren* (Te Leeuwarden: By Pieter Ruirds 1705) 36-37. Winter was a physician from Leeuwarden, and also involved in compiling that city's pharmacopoeia (see the Appendix).

<sup>253</sup> Jarcho, *Quinine's Predecessor*, 201.

<sup>254</sup> *Ibidem*, 201-203.

<sup>255</sup> As argued by Jansen, *Koophandel*, 103, judging from the 1714 edition of *De Koophandel van Amsterdam*.

Some commercial sources from England can help to identify the commercial shift in more detail. By the end of the seventeenth century, after the success of Peruvian bark at various courts, there was a growing interest in better knowledge about Peruvian bark in Europe. The London physician Charles Goodall (1642-1712), for instance, sent out a questionnaire in his network of correspondents in 1687, asking for information about the bark. He was very interested in commercial aspects: what quantities of bark were being shipped and sold, for what price, and so on.<sup>256</sup> **Goodall's network included several famous English scholars, who were all involved with Peruvian bark in various ways.** The physician Thomas Sydenham (1624-1689) was an important early protagonist of the use of Peruvian bark<sup>257</sup>; the philosopher and physician John Locke (1632-1704) kept a medical diary that is replete with references to Peruvian bark use<sup>258</sup>; and the naturalist and physician Hans Sloane (1660-1753) made great efforts to acquire Peruvian bark on his journey to Jamaica (1687-1689).<sup>259</sup> Import figures for London suggest that consumption of Peruvian bark increased tremendously in the first two decades of the eighteenth century, even though the bark was still

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<sup>256</sup> The manuscript is in the British Library, MS Sloane 3323, I, f. 291, and asks for inquiries about Peruvian bark "especially since 1677, when this bark began to be generally used". Questionnaires like Goodall's were an important means to acquire knowledge about tropical areas; see e.g. S. Boumediene, *La Colonisation du Savoir: Une Histoire de Plantes Médicinales du 'Nouveau Monde' (1492-1750)* (Vaulx-en-Velin: Éditions des Mondes à Faire 2016), Chapter 2 (about questionnaires in the Spanish Atlantic); and F. Hertroijs, *Hoe Kennis van China naar Europa Kwam: De Rol van Jezuiten en VOC-Dienaren, circa 1680-1795* (dissertation; Amsterdam: Vrije Universiteit 2014), esp. 52-62 (about questionnaires in the East Indies).

<sup>257</sup> Sydenham was already investigating Peruvian bark in the 1660s, but did not publicly support it until his *Observationes Medicae circa Morborum acutorum Historiam et Curationem* (Londini: Typis A. C. Impensis Gualteri Kettilby 1676); cf. Sydenham's *Methodus Curandi Febres Propriis Observationibus Superstructura: The Latin Text of the 1666 and 1668 Editions with English Translation from R.G. Latham*. Introd., ann. and index by G.G. Meynell (Folkestone: Wintertown Books 1987) 116-117.

<sup>258</sup> Dewhurst, *John Locke*.

<sup>259</sup> S.A. Hawkins, "Sir Hans Sloane (1660-1735): His Life and Legacy", *Ulster Medical Journal*, 79:1 (2010) 25-29; Goodall's questionnaire is included in a letter to Sloane, which has been reproduced in K. Dewhurst, "Some Letters of Dr. Charles Goodall (1642-1712) to Locke, Sloane and Sir Thomas Millington", *Journal of the History of Medicine and Allied Sciences*, 17:4 (1962) 487-508, there 492-494; cf. A. Marples and V.R.M. Pickering, "Exploring Cultures of Collecting in the Early Modern World", *Archives of Natural History*, 43:1 (2016) 1-20, there 7. Curiously, Sloane's massive herbarium contains only one reference to Peruvian bark, related to a distinct, anonymous febrifuge plant (Natural History Museum, HS 91, f. 27). I thank Charlie Jarvis for tracing this and other relevant exotic specimens in Sloane's herbarium.

relatively expensive at the time.<sup>260</sup> The price of Peruvian bark in Rome decreased sharply around 1715.<sup>261</sup> In London, a similar development only occurred sometime after 1735: from the start of the century until then, a pound of bark was valued at approximately 60 pence, whereas at the end of the century, the same amount was valued at 26,5 pence.<sup>262</sup> The fact that the Peruvian bark trade in Amsterdam, at the hands of brokers in drugs, intensified in this same period is no coincidence: the Jesuits were replaced by commercial intermediaries with a better insight in trade requirements.

These developments—in combination with the issue of smuggling, both on land and at sea<sup>263</sup>—clarify why the inadequate distribution system of Peruvian bark was gradually replaced by a new commercial configuration, dominated by Spanish transatlantic imports and Dutch inter-European shipping and redistribution. How the Dutch came to dominate the redistribution of American imports into Cádiz is not entirely clear. **The Mayor's Archive offers no clues in this respect, because the owners of goods were anonymized in auction records (except in cases of shipwreck).** Initially, the Dutch were not allowed to trade directly with Spanish America, like any other nation except Spain itself. However, Dutch merchants were occasionally given permission to trade by the Spanish authorities. Thus, so-called 'register ships' from the Dutch Republic could trade with the New World, especially in the 1650s and 1660s.<sup>264</sup> After that, the Dutch presence in the Spanish Atlantic caused more concerns with the Spanish authorities, who actively tried to ban the Dutch from their American territories in the 1670s and 1680s. Thereafter, Dutch merchants attempted to establish commercial relationships in the New World themselves, which ultimately failed. Therefore, the Dutch were

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<sup>260</sup> Wallis, "Exotic Drugs and English Medicine", 34 (Table 5). The price evolution of Peruvian bark may not have been indicative of general price developments, as the prices of exotic *materia medica* had fallen significantly much earlier, between the 1630s and 1660s, as Wallis indicates (*ibidem*, 36). It is unclear if imports of Peruvian bark in London arrived directly from Cádiz, or via other places like Amsterdam.

<sup>261</sup> S. Boumediene, "From Tree-Bark to Medicinal Product: The Appropriation of Peruvian Bark (1640-1750)", unpublished paper, 21.

<sup>262</sup> Wallis, "Exotic Drugs and English Medicine", 35 (Table 6). The year-to-year price evolution of Peruvian bark between 1735 and 1796 cannot be inferred from Wallis's table.

<sup>263</sup> Jarcho, *Quinine's Predecessor*, 196-199, discusses smuggling routes for Peruvian products across the South American mainland; Lamikiz, *Trade and Trust*, 78-81, discusses transatlantic smuggling at sea.

<sup>264</sup> W. Klooster, *Illicit Riches: Dutch Trade in the Caribbean, 1648-1795* (Leiden: KITLV Press 1998) 56-59.

mostly dependent on inter-European shipping between Cádiz and Amsterdam for the provision of American products in the Dutch Republic. The Dutch may have dominated Mediterranean shipping in the early eighteenth century, as was discussed above, but it remains an open question whether Dutch-Iberian shipping was at all representative for European shipping patterns to and from Spain, as well as how we are to understand the flow of Peruvian bark in this configuration. Klooster maintains that Dutch shipping to and from Cádiz declined during the eighteenth century.<sup>265</sup> However, the data he provides for the second half of the century does not unilaterally point in that direction. Moreover, a correlation with auctions of Peruvian bark in Amsterdam is hard to **discern. Klooster's data are too sketchy to draw any conclusions about the importance of Dutch shipping in the supply of products like Peruvian bark to the Dutch Republic, as can be seen in Figure 11.** At best, an increase in Dutch shipping to and from Cádiz can be observed after the **Seven Years' War** (1756-1763), which coincides with a rise in the supply of Peruvian bark in Amsterdam. From 1765 until around 1775, the number of both ships and auctions declined, and then rose again until around 1780. After that, no correlation between shipping and auctions can be observed. It is likely that other merchants, from across Europe, participated in the drug trade whenever the opportunity arose, bringing consignments of Peruvian bark to Amsterdam when it was deemed profitable. Only in the hands of brokers in drugs in Amsterdam, then, were Atlantic *materia medica* products like Peruvian bark transformed into medical commodities, intended for a local market.

#### *The Spanish Transatlantic Trade System and the Brokers of Amsterdam*

What exactly was the position of brokers in drugs, if we compare their activities in Amsterdam with the global supply chain of Peruvian bark? From a European point of view, brokers may have started to specialize in drugs in an effort to lower the price level, an/or to shorten the supply route. This argument applies particularly well for Peruvian bark: from a commercial perspective, the involvement of brokers was a much more desirable method of procuring *materia medica* than the Jesuit system of distribution. If brokers actively intended to undercut the Jesuits and establish a more direct supply chain, this could be expected to have affected the price level as well, but the comparison with London does not show this, as the previous section has shown. The consumption of bark in London grew exponentially, decades before the price of bark decreased.

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<sup>265</sup> Ibidem, 62.



If, by analogy, the consumption of (and hence demand for) Peruvian bark in the Dutch Republic had reached similar levels as in London by the early eighteenth century, then the emergence of brokers in drugs in Amsterdam may have resulted in better availability initially, but not a lower price level.

As shown in Figure 10, the brokers procured a relatively stable supply of Peruvian bark until the middle of the eighteenth century. The price evolution of bark in Amsterdam has yet to be investigated, to see if a similar development occurred as in London.<sup>266</sup> However, if brokers had an active goal in mind when they emerged as a distinct group of connoisseurs of *materia medica*, it was probably their intention to focus on the domestic market—the provision of drugs to customers in and beyond the city of Amsterdam, and perhaps even the Dutch Republic as a whole—rather than to influence price developments for all of Europe. This is supported by the simultaneous emergence of advertising for public auctions. **Advertisements show that most of the brokers' activities were directed at** a supra-local, but not an international level. Brokers were especially important to supply a national market of *materia medica*, and yet they were also a function within the global supply chain. If we look at Peruvian bark, which steps were taken in the commercial chain before the bark reached the brokers in Amsterdam?

A reconstruction of the global commercial trajectory of Peruvian bark demonstrates that many steps were not transparent for brokers, buyers and patients in Europe. Most of the supply line was part of the Spanish Atlantic system, which means that only Spanish data allows us to reconstruct the transfer of bark until it was unloaded in Spain itself. The Spanish state never succeeded in implementing a full monopoly of cultivation, harvesting and trade of *Cinchona* species, the botanical genus which yields the varieties of Peruvian bark. However, it certainly was an important goal of the Bourbon administration, especially in the second half of the eighteenth century, to arrive at a similar level of control as, for instance, the Dutch had reached for cinnamon cultivation on Sri Lanka.<sup>267</sup>

Relatively speaking, Peruvian bark played a minor role in the Spanish transatlantic economy. Massive amounts were shipped to Europe, but Peruvian bark was not nearly the most important trade item in the

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<sup>266</sup> Price currents could offer the data to investigate this. See paragraph 2.1, esp. note 194. Cf. Wallis, "Exotic Drugs and English Medicine", 35 (Table 6), for data about London.

<sup>267</sup> Crawford, *Andean Wonder Drug*, 133 and 164, mentions actors from the eighteenth century, who drew the parallel with the Dutch cinnamon monopoly.

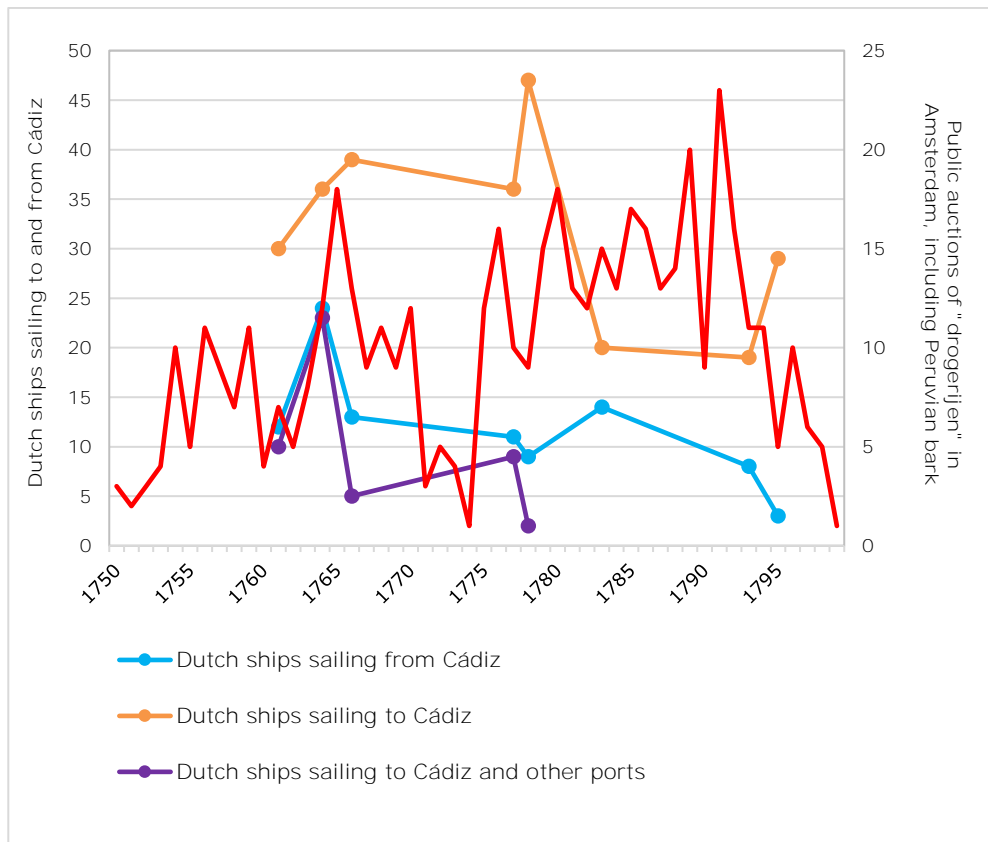


Figure 11. Dutch shipping to and from Cádiz in the second half of the eighteenth century, against the background of public auctions in Amsterdam, that included Peruvian bark.

Spanish Atlantic: for instance, it accounted for only 1,4% of all American imports in Spain between 1782 and 1796.<sup>268</sup> After gold and silver (which accounted for 56,4% of Spanish imports), other natural products were shipped in much larger quantities than Peruvian bark in this period, notably tobacco (13,6%), cacao (7,8%), sugar (5,5%), indigo (5,2%) and cochineal (4,2%).<sup>269</sup> Peruvian bark ranked fourth on the list of commodities from Peru, after silver, gold and cacao.<sup>270</sup> From the perspective of *materia medica*, on the other hand, Peruvian bark was one of the most important substances that was globally traded. Therefore, the example of Peruvian bark demonstrates many of the economic problems that occurred along the long supply line from Peru to Europe.

The first step to consider is the process of harvesting in Peru. Harvesting in the fragile and poorly accessible *Cinchona* forests was outsourced to local Peruvians, who made contracts with Spanish merchants and landowners to supply them with a specified amount of bark.<sup>271</sup> This system evidently gave the Spanish a great deal of control over the harvesting process. Traditionally, therefore, bark harvesters (*cascañeros*) have been regarded as rather inconsiderate seasonal laborers, who paid little attention to the kinds of bark they were harvesting, and who did not understand or care about the medical use of Peruvian bark in Europe.<sup>272</sup> In recent years, however, research has shown that the European understanding of medicinal plants from the New World was often deeply rooted in native American traditions. Some traditional layers of knowledge about plants were inadvertently transferred to and embedded in European medical culture.<sup>273</sup> The medical properties of Peruvian bark are a case in point. As a bitter substance, used against a disease that was classified as 'hot' in premodern Europe (i.e. malignant tertian and quartan fevers), Peruvian bark contradicted prevailing medical theories. In traditional Peruvian medicine, however, the use of this hot remedy against hot diseases was entirely justified. Peruvians probably

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<sup>268</sup> J. Fisher, "The Imperial Response to 'Free Trade': Spanish Imports from Spanish America, 1778-1796", *Journal of Latin American Studies*, 13:1 (1981) 35-78, there 52-53 (Table 5) and 55. This number refers to the combined imports of Cádiz and Barcelona.

<sup>269</sup> *Ibidem*, 52-53.

<sup>270</sup> Lamikiz, *Trade and Trust*, 83.

<sup>271</sup> Crawford, *Andean Wonder Drug*, 39-40.

<sup>272</sup> E.g. Duran-Reynals, *Fever Bark Tree*, 144-145.

<sup>273</sup> Crawford, *Andean Wonder Drug*, Chapter 1; Boumediene, *Colonisation du Savoir*, esp. Chapters 7-9.

discovered the febrifuge properties of Peruvian bark themselves after they encountered malarial fevers, which arrived in South America with European colonizers (see also **Pierre Pomet's remarks about cascarilla bark** in paragraph 5.1).<sup>274</sup>

If *cascarilleros* were more aware of the nature and importance of Peruvian bark than historians have hitherto acknowledged, the fact remains that druggists and apothecaries in Europe generally received Peruvian bark of variable quality and unclear provenance. The transatlantic shipping process of bark offers clues for an explanation. In theory, Spanish transatlantic trade operated on the basis of a state-controlled mechanism, the fleet/fare system. Since 1564, two fleets sailed out from Cádiz each year: the *flota* left in May for Mexico, while the *galeones* left in November for South America (see Map 2). Merchants of the *galeones* would meet with merchants from Peru at the yearly fair at Portobelo in Panama, and in fact most South American trade was required to pass at the Portobelo fair. The system had important benefits: prices could be fixed; the traveling distance for all merchants was reduced; there was only one occasion where deals were made; and the system exclusively favoured Spanish merchants.

In practice, however, the fleet/fare system was rife with problems. Portobelo was infested with malaria, which caused the *galeones* to moor first at nearby Cartagena in Colombia, before moving on to Panama. Smuggling posed a problem for the Spanish authorities, although it does not seem to have harmed Spanish trade in particular. Still, the fleet/fare system was declining by the end of the seventeenth century.<sup>275</sup> In 1739, after war with the British about the growing problem of illicit trade in the Spanish Atlantic, the system was lifted, but it was partly reinstated in 1754. Meanwhile, Spanish merchants had increasingly been allowed to trade directly with their American clients in consignment trade. In this way, so-called 'register ships' could operate outside of the fleet/fare system, but they were nonetheless sanctioned by the Spanish authorities—like the Dutch vessels that were allowed to trade in the 1650s and 1660, as was discussed above. In addition, merchants who traded with Peru began to substitute the Caribbean route for a direct connection

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<sup>274</sup> The existence of malaria in South America before Columbus is still a matter of debate. Crawford implies that the disease was unknown in Peru before the arrival of Europeans. See his *Andean Wonder Drug*, 32.

<sup>275</sup> Lamikiz, *Trade and Trust*, 73-81.

with Lima via Cape Horn, which was more difficult to navigate, but which reduced the risks of disease and contraband.<sup>276</sup>

Extensive records exist for the transatlantic trade of Peruvian bark within the Spanish Atlantic empire: those assembled by García-Baquero for the period 1717-1778<sup>277</sup> and by Fisher for the period 1778-1796.<sup>278</sup> The divergence of their figures for transatlantic Spanish trade in general has sparked a great deal of debate, mainly regarding the impact of Spain's free trade regulations of 1765 and especially of 1778.<sup>279</sup> The regulations dictated that trade to and from Spanish America was no longer restricted to one Iberian port (a privilege held by Cádiz since 1717) and a few ports in America (Veracruz for Mexico and Cartagena for South America), but that other Spanish ports could trade directly with the New World as well, in order to stimulate the Atlantic economy. As for the New World, while the regulation of 1765 extended free trade to islands in the Spanish Caribbean, the regulation of 1778 allowed free trade with most of mainland South America, including Peru.<sup>280</sup> In practice, the new regulations did not drastically alter the central position of Cádiz as the principal Atlantic port city in Europe: between 1778 and 1796, 84% of transatlantic trade still went through Cádiz.<sup>281</sup> Therefore, the records from Cádiz provide important data for the global availability of Peruvian bark in the eighteenth century.

To a certain extent, the availability of Peruvian bark on the Dutch market (as found in auction records) reflects the availability on the world market (as studied by García-Baquero and Fisher). Figure 12a and 12b show the relationship between the availability of bark worldwide and in Amsterdam, throughout the eighteenth century. The data is shown in two separate graphs, because García-Baquero and Fisher provide their findings in different units (bulk volume and monetary value,

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<sup>276</sup> Ibidem, 81-84.

<sup>277</sup> A. García-Baquero González, *Cádiz y el Atlántico (1717-1778): El Comercio Colonial Español bajo el Monopolio Gaditano* (dissertation; Sevilla: Escuela de Estudios Hispano-America 1976).

<sup>278</sup> J. Fisher, "Imperial 'Free Trade' and the Hispanic Economy, 1778-1796", *Journal of Latin American Studies*, 13:1 (1981) 21-56; and idem, "Imperial Response". Both articles were re-published together as *Commercial Relations between Spain and Spanish America in the Era of Free Trade, 1778-1796* (Liverpool: University of Liverpool, Centre for Latin American Studies 1985).

<sup>279</sup> A.J. Kuethe and K.J. Andrien, *The Spanish Atlantic World in the Eighteenth Century: War and the Bourbon Reforms, 1713-1796* (Cambridge: Cambridge University Press 2014) 17-20.

<sup>280</sup> Fisher, "Imperial 'Free Trade'", 21-22.

<sup>281</sup> Lamikiz, *Trade and Trust*, 174.



Map 2. The fleet/fare system in the early modern Spanish Atlantic. Two fleets arrived in the Caribbean each year: the flota, destined for New Spain (Mexico), and the galeones, destined for Tierra Firme (the northern coast of mainland South America). The galeones would moor first at Cartagena in Colombia, then Portobelo in Panama (to escape the risks of malaria). Peruvian merchants shipped their goods along the Pacific coast, then carried them across the isthmus of Panama for the yearly fair at Portobelo. After the fair, both Atlantic fleets would rendezvous at Havana and sail back to Spain together.

respectively).<sup>282</sup> Especially Figure 12b shows that Fisher's data and the number of auctions in Amsterdam follow a similar pattern during the final decades of the century, with developments in Amsterdam often slightly lagging behind those in Cádiz, because of re-export from Spain to the Dutch Republic. For the period until 1778, Figure 12a offers a sketchier image of trade in Peruvian bark. Although the availability of bark in Spain and the Dutch Republic is occasionally similar, the Dutch supply generally demonstrates a more stable availability of bark than is suggested by the Spanish records.

Since *drogerijen* could be stored for a while, it can be expected that batches of bark would be stored in warehouses for times of scarcity. However, the virtual absence of Spanish data about shipment of bark during many years in the mid-eighteenth century, suggests that the Spanish records contain many gaps up until 1778. A likely explanation could be that ships were poorly registered in Cádiz, mainly as a result of smuggling, or because of the Atlantic wars in which Spain was involved: notably the War of Jenkins' Ear against Britain (1739-1748, which revolved around the issue of British smuggling in South America<sup>283</sup>); the Seven Years' War (1756-1763, with Spain participating from 1762, also mainly against Britain and partly fought in and about Spanish territories in the New World); the Anglo-Spanish War of 1779-1783; and finally the War of the First Coalition against France (1792-1797, which gave a decisive blow to Spanish Atlantic trade, as is clearly visible in Figure 12b as well). Another important observation from Figure 12a is that the fleet/fare system seems to have barely contributed to the global supply of Peruvian bark at any moment. Although *flotas* and *galeones* did sail out occasionally during the whole eighteenth century (except for the hiatus of 1739-1754 that was mentioned above), the system broke down in 1726-1731 after a disastrous fair in Portobelo, and essentially collapsed in 1739,

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<sup>282</sup> García-Baquero gives the amount of Peruvian bark in *arrobas*. One *arroba* roughly corresponds to 25 lb or 11,5 kg. Fisher gives the value of goods in *reales de vellón*, the basic Spanish unit that was used to value goods in ship registers. One *real de vellón* corresponds to 20 *pesos fuerte* (Fisher, "Imperial Response", 37n5). García-Baquero gives the price of Peruvian bark for the period 1747-1778 as 25 *pesos fuerte* (based on customs duties in Cádiz, which did not change during the entire period (García-Baquero, *Cádiz y el Atlántico*, vol. 2, 272-275). Thus, one might collate the data of both authors by recalculating Fisher's data for *arrobas* (i.e. 1 *arroba* = 25 *pesos fuerte* = 500 *reales de vellón*). However, since Fisher does not give prices of products for the period after 1778, and because both authors regard 1778 as an economic turning-point, which probably affected prices as well, the data from both authors are presented separately in Figure 12a and 12b.

<sup>283</sup> Lamikiz, *Trade and Trust*, 81.

when war broke out with Britain over the growing problem of transatlantic smuggling.<sup>284</sup>

These global developments primarily affected the Spanish transatlantic system, but ultimately, they also influenced the market for *materia medica* in Amsterdam. Apart from the Spanish economic regulations in 1765 and 1778, and the global political upheaval outlined above, other important processes can be seen to have contributed to the fluctuating availability of Peruvian bark in Amsterdam (as can be seen in Figure 10, 12a and 12b). **The Seven Years' War does not seem to have** caused much decline in trade until after Spain itself became involved in the war in 1762, which immediately had an effect on the Dutch availability of Peruvian bark. The diminishing number of auctions in Amsterdam in the early 1780s probably had as much to do with the Fourth Anglo-Dutch War (1780-1784) as with Anglo-Spanish hostilities in the same years. By far the greatest decline on the market in Amsterdam took place in the early 1770s, a development that cannot be observed in the Spanish records. This was probably caused by the grave financial crisis of 1772-1773, which meant, among other things, that bills of exchange (the common way for merchants to purchase goods in the New World) were no longer accepted in Amsterdam.<sup>285</sup> A resurgence of trade in Peruvian bark soon took place thereafter. These correlations between global trade in *materia medica* and the local market in Amsterdam require further research, to substantiate the causal connection between global and local availability more firmly. However, this analysis has aimed to show that global developments probably had more effect on the availability of *materia medica* in Amsterdam than local developments.

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<sup>284</sup> Ibidem, 80-81.

<sup>285</sup> P. Kosmetatos, "The Credit Crisis of 1772/73 in the Atlantic World", in: D. Coffman, A. Leonard and W. O'Reilly (eds.), *The Atlantic World* (London and New York: Routledge 2015) 491-510. The precise impact of the crisis of 1772-1773 on the transatlantic trade in commodities is unknown. Kosmetatos, who mainly discusses the role of England and Scotland, maintains that the crisis did not nearly have as much effect on the commodities trade as the Anglo-French war, which broke out in 1778 (p. 503). The crisis did cause real problems, however, e.g. for Dutch slave traders, whose bills of exchange were no longer accepted because of the crisis. See R. Paesie, *Geschiedenis van de MCC: Opkomst, Bloei en Ondergang* (Zutphen: Walburg Pers 2014) 107. On the other hand, when bills of exchange were not accepted in Amsterdam in 1763, this had no obvious repercussions for the trade in Peruvian bark. As the notary archives in the Amsterdam City Archives are being digitized, more information about the situation of 1763 and 1772 is likely to surface, as can be glanced on <http://alleamsterdamseakten.nl/artikel/650/het-wisselprotest/> and <http://alleamsterdamseakten.nl/artikel/942/het-wisselprotest-ii-de-bankencrisis-1763/>.



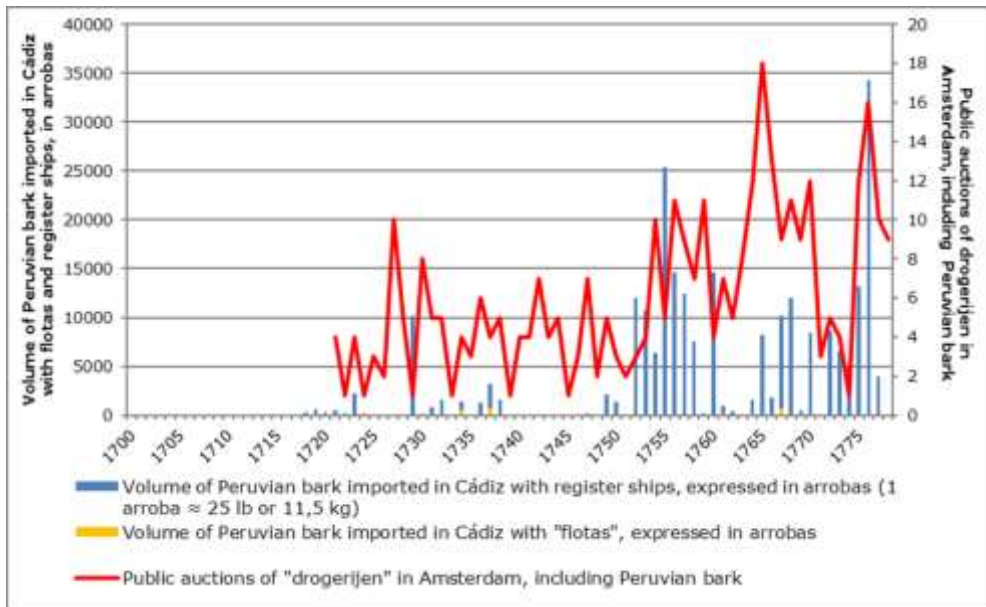


Figure 12a. Availability of Peruvian bark on the world market (in terms of bulk volume) and on the Amsterdam market (in terms of the number of public auctions that included Peruvian bark), 1700-1778. The Spanish records start in 1717.

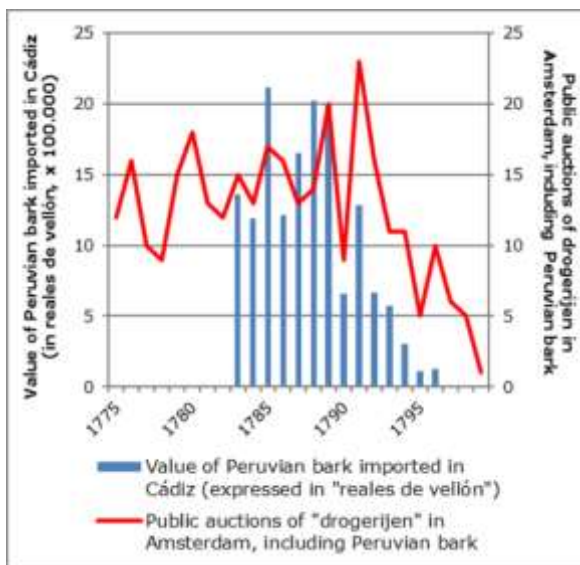


Figure 12b. Availability of Peruvian bark on the world market (in terms of monetary value) and on the Amsterdam market (in terms of the number of public auctions that included Peruvian bark), 1778-1799. The Spanish records end in 1796.

Another point of consideration is the importance of brokers as connoisseurs of drug components. For the Spanish empire, in the second half of the eighteenth century, Crawford maintains that a fierce struggle took place to determine who possessed the decisive expertise in issues about the quality and the nature of Peruvian bark: botanists, who often had first-hand knowledge of the substance and the tree from which it derived; or the Royal Pharmacy in Madrid, which had a lot of experience in testing various samples of imported bark?<sup>286</sup> In the Dutch Republic, it was not evident who should be regarded as the experts for *materia medica*. Apothecaries are traditionally seen as the principal candidates, because their artisanal training was concluded with an exam (usually monitored by physicians), where they were supposed to define and recognize the key characteristics of drug components, with the help of *simplicia* chests.<sup>287</sup> The connoisseurship of brokers cannot be gauged in a similar way. It can be expected that they learned about the characteristics of the many barks, roots, gums, resins, seeds and leaves in their domain exclusively by experience, on the spot, during the preparation of auctions. Brokers in drugs are mentioned in auction records from the moment they joined the guild, but only after a few years do they start to occur individually, as organizers of auctions and as buyers of products on behalf of their clients. It is likely that they learned their craft in the meantime, acquainting themselves with dozens of products, as well as with the many fraudulent products that must have circulated, before they came to be recognized as true connoisseurs.

In sum, the availability of Peruvian bark at public auctions in Amsterdam was to a large extent dependent on political and economic developments, in the Dutch Republic itself but especially in the Spanish Atlantic. From a Dutch perspective, Spain, which had wanted to create a monopoly numerous times during the eighteenth century, was in fact more than occupied with maintaining a regular supply of Peruvian bark to Europe. Even though the number of auctions fluctuated heavily from year to year, the brokers in drugs could procure their clients regularly, even though the largest part of the supply chain of Peruvian bark operated beyond their view. Attempts to reconstruct the entire chain of commerce suffer from similar intransparency. Many parts of the supply chain are still unknown: the producers in Peru who directed the bark harvesting

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<sup>286</sup> Crawford, *Andean Wonder Drug*.

<sup>287</sup> The Dutch *simplicia* chests that still exist have recently been studied in detail. See R. van der Ham and A. Bierman, *Van Gildekast tot Schoenendoos: Nederlandse Simpliciaverzamelingen* (Leiden: Erato 2017); and P. van Duin (ed.), *Collector's Cabinet with Miniature Apothecary's Shop* (Amsterdam: Rijksmuseum Afdeling Publicaties 2017).

process; the merchants who shipped the goods to Europe; places of departure and destination; redistribution patterns within Europe; temporary storage practices, and so on. What we do know, however, is that the brokers of Amsterdam were able nonetheless to maintain a steady practice of auctions of *drogerijen*, a practice which played an important part in the provision of *materia medica* to the Dutch Republic.

### Conclusion: Brokers as Independent but Essential Intermediaries

Brokers in drugs in Amsterdam developed into a specialised market in the first half of the eighteenth century. Newspaper advertisements are the medium through which we can observe this phenomenon, but more importantly, the growth of advertising practises itself spurred the specialisation process. Advertising allowed brokers to reach a much larger audience of potential customers than could be reached within the urban confines of Amsterdam. **In turn, this made the brokers' intervention in the commercial process all the more desirable, because merchants who had goods to sell, which would only appeal to a specialized clientele of druggists and apothecaries, immediately had access to a regional or even national audience of potential buyers, through the network of brokers.**

Brokers in drugs were able to maintain this practice, not least of all because they presented themselves as connoisseurs of *materia medica*, and because they were recognized as such by both sellers and buyers. Their practice bypassed the inherent problems of personal trade relationships. Brokers inserted themselves in the commercial process as a neutral third party between buyers and sellers, which gave commercial transactions a more pragmatics and solid character than was the case in the common practice of trading based on trust.

Once buyers and sellers gradually appreciated the opportunities that a specialised group of brokers could offer, the procedure of brokerage remained unaltered. Quantitative growth of auction practices is the clearest phenomenon that can be observed for the rest of the eighteenth century: the frequency of auctions increased, and the group of brokers expanded their own number as a result. Recognition of product diversification on the global market for *materia medica* seems not to have been a central concern for brokers. We should not, however, forget the fact that the drug trade required a comparatively large amount of specialized knowledge. The connoisseurship of brokers was most likely acquired during years of practical experience in handling medicinal substances, while the provenance of most products was hardly known to the brokers. It was a commercial accomplishment on their part that they

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succeeded nevertheless in establishing a position of both connoisseurship and trustworthiness.

## Chapter 3. Selling Fever Remedies: Meanings and Uses of Medical Terminology in Medicine and Commerce<sup>288</sup>

### Introduction

In the previous chapter, it was observed that Peruvian bark was regularly available for druggists and apothecaries in the Dutch Republic in the eighteenth century. Especially after brokers in drugs became involved in the commercial process, the supply of substances like Peruvian bark acquired a sustained character. Thus, trade in *materia medica* demonstrates the existence of a 'medical marketplace', where medical goods and services were commodities, with an economic value that can be distinguished from their medical significance. Even though the medical marketplace has now lost much of its pertinence among historians<sup>289</sup>, it is still a valuable framework to study the evolution of medical supply and demand in the early modern period, and used as such in this chapter. The magnitude of the little-known primary source material that was explored in the previous chapter shows that a separate economic perspective on medical commodities can still open new windows on early modern globalism.

This chapter highlights the significance of medical commodities once again. It does so by shifting from trade records to what could be termed the 'opposite end' of the medical market. Here we enter the domain of irregular medical practice, where a range of practitioners with diverse **backgrounds promoted 'secret remedies' for all kinds of diseases**. Quantitatively, fever remedies featured prominently in this market segment. As such, they are highly valuable: both as evidence for the existence of sustained, irregular medical practices in the early modern period, and as a supplement to the narrative about regular medical practices, like the imports of *materia medica* that were explored in Chapter 2. The shift from one market segment to another requires some

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<sup>288</sup> An early version of this chapter was presented at the Huizinga Institute's symposium for graduate students, De Hoorneboeg, Hilversum (October 4, 2016). I thank all the attendants, and especially respondent Wijnand Mijnhardt, for their critical remarks and suggestions. Furthermore, I thank Rina Knoeff and my colleagues from room 4.69, for their extensive comments on early drafts of this chapter.

<sup>289</sup> The conceptual relevance of the 'medical marketplace' was discussed in the General Introduction, esp. note 16.

explanation. Therefore, the concepts of 'irregular medical practice' and 'secret remedies' will be explained first.

Secrecy of remedies in the early modern period requires clarification on two levels: their association with quackery and their legal status. At first sight, remedies that were advertised in newspapers would nowadays be classed as quack remedies. However, the distinction between quacks and regular medical practitioners cannot be drawn as strongly for the past as nowadays.<sup>290</sup> In the eighteenth century, 'regular medical practitioners' are usually quite recognizable. It concerns physicians, (barber-)surgeons, apothecaries and midwives: the kinds of practitioners who were (semi-)professionally trained, organized and regulated. In advertisements, however, we encounter a heterogeneous multitude of 'irregular practitioners', a term that will be used throughout this chapter: itinerant or sedentary peddlers, who all presented themselves as skilled practitioners to some extent, and whose remedies can generally be classed as 'secret remedies'. Although there is an extensive body of modern literature on secrecy in early modern science and medicine<sup>291</sup>, secret remedies in this chapter are defined in a straightforward way: remedies of which the contents were kept hidden from the public by the producers and/or advertisers, because of the commercial interests involved.

Just as we can distinguish between regular and irregular *practitioners*, we can separate regular and irregular *remedies*. It can be argued that all the remedies we encounter in advertisements were irregular (and thus: secret) remedies. However, irregular remedies were not the exclusive domain of irregular practitioners. The standard therapeutic procedure in

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<sup>290</sup> For the Dutch context, the medical market and the substantial role of irregular practice have been studied in detail by F. Huisman, *Stadsbelang en Standsbesef: Gezondheidszorg en Medisch Beroep in Groningen 1500-1730* (Rotterdam: Erasmus Publishing 1992); see also Huisman's "Shaping the Medical Market: On the Construction of Quackery and Folk Medicine in Dutch Historiography", *Medical History*, 43:3 (1999) 359-375, esp. 360-361.

<sup>291</sup> Especially relevant for debates about natural knowledge are W. Eamon, "From the Secrets of Nature to Public Knowledge", in: D.C. Lindberg and R.S. Westman (eds.), *Reappraisals of the Scientific Revolution* (Cambridge: Cambridge University Press 1990) 333-365; E. Leong and A. Rankin (eds.), *Secrets and Knowledge in Medicine and Science, 1500-1800* (Farnham and Burlington: Ashgate 2011); for the Dutch context, see K. Davids, "Public Knowledge and Common Secrets. Secrecy and its Limits in the Early Modern Netherlands", *Early Science and Medicine*, 10:3 (2005) 411-427; the importance of secrecy for pharmacy is stressed by J. Rivest, "Secret Remedies and the Medical Needs of the French State: The Career of Adrien Helvétius, 1662-1727", *Canadian Journal of History*, 51:3 (2016) 473-499

'regular medicine' was as follows. Remedies were only prescribed when there was a medical need: a patient would consult a physician, who might prescribe a remedy, that would be prepared by an apothecary. This practice made use of standard, regular remedies, such as were described in the many municipal pharmacopoeias (see the Appendix). In this demand-driven approach, there was no need to promote the official, regular remedies in newspapers. However, anyone who had a medical invention to sell (or permission to do so) could resort to advertising. This included practitioners who have traditionally been classed as 'quacks' in scientific literature. It also included some regular physicians and apothecaries, who advertised for commercialized versions of regular medicines, or for their own secret preparations.<sup>292</sup> In Chapter 1, we already saw some other examples of the fluid boundaries between regular and irregular remedies: **Robert Talbor's secret remedy managed to enter** the high-profile level of court medicine in Paris around 1680, while the renowned apothecary shop of the Jesuits in the same city sold secret remedies, that were property of the Order. In other words, secret remedies could have many faces: they could be associated with irregular, but also with regular practitioners, and both the products themselves and the secrets involved in their production were commodities in their own right.<sup>293</sup>

Furthermore, quack remedies were often cheaper than those made and sold by regular practitioners, while their contents were probably quite similar. Many quack remedies were, in fact, commercialized versions of 'official', regular remedies.<sup>294</sup> In advertisements, it is often unclear what the qualifications of the advertiser are, to both early modern and modern readers. But although both the ingredients of secret remedies and the qualifications of their inventors were largely shrouded in mystery, advertisements often used many words to describe the wildly diverse

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<sup>292</sup> L. Kooijmans, *De Geest van Boerhaave: Onderzoek in een Kil Klimaat* (Amsterdam: Prometheus / Bert Bakker 2014) 23, maintains that every physician possessed several secret recipes of his own.

<sup>293</sup> Kooijmans, *Geest van Boerhaave*, 48, relates how Gerard van Swieten (1770-1772), a pupil of Boerhaave, gave one of his teacher's secret recipes to Boerhaave's cousin Herman Kaau Boerhaave (1705-1753), upon the latter's departure for Russia in 1741. Boerhaave's recipes also occurred in irregular practice. There can be found an advertisement in the '*s Gravenhaegse Courant*, 27-08-1745, promoting a treasured home remedy (*onwaerdeerlyk Huys-Medicament*), that had been invented by Boerhaave, and was then entrusted to one of his friends, who had an apothecary copy it for commercial use.

<sup>294</sup> Waddington, *Introduction*, 90-92 and 95. This probably applies also to Boerhaave's secret remedy, that can be found in advertisements (see the previous footnote).

diseases for which the remedies could be applied. Fevers were often mentioned as only one indication among many. As such, the qualification of irregular remedies in advertisements as *quack remedies* is not entirely inappropriate after all: these remedies were most often presented as panaceas (i.e. applicable for many diseases) and simultaneously as miracle drugs (i.e. with the promise of a speedy cure).

In modern scientific literature, early modern secret remedies are often referred to as 'proprietary' or 'patent medicines'.<sup>295</sup> This suggests some level of legal protection of names and/or preparations of remedies. For England, Elizabeth Lane Furdell has noted that the 'Statute of Monopolies' of 1624 stipulated that 'Letters Patent' could be offered to producers of remedies, which meant a monopoly on production for fourteen years, yet such letters were issued only eighteen times between 1650 and 1750. Apparently, advertisers took the risks of forgery and unauthorized distribution for granted, because advertising did more to generate publicity (and money) than protective measures.<sup>296</sup> For the Netherlands, Frank Huisman has argued that the law on trademarks (*Merkenwet*) of 1880 was the first significant move towards medical brand protection, which, together with the medical laws of 1865 and the abolition of the newspaper tax (*dagbladzegeel*) in 1869, ignited a "Golden Age of self-medication" during the next decades, and the first era of successful medical advertising.<sup>297</sup> However, advertisements show that self-medication and medical advertising had already become big business in the eighteenth century, without any significant help from protective regulations. The Dutch market for irregular fever remedies started booming in the late 1720s, probably as a result of a fever epidemic (which will be discussed in Chapter 5). No protective measures for secret remedies are known from that period, which indicates that the market for irregular practice had its own dynamic, independent of regulations from civic or medical authorities.

Since so many advertisements for fever remedies can already be found in the eighteenth century, the purpose of this chapter is to trace patterns in pharmaceutical advertising in that period, and the changing

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<sup>295</sup> L.H. Curth, "Medical Advertising in the Popular Press: Almanacs and the Growth of Proprietary Medicines", in: eadem (ed.), *From Physick to Pharmacology: Five Hundred Years of British Drug Retailing* (Aldershot and Burlington: Ashgate 2006) 29-47; Waddington, *Introduction*, 82-83.

<sup>296</sup> E.L. Furdell, *Publishing and Medicine in Early Modern England* (Rochester (NY): Rochester University Press 2002) 137. For Georgian England, similar conclusions were drawn by A. Mackintosh, "Authority and Ownership: The Growth and Wilting of Medicine Patenting in Georgian England", *British Journal for the History of Science*, 49: 4 (2016) 541-559.

<sup>297</sup> Huisman, "Patiëntenbeelden", 213.



use of medical terminology for fevers in newspaper advertisements. These advertisements are a highly valuable source to reveal the existence of a substantial market for irregular medical goods and services, where practitioners of all kinds tried to appeal to a large audience of potential customers. A diachronic perspective on the use of medical terminology as an advertising practice helps to discover the evolution of cultural and commercial dimensions of early modern diseases and remedies.

This chapter covers largely unexplored territory, with regard to both subject and sources. For the eighteenth-century Dutch Republic, the appropriation of medical knowledge in the public domain is a little-known topic. Fevers provide a valid use case to study the interplay of medical and public knowledge about illness and remedies more generally, because of the omnipresence of fevers in a wide array of early modern sources. In modern research, fevers have been studied in some detail within the domain of early modern medicine<sup>298</sup>, but the cultural and commercial ramifications of fevers have received little attention from scholars. Newspaper advertisements provide an abundant, but often neglected, source to study these topics. Only now that many eighteenth-century newspapers have become digitally available, is it possible to analyse newspapers in a systematic way, as was discussed in **the 'Historiography' and 'Methodology' sections of** the General Introduction. This chapter analyses the advertisements for fever remedies that were assembled in Database 2: nearly 5000 advertisements for secret remedies against fever, in Dutch newspapers between 1680 and 1799.

In order to direct the search for patterns in pharmaceutical advertising, this chapter consists of three paragraphs. The first paragraph discusses the quantitative trends that can be observed in the collection. Distant reading allows to observe trends that are worth investigating in more detail in the following sections. The second paragraph addresses the nature of terminology for fever in the eighteenth century. The Latin terms from medical discourse and their vernacular counterparts in the public domain are compared, to explore the problems that arose when medical terminology was reused in advertisements. The final paragraph extends, this discussion by connecting it to the modern debate about the supposed 'reconfiguration of the body' in the early modern period. This paragraph analyses the nature of fever terminology in advertisements from the dichotomous perspective of 'specific remedies' versus 'panaceas' in advertisements. Modern studies have argued that, in regular eighteenth-century medicine, there has been a gradual separation between remedies with a specific application for a specific disease (such as Peruvian bark for

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<sup>298</sup> See note 26 for the key publications about fever theory.

tertian fever), on the one hand; and panaceas, that could be used for various diseases (such as secret remedies for certain or all fevers, plus a range of other indispositions), on the other.<sup>299</sup> Advertisements show that the domain of irregular practice held the 'middle-ground' when it comes to knowledge and understanding of an ambiguous disease category like fever. Advertisements reveal a fusion of medical, commercial and cultural notions of fever, and these combined notions have much to say about the evolution of medical categories in general. In this way, this chapter stresses the importance of medical advertising in the eighteenth century, where the reuse of medical terminology was a strategic instrument for practitioners to address and persuade a broad range of potential customers.

### 3.1. The Evolution of Advertising Practices for Secret Fever Remedies in Eighteenth-Century Dutch Newspapers

This paragraph investigates the nature of advertisements for fever remedies in more detail. In the General Introduction, the great diversity of medical advertising was already noted. Trends in advertising for remedies can be observed by looking at fever remedies, which occur very frequently. Paragraph 3.2. will discuss the nature of terminology for fevers in advertisements. But first, advertisements will be discussed from a diachronic perspective, to trace patterns in advertising practices against the background of their use in modern research on the medical economy of the past.

#### *Positioning Advertisements in the History of Early Modern Medicine*

Medical advertising flourished in early modern Dutch newspapers, as was pointed out in the General Introduction. We can already find medical advertisements in the first half of the seventeenth century, but the numbers are modest. Dirk Kranen assembled 333 advertisements for remedies from the *Oprechte Haerlemsche Courant*, one of the most important early newspapers, for the period 1656-1733.<sup>300</sup> The number of advertisements rose significantly during the eighteenth century (see Figure 13), but only a handful of studies have been devoted to their contents. This is not surprising, because only mass digitization allows a systematic and fruitful study of early modern newspapers, but the fact

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<sup>299</sup> Cook, "Markets and Cultures".

<sup>300</sup> Kranen, *Advertenties*. This book has been a great source of inspiration for this chapter. It is basically a sourcebook with transcriptions and notes of medical advertisements from the *OHC*.

remains that the eighteenth century is an under-studied period, when compared to the century that preceded and followed it. The few relevant studies about the eighteenth century all predate the digital era.<sup>301</sup> Advertisements for fever remedies started to occur by the late seventeenth century. The earliest advertisement from Database 2, in which fever is mentioned, was found in the *Amsterdamse Courant* in 1683.<sup>302</sup> The bulk of advertisements was found in eighteenth-century newspapers.<sup>303</sup>

Thanks to the digital availability of eighteenth-century newspapers, we can observe the evolution of patterns in medical advertising. Although the interconnection of medical, cultural and commercial dimensions of early modern medicine is revealed in the long sentences of many advertisements, they offer, first, a window on the commercial nature of irregular medical practice. This is highly interesting from the perspective of the medical market, as was discussed in the Introduction, but it is equally interesting to analyse the indirect ways in which advertisements reveal the perspective of the actual consumers, the patients, by means of the medical terminology that advertisements used to appeal to customers. For that reason, we should regard advertisements as a valuable source to study medical consumerism in the past, although they are always coloured by the motives of the advertisers.

Deneweth and Wallis have been the first to attempt a long-term overview of developments in Dutch medical consumption, based on medical debts in probate inventories.<sup>304</sup> Although the authors are aware

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<sup>301</sup> Since all relevant modern studies about early modern Dutch medical advertising date from the period before mass digitization, they are usually only based on small samples of material. The only studies that are exclusively devoted to medical advertising in eighteenth-century Dutch newspapers are A. van Dam, "Een Huwelyk van gewisse tusschen Minerva en Eskulaap: De Boekverkoper als Kwakzalver", *Mededelingen van het Genootschap Jacob Campo Weyerman*, 11:1 (1988) 20-27; Huisman, "Gezondheid te Koop"; and Kranen, *Advertenties*. Much older, but still relevant, is M.A. van Andel, "Kwakzalvers-Reclames in Vroeger Eeuwen", *Nederlandsch Tijdschrift voor Geneeskunde*, 56 (1912) 297-310. Schneider, *Nederlandse Krant*, Chapter 6, briefly discusses premodern advertising. Furthermore, the importance of advertising for Dutch irregular practitioners is highlighted by H. de Waardt, "Breaking the Boundaries: Irregular Healers in Eighteenth-Century Holland", in: M. Gijswijt-Hofstra, H. Marland and H. de Waardt (eds.), *Illness and Healing Alternatives in Western Europe* (London and New York: Routledge 1997) 141-160.

<sup>302</sup> *Amsterdamse Courant*, 06-03-1683.

<sup>303</sup> Out of the 4861 advertisements that were assembled in Database 2, only 39 date from (the last two decades of) the seventeenth century.

<sup>304</sup> Deneweth and Wallis, "Households". This was the first study to use probate inventories to study early modern Dutch medicine.

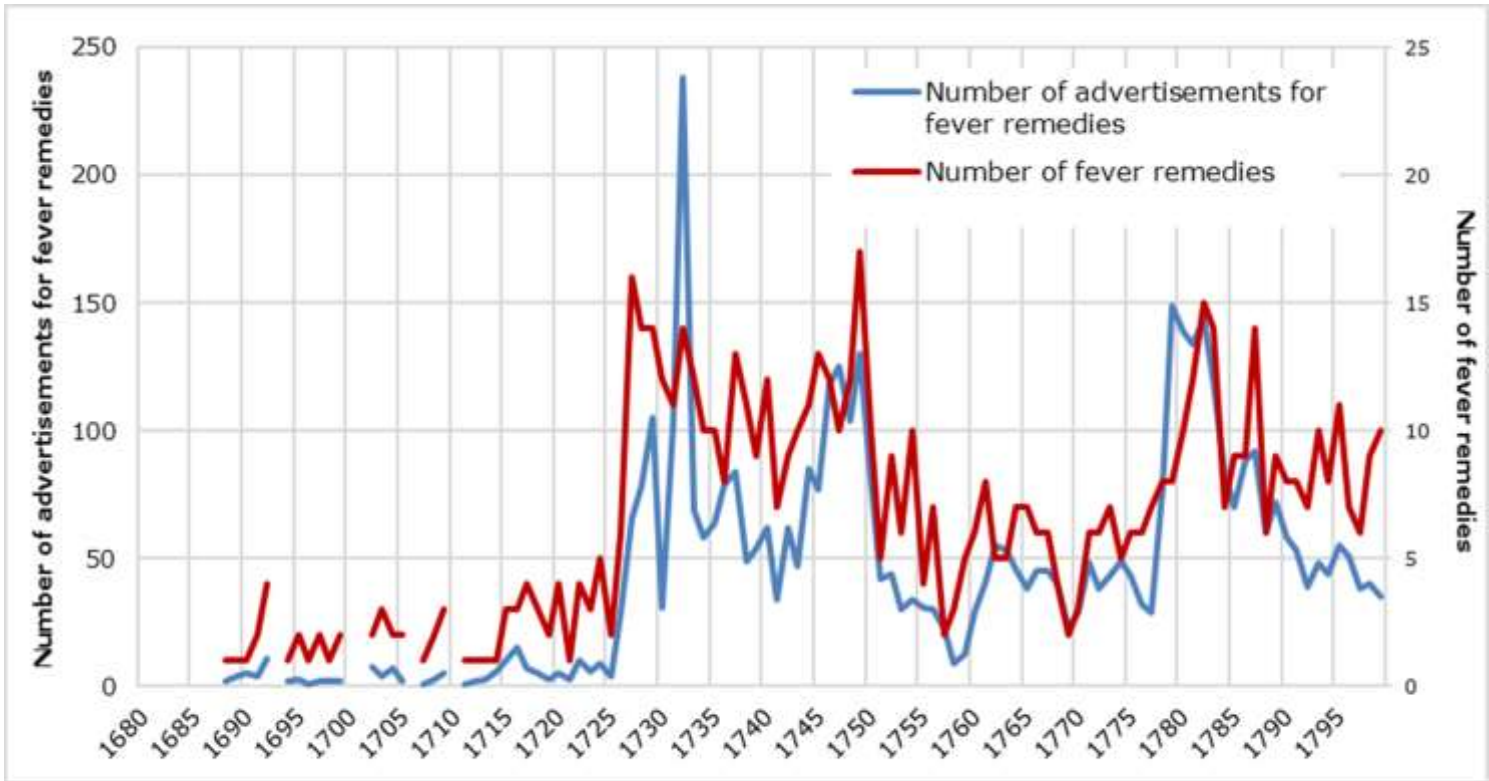


Figure 13. The distribution of advertisements for fever remedies across the period 1680-1799, and the corresponding number of fever remedies, in Dutch newspapers.

that the fairly random occurrence of inventories allows no full evaluation **of patients' willingness and ability to participate in medical consumerism**, they succeed in demonstrating that the Netherlands were a patchwork of regional differences: between coastal and inland regions; between cities and smaller localities; and that medical consumption broadly reflected **people's "market participation, their income, level of monetization and engagement in other forms of non-essential consumption."**<sup>305</sup> Their study, however, only reflects the consumption of regular medicine, as it was defined above in the Introduction: the goods and services of physicians, (barber-)surgeons, apothecaries and midwives. Advertisements, on the other hand, demonstrate that irregular practitioners must have made up a significant part of the medical market, although their exact importance cannot be calculated on the basis of advertisements only.

It should be emphasized that **patients'** consumption of irregular remedies is much harder to determine than that of regular remedies, because the number of available sources differs, but advertising practices enable the historian to make assumptions about the susceptibility of patients for irregular remedies. For quite some remedies, advertisements occurred for years or even decades, which suggests that the required financial investment in advertising must have paid off in terms of remedies sold. Moreover, it is difficult (and not the purpose of this chapter) to investigate the ratio between the use of regular versus irregular remedies. We do not know if and when patients would have preferred regular remedies over irregular ones (or vice versa), if such a distinction can be made at all.<sup>306</sup> Likewise, we do not know to what extent patients would actively search for cures themselves, either on the regular or the irregular market, or whether they were first and foremost guided by the prescriptions of regular practitioners. The increase in advertising for secret remedies might comply with the thesis that the mid-eighteenth century was a golden age for irregular practice and self-medication, during which patients actively went looking for medical help themselves<sup>307</sup>, but the frequency of advertising does not unilaterally explain how popular or successful these remedies really were. Still, the massive occurrence of advertisements for fever remedies allows for the

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<sup>305</sup> *Ibidem*, 550.

<sup>306</sup> The doctor-patient ratio in the Dutch Republic seems to have been quite favourable, at least in the seventeenth century. See Cook, *Matters of Exchange*, 153-154, which discusses the ratio of regular practitioners only. Furthermore, we do know that physicians, apothecaries and quacks were all involved in a competitive struggle to **attract patients**. See S. King, "Accessing Drugs in the Eighteenth-Century Regions", in: L.H. Curth (ed.), *From Physick to Pharmacology: Five Hundred Years of British Drug Retailing* (Aldershot and Burlington: Ashgate 2006) 49-78, esp. 67-68.

<sup>307</sup> Waddington, *Introduction*, 79.

claim that these remedies represented a substantial share of the market for fever remedies, which in itself is worth investigating in more detail.

For an in-depth analysis of advertising strategies in early modern newspapers, the scarce scientific literature about the Netherlands does not offer a useful framework. For this, we should turn to studies about British newspapers instead. In the past few decades, an extensive body of literature has elaborated on medical advertising in Britain: in newspapers, but also in other media, like broadsheets, pamphlets, and almanacs.<sup>308</sup> Although most of these studies emphasize the diversity and the commercial character of medical advertising, they often provide, first of all, a rather whimsical tour of salient features that can be found in relatively small collections of advertisements. More generally, several studies correlate medical advertising to the rise of consumerism in eighteenth-century Britain<sup>309</sup>, which corresponds to the argument by Deneweth and Wallis. However, one problematic argument that can be found in virtually all modern studies is the assumption that all irregular remedies must have been frauds. Although there is an enormous body of primary evidence to suggest that, indeed, many irregular remedies were not as useful—and were *known* to be not as useful—as their producers claimed, the argument has a ring of presentism: it is easy not to ascribe any possible efficacy to secret remedies from the past, in an era when regular and irregular practice have been largely disconnected. For the eighteenth century, the fact remains that there simply is too little

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<sup>308</sup> Many examples of medical advertising in Britain can be found in the works of Roy Porter, e.g. in "The Language of Quackery in England, 1660-1800", in: P. Burke and R. Porter (eds.), *The Social History of Language* (Cambridge: Cambridge University Press 1987) 73-103; and in *Health for Sale: Quackery in England 1660-1850* (Manchester: Manchester University Press 1989). Other examples include J. Burnby, "Pharmaceutical Advertisements in the Seventeenth and Eighteenth Centuries", *European Journal of Marketing*, 22: 4 (1988) 24-40; F. Doherty, *A Study in Eighteenth-Century Advertising Methods: The Anodyne Necklace* (Lampeter: Edwin Mellen Press 1992); U. Fries, "Electuarium Mirabile: Praise in 18th-Century Medical Advertisements", in: J. Aarts, I. de Mönnink and H. Wekker (eds.), *Studies in English Language and Teaching: In Honour of Flor Aarts* (Amsterdam and Atlanta: Rodopi 1997) 57-73; L.F. Cody, "'No Cure, No Money,' or the Invisible Hand of Quackery: The Language of Commerce, Credit, and Cash in Eighteenth-Century British Medical Advertisements", *Studies in Eighteenth-Century Culture*, 28 (1999) 103-130; Furdell, *Publishing and Medicine*, esp. Chapter 7; Curth, "Medical Advertising".

<sup>309</sup> Esp. Cody, "'No Cure, No Money'", 123, and Curth, "Medical Advertising". For an overview of the rise of consumerism in Britain, see J. White, "A World of Goods? The 'Consumption Turn' and Eighteenth-Century British History", *Cultural and Social History*, 3:1 (2006) 93-104; I. Baghdiantz McCabe, *A History of Global Consumption* (London and New York: Routledge 2015), offers a focus on exotic substances with medicinal application, like tobacco and coffee.

information about the contents, availability and consumption of most secret remedies in Dutch advertisements, to suggest that all of them were frauds.

The numerous, but brief references to fever that can be found in early modern Dutch sources from the public domain, tell us little about how patients experienced disease, what types of remedies they would apply, or to whom they would turn for a cure.<sup>310</sup> We already saw this process at **work in Christiaan Huygens's letters in Chapter 1, including the ensuing methodological problems faced by the historian who encounters such sources.** Despite the growing body of modern literature about medical advertising, then, the question remains: how should we approach the contents of medical advertisements, at the crossroads of commerce, medicine and culture? A study by Maurizio Gotti is useful for this purpose. Gotti aims to define key discursive elements of modern advertising, and he analyses to what extent these characteristics can be discovered in the eighteenth century.<sup>311</sup> Drawing especially on medical advertisements, he recognizes three main features:

- *Attention value*: "some kind of unconventional use of the language [...] to catch the prospective customer's eye"<sup>312</sup>;
- *Readability*: "a simple, personal, and colloquial style, and the use of familiar lexis"<sup>313</sup>;
- *Memorability*: "slogans, key phrases, repetition of expressions, lexical and syntactic iteration, alliteration, metrical rhythm and rhyme"<sup>314</sup>

Gotti maintains that all three elements were, in fact, absent in the eighteenth century. First, advertisements used to emphasize important elements of the message to **retain a reader's attention, rather than apply** linguistic tricks. Second, in terms of readability, they differed substantially from their modern counterparts, with very formal language and long, complex sentences. Finally, memorability was not so much achieved by applying stylistic inventions to the text (which is still very important nowadays for creating 'brand awareness'), but rather by highlighting the qualities of products and services with comparative and superlative

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<sup>310</sup> P. Wallis, "Introduction: The Growth of the Early Modern Medical Economy", *Journal of Social History*, 49: 3 (2016) 477-482, there 478, lists these and several other issues relating to the patient's perspective, as topics that have not received much attention from historians.

<sup>311</sup> M. Gotti, "Advertising Discourse in Eighteenth-Century English Newspapers", in J. Scaffari e.a. (eds.), *Opening Windows on Texts and Discourses of the Past* (Amsterdam and Philadelphia: John Benjamins Publishing Company 2005) 23-38.

<sup>312</sup> *Ibidem*, 28.

<sup>313</sup> *Ibidem*.

<sup>314</sup> *Ibidem*, 31.

statements (which is equally important nowadays). **Contrary to Gotti's** argument, however, advertisements for fever remedies do show these discursive elements in the eighteenth century to some extent, as will be demonstrated in the following section.

### *Trends in Dutch Newspaper Advertisements for Fever Remedies*

When we look at the distribution of advertisements and fever remedies over the course of the eighteenth century, we can observe great fluctuations from year to year, which points to a very dynamic market for fever remedies. This can be seen in Figure 13. The large number of advertisements for fever remedies can be regarded as an indication for the availability of irregular remedies more generally, as discussed above.<sup>315</sup> There are modest numbers of advertisements for the late seventeenth and early eighteenth century, but advertising increased exponentially from the 1720s until the 1750s. During the second half of the century, the number of both remedies and advertisements fluctuated heavily, with another peak in the final decades. The overall picture shows a prolonged period of advertising popularity, in accordance with the modern historical interpretation that the mid-eighteenth century was a golden age for irregular practice and self-medication, as was discussed in the Introduction.<sup>316</sup> Newspaper advertisements could be a valuable means to popularize remedies in an age when patients actively started looking for cures themselves, and the number of advertisements shows that irregular practitioners were willing to respond to that demand.<sup>317</sup>

Essentially, the advertisements in Database 2 have only one thing in common: the occurrence of fever, which is mentioned as an indication. The only other feature that is shared by most advertisements is the fact that they were secret remedies, as they have been defined in the previous section: remedies that were available to a general audience, but their composition was concealed from the public by the inventors. Advertisements show this secrecy as well, and they sometimes mention it explicitly in the name or description of the remedy (e.g. as in 'Arcanum antifebrile'). The frequent use of Latin names confirms the presence of **elements that comply with Gotti's aspects of attention value and memorability**. Readability, on the other hand, is hard to observe in the

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<sup>315</sup> I.e. for remedies that were advertised in print. Based on my research for Database 2, I estimate that fever remedies comprise roughly 1/5 or 1/4 of all advertisements for remedies in the eighteenth century.

<sup>316</sup> Waddington, *Introduction*, 79.

<sup>317</sup> This is also argued by Waddington, *Introduction*, 89-91.



often lengthy descriptions of the virtues or applications of remedies, that can be found in advertisements. Furthermore, ingredients of remedies are hardly ever mentioned. There are few exceptions to this rule. A man called Delaunay advertised in 1738 for a febrifuge powder made of some pulverized root, without any additions.<sup>318</sup> A man called Tiedeman advertised in 1780 for a remedy made of Peruvian bark, cremor tartari (potassium bitartrate) and cloves.<sup>319</sup> A similar, but opposite strategy occurred from the late 1720s onwards: numerous advertisements started to mention the absence of Peruvian bark from fever remedies (which had become a standard ingredient of fever remedies in regular eighteenth-century medicine), without disclosing the actual ingredients. An example is an advertisement by Cornelis Oly, 'doctor' in Edam, whose remedy **promised to cure "other-day, three-day- and so-called inner fevers [...], without the inclusion of the suspicious China China"**.<sup>320</sup> This theme should be regarded as a specific commercial strategy, aimed at patients who might have reservations against the use of Peruvian bark. As such, advertisers might have been responding to public distrust of an ingredient, without renouncing the secrecy of their remedy. In other words, the absence of Peruvian bark as a theme in advertisements reveals something about the public dimension of fever perception, albeit indirectly. Furthermore, mentioning the absence of Peruvian bark from fever remedies had everything to do with epidemic fever, which will be explored in Chapter 5.

To illustrate the diversity of 'secret' and 'irregular' remedies, it is useful to give an overview of the main characteristics of the Top 20: the fever remedies for which most advertisements were found (see Table 5). Again, **Gotti's concepts of attention value and memorability can especially** be observed in the names of remedies. Remedies were recognizable to the public by two things: a 'brand name' on the one hand; and/or the name of the inventor or principal distributor (or both), on the other hand. These 'brand names' were often lengthy descriptions with many positive adjectives ('famous', 'true', 'universal', 'excellent', 'pleasant', and so on), that result in quite unique descriptions of remedies. Some remedies were explicitly associated with their inventor, certainly if the inventor was also the prime advertiser. Examples are 'a delightful bath of medicine', which was invented by Johan van Dueren (†1694) and later transferred to his

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<sup>318</sup> *Oprechte Haerlemsche Courant*, 13-09-1738.

<sup>319</sup> *Oprechte Haerlemsche Courant*, 29-04-1780.

<sup>320</sup> *Amsterdamse Courant*, 11-07-1733: "voor de anderendaegse, derdendaegse, en de sogenaemde binnenkoorts [...], zonder dat daer in komt de verdagte China China".

heirs (no. 6 in the Top 20). Van Dueren was a curious figure, who worked consecutively in Rotterdam, Delft and The Hague. His remedy was a miracle cure that was heavily criticized<sup>321</sup>, but at the same time he published his serious medical observations in the self-edited medical journal of the Amsterdam physician Stephan Blankaart (1650-1704).<sup>322</sup> As such, Van Dueren is a clear example of an advertiser who operated at the crossroads of regular and irregular medicine.

Most of the remedies in the Top 20 were advertised in the newspapers of several cities, and sold in various locations. Only rarely, however, could the remedies be purchased in the exact same places as where the advertisements were published. The 'pleasant and cordial stomach elixir' (no. 10 in the Top 20), for instance, was advertised in fourteen newspapers from nine cities, but the advertisements only mention Lodewijk Stechwey's **bookshop** in The Hague, and the dentist Simon Nathans in Amsterdam, as the places where it could be purchased. This dichotomy between advertising strategies and distribution practices applies to many remedies, which implies that prospective buyers had to resort to postal services to buy these remedies at a distance. This is confirmed by the fact that many advertisements mention the possibility of sending remedies by mail. In this way, advertising helped practitioners to address an audience on a supralocal level. The implications of this geographical expansion of irregular practice, and the nature of distribution networks for fever remedies, will be the topics of Chapter 4.

Judging from the diseases that are mentioned in advertisements for Top 20 remedies, we can regard them all as panaceas. All twenty remedies mention multiple applications, including various (or all) kinds of fevers. In general, however, certain kinds of fever are mentioned frequently, especially tertian and quartan fever. The nature and occurrence of these terms for fever will be discussed in more detail in the following paragraph. What is important to note here, is that the frequent occurrence of tertian and quartan fever in advertisements should be no surprise. As has already been noted in Chapter 1, endemic variants of these fever types are known to have existed in many parts of northern Europe, including the Netherlands.<sup>323</sup> Fevers from the province of Zeeland

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<sup>321</sup> Salman, "Battle of Medical Books", 185-188.

<sup>322</sup> An example of Van Dueren's observations about fever is his "Een seltzaam Historie die in de Koorts gebeurt is", *Collectanea medico-physica, Oft Hollands Jaar-Register*, 2 (1683) III, 140.

<sup>323</sup> See Chapter 1 above, esp. notes 96 and 99-100. For the European context of endemic malarial fevers, cf. L. Huldén, L. Huldén and K. Heliövaara, "Endemic Malaria:

(*Zeeuwsche koorts*) were notorious, and were sometimes even singled out for special consideration in advertisements.<sup>324</sup>

The remedies are arranged according to the number of advertisements that was found. The information about the remedies was extracted from the earliest advertisement for each. Both the original name/description in Dutch and its modern English translation are given. Changes in prices, indications, distribution locations etc. across time are not taken into account. **One veterinary fever remedy, described as 'The very famous, safe, empirically and frequently tested remedy' (Het zoo beroemd, alleen zeker, wiskunstig en zoo veelvuldig beproeft middel), for which 97 advertisements were found, was left out of consideration.**

Responding to currently raging fevers was another tactic. The Amsterdam bookseller J. Hayman advertised for a remedy against **"currently prevailing fevers"** (*thans regeerende koortzen*).<sup>325</sup> Another Amsterdam bookseller, Stoffelbeek, sold the 'English Elixir Salutis', to be used against **"present-day fevers"** (*hedendaagse koortzen*), among other things.<sup>326</sup> **In Amsterdam could be bought plasters for "present-day fevers"** as well.<sup>327</sup> These three examples from the late 1720s occurred in a time frame of less than half a year, which points not only to the use of prevailing diseases for marketing strategies, but also to the incidence of epidemic fever in the early modern period. Thus, when a certain Egbert Platvoet (1743-1792) advertised his 'Acclaimed Miracle Medicine' (*gekroonde wonder-artzeyn*), to be used against **"currently prevailing fevers, accompanied by colds and lethargy"**, he was probably responding to a local fever epidemic in Amsterdam in 1782.<sup>328</sup>

Another recurring theme is an appeal to patients who have been affected by fever for a long time. A man called Etienne Gautier, for instance, advertised in 1720 that the best Venetian theriac could be purchased from him, which was also beneficial against fevers, **"even those**

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An 'Indoor' Disease in Northern Europe. Historical Data Analysed", *Malaria Journal*, 4:19 (2005), DOI: 10.1186/1475-2875-4-19.

<sup>324</sup> *Goudasche Courant*, 29-09-1794. The dentist (*tandmeester*) M. Hartlooper advertised several remedies, including "packages of herbs, beneficial for the recovery of Zeelandish and other fevers, of whatever name" (*pakjes met Kruiden, dienende tot 't herstellen van de Zeeuwsche en andere KOORTZEN, hoegenaamd*).

<sup>325</sup> *Amsterdamse Courant*, 11-11-1727.

<sup>326</sup> *Amsterdamse Courant*, 08-01-1728.

<sup>327</sup> *Amsterdamse Courant*, 03-08-1728.

<sup>328</sup> *Amsterdamse Courant*, 08-06-1782: "thans heerschende Koorts-Ziektens, met Verkouwdheden en Lomigheid verzeld."

A. Rank, based on no. of advertisements <sup>i</sup>	B. Original name or description of fever remedy in Dutch	C. Translation	D. Number of advertisements	E. Publication locations of newspapers with advertisements <sup>ii</sup>
1	De beroemde en alom berugte Zwitserse kruyder-thee	The famous and widely known Swiss herbal tea	1361	Amsterdam (2), Delft, Groningen, Haarlem, The Hague (2), Leiden, Rotterdam, Woerden
2	De algemeene ontbindende [en losmakende] pillen	The general dissolving [and loosening] pills	683	Amsterdam, Haarlem, The Hague, Leeuwarden, Leiden, Utrecht
3	Een soevereyn borst- middel <sup>v</sup>	A sovereign chest remedy	541	Amsterdam, Buiksloot, Haarlem, The Hague, Leiden, Rotterdam
4	Een flesje Elixir Capitaal	A bottle of capital elixir	302	Delft
5	De beproefde Essentia Universalis Regia	The well-tried royal universal essence	120	Amsterdam, Haarlem, The Hague, Leiden
6	Een heerlijk bad der medicijne	A delightful bath of medicine	103	Amsterdam, Haarlem, The Hague, Leiden, Utrecht
7	De oprechte Elixter Salutis de Montpillier	The true health elixir of Montpellier	101	Amsterdam, Haarlem, The Hague, Leiden
8	Het opregte Elixter Machnum Stomachicum	The true great stomach elixir	92	Amsterdam, Buiksloot, Groningen, Hoogkerk, Leeuwarden
9	De Panacea Aurea of gulde balsem	The golden panacea or golden balm	91	Haarlem
10	Het aangenaame en hertsterkende maag- elixter	The pleasant and cordial stomach elixir	84	Alphen a/d Rijn, Amsterdam (2), Den Bosch, Gouda, Groningen, The Hague (3), Hoogkerk, Leeuwarden (3), Rotterdam
11	Magnesia Alba Anglicana of Hypochondriaca	White English or hypochondriac magnesia	79	Amsterdam (3), Delft, Groningen, Haarlem, Leeuwarden, Leiden, Rotterdam
12	Het Arabische, hertsterkend en losmakend poeder	The Arabic, cordial and loosening powder	61	Haarlem, The Hague
13	De beroemde Engelse Elixir Salutis	The famous English health elixir	58	Amsterdam, Haarlem, The Hague, Leiden
14	Een geneesmiddel	A remedy	51	Amsterdam, Haarlem, The Hague, Leiden
15	De Elixir Universalis, of gezondheid herstellend elixir	The universal elixir, or health restoring elixir	44	Amsterdam, Haarlem, The Hague, Leiden
16	Het beroemde Londonse maag-elixir	The famous London stomach elixir	43	Amsterdam, Haarlem, Leiden
17	't Sal Mirabile Antifebrile	The miraculous febrifuge salt	41	Amsterdam, Haarlem, The Hague, Leiden
18	De uytmuntende Maag- Tinctuur	The excellent stomach tincture	28	Haarlem
19	De dierbare versterkende en vervrolykmakende Tinctuur	The cherished reinforcing and enlivening tincture	26	Amsterdam, The Hague, Leiden
20	[service] <sup>vi</sup>	[service]	26	Amsterdam, Haarlem

Table 5. Top 20 of fever remedies, found in advertisements (continued on next page).

F. Number of advertising years	G. Advertising period	H. Name/description of fever type(s) <sup>iii</sup>	I. Price per smallest available unit	J. Instructions for use <sup>iv</sup>	K. Cities where fever remedy can be purchased
68	1732-1799	all fevers without distinction	12 st. / package	no	Amsterdam
41	1727-1767	all continuous intermittents, quartan and four-day fevers	14 st. / carton	no	Hamburg, Haarlem, Amsterdam
50	1750-1799	all kinds of fevers	1 f. / bottle	yes	Amsterdam, Rotterdam, The Hague
10	1778-1787	fever	12 st. / bottle	yes	Leiden, Rotterdam
19	1731-1749	all fevers	20 st.	no	Amsterdam
57	1688-1744	all sorts of fevers	n/a	no	The Hague
28	1713-1740	hot fevers	24 st. / bottle	no	Groningen, Amsterdam, Rotterdam, Haarlem, Hamburg
14	1776-1789	many fierce and all too heavy fevers	n/a	no	Leeuwarden, Sneek
15	1742-1756	malignant fevers	6 st. / bottle	yes	Amsterdam, Middelburg, Rotterdam
11	1789-1799	quotidian, tertian and quartan fevers	8 st. / bottle	no	The Hague, Amsterdam
10	1785-1794	fevers	1 f. 12 st. / carton	yes	Amsterdam
12	1743-1754	fever	2 f. / package	yes	The Hague, Amsterdam, Middelburg, Utrecht, Rotterdam
5	1728-1732	all kinds of fevers	26 st. / bottle	no	Rotterdam, The Hague, Leiden, Amsterdam
5	1730-1734	all kinds of fevers, of whatever duration, name, or fits, no matter how inveterate	18 st. / bottle	yes	Amsterdam, Rotterdam, The Hague, Utrecht
20	1740-1759	all fevers of whatever name	24 st.	yes	Amsterdam, The Hague, Haarlem
7	1726-1732	various fevers	25 st. / bottle	yes	Amsterdam
11	1727-1737	all quotidian, tertian, quartan and four- day fevers	18 st. / bottle	no	Amsterdam
4	1739-1742	all sorts of fevers, no matter how inveterate	12 st. / bottle	no	Amsterdam
10	1734-1743	all malignant fevers	16 st. / bottle	yes	Amsterdam, Rotterdam
3	1746-1748	all kinds of fevers	n/a	no	Amsterdam

<sup>i</sup> The remedies are arranged according to the number of advertisements that was found. The information about the remedies was extracted from the earliest advertisement for each. Both the original name/description in Dutch and its modern English translation are given. Changes in prices, indications, distribution locations etc. across time are not taken into account. One veterinary fever remedy, described as **'The very famous, safe, empirically and frequently tested remedy'** (*Het zoo beroemd, alleen zeker, wiskunstig en zoo veelvuldig beproeft middel*), for which 97 advertisements were found, was left out of consideration.

<sup>ii</sup> If advertisements were found in more than one newspaper title, that were published in a certain city, then the number of newspaper titles per city is mentioned in brackets.

<sup>iii</sup> The translations of fever types follow the main text, with often occurring names lumped together in more or less uniform categories:

- Quotidian fever for *gedurige, gestadige, or eerstedaagse koorts*;
- Tertian fever for *anderendaagse* or *tweedendaagse koorts*;
- Quartan fever for *derdendaagse koorts*;
- **'Four-day fever'** for *vierdendaagse koorts*.

Also, a distinction is made between **'all kinds of fevers'** (a determinate notion, to indicate every type of fever) and **'all sorts of fevers'** (an indeterminate notion, similar to **'various fevers'**).

<sup>iv</sup> **'Instructions for use'** should not be understood as information for patients in the modern sense of the word (*bijsluiter* in modern Dutch). The Dutch word *bericht* signified a leaflet with information for proper use. I have not been able to find any contemporary leaflets like these in archives. However, the information provided about them in advertisements suggests that they should be interpreted more as a way for advertisers to cover themselves in case of misuse, rather than as safety regulations for the benefit of the patient.

<sup>v</sup> This remedy occurs many more times, but without mentioning fevers.

<sup>vi</sup> **Some advertisements do not describe a remedy, but only the advertiser's services in curing certain diseases.** In this case, a woman from Amsterdam, Alyta Elsely, advertised for her services several times.

that are engrained, inveterate and contagious”.<sup>329</sup> Advertisements often addressed the most desperate patients: the male obstetrician (*vroedmeester*) of the village of Wormer advertised in 1730 for his “infallible remedy against quartan fever, even if the patients had been suffering 2 or 3 years from it, [which] can cure it entirely within 4 to 6 weeks.”<sup>330</sup> Previous experiences with failed treatment were also a recurring theme. An anonymous advertiser wrote in 1756 that his fever remedy was beneficial against “fever, of whatever name, whether engrained or corrupted by ignorant healers, even if one had suffered from it for 3 or 4 years.”<sup>331</sup>

A striking feature of Table 5 is the high number of advertisements for these Top 20 remedies. Together, they were advertised 3935 times, thus comprising over 80% of all the 4861 advertisements in Database 2. By far the most frequently occurring fever remedy is ‘the famous and widely known Swiss herbal tea’, for which 1361 advertisements were found over 68 years (1732-1799, and extending into the nineteenth century). Thus, this remedy alone covers 28% of all the advertisements for fever remedies that were assembled in Database 2. The Swiss herbal tea will be discussed in more detail in Chapter 4. Here, it is useful to note the discrepancy between such ‘high-frequency remedies’, as occur in Table 5, and ‘low-frequency remedies’, for which only one or a few advertisements were found. Although all fever remedies that were found in advertisements can be lumped together as ‘irregular remedies’, the number of advertisements that was found for each reveals great differences among them. The unknown inventor (it may even have been some sort of semi-industrial company) behind the Swiss herbal tea was operating on an entirely different level than the many, often local producers, who advertised only once or twice for their remedies, perhaps more as an experiment than as an intentional, structural marketing strategy. This discrepancy evokes the question: what does the number of advertisements for a remedy say about the success of advertising?

If we compare the five remedies from Table 5, for which most advertisements were found, with all the other fever remedies in Database 2, we can observe two things (see Figure 14). First, the Top 5 of fever remedies dominate the total number of advertisements in the database,

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<sup>329</sup> *Oprechte Haerlemsche Courant*, 06-01-1720: “sy verjaagt in korte tijd de Koorts, selfs die verouderd, ingekankert en besmettelijk zijn.”

<sup>330</sup> *Amsterdamse Courant*, 05-01-1730: “een onfeylbaer Geneesmiddel tegens de derden daegse Koorts, al was het dat de Lyders daer ook twee of drie jaren meede bezet geweest zyn, kan dezelve binnen vier of zes weeken volkomen geneezen.”

<sup>331</sup> *Amsterdamse Courant*, 08-07-1756: “Koors, hoe ook genaemt, 't zy verouderd of door onkundigen bedorven, al was men 'er ook 3 a 4 jaren mee behebt geweest.”

as can be glanced from the stacked, coloured bars in Figure 14. Therefore, it is these five remedies which are largely responsible for the quantitative trends in advertising, that were observed earlier in Figure 13. Second, notwithstanding the preponderance of advertisements for a handful of remedies, it can still be observed also that significant numbers of advertisements for other fever remedies occurred steadily over the years, as represented by the black line in Figure 14. Thus, although we find many fever remedies that were advertised only once or twice, such low-frequency remedies continued to be advertised throughout the century. In other words, producers were apparently motivated again and again to advertise, during the whole eighteenth century. This thesis is confirmed when we look at the number of fever remedies (not advertisements), that newly occurred or disappeared from newspaper advertisements (Figure 15). The green segments of the bars in Figure 15 point to the number of remedies that were advertised for the first time in that year: new remedies were promoted in almost every year. If the actual success (in terms of financial gain) of advertising is hard to determine, it can at least be argued that producers of remedies continued to perceive advertising as a useful strategy over and over again.

The main incentive for producers to advertise must have been the prospect of attracting more customers, but this cannot be inferred from the advertisements themselves. Of course, whenever producers discussed the reasons that motivated them to advertise, they did not refer to commercial considerations. Their reasons were mostly framed as charitable: they simply wanted to extend the benefits of their product to as many suffering patients as possible. An example are the advertisements from 1798 for an elixir, originally invented by a Swedish physician 'Jernest' (perhaps Urban Hjärne, 1641-1724). The elixir promised a very long life (beyond the age of 100) and the cure of many diseases, including fevers. The advertiser (who may or may not have had permission to sell the remedy in the Netherlands) discussed his motivation **explicitly: "Charity and the hope of its preservation have been the reasons that motivated me to announce the Elixir de Vie (or Elixir for a long life)".**<sup>332</sup> Such considerations may have been genuine, but the considerable financial investment it took to advertise also suggests that producers were at least partly motivated by commercial incentives.

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<sup>332</sup> *Haagsche Courant*, 07-04-1798.



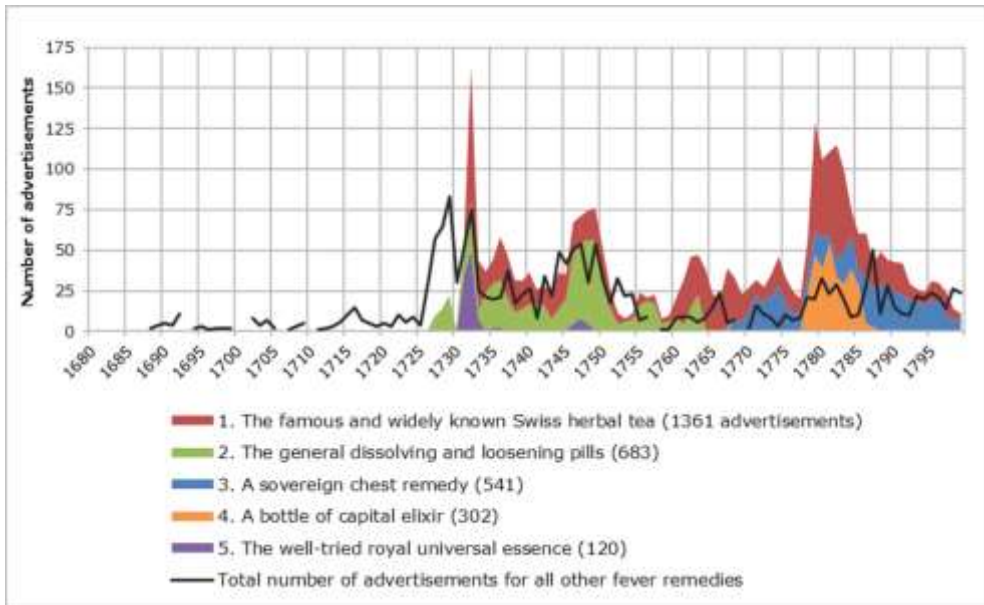


Figure 14. Visualization of the difference between fever remedies with a high advertising frequency versus those with a low advertising frequency. The number of advertisements for the Top 5 of most often occurring fever remedies is shown as a stacked bar. Advertisements for all other fever remedies are represented by a black line.

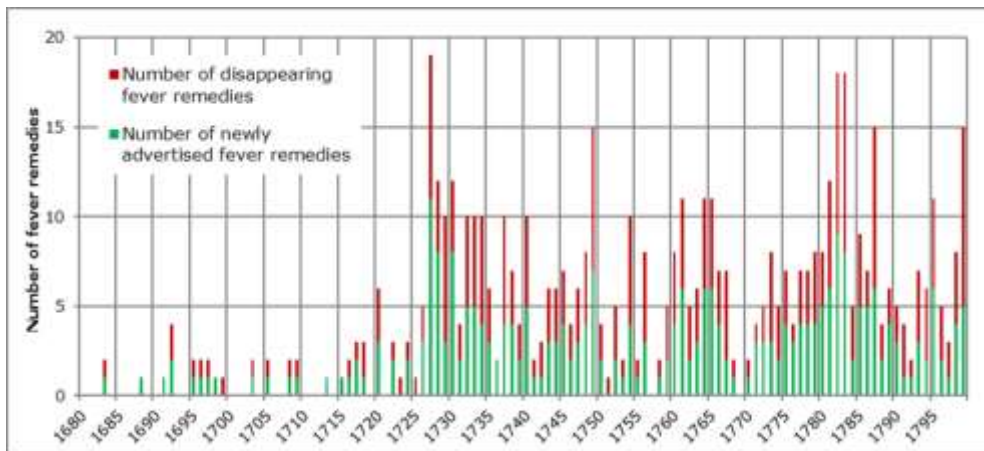


Figure 15. Yearly number of newly occurring and disappearing fever remedies from advertisements (1680-1799).

### 3.2. Ambiguities of Fevers and Fever Terminology in the Medical, Commercial and Public Domain

The previous paragraph discussed several significant features of advertisements for fever remedies, many of which reveal commercial considerations on the part of advertisers. In this paragraph, the argument is extended by looking at the terminology for the diseases which these remedies were supposed to cure: fevers. We already saw in Chapter 1 that fevers posed many ambiguities for early modern observers. The diseases of Lodewijk Huygens in The Hague and of Anna Bergerotti in Paris may have been of a different nature in the eyes of medical professionals, but they were correlated nonetheless by their acquaintances, to motivate the possible application of Peruvian bark in both cases. This paragraph explores the nature of fevers and fever terminology in more detail, with a specific focus on the eighteenth-century Dutch Republic.

#### *Early Modern Fevers and Linguistic Ambiguity*

Early modern patients would class many indispositions as 'fever', without regard for the precise medical implications of using the term. Letters, for instance, provide an abundance of references to fever, but often in general terms, like the ones that were discussed in Chapter 1. Newspaper advertisements cover the middle ground between the opposites of medical accuracy on the one hand and indifference of laymen to medical categories on the other. Advertisements reflect official fever typologies from medical discourse to some extent, but simultaneously try to appeal to a general audience that was probably not very interested in the meticulous categorization of fevers.

Fevers are not a separate nosological category in medicine today: they are symptoms of various diseases, not entities of their own. For centuries, however, they were considered to be among the most widespread and troublesome diseases. In modern research, fevers feature prominently in overviews of disease incidence for the early modern period.<sup>333</sup> They were categorized as separate entities, which means that the variety of fever **types was abundant, as can be glanced from Torti's 'fever tree'** (see Figure 1a/1b). As such, fevers presented many problems of theory and practice for doctor and patient alike. The diversity of diseases labelled as 'fever' was enormous; the distinction between various types was unclear; the

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<sup>333</sup> Examples beyond the Dutch Republic include Brockliss and Jones, *Medical World*, 44, which specifies separate categories for malaria and for other fever types; and A. Bamji, "Medical Care in Early Modern Venice", *Journal of Social History*, 49:3 (2016) 483-509, there 500.

terminology for each was ambiguous; and the therapeutic possibilities to cure them were manifold.

Because of their widespread occurrence and problematic categorization, fevers offered many examples that were used in early modern medical debates more generally. These medical debates have been analysed by historians to some extent.<sup>334</sup> However, Christopher Hamlin rightly calls **fevers the “invisible elephant in the china shop of the medical past”**, to indicate the discrepancy between their importance and ubiquity in premodern medicine and society on the one hand, and their virtual absence from modern debates on the history of medicine on the other.<sup>335</sup> The frequent occurrence of fevers in premodern society warrants a scholarly interest of the same level as diseases that are better known to historians, either for their raging epidemicity (as in the case of the plague) or their novelty (as in the case of syphilis).

It is now commonly understood that the relationship between learned and popular medicine should not be regarded as **“true medical knowledge versus a corrupted lay version”**, as Waddington maintains, because **“medical and popular understanding of health and disease shared common ideas about the body and illness.”**<sup>336</sup> With regard to fevers, Bynum and Nutton already noticed that works about fever were often **explicitly intended to address cultural phenomena: “treatises on fever were rarely written, still less read, without a social purpose, and social polemic could easily sully the purity of philosophical and scientific discourse”**.<sup>337</sup> In other words, if ‘learned’ and ‘popular’ medicine can be viewed separately at all, they did share a common basis, and interacted frequently.

Cross-fertilization of medical understanding between the medical and public domain is difficult to ascertain. Advertisements do not readily seem to be a suitable conduit for the transfer of knowledge from the medical to the public domain, both due to their brevity and their intended audience. At first sight, the use of medical terminology for fevers in

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<sup>334</sup> Especially relevant are A. Cunningham, “Sydenham versus Newton: The Edinburgh Fever Dispute of the 1690s between Andrew Brown and Archibald Pitcairne”, in: Byum and Nutton (eds.), *Theories of Fever*, 71-98; and M.J. van Lieburg, “Reinier de Graaf en zijn Plaats in het Fysiologisch Onderzoek van de Zeventiende Eeuw”, *Tijdschrift voor de Geschiedenis der Geneeskunde, Natuurwetenschappen, Wiskunde en Techniek*, 15:2 (1992) 73-84, there 82. Van Lieburg argues that several publications from around the middle of the seventeenth century, by authors like Harvey, Willis, Sylvius and De Graaf, should in part be regarded as contributions to the ongoing debate on fever theory.

<sup>335</sup> Hamlin, *More than Hot*, 12.

<sup>336</sup> Waddington, *Introduction*, 81.

<sup>337</sup> Bynum and Nutton (eds.), *Theories of Fever*, vii.

**advertisements does not seem to meet Gotti's** criteria for successfully addressing a large audience, in terms of attention value, readability and memorability. However, as this paragraph will show, fever typologies in advertisements did reflect disease categorizations in academic medicine to a certain extent. In fact, both regular and irregular practitioners had to cope with the diversity of fever types and the corresponding diversity of typology. The actual medical treatment of fevers, by both types of practitioners, must often have diverted from how fevers were arranged in advertisements, or, for that matter, in medical handbooks.

This section will first investigate the nature of fever classifications in learned medicine. Medical handbooks have a lot to offer in terms of fever classifications, but as carriers of largely codified knowledge they show a surprising amount of ambiguity in fever terminology. The confusing nomenclature was still a cause for concern in the eighteenth century. Fevers were generally classified as either benign or malignant, as indicated **by the light and dark shadings of Torti's 'fever tree'** (Figure 1a). Most medical concerns were related to intermittent fevers: various types of malignant fever, which were distinguished on the basis of the day of recurrence of a set of symptoms at regular intervals. Quotidian, tertian and quartan fever were diseases with recurring symptoms on day two, three or four, respectively. Thus, a quotidian fever lasted one day and the same symptoms would recur on the second day; whereas a quartan fever had symptoms that lasted for three days, which would start to recur on day four of the disease process. Treatment of intermittent fevers was often guided by the occurrence of bouts of fever, or paroxysms.

As simple as this categorization might seem, it caused a lot of problems in actual medical practice. Fevers were hard to recognize and classify at first sight, and an already recognized fever could transform into another type during the course of the disease, which would require an adapted therapy. To include every type of fever in a single classification **was a hopeless task: Torti's fever tree is** very complicated, even though it is arguably one of the most elegant attempts to organize all fevers into a single image. **Torti's accounts of his own medical case studies reveal** a highly diverse practice, featuring many cases of fever that would not readily fit into the categories he proposed in his fever tree image.<sup>338</sup> The difference between theory and practice caused frustrations among practitioners. In the Netherlands, the physician and prolific medical writer

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<sup>338</sup> F. Torti, *The Clinical Consultations of Francesco Torti*. Transl. and introd. by S. Jarcho (Malabar (FL): Krieger Publishing Company 2000).

Willem van Ranouw (1673-1724) argued that the highly specific categorization of fevers was an important cause of confusion among medical students.<sup>339</sup>

For Dutch students, moreover, there was an additional problem: there were two sets of terminology in Dutch to describe the duration of intermittent fevers. One set followed the categorization that was outlined above, based on the *day of recurrence* of symptoms. The Latin terms were omnipresent in medical publications, but only tertian and quartan fever had exact counterparts in Dutch, as *tertiaan* and *kwartain*. The second set of terminology was based on the *duration* of a set of symptoms, with distinctions between 'every-day' (*alledaagse*), 'other-day' (*anderendaagse*) and 'three-day fever' (*derdendaagse koorts*).<sup>340</sup> These categories were identical to the previous set of terms. Thus, a quartan fever (*febris quartana* in Latin, or *kwartain* in Dutch) was the same as a 'three-day fever' (*derdendaagse koorts* in Dutch), but it is not hard to imagine that these were easily confused. Adding to the confusion, the term 'four-day fever' (*vierdendaagse koorts*) was used in various sources: this might indicate a tertian, or a quartan fever. This is a particularly problematic feature of advertisements for fever remedies. Because of the diverse backgrounds of advertisers, it is often unclear whether their choice for certain terms should be interpreted as a deliberate move—either medically or commercially—or as thinly disguised medical ignorance. Although the two sets of terms were usually distinguished in scholarly publications, their precise meaning became blurred when taken out of the academic context. The use of a term like *vierdendaagse koorts* could even assume a literary, rather than literal function.<sup>341</sup> Moreover, 'fever' was often not accompanied by a prefix, which suggests that the medical niceties of the disease were not particularly important for the non-specialist, as in the case of Huygens's letter from Chapter 1. According to Van Ranouw, fevers with symptoms of more than three days should generally be understood as combinations of two or more fevers.<sup>342</sup> In other words, it is difficult to ascertain if authors were aware of the medical implications of mentioning a specific fever type.

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<sup>339</sup> Van Ranouw, "Vyfde Verhandeling", 284-285.

<sup>340</sup> Ibidem, 287-292.

<sup>341</sup> The *vierdendaagse koorts* in a poem from 1644 by Constantijn Huygens Sr. probably has a literary function: "Aan Caspar Barlaeus, medicus, op de vierdendaagse koorts van Hooft," in: C. Huygens, *Korenbloemen*. Ed. by T. van Strien (Amsterdam: Em. Querido's Uitgeverij 1996) 23. The poem contains a play of words between 'four' (*vier*), 'fire' (older Dutch *vier*) and 'celebrate' (*vieren*). Cf. Haeseker, *Vileine Hippocraten*, 27.

<sup>342</sup> Van Ranouw, "Vyfde Verhandeling," 300-301.

*Fever Categorizations in Early Modern Medicine*

Classification of fevers was a central concern for many early modern medical authors. **Torti's 'fever tree' (Figure 1a/b) is one visually attractive example**, but similar images would arguable look very different from **Torti's**. Many authors preferred a concise classification of fevers, but still ended up with so many particularities that simplicity was hard to find. Examples are Lorenzo Bellini (1643-1704) in Italy, Richard Morton (1637-1698) in England<sup>343</sup>, and Willem van Ranouw (1673-1724) in the Dutch Republic. Especially Van Ranouw, a physician from Amsterdam, draws our attention to the difficulties of fever interpretation. His work, a series of articles in Dutch about Peruvian bark and its relationship to fever, intertwined the author's veneration for ancient and contemporary authorities with a good deal of personal observation.<sup>344</sup> Like Torti, Van Ranouw distinguished only two main categories: intermittent fevers (*afgaande koorts*) and remittent fevers (*wederkomende koorts*).<sup>345</sup> Unlike Torti, however, Van Ranouw insisted that these two categories should be the focus of debate: he argued that previous authors had made too specific distinctions. For students, fevers would all seem distinct, whereas in fact, many share common symptoms that require similar treatment.<sup>346</sup> We will **see more of Van Ranouw's views on fever below**.

Before the ambiguity issue of fevers will be addressed with reference to advertisements, three works of learned medicine will be considered first. These vernacular works reveal the delicacies of fever categorizations and the ambiguities of fever terminology in different languages in the eighteenth century, and they can serve as benchmarks for further investigations into the nature of fevers in advertisements. Although this

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<sup>343</sup> See Jarcho, *Quinine's Predecessor*, 247-251 (for Bellini), and 254-257 (for Morton).

<sup>344</sup> [W. van Ranouw], "Vierde Verhandeling van de byzondere Natuurlyke Historischryvers, en in dezelve de Natuurlyke Historie van de Kina-Kina", *Kabinet der natuurlyke Historien, Wetenschappen, Konsten en Handwerken*, 6 (1722) 92-176. Parts 5 and 6 have similar titles: "Vyfde Verhandeling," *Kabinet*, 6 (1722) 279-380; and "Zesde Verhandeling," *Kabinet*, 6 (1722) 470-563. For Van Ranouw himself, see C.C. Delprat, "De Geschiedenis der Nederlandsche Geneeskundige Tijdschriften van 1680 tot 1857", *Nederlandsch Tijdschrift voor Geneeskunde*, 71 (1927) 3-116, there 15-26; H. Beukers, "De Tijdschriften van Willem van Ranouw", *Nederlands Tijdschrift voor Geneeskunde*, 125:40 (1981) 1613-1617; and Lindeboom, *Dutch Medical Biography*, 1590-1591. Earlier Dutch authors on fever are discussed in J. Geyer-Kordesch, "Fevers and Other Fundamentals: Dutch and German Medical Explanations c. 1680 to 1730", in: Bynum and Nutton (eds.), *Theories of Fever*, 99-120.

<sup>345</sup> For Torti, the main subdivision was between intermittent and continuous fevers, with remittent fevers being a subdivision of continuous fevers. See also Figure 1b.

<sup>346</sup> Van Ranouw, "Vyfde Verhandeling," 284.

analysis cannot offer an exhaustive discussion of academic views on fever classification and terminology, it does show the common principles underpinning fever categorization in medical works. Three works will be **considered: Herman Boerhaave's collection of aphorisms; the articles by the Amsterdam physician Willem van Ranouw; and a vernacular medical manual called the "Nursery of Pathology" (*Kweekschool der Ziektekunde*).**

As perhaps the most important Dutch physician of the eighteenth century, Herman Boerhaave (1668-1738) deserves attention for his categorization of diseases. Boerhaave emphasized the importance of understanding the causes of disease, instead of simply prescribing remedies to a set of observed symptoms. His works highlight the diversity of disease in the body, and the corresponding diversity of remedies.<sup>347</sup> Therefore, it would seem that an exhaustive overview of fever and **possible remedies is not to be found in Boerhaave's work.** However, Boerhaave did follow Thomas Sydenham (1624-1689) in his distinction between autumnal and vernal fevers, which corresponded with **Sydenham's physiology.**<sup>348</sup> Sydenham was one of the first authors to make a classification of diseases, in which fevers featured prominently<sup>349</sup>, and as such he can be regarded as a precursor to **Boerhaave's fever nosology.** **Boerhaave's Aphorisms contain some of his most elaborate remarks about fever, and his implicit fever categorization can be extracted from these.**<sup>350</sup> Aphorism 727 contains a brief, yet clear description of different fever types, which is worth quoting in full:

Hence it appears, what we ought to think about the Variety of acute Fevers: for all such as do carry the febrile Motion, when once raised, to its very End, at one Shock, them we call *continual*

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<sup>347</sup> R. Knoeff, *Herman Boerhaave (1668-1738): Calvinist Chemist and Physician* (Amsterdam: Koninklijke Nederlandse Akademie van Wetenschappen 2002) 199-200.

<sup>348</sup> Wilson, "Fevers", 398.

<sup>349</sup> W.F. Bynum, "Nosology", in: *idem and Porter (eds.), Companion Encyclopedia of the History of Medicine*, 2 vols. (paperback edition; London and New York: Routledge 1997), vol. 1, 335-356, there 340-343.

<sup>350</sup> H. Boerhaave, *Boerhaave's Aphorisms: Concerning the Knowledge and Cure of Diseases. Translated from the last Edition Printed in Latin at Leyden, 1728. With useful Observations and Explanations* (London: Printed for A Bettesworth and C. Hitch; and W. Innys and R. Manby 1735), esp. 137-196 (aphorisms 558-769). His related work on materia medica contains several recipes for fever remedies, most of them on the basis of *Peruvian bark*: *Herman Boerhaave's Materia Medica: Or, a Series of Prescriptions Adapted to the Sections of his Practical Aphorisms Concerning the Knowledge and Cure of Diseases. Translated from the Latin Original of the last genuine Edition of the Author* (London: Printed for W. Innys; and R. Manby 1741) 119-121. See also paragraph 5.2 below, for Boerhaave's involvement with *Peruvian bark*.

*Fevers*: Such as now and then do relent and renew their Force, without ceasing entirely, them we call *continual remitting Fevers*; and such as do so far relent, as to leave the Patient without any Fever at all between the Fits or Paroxysms, them we call *intermitting Fevers*.<sup>351</sup>

Here the arrangement follows the common procedure that was outlined above: there is a limited number of fever types, which can be recognized on the basis of the duration of intervals between symptoms. In the following aphorisms, the book goes on to describe further subdivisions of these categories, sometimes accompanied by their original (though often scrambled) Greek or Latin names. Continuous fevers either last one day (*ephemera*) or more than one day, in which case they can be of a putrid nature, or not.<sup>352</sup> Among the continuous remitting fevers (suddenly called 'ardent fevers' at this point), Boerhaave singles out the 'burning-hot fever' for a more a detailed discussion, because of its severity.<sup>353</sup> Finally, as mentioned above, the intermittent fevers are divided according to the season in which they occur: either 'vernal' between February and August, or 'autumnal' between August and February.<sup>354</sup>

**Boerhaave's divisions of fevers describe familiar early modern** medical categories. Every physician would have agreed to a basic, tripartite division of quotidian, tertian an quartan fevers. Below that level, however, Boerhaave abandons any systematic classification of fevers, and there is a lot of ambiguity in his names for fevers. Instead of looking for systematics, the *Aphorisms* go on to describe treatments for all kinds of fever, that might occur on their own, or in combination with other diseases. From the perspective of medical treatment, then, there existed little coherence among fever types. Just as in advertisements, medical handbooks like the *Aphorisms* could also contain a plethora of names for fever types.

If diversity of available terminology for fevers was likely to cause confusion among irregular practitioners, who advertised their own secret remedies, this was also a problem for the medical practice of academic physicians. An exemplary case of this struggle is Willem van Ranouw (1673-1724), a contemporary of Boerhaave, who practiced in Amsterdam. A combination of scientific reading and personal observation

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<sup>351</sup> Boerhaave, *Aphorisms*, 181 (aphorism 727).

<sup>352</sup> Ibidem, 182 (aphorisms 729-730).

<sup>353</sup> Ibidem, 184-188 (aphorisms 738-745).

<sup>354</sup> Ibidem, 188-189 (aphorisms 746-747).



led him to come up with his own unique, recognizable, yet distinct classification of fevers in the 1720s. In a series of three lengthy articles in his self-edited journal "**Cabinet of natural histories, sciences, arts and crafts**" (*Kabinet der natuurlyke Historien, Wetenschappen, Konsten en Handwerken*), he went into great detail about the nature of fever, and especially about the applicability of Peruvian bark.<sup>355</sup>

When compared to other classifications, like those of Boerhaave or Torti, Van Ranouw seems to be the most rigid organizer of fevers. As was already noted above, Van Ranouw considered only two categories, for educational purposes: intermittent fevers (*afgaande koortsen*) and remittent fevers (*wederkomende koortsen*). The intermittence or remittance of paroxysms is his only yardstick for determining fever types, also below the level of the two main categories. Still, in the end Van Ranouw cannot do without a more detailed fever categorization, and he is aware of the linguistic confusion that might arise on top of that, as was discussed in the previous paragraph. Moreover, like in the case of Boerhaave, it is impossible for Van Ranouw to disregard intermediate categories altogether. He never classes them separately, but he makes scattered remarks about heterogeneous fever types throughout his work, with a varying degree of detail. This includes categories with no obvious relationship to any of the types that he discusses *in extenso*, such as '*Febres Algidae*', '*Febres Lipyriae*'<sup>356</sup>, '*Febris Dejectoria*',<sup>357</sup> or '*Febris Vomitoria*'.<sup>358</sup> It seems that Van Ranouw regarded these as slight variations of his main categories.

In the decades after Boerhaave and Van Ranouw, several groundbreaking works were published to arrive at a better classification of diseases. The nosological literature of the time reveals various mutual influences among authors. The *Nosologia Methodica* by François Boissier de Sauvages de Lacroix (1706-1767) from 1763 was greatly influenced by Sydenham, like Boerhaave had been. De Sauvages maintained, similar to Van Ranouw before him, that it was arbitrary to classify diseases on the basis of their duration.<sup>359</sup> Carolus Linnaeus (1707-1778), a friend of

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<sup>355</sup> For Van Ranouw's articles, see note 344.

<sup>356</sup> Both in Van Ranouw, "Vyfde Verhandeling", 307.

<sup>357</sup> Ibidem, 319.

<sup>358</sup> Ibidem, 333.

<sup>359</sup> F.B. de Sauvages de Lacroix, *Nosologia Methodica Sistens Morborum Classes, Genera et Species, Juxtà Sydenhami mentem & Botanicorum ordinem*, 2 vols. (Amstelodami: Sumptibus Fratrum De Tournes 1763), vol. 1, 26. De Sauvages did not explicitly refer to fevers. R. Weston, *Medical Consulting by Letter in France, 1665-1789* (Farnham and Burlington: Ashgate 2013) 127n50, judging from the French edition of

De Sauvages and a pupil of Boerhaave, published his *Genera Morborum* in the same year. Linnaeus acknowledged a great number of fever types. With regard to intermittent fevers, he mentioned the familiar types of quotidian, tertian and quartan fever, plus a '*duplicana*' (apparently a double tertian fever). However, Linnaeus also mentioned a fifth category, '*errata*', intended to include every type of intermittent fever with atypical paroxysms.<sup>360</sup> The Scottish physician William Cullen (1710-1790) should also be mentioned for his classification of fevers, which he formulated first in his *Synopsis Nosologiae Methodicae* of 1769. With Cullen, fevers were categorized as the first of four groups (called '*pyrexiae*') which comprised both intermittent and typhoid fevers. His categorization was more systematic than the one by De Sauvages, but Cullen (and Linnaeus before him) still regarded some fevers as symptoms of other diseases, and other fevers as separate entities.<sup>361</sup>

Although these improvements in nosology show a more systematic approach to fever classification than what can be found in Van Ranouw and Boerhaave, the examples of De Sauvages, Linnaeus and Cullen still offer only symptom-based nosologies. The rigid character of all these classifications did not do full justice to the diversity of fever manifestations. Therefore, in the third example of a vernacular Dutch categorization of fevers, the "Nursery of Pathology" (*Kweekschool der Ziektekunde*) from 1772, we can still observe the same struggle to arrive at a concise fever classification that can be found in Van Ranouw half a century earlier. The "Nursery of Pathology" is a journal-like medical manual that was originally published in French. The Dutch translation of 1772 was intended as a translation of De Sauvages, but only a short

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De Sauvages's work from 1772 (vol. 1, 103), interprets *aigues* as fevers, although De Sauvages' Latin original literally refers to 'acute diseases', among which fevers may be included.

<sup>360</sup> C. Linnaeus, *Genera Morborum*, in *Auditorum Usum edita* (Upsaliae: Apud Christ. Erh. Steinert 1763) 7: "Errana [*sic*]. Febris paroxysmi dissimiles omnes." Linnaeus also gives the Swedish equivalents of the names of fever types, which demonstrates that a double set of terminology existed in Swedish as well, just like Van Ranouw had discussed for Dutch (see note 340).

<sup>361</sup> De Sauvages, Linnaeus and Cullen are all discussed by Bynum, "Nosology" and by G.B. Risse, "Medicine in the Age of Enlightenment", in: A. Wear (ed.), *Medicine in Society: Historical Essays* (Cambridge: Cambridge University Press 1992) 149-195, there 169-171; see also J. Martin, "Sauvages's Nosology, Medical Enlightenment in Montpellier", in: A. Cunningham and R. French (eds.), *The Medical Enlightenment of the Eighteenth Century* (Cambridge: Cambridge University Press 1990) 111-137; W.F. Bynum, "Cullen and the Study of Fevers in Britain, 1760-1820", in: idem and V. Nutton (eds.), *Theories of Fever*, 135-147; and Weston, *Medical Consulting*, 125-128, who discusses De Sauvages and Linnaeus.

section of his work was included. The justification that is given in the **"Nursery"** for the Dutch translation, is to teach some of the basics of medicine to practitioners with limited medical training (like apothecaries and surgeons), who would nonetheless see patients and prescribe remedies, independent of a physician.<sup>362</sup> For the present purpose, the **"Nursery"** is especially interesting for its brevity: it presents its classification of fevers in the explicit form of a taxonomic list, like Linnaeus had done some years before.

However, that same brevity makes the actual usefulness of the book, for the identification and treatment of fevers, rather dubious. It reviews all types of fever in less than five pages. Even though the niceties of fever get lost in this way, the work makes very clear distinctions, that are similar to earlier works.<sup>363</sup> Like **Boerhaave's *Aphorisms***, the **"Nursery"** describes three main categories: continuous fever, intermittent fever, and 'continuous increasing and decreasing fever', all of them with several subcategories. Both works make use of a tripartite division, and many of the subdivisions are recognizable as well. For example, the 'hot evil' type of fever in the **"Nursery"** (*mal chaud* in French, one of the 'continuous increasing and decreasing fevers') corresponds to Boerhaave's 'burning-hot fever'. A difference between Boerhaave and the **"Nursery"** is the inclusion in the latter of a subdivision of intermittent fevers according to the duration of symptoms (quotidian, tertian and quartan fever), which is not explicitly part of Boerhaave's classification (although many aphorisms discuss quotidian, tertian and quartan fever, obviously). More important, however, is the fact that the **"Nursery"** distinguishes fever types solely on the basis of the duration of sets of symptoms, instead of e.g. their seasonal occurrence. In that way, the **"Nursery"** does offer a slightly more coherent fever nosology than the works mentioned so far, but without superseding them in any practical way.

One important feature in all these works is that the major categories (on the level of intermittent and continuous fevers) all contain subdivisions that are intended as 'residual' categories, for any type of fever that does not fit in any other category. An example in the **"Nursery"** is 'slow fever', which can last up to seven weeks, while other continuous fevers last three weeks at the most. Similarly, intermittents are described

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<sup>362</sup> *Kweekschool der Ziektekunde, zynde Verzamelingen en Waarnemingen. Uyt de beste en nieuwste Schryvers getrokken. Ten dienste der geene, die zig in deeze Weetenschappen willen oeffenen*, 1 vol. (Te Amsterdam: By David Weege 1772); Delprat, "Geschiedenis der Nederlandsche Geneeskundige Tijdschriften", 60-61.

<sup>363</sup> *Kweekschool der Ziektekunde*, 179-183.

as diseases where paroxysms recur regularly, as in quotidian, tertian or **quartan fever; however, the "Nursery" mentions 'erratic fevers'** as intermittents with paroxysms of *any other* interval (a category that was also recognized by Linnaeus, as discussed above). **Finally, the "Nursery"** also mentions semitertian fever, one of the few heterogeneous categories of fever with a certain fixed status in early modern medicine.<sup>364</sup>

In other words, neither Boerhaave, Van Ranouw nor the **"Nursery of Pathology"** provided conclusive organizations of fever types, just like the key publications on nosology in the eighteenth century. Although physicians possessed the skills to recognize and treat fevers according to relatively fixed principles, there was no fixed organization or nomenclature. Any advertiser who wanted to present his fever remedy with impressive, appealing, and/or recognizable medical terminology, would have been able to borrow from various categorizations, which were largely similar, but distinct enough to cause ambiguity as to the precise meaning of fever types.

### 3.3. The Uses of Fever in Advertisements: Medical Terminology as an Indicator for Shifts in Appreciation of Panaceas and Specific Remedies

The previous paragraph argued that attempts to classify fevers in the eighteenth-century medical domain led to few satisfactory results. Although various authors made efforts to arrive at a solid classification of feverish indispositions, none of them was able to put an end to the ambiguities surrounding fever types that were hard to categorize. Even a relatively clear-cut category like intermittent fever could not do without a residual category for any intermittent disease that had an atypical course of symptoms. This paragraph will look at how these ambiguities can be retraced in advertisements for secret remedies, by looking at the terminology for fevers. As a medium that contains both medical, public and commercial characteristics of knowledge about fevers, advertisements offer an excellent testing-ground for the thesis of the 'reconfiguration of the body' in the early modern period, as it can be found in modern research: a shift in medical practice, from a holistic system based on personalized therapy according to humoral theory, to a reductionist approach in which clearly defined diseases were to be treated

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<sup>364</sup> Semitertian fever or *hemitritaeus* was a fever category that was already recognized in Antiquity as an intermediate form, in between tertian and quartan fever, and it could still be found in most early modern medical handbooks. See S. Jarcho, "A History of Semitertian Fever", *Bulletin of the History of Medicine*, 61:3 (1987) 411-430.

with specific remedies, that acted on the pathogenic cause of disease in populations of patients with similar symptoms.

*Panaceas, Specifics, and the Reconfiguration of the Body*

In the Introduction to this chapter, the secret remedies for fever that were assembled in Database 2 have been characterized, among other things, as panaceas: remedies that could be applied to more than one type of fever, and usually to a variety of other diseases as well. In modern scientific literature, however, the seventeenth and eighteenth centuries are commonly lauded as the era when applying specific cures for specific diseases became the common therapeutic procedure. Harold Cook has argued that specifics increasingly became the remedies of choice. As such, they exemplify a change in medical practice in which diseases and remedies came to be regarded as universal entities, with identical characteristics in patients who would hitherto have been treated wholly individually from a humoral perspective, taking into account all aspects of **the patient's way of life**.<sup>365</sup> This development, which Cook called the 'reconfiguration of the body' in the early modern period, essentially signifies a shift from a holistic to a reductionist perspective on medical therapy, that can be found in modern studies more generally.<sup>366</sup>

Fevers and Peruvian bark figure prominently in this argument. Peruvian bark, the febrifuge remedy that became a successful exotic addition to the existing European *materia medica*, is often regarded as the exemplification of this development, especially because the application of bark against certain fevers has often been interpreted retroactively as the application of quinine against malaria. The early modern recognition, albeit unwittingly, of **Peruvian bark's usefulness** conferred a canonical status upon the substance, as the most important exotic remedy to have helped demolish traditional medicine.<sup>367</sup> The close interaction between knowledge of fever and of Peruvian bark, from the **latter's** first introduction in Europe onwards, is also part of the argument. Cook mentions the example of Richard Morton (1637-1698), whose *Pyretologia* of 1692 argued that the application of Peruvian bark could help to differentiate between fever types.<sup>368</sup> In other words, if a reconfiguration of the body can be observed in the early modern period,

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<sup>365</sup> Cook, "Markets and Cultures".

<sup>366</sup> The idea can already be traced earlier, for instance in R. Porter, *Health for Sale: Quackery in England 1660-1850* (Manchester: Manchester University Press 1989) 141.

<sup>367</sup> Cook, "Markets and Cultures", 142. See also W.-D. Müller-Jahncke, "Exotische Arzneidroge aus Übersee: Die Chinarrinde aus Peru als Paradigma", in: H. Schott (ed.), *Meilensteine der Medizin* (Dortmund: Harenberg Verlag 1996) 214-218.

<sup>368</sup> Cook, "Markets and Cultures", 132-133.

it was characterized by a close interaction of shifting notions of both diseases and remedies, with a special role for exotic substances.

Before relating the reconfiguration thesis to advertisements for secret fever remedies, it is useful to define what 'specifics' and 'panaceas' actually were, and to reflect on the position of medical advertising in **Cook's argument. The modern definition of a specific remedy as "a medicine or remedy effective in treating a particular disease or part of the body"**<sup>369</sup> resembles the early modern understanding of the word. In **Johnson's dictionary of 1755, a specific is described as "appropriated to the cure of some particular distemper"**.<sup>370</sup> A similar definition is given in **Chomel's dictionary of 1778, which** also appeared in Dutch translation.<sup>371</sup> It is doubtful, however, whether this precise meaning had been appropriated by all of society yet, for in advertisements at least, we find diverging interpretations of the word. For instance, the 'Arabic, cordial, loosening powder' (**no. 12 in the Top 20**), essentially a panacea, was presented in advertisements as a specific remedy (*specificcq middel*) against a range of diseases, including fever.<sup>372</sup> On the other hand, the **remedy invented by J.J.P. de Treytorrent (†1772), 'royal British physician'** (*Med. Doctor, Med. Reg. Magn. Brit.*, but in fact he resided in Lüneburg), resembled a specific remedy much closer, in the eighteenth-century sense of the word: indicated only for tertian and quartan fever, its characterization as a specific remedy (*medicamentum specificum*) corresponded much better to the textbook explanation of the word.<sup>373</sup>

Thus, the use of the word 'specific' could lead to ambiguities in the domain of advertisements, and this is problematic if we want to evaluate the role of advertising in the reconfiguration thesis. Cook, for instance, also discusses early modern advertisements for remedies, which demonstrate a surprisingly modern way of addressing patients. **Advertisers often promised their remedies to be "comfortable, targeted and available. And that they be good for any potential purchaser."**<sup>374</sup> The implication seems to be that advertisements helped to create a sense of

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<sup>369</sup> <https://en.oxforddictionaries.com/definition/specific>, accessed on 21-02-2018.

<sup>370</sup> S. Johnson, *A Dictionary of the English Language*, 2 vols. (London: Printed by W. Strahan 1755), vol. 2, entry 'specifick'.

<sup>371</sup> M.N. Chomel, *Algemeen Huishoudelijk-, Natuur-, Zedekundig- en Konst- Woordenboek. Tweede Druk geheel verbeterd, en meer als de helfte vermeerdert door J. A. de Chalmot*, 7 vols. (Te Leyden: bij Joh. le Mair, en te Leeuwarden: bij J. A. de Chalmot 1778), vol. 6, 3459: "SPECIFICUM; is men een zodanig Geneesmiddel gewoon te noemen, 't welk in 't bijzonder tegen de een of andere ziekte dienstig is."

<sup>372</sup> *Oprechte Haerlemsche Courant*, 23-07-1743.

<sup>373</sup> *Leydse Courant*, 31-12-1755.

<sup>374</sup> Cook, "Markets and Cultures", 130. On medical advertising, cf. Cook, *Matters of Exchange*, 136-138.

*universal applicability*, where the *personal circumstances* of the individual **patient made little difference for the remedy's usefulness. From Cook's** account, it is unclear if these two premises are to be understood as support for the reconfiguration thesis, because they seem to relate to panaceas, rather than to specific remedies.

Given the quantitative growth of eighteenth-century advertising practices, that was outlined in paragraph 3.1, it seems odd to regard advertisements for panacea-like remedies as part of a development that culminated in the customary application of specifics in medical practice. It appears that the reconfiguration thesis does not tell the whole story. Maehle, for instance, used the history of Peruvian bark to claim quite the opposite: that late eighteenth-century medicine witnessed a shift from specific to universal remedies. These 'universal remedies' can be understood as a new generation of panaceas: remedies that had originally been regarded as specifics (like Peruvian bark) increasingly came to be applied for more diseases. As Maehle argues:

a specific remedy was no longer defined through its single target, such as intermittent fever in the bark, but through its uniquely powerful and not fully understood mode of action, which was beneficial in a number of diseases.<sup>375</sup>

There is no absolute difference of interpretation between Cook and Maehle, however: both developments can be observed in the early modern period, and both might be regarded as part of a wave movement. Much earlier, Erwin Ackerknecht basically argued for such an interpretation with regard to therapeutics in the nineteenth century: a shift from specifics to panaceas, and then once again to specifics.<sup>376</sup> In modern research on drug trajectories in the nineteenth and twentieth centuries, we can observe the same cyclical pattern in medical understanding of remedies, and the accompanying repercussions in and interactions with the public domain.<sup>377</sup>

The fact that 'universal remedies' of the late eighteenth century were not entirely the same as the panaceas that had been used for centuries, is exemplified by the clear definition of panaceas as useful medicines, that can be found in eighteenth-century dictionaries. An example is, again, the **Dutch translation of Chomel's dictionary from 1778, which defines panaceas as such:**

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<sup>375</sup> Maehle, *Drugs on Trial*, 287.

<sup>376</sup> E.H. Ackerknecht, "Aspects of the History of Therapeutics", *Bulletin of the History of Medicine*, 36:5 (1962) 389-419, esp. 394 and 396-397. Cf. Maehle, *Drugs on Trial*, 286.

<sup>377</sup> E.g. in Snelders, Kaplan and Pieters, "On Cannabis".

PANACEA; *Remedium universale*; is called a remedy, which is allegedly general and cures all diseases, that can be cured; but such a remedy is not known, and cannot be prepared either, although attempts to find one under the name of *Philosopher's Stone* (*Lapis Philosophorum*); or *universal Tincture*, have been made, and are still made by some, but which will likely never be found; because it is naturally impossible, that a single remedy would cure all diseases; but it is [possible], that a single remedy can be useful against many defects, by cleansing the body from all sorts of evil humors [*kwaade vogten*] and other impurities; [by] carrying these out of the body through natural ways; and so there are various good remedies, that have been invented by this or that physician or chemist, and carry the name of *Panacea*; of which we shall mention some very good ones here.<sup>378</sup>

The wordiness in this long description reveals cautiousness on Chomel's part: the panaceas of the day should not be understood as such unavailing **attempts to find universal remedies like the Philosopher's Stone**. Instead, Chomel goes on to list several panaceas that have proven their merits widely.

Both 'specifics' and 'panaceas' were terms with more than one meaning in the eighteenth century. The advertisements for secret remedies in Database 2 contain plenty of terminology for fevers, to reflect and reassess the shifting availability and understanding of fever remedies as either specific remedies or panaceas. This investigation will be the topic of the following section.

### *Fever Terminology in Advertisements*

The various names for fever, that are mentioned in advertisements, have been visualized in Figure 16. For this figure, all the names that were used to indicate fever types have been grouped together in useful categories (identical to the ones that have been described in Table 5, note iii). More precisely, Figure 16 is based on the 498 names that were found in the first advertisement of all the 282 remedies in Database 2. The types of fever mentioned in Figure 16 refer to various aspects of fever:

- the duration of a set of symptoms, or the duration of the disease as a whole (as in the case of intermittents, like tertian and quartan fever);
- the quality of the febrile matter in the body (hot and cold fever);
- **the place of origin of the febrile matter ('inward' and 'outward' fever, or *binnenkoorts* and *buitenkoorts*, respectively);**

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<sup>378</sup> Chomel, *Woordenboek*, vol. 5, 2571.



- the place where fever existed endemically (Zeeland fever).

By far the largest group, indicated by the white section in Figure 16, contains advertisements where fever types are not specified at all, but presented as an indeterminate conglomerate, like **'fevers', 'all fevers', 'all sorts of fevers', and so on. Such characterizations occur 163 times (32,7%)**. This large number is no surprise, because these terms are often used in advertisements for panaceas (like the Top 20 in Table 5), which usually had many indeterminate indications. Remedies for continuous or remittent fevers (in yellow) occur very little: only 10 times (2%). More interesting is the variety of intermittent fevers (in red): 286 names were found that indicate intermittent fevers and/or varieties thereof (57,4%). Only a limited number of names in this group is used to describe intermittent fevers in general (4,6%). For the largest group of advertisements, one or more particular types of intermittent fever are mentioned as indication.

These observations apply to the entire eighteenth century: advertisements tend to mention specific types of fever, most likely **intermittents, rather than 'fevers' as a general category. For example, the Swiss herbal tea, which we already saw was the most often advertised remedy for fevers, described its applicability in general terms: the first advertisement that was found for the tea, in 1732, advertised its use for "all fevers without distinction" (see Chapter 4 for a more detailed discussion of the Swiss herbal tea). In the same year, another remedy against fever was promoted in a much more verbose way. The "Elixir Philosophicum Album, rightfully [called] the great Health Preserver" could be used against quotidian, tertian and quartan fevers (*eerste, 2de, en derdendaegse Koortsen*), besides hydropsy, jaundice, colics, and various other diseases.<sup>379</sup> These two examples are very revealing. Although they differ in their use of specific epithets, both are still panaceas. In other words, the use of specialized medical terms in advertisements does not indicate that the remedies themselves were transforming from panaceas to specifics. Quite the opposite: the language for specifics was adopted to promote the same kinds of cure-all remedies.**

**If we now reflect on the 'reconfiguration of the body', that was discussed in the previous section, an interesting divergence can be observed. If any transformation in bodily perception indeed took place in scholarly medicine, then the terminology for diseases may have been**

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<sup>379</sup> *Amsterdamse Courant*, 29-01-1732: "De ELIXIR PHILOSOPHICUM ALBUM, met regt groote Gezondheyds-bewaerder".

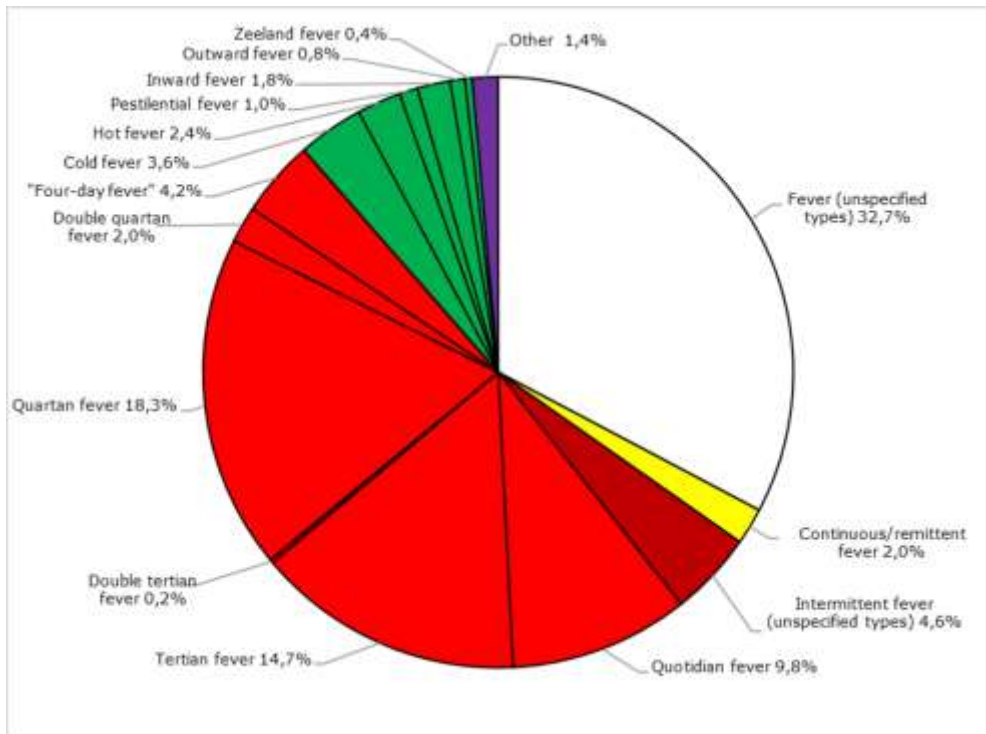


Figure 16. Names of fever types in newspaper advertisements, 1680-1799. The names were extracted from the first advertisement of all 282 remedies in the database: 498 names were found in total. The colours signify the most important fever categories that were found: unspecified fevers (white), continuous and remittent fevers (yellow), unspecified intermittent fevers (dark red), specified intermittent fevers (light red), other specified fever types (green) and occasional, undefinable fevers (purple).

adopted in advertisements, but not the precise medical understanding of these notions. The words to describe specific fevers were reused by advertisers, but the meaning behind them was not. This is not to suggest that no patterns emerge from the use of fever terminology in advertisements, over the course of the eighteenth century. Medical practice changed significantly during the century, so we might expect to see some evolution in the use of fever terminology across the eighteenth century, if not a reconfiguration along the lines of Cook or Maehle.

The question, then, is what kind of development in the use of specific and panacea-like epithets for fever took place: can a shift be discerned, where one of the two types gradually came to be replaced by the other? To answer this question, we can take the 282 fever remedies in Database 2 again, and divide them in two groups: specifics (i.e. those that mention only specific types of fever, as indicated by the green and light red sections in Figure 16); and panaceas (i.e. remedies where fever occurs as one indication among many). The distribution of these two groups over time is shown in Figure 17. Whereas we might expect to see a gradually increasing number of specifics, at the expense of panaceas, no shift like that can be observed. Remedies that use specific epithets are a majority during several periods, but panaceas are never completely superseded. To sum up, the irregular market for remedies did not partake in a gradual development towards a more individual perception of the body.

Why did advertisers choose to include certain names for fevers? We have seen that medical sources showed a great deal of diversity in terminology, which offered space for advertisers to appropriate fever terms for their own ends. Still, as shown in Figure 16, the terms that were used most often referred to the best-known varieties of intermittent fever only: quotidian, tertian and quartan fever. These were the categories that **medical sources like Boerhaave, Van Ranouw and the "Nursery of Pathology" would also have agreed upon. Advertisers, then, tended to stick to well-known fever types.** Moreover, as already shown for Top 20 remedies in Table 5, fever terms were usually clustered. Quotidian fever, for example, was never described as the only indication for a fever remedy: it co-occurs almost always with tertian, and often also with quartan fever. Tertian fever is mentioned only three times as the only fever type for which a remedy could be applied. Only quartan fever (*derdendaagse koorts*) occurs about twelve times as the only indication

of a remedy.<sup>380</sup> Intermittent fevers, then, were commonly regarded as a unity with clearly recognizable subdivisions, in medical discourse as well as in advertisements.

But whether advertisers were aware of the medical connotations of these terms is often unclear, not only because of the names themselves, but also because of the unclear qualifications of the advertisers and the secrecy about their remedies. Three situations can be found when the interpretation of fever terms is truly problematic, at least from the perspective of eighteenth-century academic medicine. First, advertisements could enumerate four instead of the usual three types of intermittent fever (i.e. quotidian, tertian and quartan fever). In 1749, for instance, Willem Aldendorp Jr., seller of trinkets (*galanterie winkelier*), advertised for the powders of the physician Bahr from Prague, which he **sold in commission, "being a sovereign remedy against all sorts of paroxysms, or fevers, whether 1, 2, 3 or 4-day fevers"**.<sup>381</sup> It is not clear to which set of Dutch terminology Aldendorp was referring here: either to the duration of intervals between symptoms, or to the duration of the **symptoms themselves. Second, advertisements sometimes 'skipped' a fever type in the list of intermittents, so as to retain a list of three.** In 1727, Paul Rostang, advertising in The Hague, promoted his fever remedy for **"daily, 3-day or 4-day fevers"**. From a scholarly perspective, "daily" would have referred to continuous fever, but Rostang probably intended to describe quotidian fever.<sup>382</sup> Third, fever types sometimes occurred twice under different names. The surgeon Jacobus Reyniersen, operating in the village of Herwijnen in the Tielerwaard (a region bordering on the province of Holland), **warned in 1776 that his "celebrated and tried fever beverages" (*koortsdranken*) were being copied by illicit sellers. The remedy was promoted for use against "one-, two-, three and other-day fevers" (*één, twee, derdendaagschen en anderdaagschen Koortsen*).** A practitioner with some education, as Van Herwijnen must have been, should have known that the second and fourth name both referred to

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<sup>380</sup> 'About' twelve times, because counting these instances requires some interpretation. Excluded are instances like '(intermittent) fever, including / even / especially quartan fever'. Included are combinations of quartan fever and double quartan fever, and instances of 'four-day fever'.

<sup>381</sup> 's *Gravenhaegse Courant*, 12-12-1749: "Te Amsterdam by WILLEM ALDENDORP Junior, Galanterie Winkelier in de Halsteeg, is te bekomen, de van ouds beroemde Poejers van de Heer BAHR, Professor en Doctor in Praeg, zynde een souverain Remedie voor allerhande soorten van Parojosmi, of Koortsen, het zy 1, 2, 3 of vierdendaegse Koortsen".

<sup>382</sup> 's *Gravenhaegse Courant*, 14-11-1727.

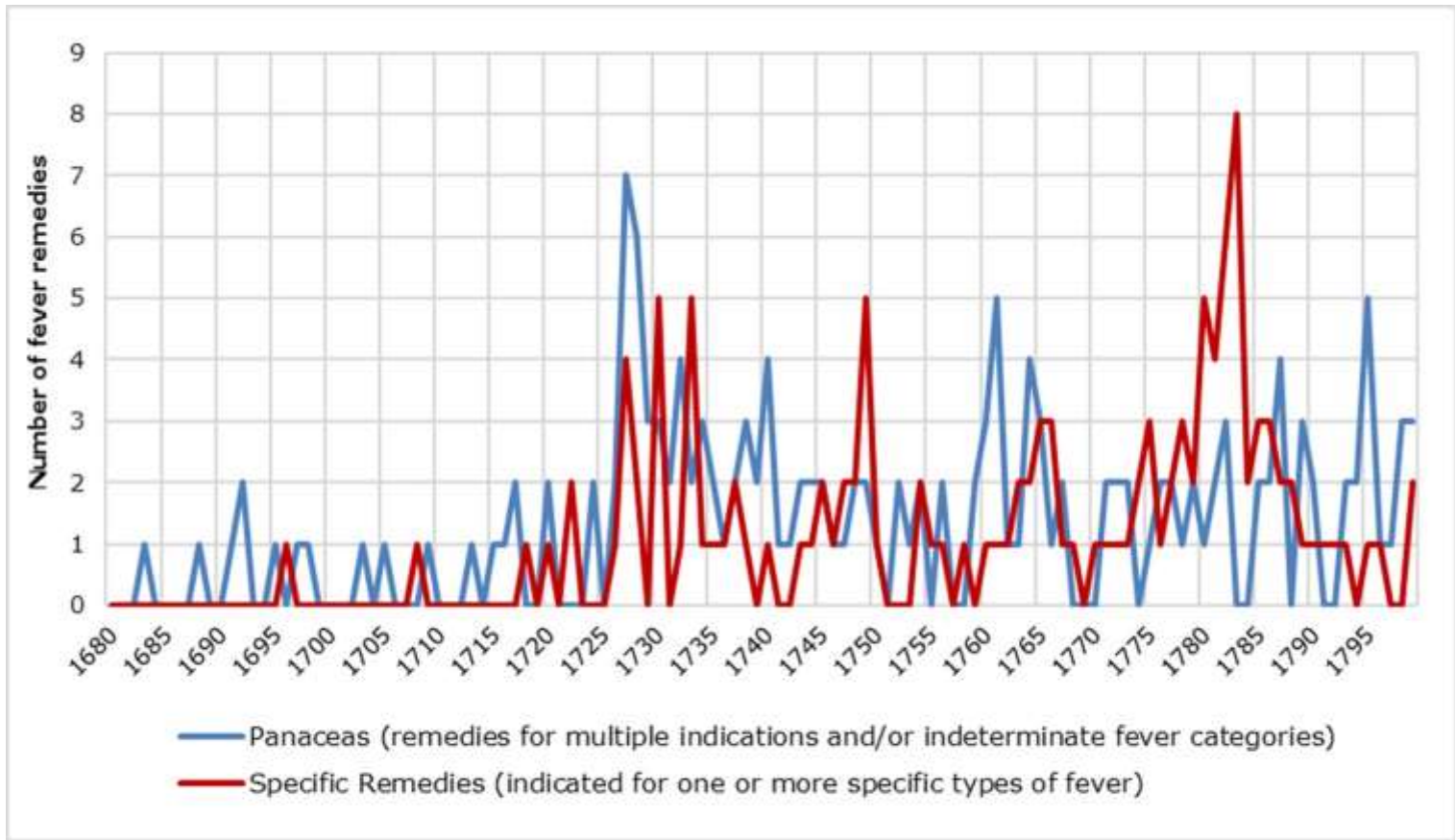


Figure 17. Specific remedies and panaceas for fever in advertisements, 1680-1799.

tertian fever in academic medicine.<sup>383</sup> When he advertised again several years later, the ambiguity was resolved: this time, the remedy was **intended for "quartan, double quartan and other intermittent fevers."**<sup>384</sup>

Whether these ambiguities should be regarded as unconscious linguistic mistakes or intentional transformations of medical terms cannot be ascertained. Apart from the unknown credentials of many advertisers, it is often unclear which of the two sets of Dutch fever terminology was intended. Advertisers could have made linguistic mistakes occasionally, but their advertisements often seem to have copy-pasted fever categories without much consideration. When the widow Van Egmond advertised that she sold a 'gold powder' in commission in her bookshop in Amsterdam, **against "continuous tertian, quartan and double fevers", the term 'continuous' was most likely intended to refer to the longevity of the disease, not to continuous fever as a separate type, characterized by the swirling nature of symptoms at regular intervals.**<sup>385</sup> The combination of continuous fever with various intermittents should therefore not strike the reader as particularly inconsiderate.

Rather than regarding such advertisements as inaccurate depictions of fever categories, we should look at them as intermediaries between the commercial, medical and public domain. Instead of rigidly trying to adhere to official medical conventions, advertisers would mould complex medical terminology in a shape that made their remedies comprehensible or at least attractive for a larger audience. By appealing more to a popular understanding of fever terminology, remedies were easier to sell. Thus, the remedy of the Baron von Hupsch (1730-1805), 'naturalist' (*natuur-onderzoeker*), **was advertised as an "infallible remedy against intermittent fever (*aflatende koorts*), which the common man calls cold fever."**<sup>386</sup> Likewise, the 'experienced Italian' doctor who advertised his remedy against *Alledaegse, Derdendaegse en Vierdendaegse Koorts* in 1696, may very well have meant to describe quotidian (not continuous), tertian, and quartan fever, respectively. He might have decided intentionally to depart from official terminology, so as not to confuse his intended audience of laymen.<sup>387</sup> In this way, ambiguous and confusing, yet familiar medical terms for fever were repurposed in advertisements, which

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<sup>383</sup> *Amsterdamse Courant*, 27-07-1776.

<sup>384</sup> *Middelburgsche Courant*, 25-11-1784: "derdendaagsche, dubbelde derdendaagsche en andere tusschenposende Koortsen."

<sup>385</sup> *Leydse Courant*, 21-11-1749.

<sup>386</sup> *Oprechte Haarlemsche Courant*, 31-12-1778: "De in de Weetenschappen wel verdiende Heer Baron van Hupsch alhier, heeft een onfeilbar Middel tegen de Aflatende Koorts ontdekt, dewelke by den gemeenen Man de Koude Koorts genoemd word."

<sup>387</sup> *Oprechte Haarlemsche Courant*, 29-05-1696.

increased their readability and memorability (in Gotti's words) for potential customers.

### Conclusion: A Century of Successful Advertising for Irregular Medicine

Advertisements are an interesting and highly relevant source to study cultural and commercial features of medical practice in the past. This chapter explored the rich diversity of medical advertising in Dutch eighteenth-century newspapers. Producers of remedies started to make use of newspapers as a medium to propagate their goods and services early on, from the middle of the seventeenth century. Advertising became a massive practice in the 1720s, when the number of advertisements practices for all kinds of remedies increased tremendously. The remedies we encounter in advertisements can generally be classed as secret remedies. The producers and/or advertisers of these remedies are often hard to track down, their credentials for medical competence are generally vague, and the nature of their remedies (in terms of ingredients, applicability, effectiveness and so on) can only be determined on the basis of their own, brief, and usually embellished remarks. Discursive elements as marketing tools in medical advertisements, such as they were formulated by Gotti, can be found to some extent in the eighteenth century, contrary to what Gotti himself claimed. Advertisements were especially keen to create attention value among their readers, and they used various common themes to make their products memorable for potential customers. One recurring linguistic feature are superlative statements to praise the virtues of remedies, in the treatment of many different diseases.

As such, many secret remedies can also be characterized as panaceas. From the perspective of modern scientific literature, this might look like a continuation of centuries-old practices, but in fact eighteenth-century panaceas represented a new wave of universal remedies, after a period in which specific remedies had been propagated against specific diseases (like Peruvian bark against intermittent fevers). It is therefore not particularly striking that significant commercial success of many secret remedies can be inferred from the advertising practices of their producers. Repeated advertising, and the significant number of newly appearing remedies in advertisements over the course of the eighteenth century, show that producers of remedies were willing and able to invest in advertising during the whole eighteenth century. In other words, a large market of irregular remedies for self-medication already existed in the

eighteenth century, well before the heyday of self-medication that is often situated in the late nineteenth and early twentieth century.<sup>388</sup>

Advertisements for fever remedies have been an excellent case study to investigate the commodification process of remedies. Fevers were often described as a conglomerate of diseases in the early modern period, and as such they presented both problems and opportunities for advertisers. Fevers occurred frequently in advertisements for secret remedies. They could easily be presented as an indistinct medical category that might appeal to an extensive audience of potential customers. The advertising strategies that were applied by producers differed substantially from modern marketing techniques. The quality of a remedy was usually highlighted by emphasizing its virtues, which might include the promise of a speedy recovery (miracle drugs); a broad range of possible applications (panaceas); or an appeal to notorious occurrences of fevers in a particular place or time (epidemicity). Whereas it was easy to describe fevers in general terms, advertisers experienced significant difficulties when they mentioned particular fever types.

The problems they encountered revolved around the proper categorization of fever, which had long been a familiar issue in academic medicine. In early modern scholarly works, fevers were an omnipresent, well-studied group of diseases, but the medical profession struggled to demarcate various types of fever that were generally known to exist, but hard to fit into well-defined nosological categories. Most authors of medical handbooks had to add residual categories to account for the full range of possible manifestations of fever. The medical profession generally agreed upon a basic division among malignant fevers: continuous or remittent fevers on the one hand, and intermittent fevers on the other. The subdivisions of the latter (quotidian, tertian and quartan fever) were essentially based on the observed duration of symptoms and the intervals between them. These kinds of fever were most often discussed by medical writers, and these were also the kinds of fever that we encounter most frequently in advertisements for fever remedies. The names we find for these fevers closely resemble the terminology that can be found in works of learned medicine, but the secretive nature of advertisements causes difficulties of interpretation, and the ambiguity of different language sets of fever terminology added to the medical confusion of differentiating between types. The choice for mentioning specific fever types could have been motivated by the pre-existing medical knowledge of advertisers, but also by their commercial interests. Overall, advertisers disregarded the precise medical connotations of fever

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<sup>388</sup> Huisman, "Patiëntenbeelden". Cf. the Introduction to this chapter.



types when they used terms, or they even created new ambiguities themselves. Whether they were aware of these medical ambiguities is often unclear, but it could emanate either from real medical ignorance, or from a deliberate move to suggest medical competence and/or to offer patients the opportunity to lend their own interpretation to the use of medical terminology.

Finally, it can also be observed that neither developments in academic medicine, nor sustained advertising practices of irregular practitioners, did gradually change the ways in which fevers were described, either in advertisements or in medical handbooks. This is a significant observation, because it contradicts common notions in modern scientific literature, which argue that a general development took place in premodern medicine, from a holistic approach which revolved around the use of panaceas, to a more reductionist type of practice in which specific remedies for specific diseases became customary therapy; or the other way around, from specifics to universal remedies. Advertisers chose to describe fevers with specific epithets for certain fever types, rather than in general terms, but their remedies were still recognizable as panaceas nonetheless. It is by comparing developments in eighteenth-century medical literature with commercial developments in advertising, that we can get a hint of the shifting interconnections between holistic and reductionist approaches in medicine. This comparative approach has shown that appreciation for panaceas and specifics shifted from time to time in a whimsical cycle. The eighteenth century was a dynamic era for irregular medical practice: producers of remedies would increasingly resort to advertising, to address a larger audience. This development commercialized the irregular market segment for medicines, which meant that patients gained access to a larger body of alternative remedies than what they could acquire in an apothecary shop. Advertisers could borrow specific epithets for fevers from regular medicine and include them in their advertisements, but their remedies did not cease to be panaceas as a result. Commercial considerations overran concerns for accuracy of medical information. Newspapers were an ideal medium for producers of remedies to propagate their products. For the first time in history, medical advertising became big business.

# Chapter 4. Secret Remedies and Territorial Practices: The Growing Market for Irregular Medicine in the Eighteenth-Century Dutch Republic

## Introduction

In the previous chapters, we have seen that, in the premodern era, fevers were regarded—by physicians and patients alike—as a conglomerate of diseases with shared characteristics, notably the fluctuating incidence of bouts of fever from day to day. This meant that the category of fevers covered many different diseases, from a common flu to the endemic type of malarial fever that was prevalent in many marshy areas in Europe until the early twentieth century, including some Dutch provinces. Apart from regular remedies, which were prescribed by trained physicians and prepared by apothecaries, Dutch fever patients had access to various irregular, secret remedies. Many of these were promoted in print, like newspaper advertisements. Chapter 3 has explored the nature of the concept of fever, from a linguistic perspective. In the present chapter, the focus will be on the geographical aspect of advertising for secret remedies.

The commodification process that was explored in the previous chapter can be expected to have resulted in a growing market for remedies, not only in the number of available products, but also in the geographical reach of inventors and distributors. Therefore, this chapter asks the question: to what extent was the market for secret remedies an expanding market? To answer this question, this chapter will explore the motives that advertisers in the eighteenth century may have had to resort to advertising, and the effects that advertising may have had for the geographical scope of their practice. Advertising in newspapers created a possibility for producers of remedies to reach a much larger, supralocal audience than by word of mouth alone. In this way, they could tap into new markets (cities, provinces, countries) to enlarge the range of potential customers. Because many secret remedies are known to us only through the advertisements that were published for them, a diachronic perspective across a digitized collection (like Database 2, which was described in the General Introduction, and explored in Chapter 3) is required to investigate such topics. It will be argued that, in general, advertisements reveal that the market for irregular medicines was

growing in the eighteenth century. This expansion is understood on two levels: the creation of awareness about the existence of a remedy among the general public, by means of advertising; and the actual availability of these remedies through networks of distribution in various cities.

If the market for secret remedies was indeed expanding in the eighteenth century, then this would be a strong contrast with developments on the market for regular remedies, which were prescribed by physicians and prepared by apothecaries. All over Europe, regular practitioners had long been organized in guilds and *collegia medica*, and their practice was often sanctioned and protected by municipal or state authorities. Towards the end of the eighteenth century, however, their position came under threat. The number of irregular practitioners had grown substantially, and the diversity among them was greater than ever. Simultaneously, patients increasingly tended to consult multiple practitioners, both regular and irregular, for the same medical indispositions. To forestall any further decline and win back the authority of their position, regular practitioners tended towards territoriality: the *de facto* monopolization of medical practice in a confined geographical area.

The geographical dimension of irregular medical practice in the eighteenth century has received very little attention in modern historical research. Surprisingly enough, the concept of territoriality is not used very often to describe the expanding or contracting geographical reach of medical practitioners in the past, yet the development itself is widely acknowledged to have taken place in large parts of eighteenth-century Europe. Anne Digby was the first to explore medical territoriality in detail, although no clear definition has surfaced from her work. Her study implies that territoriality not only had a geographical, but certainly also a qualitative dimension: regular practitioners would increasingly focus on patients whom they could attend within short travelling distance, while at the same time they would present themselves more and more as general practitioners (GPs). These developments were intended to strengthen the authoritative position of regular practitioners as the primary contact for patients; to secure their livelihood as medical professionals; and to ban illicit practitioners from their regions.<sup>389</sup>

An opposite development seems to surface from advertisements for secret remedies: territorial expansion on a supralocal level; impersonal,

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<sup>389</sup> A. Digby, *Making a Medical Living: Doctors and Patients in the English Market for Medicine, 1720-1911* (Cambridge: Cambridge University Press 1994), Chapter 4. The emergence of the GP has been traced in detail by I. Loudon, *Medical Care and the General Practitioner 1750-1850* (Oxford: Clarendon Press 1986).

distant communication between buyers and sellers; and commodification of remedies through advertising. Modern studies have already highlighted the quantitative growth of medical supply and demand; and the territorial tendencies of regular practitioners.<sup>390</sup> An exploration of the territorial ambitions of irregular practitioners will thus add a currently missing dimension to the existing scientific literature. A methodological innovation to modern research is implied here as well. As large collections of data for secret remedies, such as those that were assembled in Database 2, become available, it will be possible to mine them systematically for patterns in geographical distribution, a feature which has become a very promising topic in historical research in recent years.<sup>391</sup> As such, the preliminary investigation of medical territoriality in the past, that is presented in this chapter, offers a test case for systematic data mining of digitized newspaper advertisements, which has great potential for further research.

This chapter is structured as follows. The first paragraph investigates the concept of medical territoriality on a micro level. The focus is on the advertisements for a fever remedy that was produced on a local level in the village of Smalle Ee, in the province of Friesland. In the second paragraph, the focus will be on the **distribution networks of two 'big'** fever remedies, that we already came across in in the Top 20 in Chapter 3: remedies for which so many advertisements were found, that long-term patterns of advertising can be discerned. In the final paragraph, the insights from both approaches are combined—local remedies for which only a few advertisements were **found, on the one hand, and 'big'** remedies for which advertisements reveal business-like patterns, on the

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<sup>390</sup> The process took place all over Europe. For England, apart from Digby (mentioned in the previous footnote), see S. Williams, "Practitioners' Income and Provision for the Poor: Parish Doctors in the Late Eighteenth and Early Nineteenth Centuries", *Social History of Medicine*, 18:2 (2005) 159-186; P. Wallis and T. Pirohakul, "Medical Revolutions? The Growth of Medicine in England, 1660-1800", *Journal of Social History*, 49:3 (2016) 510-531; for the Netherlands, see Deneweth and Wallis, "Households"; for France, see Brockliss and Jones, *Medical World*, 658-660; for Germany, see R. Schilling, "Raum und medizinischer Markt: Die Praxis des Stadt- und Amtsarztes Johann Friedrich Glaser (1707-1789) in Suhl", *Gesnerus*, 69:1 (2012) 36-53; for Venice, see Bamji, "Medical Care in Early Modern Venice".

<sup>391</sup> The 'geographical turn' in history is exemplified by studies like D.A. Finnegan, "The Spatial Turn: Geographical Approaches in the History of Science", *Journal of the History of Biology*, 41:2 (2008) 369-388; and K. Offen, "Historical Geography II: Digital Imaginations", *Progress in Human Geography*, 37:4 (2013) 564-577. The geographical approach to digital history is not yet generally embraced, however, as argued by O.W.A. Boonstra, "No Place in History – Geo-ICT and Historical Science", in: H.J. Scholten, R. van de Velde and N. van Manen (eds.), *Geospatial Technology and the Role of Location in Science* (Dordrecht: Springer Science + Business Media 2009) 87-101.

other—to analyse the commonalities of advertising for irregular remedies in general.

#### 4.1. The Fever Jars of Smalle Ee: Isolated Advertisements in Context

Secret remedies could be found in remote places. One secret remedy with quite a reputation were the small fever jars (*koortspotjes*) of Smalle Ee, a hamlet near the town of Drachten in the province of Friesland. Scant information about these jars can be found from the late seventeenth to the early twentieth century. The little information that can be found is mainly based on the occurrence of this remedy in advertisements. Perhaps the biggest problem with advertisements for secret remedies is that they are largely devoid of any context: little is known about most remedies, like the ingredients, inventors, advertisers and vendors, apart from what is mentioned in the advertisements themselves (which is short, by definition), and sometimes an occasional reference in genealogical or local histories. Extricating such histories requires a great deal of puzzle-solving and loose assumptions. The result is often rewarding, however, because the hidden features of remedies are wrested from the sources, and it allows the historian to trace trends that surface in a collection of otherwise unsystematic data.

The most extensive description of the fever jars of Smalle Ee was noted down by Waling Dykstra, in his monumental work on the folklore of **Friesland, written at the end of the nineteenth century. Dykstra's work** discussed many folk remedies, but he singled out the fever jars for special consideration, due to their supposed effectiveness. The jars could still be **purchased in Dykstra's days, although the remedy itself went back several centuries.** With Dykstra, this folk remedy was still largely shrouded in **mysteries. "I have never seen that substance, let alone tasted it", he says,**

but I have heard people, who had become acquainted with it, assert that because of the terribly disgusting taste, one could be afflicted by fever by only thinking of using it. According to an old note that was found somewhere, it consists of six *lood*<sup>392</sup> of the best Peruvian bark, half a *lood* of grinded blessed thistle [*karmediktus*], a *stuiver* worth of cloves and a quarter-*lood* of Spanish wormwood, blended together in beer and slightly sweetened with some kitchen syrup. A fever patient must use

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<sup>392</sup> A *lood* or *loot* is 1/24 of a pound (1/2 of an ounce), approximately 13,64 grams. See Geldof, "Beknopt Overzicht", 8.

some of this, the size of a chestnut, five or six times a day; a child below the age of ten half as much.<sup>393</sup>

The story was repeated several times by later authors, including Van der Wielen in his account of the history of pharmacy in Friesland.<sup>394</sup> These sources provide some context to Dykstra's semi-legendary account. Originally, the remedy came from the Benedictine monastery near Smalle Ee, which had closed its doors in 1580. The ingredients for the original recipe must have come from the **monastery's herb garden, which was quite well-known in the area.**<sup>395</sup> The nuns passed on the recipe, perhaps already to a member of the Wildeboer family, who were living in Smalle Ee. The recipe was probably passed on within the family through successive generations, until the twentieth century.<sup>396</sup>

More than two centuries elapsed between the Benedictine nuns and **Wildeboer's family firm. Much about the remedy could have changed in those years: in fact, the ingredients certainly did. Peruvian bark, mentioned in Dykstra's recipe, cannot have been part of the remedy's original composition.** As has been noted in previous chapters already, Peruvian bark only became known in Europe around 1640, some sixty years after the monastery was closed.<sup>397</sup> In the eighteenth and early nineteenth century, the recipe belonged to a family called Wildeboer. One interesting source for this is a newspaper advertisement from the *Leeuwarder Courant* of 1803. The advertisement warns against adulterations:

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<sup>393</sup> W.G. Dykstra, *Uit Frieslands Volksleven van Vroeger en Later: Volksoverleveringen, Volksgebruiken, Volksvertellingen, Volksbegrippen*, 2 vols. ([Leeuwarden: A. Bruis 1892-1896]), vol. 2, 251-252.

<sup>394</sup> P. van der Wielen, "Friesland en de Pharmacie", *Pharmaceutisch Weekblad*, 62: 27 (1925) 690-714, there 714.

<sup>395</sup> J. Dijkstra and K. Wolters, *Uit de Geschiedenis van Smalle Ee, De Wilgen, Buitenstvallaat* (2<sup>nd</sup> edition; s.l.: s.n. 2003) 16.

<sup>396</sup> The exact transfer of the recipe through time is difficult to trace. The nuns transferred the recipe to friends in Smalle Ee, according to Dijkstra and Wolters, *Uit de Geschiedenis*, 55. This may have been a Wildeboer, or another, unknown person. When the remedy came in the possession of the Wildeboer family, it seems to have stayed there. In **Klaas Henstra's book, *Duivelbanners en Wonderdokters in de Wouden*** (Leeuwarden: Friese Pers Boekerij 2007) 86-89, local remedies are associated with both Jan Klazes Wildeboer and his nephew, Klaas Sytses Brandenburg. Whether these were actually the same remedies is unknown, but it is likely: in the family chronicle of the De Haan family (who were descendants of Brandenburg), the same recipe as the one mentioned by Waling Dykstra can be found. I thank Klaas Henstra, and Feito van der Wal (Historische Werkgroep Kynhout), for providing me with information on this topic.

<sup>397</sup> Jarcho, *Quinine's Predecessor*, Chapter 1. See also Chapter 1 above.

Everyone who needs the remedy of Smalle Ee is warned, that he should receive with it a leaflet [*biljet*] from Jan Klazes Wildeboer; because there are people in that village who counterfeit it, and it can be purchased from none other than the boatmen of Smalle Ee.<sup>398</sup>

The advertisement does not explicitly mention fever jars, but it is certainly the same remedy. It was characterized as *the* remedy from Smalle Ee, which was apparently enough information for any interested buyer: no other remedies would have been known to originate from such a small village. However, it was probably no longer an exclusively local remedy at the time. The Wildeboer family had 'outsourced' the distribution of the remedy to boatmen. This is a significant detail, because involving sailors for distribution purposes could substantially enlarge the market of a local remedy. In the case of Smalle Ee, the involvement of boatmen was all the more obvious, as waterways provided the easiest, and cheapest means of transportation for peat, which was produced in the area.<sup>399</sup> The success of a growing market had a downside, however, because it apparently led others to imitate the remedy, to profit from it as well.

More newspaper advertisements can help to clarify parts of the intermediate history of the fever jars. When the warning against adulterations was published in 1803, Jan Klazes Wildeboer was no longer alive. In 1801, his niece Geeske Pieters advertised that the fever remedy of her late uncle could still be purchased from her, at the same location in Smalle Ee, for the same price.<sup>400</sup> The process of regional expansion had already started by then. In 1798, Gerhard de Buhr, practitioner (*practizyn*) in the town of Irnsum (at c. 25 kilometres distance from Smalle Ee), also advertised for the "infallible remedy" against fevers.<sup>401</sup> Whether he did so with permission of the Wildeboer family is unknown.

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<sup>398</sup> *Leeuwarder Courant*, 26-03-1803: "Een ieder word gewaarschuwd, wanneer hy het MEDICAMENT van Smallie nodig heeft, dat hy daar by een Biljet van Jan Klazes Wildeboer ontvangt; want daar zyn Lieden in dat Dorp, die het na maken, en het is nergens dan by de Smalliester Schippers aan huis te bekomen." Paraphrased in: G.A. Wumkes, *Stads- en Dorpskroniek van Friesland, Deel II: (1800-1900)* (Leeuwarden: Drukkerij Eisma 1934) 14; and in *Smellingera-Land: Proeve van een 'Geakinde' van de Gemeente Smallingerland: Uitgegeven ter Gelegenheid van het Driehonderdjarig Bestaan van Drachten 1641-1941* (Drachten: Drukkerij Laverman 1944) 305. This book erroneously describes the producer of the remedy as a branch of the firm, that is situated in Groningen, at 45 kilometres distance from Smalle Ee.

<sup>399</sup> P. van Schaik and J.J. Spahr van der Hoek (eds.), *Geschiedenis van Smallingerland* (Leeuwarden: De Tille 1976) 48-50.

<sup>400</sup> *Leeuwarder Courant*, 02-05-1801.

<sup>401</sup> *Bataafsche Leeuwarder Courant*, 20-10-1798 and 27-10-1798.

Earlier still, in 1782, S.H. Wildeboer promoted the “jars against fever, that have been tested and are already well known.” He was then living in Balk, a town at c. 50 kilometres distance from Smalle Ee.<sup>402</sup> The oldest reference in newspapers are the advertisements by Klaas Hendriks Wildeboer, who was probably the brother of the man living in Balk and the father of Jan Klazes Wildeboer. He advertised several times in 1765 for “the infallible and blessed fever remedy, which has been used for so many years by his father.” At the time, the remedy could also be purchased from Johannes Luitjes, a butcher in Leeuwarden (at 18 kilometres distance from Smalle Ee), who sold it in commission.<sup>403</sup>

These advertisements help to trace the fever jars’ lineage back into the first half of the eighteenth century, when the father of Klaas Hendriks Wildeboer sold it. The advertisements reveal several dynamic features of the market for irregular remedies. Three observations are especially relevant with regard to the hypothesis of a growing market for secret remedies in the eighteenth century. First, the example of Smalle Ee shows that advertising made it possible to sell remedies on a *supralocal* level. Of course, the impact of the advertisements in the *Leeuwarder Courant* is hard to assess: we do not know how many potential buyers were reached by advertisements, nor the number of fever jars that were sold before and after the start of advertising. However, the frequent occurrence of advertisements over the course of several years, at least suggests that the producer would have benefitted from advertising in newspapers, in addition to other promotional strategies, either in print or by word of mouth. The fact that the producer involved local boatmen, to distribute his fever jars in the area, supports the idea that advertisements helped to reach customers who lived too far away to come to Smalle Ee themselves. In the General Introduction, it was already observed that the *Leeuwarder Courant*, the most important regional newspaper in eighteenth-century Friesland, printed much less copies than more widely available newspapers like those of Amsterdam or Haarlem. Nevertheless, the opportunities for regional distribution in Friesland alone might have been an important reason for the producers of the fever jars to start advertising. In Friesland, various urban and rural centres had an important economic function in the region, and were closely related with other centres by means of regulated traffic in a dense network of waterways.<sup>404</sup> Moreover, the city of Leeuwarden developed into a strong

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<sup>402</sup> *Leeuwarder Courant*, 12-10-1782, 19-10-1782 and 26-10-1782.

<sup>403</sup> *Leeuwarder Courant*, 07-09-1765, 14-09-1765, 28-09-1765 and 05-10-1765.

<sup>404</sup> G. Jensma, R. Kunst and H. Spanninga, “De Sleutels van de Stad: Leeuwarders en de Buitenwereld”, in: R. Kunst e.a. (eds.), *Leeuwarden 750-2000: Hoofdstad van Friesland* (Franeker: Uitgeverij Van Wijnen 1999) 110-127, there 116-118.



urban economy in the early modern period, which became closely linked to that of other cities, especially Amsterdam. Still, Leeuwarden retained an independent position within the economy of Friesland. The many waterways tied cities and villages in Friesland together economically, while at the same time they maintained a strong connection with the most important cities of other provinces, especially Holland.<sup>405</sup> By implication, remedies like the fever jars of Smalle Ee had relatively good possibilities for supralocal distribution and promotion.

Second, the advertisements from Smalle Ee show that advertisements created distance, both physically and mentally, between buyers and sellers of remedies. Increasing advertising for irregular remedies thus gave an *impersonal* character to drug retailing. For advertisers, a larger distribution area for their remedies made it both impractical and unnecessary to invest in a personal relationship with potential customers. For example, **Klaas Hendriks Wildeboer still referred to his father's practice to give credit to his remedy.** Almost half a century later, however, **his son's niece only mentioned the locality of Smalle Ee to stir the interest of customers, together with the inclusion of a 'leaflet' (*biljet*) to ascertain the remedy's authenticity.** The inclusion of such a leaflet, which may have resembled patient information to some extent (*bijsluiter* in modern Dutch), might also be regarded as a way for inventors and advertisers of secret remedies to safeguard themselves in cases of misuse.<sup>406</sup> If a tendency towards the impersonal distribution of secret remedies took place more generally on the market for irregular remedies, then this is an altogether opposite development to the tendency of regular practitioners to operate on an increasingly local level, as was outlined in the Introduction to this chapter.

Third, the advertisements for the fever jars reveal the increasing *commercial* character of this remedy over the course of time. Many irregular practitioners (i.e. those who are not obviously recognizable as officially trained physicians, surgeons or apothecaries), who advertised in newspapers, promoted their goods and services with arguments that concealed rather than clarified the medical qualities of their products. The fever jars of Smalle Ee were invariably presented as 'infallible', and at times as 'tested' (*probatum*), but the remedy remained, essentially, a secret remedy. As was observed in Chapter 3, such linguistic tricks reveal nascent marketing strategies rather than veritable descriptions of the

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<sup>405</sup> H. Nijboer, "Het Openen en Sluiten van de Markt: De Economische Ontwikkeling van Vroegmodern Leeuwarden", in: Kunst e.a. (eds.), *Leeuwarden 750-2000*, 159-183, there 166-168.

<sup>406</sup> See also Table 5, note iv.

qualities of remedies. Thus, advertisements were not just the channelling medium through which remedies were promoted: advertising itself was part of, and instrumental in shaping the commodification process. Advertisements mentioned as many virtues as was necessary to attract customers, without going into much detail about the actual composition, applicability or effectiveness of a remedy. Regardless of the diversity among medical advertisements, secrecy was the most important shared characteristic. The brevity of advertisements only contributed to this.

#### 4.2. Long-Term Advertising Patterns of **'Big' Secret** Remedies

The example of the fever jars of Smalle Ee points to some significant features of the local, regional and national economies for irregular remedies in the Dutch Republic: local remedies could acquire commercial prospects on a supralocal level, where they were detached from the personalities of their inventors, producers and/or advertisers, and instead transformed into commodified remedies in their own right. In this paragraph, the focus will be widened from a local context to some other secret remedies, which operated on a regional or even national scale. Many of the same **commercial mechanisms were at work for such 'big'** remedies (in terms of the number of advertisements that can be found for them) as for local remedies like the fever jars.

In Chapter 3, it was observed that the number of advertisements for secret remedies, that can be found in newspapers, shows that the market for such remedies grew significantly during the eighteenth century. More precisely, the total number of available fever remedies grew over the course of time, and the number of advertisements for these remedies grew as well: this was most clearly demonstrated in Figure 13. Local remedies, like the fever jars of Smalle Ee, reveal the potential of secret remedies to increase their geographical scope (in terms of public awareness and availability) in the eighteenth century. But do advertisements reveal an actual tendency for territorial expansion of remedies? To what extent did advertisers purposefully try to enlarge their audience by promoting their remedies in other localities than their own, both in printed advertisements and in distribution locations in various places?

The best way to find out about this is to investigate some of the most frequently occurring remedies more closely. The fever remedy for which most advertisements can be found is **'the famous and widely known Swiss herbal tea'**. **The 1361 advertisements that were found for this remedy are scattered over at least 68 years (1732-1799, and extending into the nineteenth century), in fifteen newspaper titles, which were published in**

eight different cities. As in the case of so many other remedies, advertisements basically presented the Swiss herbal tea as a panacea. The very first advertisement already made a claim for its universal applicability. **Not only could it be used against “all fevers without distinction”, but it was also useful against pains associated with the head,** chest, loins, stomach, colic, gout and limbs; lethargy; stomach ailments; vomiting; lost appetite; ailments of mothers and ‘diseases of spinsters’ (*vrysters-ziektens*).<sup>407</sup> The last advertisement that was found for the tea, in 1799, still mentioned most of these same diseases.<sup>408</sup> During the whole of the century, a package of tea cost 12 *stuivers*. In other words, advertisements for this remedy show a lot of continuity.

From a modern perspective, the Swiss herbal tea apparently had a **very successful ‘business model’**. It managed to survive on the medical market, unaltered, for decades. The producer was willing and able to invest in dozens of advertisements each year, in all the most important cities of the Dutch Republic, well into and beyond the French occupation. Furthermore, this remedy shows the two most important types of territorial reach, that can be found in advertisements: the possibility to buy a remedy on the spot, **in one’s hometown**; and the possibility to order it by mail. The Swiss herbal tea offered both options to customers. But did the regional availability of this remedy follow a regular pattern as well?

If we look at the distribution of advertisements in the cities where the newspapers were published, it is evident that the producer did not follow a uniform advertising strategy, as can be seen in Figure 18. The first advertisement for the Swiss herbal tea was found in 1732, and it seems that this was indeed the year in which it was first advertised. More than eighty advertisements were found for this year only, more than for any other year. It seems that the producer started advertising in January 1732, to quickly gain a reputation for his tea, by publishing similar numbers of advertisements in the newspapers of four big cities in Holland: Amsterdam, Haarlem, The Hague and Leiden. In the following years, however, the number of advertisements diminished, while at the same time the producer did not advertise evenly in different cities. A low point was reached in the 1750s, when only a handful of advertisements was published. This might explain why the producer decided to extend his reach, by advertising in the newspaper of Groningen in 1755, the first and only time he advertised in a newspaper beyond the confines of urban

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<sup>407</sup> *Amsterdamse Courant*, 12-01-1732: “neemende Wonderlyk weg alle Hoofd- Borst- Lenden- Maag- Colyk- Jigt- en Leedenpynen, Loomheeden, alle Koortzen zonder onderscheyd, Lammigheden, Maegqualen, Brakingen, verloren Eetlust, Moederqualen, en by uytnemendheyd de VRYSTERS-ZIEKTENS.”

<sup>408</sup> *De Nieuwe Haagse Nederlandse Courant*, 13-11-1799.

Holland. This move may not have been a success, as no more advertisements were found for Groningen in the following years (except for one in 1764). When the producer reinvigorated his advertising practice in the 1760s, he stuck to the newspapers of Haarlem, Leiden and Amsterdam. He confined himself to the province of Holland thereafter, adding the newspapers of Delft and Rotterdam to his publishing area in the final decades of the century

Advertising in newspapers would certainly have raised awareness of the Swiss herbal tea among the public in many cities. But where could it be purchased? Wittop Koning mentions a request from the city of Brielle in 1772, regarding permission for irregular practitioners to appear at the market of Saint Catherine. The Swiss herbal tea is mentioned among the medicinal products which could be purchased at shops that were not owned by apothecaries, indicating that the remedy was not (or not only) available in stores for regular medicines, like apothecaries and druggists.<sup>409</sup> Apart from such temporary occasions like markets, advertisements show that the producer of the Swiss herbal tea typically used one distribution point in various cities, usually a bookseller or a coffee house. Was this an effective strategy? The theory of urban retailing patterns suggests that a successful business depends on two components: *range*, “the maximum distance that a consumer is prepared to travel in order to buy that specific product”; and *threshold*, “the minimum consumption demand that is required in order to keep a business—in this case a shop—running.” **For products that will not be bought on a daily or regular basis by most people, like medicines, it is not necessary that they can be bought on every street corner.**<sup>410</sup> But for a product that was not produced in a certain city (and we do not know where the Swiss herbal tea was being produced), one distribution point could be enough to gain a foothold in that place. By installing only one vendor in various cities, then, the producer of the Swiss herbal tea managed to **bypass the ‘range’ condition. He used only one shop in various cities, so as not to address entire urban populations, but just to have a basis in each city.** Advertisements might then have been intended primarily to lure customers from across the city. **Similarly, the ‘threshold’ condition did not apply to the Swiss herbal tea either. The shops where it could be bought did so ‘in commission’: they were allowed to sell the remedy on the**

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<sup>409</sup> D.A. Wittop Koning, “Wondermiddelen”, *Bulletin van de Kring voor de Geschiedenis van de Pharmacie in Benelux*, 67 (1985) 1-17, there 14.

<sup>410</sup> C. Lesger, “Patterns of Retail Location and Urban Form in Amsterdam in the Mid-Eighteenth Century”, *Urban History*, 38:1 (2011) 24-47, there 26-27.

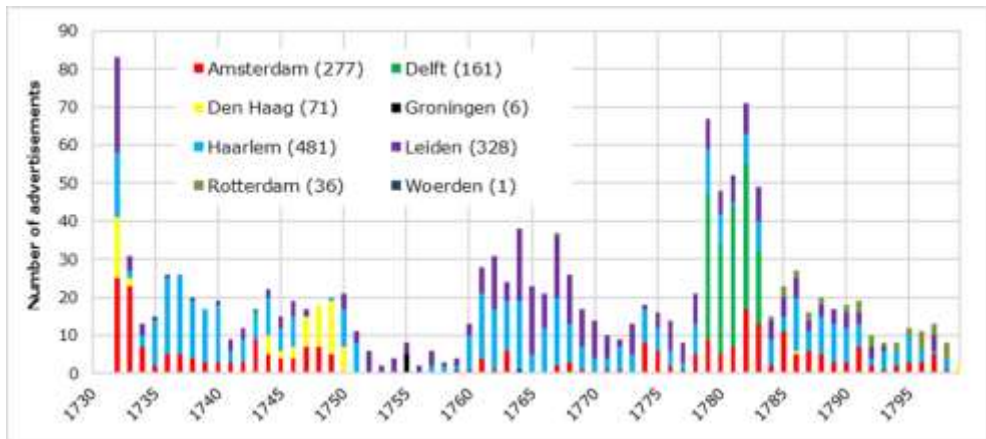


Figure 18. Distribution of advertisements for 'Swiss herbal tea', in the cities where the newspapers were published, 1732-1799. The total number of advertisements for each city is in brackets.

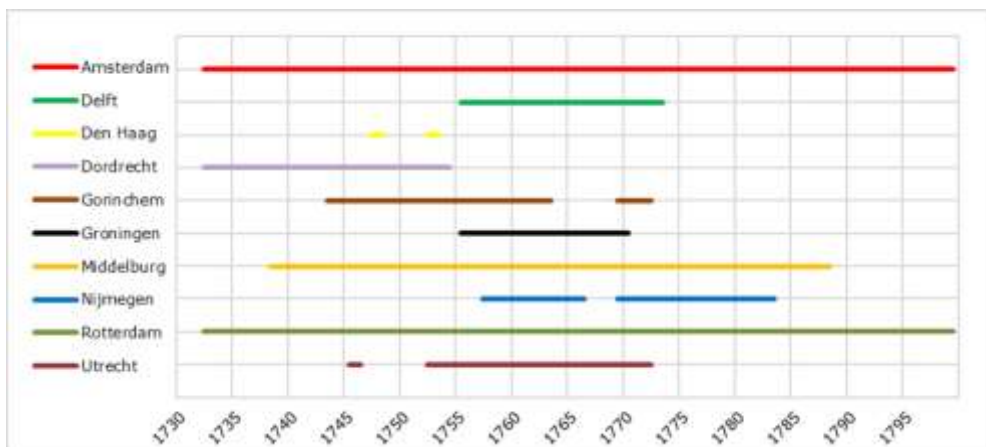


Figure 19. Cities with distribution locations of 'Swiss herbal tea', 1732-1799.

**producer's behalf, in exchange for a share** of the profit. For these shops, then, selling remedies was a way of making extra money, not the core of their business. For the producer, this system provided an unconstrained way of distribution: his only concern was to have his product available in a certain locality, without the responsibility for the survival of the shop.

Just as in the case of his advertising strategy, the producer of the Swiss herbal tea followed no consistent pathway with regard to the distribution locations of his product. In fact, contrary to what one would expect, there is no obvious relationship between the cities where the tea was *advertised* and the cities where it could be *purchased*, which can be seen in Figure 19. The only two cities where the remedy could be bought continuously from 1732 onwards were Amsterdam and Rotterdam. In the earliest advertisements, we find the coffee house of D. Wilderling in Amsterdam and, a week later, Haasverberg's **coffee house** in Rotterdam, as the principal distribution locations.<sup>411</sup> Distribution in Amsterdam followed a fuzzy track. In 1745, distribution shifted from Wilderling to another bookseller, D. Jemans<sup>412</sup>, which happened again in 1750 (to Eleke van Belkom)<sup>413</sup> and in 1755 (to B. Bakker).<sup>414</sup> Sometime in between, the Swiss herbal tea could also be bought at the apothecary E. Nadeau.<sup>415</sup> A similar development occurred in Rotterdam.<sup>416</sup> Most other distribution points were in the province of Holland as well, but in no other cities was it continuously available during the eighteenth century. In The Hague, the remedy was only sold for a few years (at the bookseller Walpot), after advertising in that city had already stopped. Conversely, the distribution in Delft stopped before advertisements for it began to be published in the **city's** *Hollandsche Historische Courant*. It is curious that advertisements do not mention distribution points in Haarlem or Leiden, two important cities where many advertisements for it were published. At the same time, there is no conclusive evidence to suggest that the Swiss herbal tea was not available at all in these cities, only because advertisements do not mention a vendor.

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<sup>411</sup> *Amsterdamse Courant*, 12-01-1732; 19-01-1732. It is unclear if Wilderling owned a **coffee house, but Van Dam, "Een Huwelijk", 26, does imply** this.

<sup>412</sup> *Oprechte Haerlemsche Courant*, 08-06-1745.

<sup>413</sup> *Oprechte Haerlemsche Courant*, 12-03-1750.

<sup>414</sup> *Leydse Courant*, 04-06-1755.

<sup>415</sup> For the first time in the *Leydse Courant*, 11-06-1756.

<sup>416</sup> Distribution in Rotterdam shifted first to the bookseller Iz. Hutte (*Oprechte Haerlemsche Courant*, 03-04-1760), and later to D. Hoogwerf (*Leydse Courant*, 01-10-1773). Sometimes no distribution point in Rotterdam was mentioned at all, even though one is known to have existed at the time (e.g. *Oprechte Haerlemsche Courant*, 16-03-1769).

Some inferences can be made about the commercial success of the Swiss herbal tea as well. For instance, the low number of advertisements in the 1750s does not readily imply that the remedy was not doing well on the medical market during that period. Quite the contrary. Around 1760 the Swiss herbal tea could be bought in eight different cities, four of them in the province of Holland: Amsterdam, Rotterdam, Delft and Gorinchem. Four other distribution locations operated outside of Holland: in Middelburg, Nijmegen, Groningen and Utrecht. In the 1770s and 1780s, however, distribution in these cities stopped again, as well as in various cities in Holland. Overall, the Swiss herbal tea experienced a period of significant geographical expansion towards the middle of the eighteenth century, whereas a period of contraction set in during the second half of the century, until it could only still be purchased in Amsterdam and Rotterdam.

The availability of Swiss herbal tea in shops might be a stronger **indication for the remedy's success than its occurrence in advertisements**. However, the divergent developments that can be observed in advertising and distribution of this remedy might actually reflect two sides of the same coin. The absence of a distribution point in a city did not mean that it was not available to customers living in that city. There may have been distribution point in cities, that were not mentioned in advertisements, but more importantly, the remedy could be sent by mail. Each **advertisement for the Swiss herbal tea ended with the brief line "letters [should be] post-paid" (*de brieven franco*)**. This addition can be found in many advertisements for other secret remedies as well, and this single line may have been the very strength of the market for secret remedies. The possibility to send remedies by mail made it virtually irrelevant where a customer lived: if he knew about it from an advertisement, he could also read about one or more places where it was sold, and a simple letter would suffice to have the remedy reach the farthest corners of the country. Seen from that perspective, an abundance of advertisements could complement a limited number of distribution points; and conversely, a great number of distribution points might make frequent advertising unnecessary. As such, advertising and local distribution were two strategies to maximize the geographical coverage of secret remedies.

If we compare the Swiss herbal tea with another remedy for which many advertisements occurred, similarities and differences can be observed to sustain the argument about the geographical expansion of **the market for secret remedies**. The **'General dissolving and loosening pills'** were another successful remedy, for which 683 advertisements were found, in six newspapers, published between 1727 and 1769. The pills had an impressive list of possible applications. For the price of 14 *stuivers*,

one would buy a remedy “against all pains of gout, podagra and scurvy in all limbs and intestines, all continuous intermittents [fevers], tertian and quartan fevers, as well as white and grey leprosy, all engrained ulcerations, and especially in the legs, lethargy, nausea, spasms and twitches, inveterate epilepsy, all kinds of dyspnoea, consumption and **hydropsy**.”<sup>417</sup> Like the Swiss herbal tea, then, it was essentially a panacea.

This remedy had a comparable career as the Swiss herbal tea, but was even more firmly based in the province of Holland, as is shown in Figure 20 and 21. The beginnings of advertising were more modest than in the case of the Swiss herbal tea: only a few advertisements were published for this remedy in the newspapers of Amsterdam, Haarlem and Leiden, starting in July 1727. The subsequent intensification of advertising may have had to do with the fever epidemic that broke out in various cities in the Fall of 1727. This caused a general increase in the number of advertisements for irregular fever remedies, as could already be observed in Figure 13, and which will be discussed in more detail in Chapter 5. The epidemic may have caused the pills to gain a stronger foothold on the medical market for secret remedies, because advertisements for the pills appeared regularly in the newspapers of Amsterdam, Haarlem and Leiden thereafter. Dozens of advertisements in the *'s Gravenhaegse Courant* from The Hague, in the late 1740s, caused the only real peak. No advertisements were published for some years in the 1760s and none at all after 1767, but it is unknown whether the pills were still produced during these periods. An occasional advertisement was published outside of Holland, in Utrecht or Leeuwarden, but advertisements for this remedy reveal no strong ambition to address a national market.

However, as in the case of the Swiss herbal tea, this advertising strategy differed significantly from the actual distribution of the remedy. The pills were more or less continuously available in Amsterdam, The Hague, Haarlem and Rotterdam in Holland, and also in Utrecht. Distribution in Leiden and Weesp started early, but was soon lifted. Towards the middle of the century, however, the producer increased the number of locations, and by 1760 new (or renewed) locations were employed in Delft and Gorinchem in Holland, and further away in

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<sup>417</sup> *Oprechte Haerlemsche Courant*, 17-07-1727: “tegens alle Jichtigen, Podagreuse en Scorbutike of Scheurbuyckige Pijnen door alle de Leden en Ingewanden, alle gedurige tussenpozingen, derde en vierdendaegse Koortsen, oock de witte en graeuwe Lazary, alle verouderde Sweragies en voornamentlijck in de Beenen, Lammigheden, Beroertheden, Kram- en Zeenuwtreckingen, verouderde Pleuritide, alle soorten van **benauwde Borsten, Thering, en de Watersugt**”. The translation of *derde en vierdendaegse Koortsen* is dubious, due to the incongruity between Dutch names on the one hand and Latin names (including their English derivatives) on the other. Cf. paragraph 3.2 above.



Middelburg, Groningen and Nijmegen. It is no coincidence that the producer of the Swiss herbal tea was operating in many of these same cities. In fact, his tea was often sold in the same bookshops and coffee houses as the pills. In mid-1762, for example, an issue of the *Leydse Courant* contained advertisements for both remedies, which were sold in many of the same places in the same cities: the widow of the apothecary Nadeau in Amsterdam; J. Hutte in Rotterdam; J. Kock in Delft; Besseling in Utrecht; J. Andriessen in Middelburg; Ottinghof in Gorinchem and M.A. Bouvard in Nijmegen.<sup>418</sup> Therefore, the choice for a distribution location **may have had as much to do with a shop owner's willingness to sell** medical products, as with the trust invested in him by producers of secret remedies. With regard to the time frame, the middle of the eighteenth century seems to have been the most successful period for both remedies in terms of geographical coverage. This corresponds to the quantitative heyday of advertising for secret remedies, that was discussed in Chapter 3.<sup>419</sup>

#### 4.3. Territorial Preferences and Boundaries of Irregular Practitioners

The previous paragraphs have shown that both small, locally oriented fever remedies, and large business-like producers of remedies could all be involved in advertising, which increased the commercial possibilities for each. This paragraph investigates the boundaries of advertising: why would producers of remedies partake in or refrain from advertising, and were there spatial limits as to what they could achieve through advertising?

##### *Willingness and Necessity of Advertisers for Geographical Expansion*

**Advertising and distribution of both the 'Swiss herbal tea' and the 'General dissolving and loosening pills' took place mainly in Holland.** This is no surprise, given the prominence of Holland in the Dutch Republic, but at the same time it could point to a preference of advertisers for regional boundaries. If we look at advertisers from towns in the provinces of Friesland and Groningen, it is clear that most of them were focusing on a local or at best regional market. They usually advertised only once or twice, and sold their remedies exclusively from their own home, or with one other distribution point. Examples include Dina Dorotea Wallinga, who

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<sup>418</sup> *Leydse Courant*, 30-06-1762.

<sup>419</sup> See the Introduction to Chapter 3 above, esp. note 297.

## New Drugs for the Dutch Republic

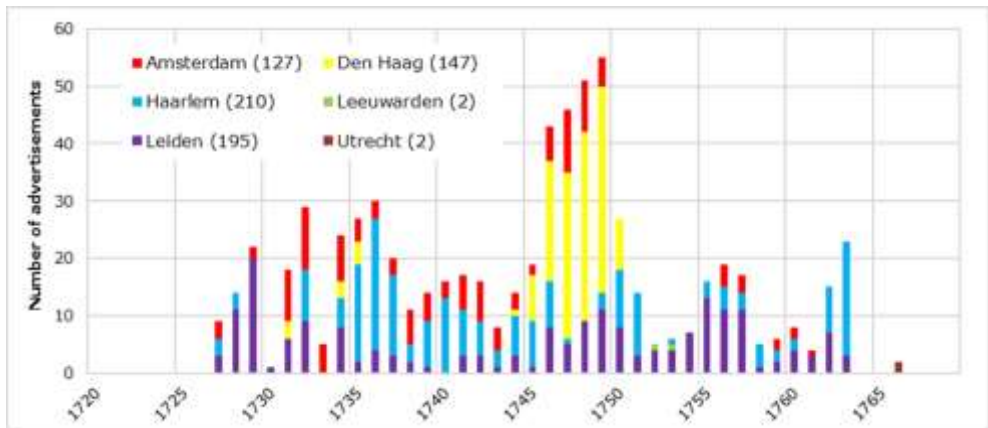


Figure 20. Distribution of advertisements for 'General dissolving and loosening pills', in the cities where the newspapers were published, 1727-1767. The total number of advertisements for each city is in brackets.

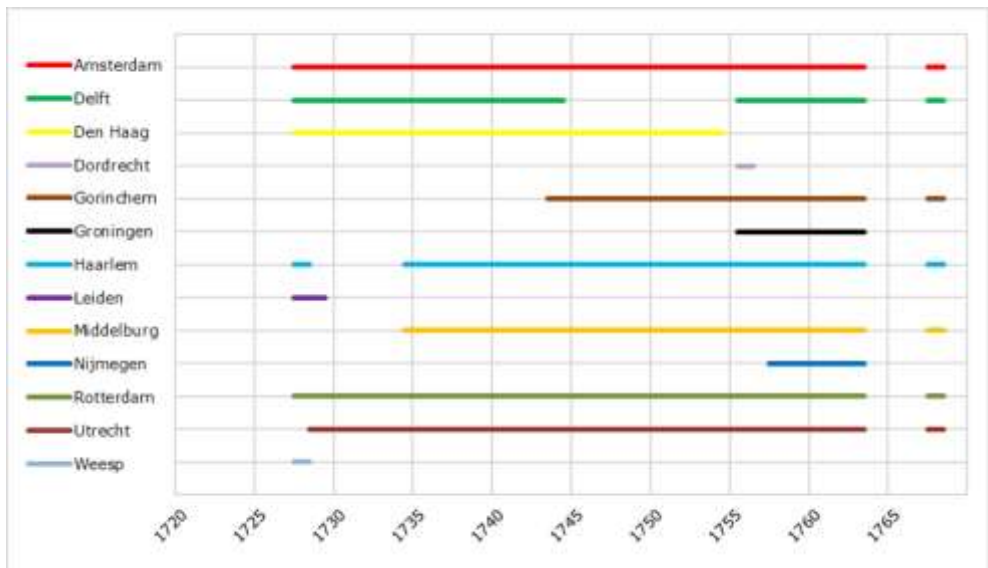


Figure 21. Cities with distribution locations of the 'General dissolving and loosening pills', 1727-1767.

had inherited her father's remedies and sold them in Marsum in 1759<sup>420</sup>; J. Sperner, who sold "the Essence Merveilleuse, or miracle essence" from his home in Leeuwarden in 1765<sup>421</sup>; and Tjisse Douwes, ferryman in Drachten, who also sold a fever remedy, seemingly on his own account.<sup>422</sup>

Occasional advertisements like these show that expanding one's territory was certainly not a strategy that was embraced by every producer of fever remedies. But living in the north of the Dutch Republic instead of in Holland did not preclude the possibility of enlarging the market of a secret remedy. A successful example is the French Huguenot immigrant Jacques Fabre in Groningen, who is best known for his ill-fated lottery activities.<sup>423</sup> For his 'true Elixir Salutis de Montpillier', 101 advertisements were found. When Fabre started advertising for this remedy in 1713, he already had a substantial network of distribution points: five merchants in Amsterdam, other locations in Rotterdam, **Haarlem and Hamburg, and the remedy was further sold "in the prominent cities of the Netherlands"**.<sup>424</sup> Judging by the names of his distributors, several of them could have been French immigrants, like Fabre himself. An advertisement published less than a year later specified all the places where the remedy was available, showing near-complete coverage of the Dutch Republic: several merchants in Amsterdam; surgeons in Franeker and Enkhuizen; coffee houses in Rotterdam, Middelburg, Zierikzee, Geertruidenberg and Embden; a bookseller in The Hague; a postmaster in Zwolle; a wig-maker in Leeuwarden; and other sellers in Haarlem, Deventer, Utrecht, Vlissingen, Dordrecht and Nijmegen.<sup>425</sup>

Initially, Fabre advertised mainly in the *Oprechte Haerlemsche Courant*. This may have been enough to reach his desired audience: the *OHC* came close to being a 'national' newspaper, with 5000 copies printed for each issue, as was discussed in the General Introduction. In 1727, **Fabre's active role in distributing the elixir was over: advertisements still referred to it as his remedy, but these were no longer issued by him. The remedy was then sold by J. Spanjert in Amsterdam, in Haasverberg's coffee house in Rotterdam, "and furthermore in the prominent cities of Holland and Friesland"**.<sup>426</sup> Distribution had thus shifted away from

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<sup>420</sup> *Leeuwarder Courant*, 02-05-1759.

<sup>421</sup> *Leeuwarder Courant*, 08-06-1765.

<sup>422</sup> *Leeuwarder Courant*, 20-02-1783.

<sup>423</sup> Kranen, *Advertenties*, 139n304.

<sup>424</sup> *Oprechte Haerlemsche Courant*, 16-11-1713.

<sup>425</sup> *Oprechte Haerlemsche Courant*, 14-06-1714.

<sup>426</sup> *Amsterdamse Courant*, 15-03-1727.

Groningen. However, there is no sign of territorial contraction, and the **remedy remained in possession of Fabre's family. From 1734 onwards**, advertisements were published by the widow of Paul Fabre in The Hague, who must have been **a relative of Jacques Fabre. By then, the latter's** original distribution network was still largely operational.<sup>427</sup> The remedy continued to be sold at least until 1740, when the last advertisement for it can be found. **Fabre's elixir had mainly been available in actual shops.** Advertisements, though numerous, were only published in the newspapers of Haarlem, Amsterdam, Leiden and The Hague. The strategy to commodify this remedy shows again a combination of printed promotion and physical presence in shops, with a predominance of the latter.

Fabre was rather exceptional. Many advertisers never transgressed local or regional boundaries. It is unclear if this should be interpreted as a lack of willingness on the part of producers; contentment with a local clientele of customers whom he could know personally; or the financial risk of investing in advertising and supralocal distribution. The fact that we encounter so many remedies for which only one or two advertisements can be found, could indicate that advertising may have been no more than an experiment for many producers, from which they soon refrained after the hoped-for speedy increase of business did not materialize. Promotion by word of mouth might well have been at least as important as advertising in print. Occasionally, advertisements give a glimpse of such an attitude. An example is the dentist M. Hartlooper, who also sold packages of herbs against Zeeland fevers (*Zeeuwsche koortzen*) and who had his own network of vendors, in Zierikzee, Tholen, Rotterdam, Gouda, Delft and Hoorn. In the one advertisement that he published, in 1794, he maintained **that he "normally did not use the newspaper (because his competence [*habilliteit*] is generally known), except when he has devised, for the benefit of society, something new for the weaknesses and discomforts of teeth".**<sup>428</sup>

It is perhaps no coincidence that Hartlooper would not normally make use of advertisements. Unlike remedies that were produced and distributed from centres in Holland, Friesland or Groningen, advertisements provide no evidence for the existence of regional distribution networks for fever remedies in Zeeland. Hartlooper is the only advertiser who had a recognizable network for distribution of his remedy, and for him it was only an ancillary activity, next to his dental practice. This absence of regional networks in Zeeland is rather surprising, because

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<sup>427</sup> 's *Gravenhaegse Courant*, 29-10-1734.

<sup>428</sup> *Goudasche Courant*, 29-09-1794.

endemic fevers in the Dutch coastal provinces were notorious, as was discussed in Chapters 1 and 3 already. Even Hartlooper himself specifically describes the usefulness of his remedy against Zeeland fevers. During fever epidemics (which are hard to trace in sources, but are known to have occurred regularly, as will be discussed in Chapter 5), the population might have benefitted from a systematic distribution network for fever remedies. That is, of course, if these secret remedies should be considered as effective alternatives for the regular remedies of physicians and apothecaries, which is impossible to find out. Irregular practitioners probably would have benefitted more from a reputation of medical competence, based on the positive testimony of clients, than from impersonal advertising, which may have caused Hartlooper to limit his promotional campaign to a single advertisement.

Even when a producer decided to advertise the distribution locations of his remedy, this did not necessarily mean that he chose to stop seeing many of his patients in person. Advertising could still be compatible with the itinerant lifestyle for which many irregular practitioners had long been known. An example is **the anonymous producer of the "veritable herbs against quotidian, tertian and quartan fevers"**, and many other diseases, who lived near the town of Harlingen in Friesland. He had a network of locations in that province, but instead of outsourcing the distribution to vendors in those places, he probably appeared there himself on weekly markets at different days of the week. On Thursdays he appeared in Franeker, on Fridays in Bolsward, on Saturdays in Leeuwarden, and on Tuesdays in Sneek. Only in IJlst he must have had a trusted seller, since the herbs were available in that town all week.<sup>429</sup> In this case, then, advertising was not a substitute for travelling around, but a means to amplify an existing practice.

### *Geographical Expansion and the Success of Advertising*

The producers whose advertisements do reveal territorial expansion, usually appear to have been quite successful at doing so. But what were the boundaries of territorial expansion? Was it common wisdom to stick **to a confined region so as not to 'overstretch' one's capabilities for geographical coverage?** There are some instances where advertisers used a large number of distribution locations, or at least they were the only ones who took the trouble to mention all of them in their advertisements. **The 'Swiss herbal tea' and the 'General dissolving and loosening pills' were good examples of this, as was the remedy of Jacques Fabre. Another example is the "General Health Elixir from the late Med. Doct. F. Jackson",**

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<sup>429</sup> *Leeuwarder Courant*, 24-12-1781.

which was promoted eight times in the *Nieuwe Haagse Nederlandse Courant* in 1799. After a long list of indications (this remedy was also a panacea), the distribution locations are listed, starting with J.J. Henneberg, seller of perfumeries in The Hague. The remedy could also be **bought in Amsterdam, Rotterdam, and "from the regular correspondents of the first", i.e. Henneberg's connections. Fourteen more locations are mentioned, curiously enough in the Southern Netherlands, which was apparently the basis of distribution for this remedy.**<sup>430</sup> In this case, the Northern Netherlands were just an extra market.

Much earlier in the eighteenth century, one advertisement from 1727 describes a panacea that was sold by Claes Tilly (†1734) in Haarlem.<sup>431</sup> Tilly was a school teacher who is often credited as the inventor of Haarlem Oil, a famous irregular remedy that is still produced today, and that was adopted in several pharmaceutical manuals of the seventeenth and eighteenth centuries.<sup>432</sup> The remedy in this particular advertisement may actually have been Haarlem Oil, but no description of it is given, apart from yet another long list of diseases against which it can be applied. If it was Haarlem Oil (for which many advertisements were indeed published during the eighteenth century), then this might be a rare instance where it was both anonymized, and indicated for use against fevers. According to Wittop Koning, a leaflet for Haarlem Oil from 1761 mentions several cities beyond the Dutch Republic where the remedy could be bought (including New York)<sup>433</sup>, which means that its distribution network had transgressed all the boundaries of territoriality that we encountered so far. Apparently, Tilly knew how to manage a large distribution network. The advertisement from 1727 provides a long list of sellers in Holland, apart from Tilly. It could be bought at four different places in Amsterdam, and also in Rotterdam, Dordrecht, The Hague, Overschie, Leiden,

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<sup>430</sup> *Nieuwe Haagse Nederlandse Courant*, 03-08-1799.

<sup>431</sup> *Oprechte Haerlemsche Courant*, 02-01-1727. There is an earlier advertisement which is probably about the same remedy, but which is slightly more indirect about **Tilly's involvement** (*Oprechte Haerlemsche Courant*, 04-07-1726); the house where the remedy can be bought is described as the one "where Tilly's coat of arms is above the door" (*daer het Wapen van Tilly boven de deur staet*).

<sup>432</sup> D.A. Wittop Koning, "Bijdrage tot de Geschiedenis van de Haarlemmerolie", *Bulletin van de Kring voor de Geschiedenis van de Pharmacie in Benelux*, 45 (1972) 9-16. Wittop Koning maintains that Haarlem Oil goes back further in time than Tilly's 'invention'. See also P. van der Wielen, "Haarlem en de Pharmacie", *Pharmaceutisch Weekblad*, 74:26 (1937) 775-778, there 776-778.

<sup>433</sup> Wittop Koning, "Bijdrage tot de Geschiedenis", 10.

Alkmaar, Goejanverwellesluis and Hoorn.<sup>434</sup> Outside Holland, it was sold in Utrecht; Middelburg; Joure and Leeuwarden in Friesland; Zwolle and Kampen in Overijssel; Koningslo in the Southern Netherlands; **“and furthermore by all boatmen sailing to Haarlem”**. Although this remedy was operating on a larger scale, the similarities with the fever jars from Smalle Ee stand out: both aimed at expansion on a supralocal level, and the involvement of boatmen for distribution to places where no shop was selling it in commission.

The importance of leaflets (*biljetten* or *berichten*) should be noted here as well, although they served a broader purpose than in the case of Smalle Ee, where they resembled patient information (*bijsluiter* in modern Dutch) more closely.<sup>435</sup> In his advertisement, Tilly noted: **“If anyone wants to send this remedy to Great Britain, I will append English leaflets to it.”** Here, the leaflets were not only intended as documents of the remedy’s authenticity, or as explanations of its applicability, but also as a promotional tool on their own, to address a new, foreign audience. Moreover, by using leaflets in this way, the producer indirectly employed his native customers as occasional, ‘mobile distribution entities’. Patients themselves were thus involved in the process of expanding territoriality, next to advertisements and shops.

The potential reach of sending remedies by mail was unlimited. Gerardus Yzermans, apothecary in Amsterdam, advertised in 1747 for his ‘Medicamentum Calculum’, a lithotriptic remedy that could also be used, unsurprisingly, for many other diseases, like fever.<sup>436</sup> The advertiser

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<sup>434</sup> *Oprechte Haerlemsche Courant*, 02-01-1727: **“Dit Medikament wert verkocht by Claes Tilly in de Achterstraet tot Haerlem, Amsterdam in de Lombertstraet by van der Woude achter de Beurs, en voor op de Haerlemmerdijck by de Yserkramer in de Roozaeg, en op de hoek van de Vijselstraet in de Butterkelder, en in ‘t Noordsebos in de tweede Waterings dwarsstraet naest de Koekebacker in No.33, tot Rotterdam by Moses Haesverberg in het Duytse Coffihuys op de Beurs, tot Dord op de Dwarskaay by de Erve van Metje de Raat, in ‘s Gravenhage by van Meurs in de seve Kercken van Romen op het Leydse Veer, tot Overschie by Cornelis Vermeulen Hospes in de Schenkkan, tot Leyden in de Koppelingsteeg by Gerret Rissing in de blaauwe Haen, tot Alckmaer by Marijtje Goor Klopje over de Breestraet, tot Utrecht by Bart Schaap Hospes in de Haerlemmer Veerschuyt, tot Jauwer in Vriesland by Goris Sjoersz. Kaarsemaker, tot Leeuwaerden by Tjepke Liebensch., op Koningsloo by Jacobus ten Hoove in de Herreberg, tot Swol by Willem ter Haar in de Melkmartstraet, tot Kampen by Adriaen van Houten in de Boven-Hofstraet en by Willem Hartslager Schipper op Haerlem, tot Goverwelle-sluis by Pieter van Trigt, tot Middelburg by Ewout Cornelisz., en tot Hoorn by Pieter Claesse, en verder by alle Schippers die op Haerlem varen.”**

<sup>435</sup> See also Table 5, note iv.

<sup>436</sup> *Amsterdamse Courant*, 11-02-1747. His name is spelled as ‘IJssemans’ in Bierman, Van Lieburg and Wittop Koning, *Biografische Index*, 54.

boasted that his remedy could be sent to the East and West Indies without the risk of decay. **The same claim was made for the 'distilled spirit'**, that was advertised by Wilhelm Triest in 1787.<sup>437</sup> A bookseller in Groningen, J. Groenwolt, went even further, when he advertised for the **'pleasant and cordial stomach elixir'**, which **"can be sent across land and sea without decay, and the longer it stands, the stronger it gets."**<sup>438</sup> In these cases, the commercial strength of the remedy joined forces with its inherent virtues.

Not only did some Dutch advertisers try to reach an audience abroad, the same thing happened the other way around. **An example is the 'True English Elixir Salutis' or 'English Purgative Elixir'**, for which 58 advertisements were found between 1727 and 1732. This was in fact a famous panacea, invented almost a century earlier by Thomas Daffy (†1680) in England.<sup>439</sup> It was promoted in Dutch newspapers several times by various advertisers, as having been **"transferred directly from England"**. The elixir was contested, however. The satirical writer Jacob Campo Weyerman (1677-1747) considered it a fraud, when he noticed an **advertisement where Daffy's widow (i.e. the widow of one of Thomas Daffy's heirs) announced that it was only sold in commission by the heirs of Evert Haverkamp in Amsterdam.**<sup>440</sup> Not all advertisements were from **official sellers, however. At one point the elixir was sold 'in commission'** by D. Vreek in Amsterdam, and in several bookshops across the country, where remedies like the **'Swiss herbal tea'** and the **'General opening and loosening pills'** were also being sold, like Kentling (or Kentlick) in Rotterdam, Walpot in Dordrecht, Besseling in Utrecht and Meerkamp in Middelburg. **In early 1728, however, Haverkamp's heirs announced that the remedy would henceforth be sold by Hendrik Leeuwschen in Amsterdam.**<sup>441</sup> Apparently, then, **Vreek's** advertisements were about an **imitation, which drew the attention of the 'official' sellers in October 1732.**

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<sup>437</sup> *Amsterdamse Courant*, 31-03-1787.

<sup>438</sup> *Ommelander Courant*, 29-05-1795.

<sup>439</sup> Furdell, *Publishing and Medicine*, 153-154; Curth, "Medical Advertising", 39-40. **According to Curth, Daffy's remedy was still available in the late nineteenth century. It contained many ingredients; Curth mentions a recipe that included Aqua Vitae, rhubarb, senna leaves, coriander seed, saffron, elecampane, liquorice and stoned raisins. Most of these ingredients were still part of the remedy's composition in the late nineteenth century.**

<sup>440</sup> J.C. Weyerman, *De Doorzigtige Heremyt, Bespiedende door zynen Verrereykenden verrekyker, In het Geheymste van zyne Kluys, de verborgenste Gebreken der Menschen: Ende dezelve op eene Geestige, en Aangename wys ten toon stellende* (In 'sGravenhage: Gedrukt by Reynier van Kessel 1730) 43-44.

<sup>441</sup> *Leydse Courant*, 07-01-1728.



First, Vreek's advertisements began to include a note that the leaflets that came with the remedy contained a stamp, to ascertain the elixir's authenticity, "because of all the imitations".<sup>442</sup> A few days later, however, Vreek's advertisement was directly followed by another one from Daffy's widow, which claimed that the true elixir, marked with a true stamp, could only be bought at Hendrik Leeuwschen in Amsterdam, of which the city's authorities had been notified.<sup>443</sup> Although another thirteen advertisements for the imitated variant were published thereafter, the advertising campaign stopped before the end of the year. As in the case of Smalle Ee, expanding territoriality brought with it the risk of forgery.

### Conclusion: Strategic Benefits and Drawbacks of Geographical Expansion

Various irregular practitioners did pursue territorial expansion of their market opportunities in the eighteenth-century Dutch Republic. Newspaper advertisements for secret fever remedies provide substantial evidence for that. However, for most fever remedies, the frequency of advertising is too small to ascertain whether a producer was really eager to address a larger audience. The small number of advertisements for many remedies conceals the reasons which producers may have had to refrain from further advertising, or from the creation of a sustained distribution network. Furthermore, a drawback of advertisements is that they appear to leave the initiative for creating a network exclusively in the hands of the advertisers themselves. Since many distribution locations of secret remedies, like bookshops and coffee houses, occur many times for very different remedies, it is probable that the creation of a network depended at least in part on the agency of the vendors. The choice for a distribution location in some cities, but not in others, could have been closely related to the preferences of shop owners for including or excluding certain products from their assortment. This may have had more to do with retail patterns in individual towns, than with the distribution strategies of producers.

One crucial point has been touched upon repeatedly, without a satisfactory explanation: the supposed commercial benefits of advertising and distribution networks. Any consideration which producers of secret remedies may have had to partake or not partake in advertising hinges on the matter of benefit. If no gain was to be expected from advertising or geographical expansion, and/or if the risks involved might seem too large, a producer would not have ventured to extend his reach to other

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<sup>442</sup> For the first time in the *Amsterdamse Courant*, 02-10-1732.

<sup>443</sup> *Amsterdamse Courant*, 07-10-1732.

localities than his own. A larger audience brought with it the risk of forgery: even a locally produced remedy, like the fever jars of Smalle Ee, could be counterfeited, and there were little means for producers to protect their products from commercial interlopers. However, the hope of reaching a large audience by means of advertising were tempting. This is revealed by the many advertisements that mention the possibility to send remedies by mail, sometimes as far as the East and West Indies. This precursor to the present-day phenomenon of mail-order pharmaceuticals is perhaps the most striking feature of commodification and globalism of remedies in the eighteenth century, and one that deserves further research.

The fact that we can observe a lot of producers for whom advertising was a one-time effort, and relatively few producers who managed to advertise and distribute their products substantially on a supralocal level for several years or even decades, reveals much about the changing commercial character of irregular practice in the eighteenth century. The itinerant peddler could still be found, but he was no longer the only type of irregular practitioner operating on the medical market. Advertising had **proven to be instrumental for creating a remedy's sudden impact in the public domain**. The 'Swiss herbal tea' launched itself onto the market with a directed advertising campaign, and it subsequently survived on the market for many decades. Advertisements could extend the geographical span of a sedentary, often business-like producer of secret remedies beyond any local, regional or national boundaries. Service by mail facilitated a clientele where no interaction between buyer and seller was required. When compared to their professional brothers—physicians, surgeons and apothecaries—who tended to limit the boundaries of their practice from the late eighteenth century onwards, irregular practitioners increasingly tended towards a territoriality that had the potential to encompass the entire globe.

Finally, the use of a combined traditional and digital research approach, based on systematic data, is vital to arrive at a meaningful explanation of advertising practices and distribution patterns in the past. Database 2, that was created for the purpose of this and the previous chapter, has proven to be an essential collection to answer questions relating to diachronic patterns of medical advertising. Seemingly basic questions about the existence or non-existence of territorial growth on the medical market require an abundance of data to answer. Isolated instances of secret remedies in advertisements, like the fever jars of Smalle Ee, are only meaningful if they can be correlated to similar data. Likewise, **long-term advertising practices of 'big' remedies only reveal themselves once systematic data about individual remedies are**

assembled and compared. Apart from the territorial aspirations of producers, and the supralocal distribution networks that they attempted (or did not attempt) to create, there are many related issues to which this chapter has only briefly alluded: the variety of inventors, producers, advertisers, vendors, customers, distribution locations, prices of advertisements and products, pharmaceutical packaging, applications of remedies, patient information, and so on. Given the magnitude and diversity of advertisements that have not yet been disclosed, one can only marvel at the possibilities for future research, if more complete access and better digital tools for data analysis can be arrived at.

# Chapter 5. Competing Medical Substances during an Epidemic: Causes and Consequences of the Interference of Peruvian Bark and Cascarilla (1720-1740)<sup>444</sup>

## Introduction

Previous chapters have explored the relationship between fever and Peruvian bark in the Dutch Republic, with special attention for the commercial, linguistic, and geographical interferences between the disease and the remedy, and the promotional strategies that were used on the irregular market for fever remedies. The reconstruction process of drug trajectories in the early modern period can be a tedious and complicated work. It can be argued that there are only three non-European medicinal substances for which a substantial amount of historical data is readily available, and which have received most attention from historians accordingly: opium, Peruvian bark, and rhubarb.<sup>445</sup> These were **arguably the 'Big Three'** of exotic medicines, which had the largest impact on early modern society, both in terms of trade volume and of

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<sup>444</sup> **Early versions of this chapter were presented at the workshop "Consumers of the Exotic: European Commerce and the Consumption of Materia Medica, 1670-1730",** Christ Church College, Cambridge (April 6, 2017); and at the 7<sup>th</sup> Gewina Conference for the History of Science in the Netherlands, Woudschoten, Zeist (April 20, 2017). I thank all the attendants of both conferences for their critical remarks and suggestions.

<sup>445</sup> The literature about the history of Peruvian bark is abundant. Besides the works that were mentioned in notes 36-37, two books stand out: Boumediene, *Colonisation du Savoir*, and Crawford, *Andean Wonder Drug*. For rhubarb, see C.M. Foust, *Rhubarb: The Wondrous Drug* (Princeton: Princeton University Press 1992); E. Monahan, **"Locating Rhubarb: Early Modernity's Relevant Obscurity"**, in: P. Findlen (ed.), *Early Modern Things: Objects and their Histories, 1500-1800* (New York: Routledge 2013) 227-251; S. Heßbrüggen-Walter, **"Problems with Rhubarb: Accommodating Experience in Aristotelian Theories of Science"**, *Early Science and Medicine*, 19: 4 (2014) 317-340; and M.P. Romaniello, **"True Rhubarb? Trading Eurasian Botanical and Medical Knowledge in the Eighteenth Century"**, *Journal of Global History*, 11:1 (2016) 3-23. For opium, see Maehle, *Drugs on Trial*, Chapter 3; Derks, *History of the Opium Problem*; and S. Klerk, **"The Trouble with Opium. Taste, Reason and Experience in Late Galenic Pharmacology with Special Regard to the University of Leiden (1575-1625)"**, *Early Science and Medicine*, 19: 4 (2014) 287-316.

medical significance. But **these are precisely the kind of 'big'** medicinal products from which we are trying to diverge.

Early modern pharmaceutical literature swarms with other exotic substances, that were commodified in European medicine to some extent. The pharmacopoeia of Lille from 1772, one of the few handbooks to set apart exotic from indigenous remedies, listed no less than 174 exotic medicinal substances.<sup>446</sup> Most of these had been included in pharmaceutical literature throughout the early modern period, and had become staple drugs in apothecary shops by the time the book was published. Each of them followed its own, unique commodification process, with trajectories in medicine, trade and society taking their own course, though with many interconnections between them.

It is precisely these interconnections that enable the historian to delve deeper into the trajectories of drugs, **both the 'Big Three'** and many of the less prominent drugs (whether 'less prominent' is defined in terms of medical significance, commercial availability, or available primary sources). In Chapter 1, the early history of Peruvian bark in the Dutch Republic was explored by means of 'traditional' close reading of various written sources, especially letters. The scarce information, that could be extracted from letters to create a more comprehensive narrative, spurred the quest for structural data. The collections of newspaper advertisements, that were created for Chapters 2, 3 and 4, offer an opportunity to 'zoom out' and apply distant reading to discover new, relevant search trails. In this chapter, both approaches are combined to explore the trajectories of another exotic, febrifuge substance: cascarilla. The history of cascarilla was closely related to that of Peruvian bark, and the trajectories of Peruvian bark reveal many angles to write a history about cascarilla, as an adjacent narrative to that of its 'big brother'.

While previous chapters have hinted at the possible importance of fever epidemics as a relevant topic for research, this chapter explores a fuller scope of possible angles to study epidemic fever. Epidemics, like the fever epidemic of 1727-1728, provide a fruitful window on the commodification of drugs: it will be demonstrated that data about the supply of drugs is one of the few systematic sources that we have (besides mortality figures) to trace the occurrence of epidemics in the eighteenth century. The advertisements for secret remedies, that were used for Chapters 3 and 4, offer a valuable point of departure here. During the months when a fever epidemic raged in 1727 and 1728, the number of advertisements for fever remedies rose exponentially, and many more

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<sup>446</sup> *Pharmacopoea jussu Senatus Insulensis tertio edita* (Insulis Flandrorum: Typis J. B. Henry 1772) 3-5.

similar advertisements were published in the following years (see Figure 13). Thus, the epidemic can be said to have had a lasting impact on advertising practices for secret fever remedies. Moreover, the epidemic is the only episode when advertisements mention Peruvian bark. This is important, because Peruvian bark is only mentioned in these advertisements for being absent as an ingredient, and is only discussed with negative connotations. This suggests that advertisers tried to appeal to potential customers who might dislike the bark. The negative image that arises from these advertisements is unique: one rarely comes across sources that exhibit negative publicity for a remedy with such a canonical status as Peruvian bark had acquired by the early eighteenth century.

At the same time, the epidemic shows that the supply of Peruvian bark and cascarilla, as crude substances, was also influenced by the epidemic. Trade in these substances grew significantly, as can be observed in the advertisements for public auctions of drugs in Amsterdam in this period. The fever epidemic of 1727-1728 thus creates a dual issue. On the one hand, Peruvian bark, an established exotic remedy against fever, can be found to have been disliked during the epidemic, as can be glanced from a particular source that was aimed at a particular audience. On the other hand, cascarilla, a relatively new and unknown fever remedy, became a steady appearance on the medical market in the wake of the epidemic. Thus, the epidemic seems to have influenced the commodification of both substances in different ways. Therefore, this chapter asks the questions: how where the trajectories of Peruvian bark and cascarilla connected, and to what extent did these substances compete with each other during the extraordinary circumstances of an epidemic, when demand for remedies was higher than usual?

The first paragraph of this chapter deals with the early history of cascarilla, from the late seventeenth century onwards. It will be argued that the commodification of cascarilla cannot be disconnected from the history of Peruvian bark. At the same time, however, cascarilla had a history of its own, and had already become an accepted exotic fever remedy next to Peruvian bark, well before 1727. The second and third paragraph are concerned with the course and aftermath of the fever epidemic of 1727-1728, in several cities in the Dutch Republic. It will be argued that cascarilla was able to play a successful, although modest role in the supply chain of drugs, again next to Peruvian bark. By interfering on the market for fever remedies during an epidemic, cascarilla consolidated its commodification process, by transforming from a novelty into a commodity. At the same time, this transformation could not occur without a simultaneous process taking place for Peruvian bark. The history

of Peruvian bark, then, allows the historian to address the trajectories of 'historically related' substances, such as cascarilla.

### 5.1. The Rise of Cascarilla

Cascarilla bark was a substance that had already gained some recognition as a useful remedy against fevers, before its commodification process was influenced by the fever epidemic of 1727-1728. This paragraph investigates the most important medical and botanical aspects of **cascarilla's history**, that played a part in its commodification process.

#### *A New Type of Peruvian Bark?*

The rationale to correlate the trajectories of Peruvian bark and cascarilla **bark does not emanate, in the first place, from cascarilla's supposed 'intrusion'** of the European market for exotic febrifuges between 1720 and 1740. At the centre of that episode in the history of both substances lies a more obvious, linguistic reason: Peruvian bark was referred to as *cascarilla* in the Spanish Atlantic empire, well before the discovery of the actual cascarilla bark, and long after cascarilla bark had become a successful commodity in European medicine.<sup>447</sup> The very name *cascarilla* ('little bark' in Spanish) was initially a synonym of the bark that derived from 'true' Peruvian bark trees (i.e. *Cinchona* species, retrospectively), until it was realized in Loja, the centre of bark harvesting in Peru, that 'true' Peruvian bark should be distinguished from similar species. 'False Peruvian bark' became the name of such similar types of bark, derived mainly from *Iva frutescens* (marsh elder) and from *Croton* species (a diverse genus, that includes rushfoil). As such, newly discovered *Croton* species of cascarilla, which were **originally referred to as 'female Peruvian bark'**, parted ways with the *cascarilla*/Peruvian bark that came from *Cinchona* species.<sup>448</sup>

However, acknowledgment of the existence of a new type of *cascarilla*, that was similar to, **but distinct from 'true'** Peruvian bark, preceded the linguistic confusion between the two types. The French pharmacist Pierre Pomet (1658-1699) can be regarded as the first author who recognized cascarilla bark as a distinct substance.<sup>449</sup> Pomet added an appendix with

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<sup>447</sup> The best-known studies about Spanish Atlantic trade in Peruvian bark consistently refer to Peruvian bark as *cascarilla*, in line with their sources. See García-Baquero, *Cádiz y el Atlántico*; Fisher, *Commercial Relations*.

<sup>448</sup> Boumediene, *Colonisation du Savoir*, 192-193.

<sup>449</sup> Assigning this honour to Pomet is fairly safe, although some caution is required. E.J. Waring, *Bibliotheca Therapeutica, or, Bibliography of Therapeutics*, 2 vols.

several newly discovered substances to his *Histoire generale des drogues* (1694), including a section entitled 'Du Kinquina Femelle'. The substance was described as pale, initially tasteless but later unpleasantly bitter, with a cinnamon-like appearance. Pomet equated it with the 'Falsa-Kaskarina' of the Indians, which might suggest that the distinction between 'true' (i.e. *Cinchona*) and 'false' cascarilla was sooner recognized by native Peruvians than by Europeans.<sup>450</sup> The substance had first become known in Europe around 1670, and had been presented to Pomet by Pierre Bourdelot (1610-1689), a physician from Paris who is best remembered as the organizer of the Académie Bourdelot, a series of *salon* meetings in the 1640s.<sup>451</sup> But after more than two decades since the initial discovery of cascarilla, Pomet was unable to say much more about it.

This brevity is typical of him and other early authors about cascarilla, including Nicolas Lémery (1645-1715), who also wrote a standard work about medicinal substances. The third edition of his *Dictionnaire ou Traité universel des Drogues Simples* (1716) called cascarilla 'Eleaterium'. The description is even shorter than Pomet's, and calls the substance similar to, but of less quality than Peruvian bark. Lémery also mentions that cascarilla is often adulterated with tobacco.<sup>452</sup> When the Amsterdam

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(London: The New Sydenham Society 1878-1879), vol. 1, 320, regarded the booklet *Unica quaestincula in qua examinatur pulvis de Quarango, vulgò Cascarillae, in curatione Tertianae et Quartanae* ([Valentiae]: s.l. 1692), as the oldest work about cascarilla. Waring gave the author as "Salat (vel Salas), V. G.". However, 'quarango' was a name for Peruvian bark (see Jarcho, *Quinine's Predecessor*, 207; Boumediene, *Colonisation du Savoir*, 188 and 192). Waring's author is probably the same as Diego Salado Garces, who wrote another work still earlier, that definitely dealt with Peruvian bark, not cascarilla: *Apologetica Discurso, Con que se prueba que Los Polvos de Quarango se deben usar por Febri-Fugio De Tercianas Nothas, y de Quartanas* (En Sevilla: Por Thomas Lopez de Hare 1678). Therefore, Pomet can still be regarded as the oldest printed source about cascarilla.

<sup>450</sup> P. Pomet, *Histoire Generale des Drogues* (A Paris: Chez Jean-Baptiste Loyson, & Augustin Pillon, et au Palais: Chez Estienne Ducastin 1694), Appendix, 'Du Kinquina Femelle': "Monsieur Bourdelot m'a fait present d'un Kinquina d'une figure de Canele, mais d'une couleur plus pâle, d'un goût dans le commencement insipide; mais au bout d'un petit moment il donne une amertume allez desagreceable. Ce Kinquina nous a été apporté du Pérou en 1670. par Monsieur Legras. Les Indiens en usent infusé dans l'eau froide du poids de deux gros. Et pour mon particulier je croy que c'est ce que les Indiens appellent Falsa-Kaskarina."

<sup>451</sup> See also paragraph 1.3, about Christiaan Huygens and the occurrence of exotic drugs in the Académie Bourdelot.

<sup>452</sup> N. Lémery, *Dictionnaire ou Traité universel des Drogues Simples. Troisième Edition* (A Amsterdam: Aux Dépens de la Compagnie 1716) 203: "Eleaterium, est un écorce des Indes qui ressemble au Quinquina, mais qui n'en a pas la qualité; on dit qu'étant mêlée avec du Tabac & fumée dans une pipe, elle ôte à la fumée du Tabac toute sa



physician Willem van Ranouw (c. 1670-1724) wrote his description of Peruvian bark varieties a few years later, he included a letter and lengthy description of bark varieties, by **Hendrik van Raat (†1731)**, “distinguished merchant of Rotterdam in drugs, and excellent lover and connoisseur of **natural histories**”.<sup>453</sup> Van Raat **confirmed Lémery’s story about cascarilla adulteration with tobacco.**<sup>454</sup> The visual differences between samples of Peruvian bark and cascarilla are easy to overlook, admitted Van Raat,<sup>455</sup> but this did not withhold Van Ranouw from studying the minute details of various samples himself.

Van Ranouw maintained that, although the barks of many trees are very similar, the colour of the inner bark of Peruvian bark and cascarilla were clearly different, and the moss that grew on the samples of both was also dissimilar.<sup>456</sup> He illustrated these and several other findings about his samples by including a copper plate, which showed various samples of bark, to which the text alluded (see Figure 22). The images of samples, which look similar enough to the average observer, only made sense with the accompanying text, but even then, there was no one-on-one relationship between image and text. Van Ranouw made it seem like his descriptions of samples were identical to the observations by Hendrik van Raat, but both men drew their conclusions on the basis of different sets of samples. Although Van Raat had promised Van Ranouw in his letter to send bark samples to Amsterdam<sup>457</sup>, which would accompany his **descriptions, in the end Van Ranouw’s observations (and the images)** were based on samples he received from the apothecary and collector Albertus Seba (1665-1736) from Amsterdam.<sup>458</sup> In other words, when Willem van Ranouw compiled all the information he could about Peruvian bark varieties, and about the differences between Peruvian bark and cascarilla, he fused the input from various trajectories: printed information from medical works by men like Pommet and Lémery; commercial information from Hendrik van Raat; and Albertus **Seba’s**

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**mauvaise odeur.” This description can still be found in the Dutch translation of Lémery, *Woordenboek*, 261.**

<sup>453</sup> **Van Ranouw, “Vierde Verhandeling”, 136. Van Raat’s letter and description are on pp. 136-145. The letter is oddly dated April 9, 1722, while Van Ranouw’s volume was published for the months July and August 1721. Van Raat probably had more connections with Amsterdam than with Van Ranouw alone: after his death, his inheritance was auctioned by brokers in drugs from Amsterdam, on August 8, 1731. Advertisements announced the auction, but no catalogue seems to have survived.**

<sup>454</sup> **Van Ranouw, “Vierde Verhandeling”, 139-140.**

<sup>455</sup> *Ibidem*, 145.

<sup>456</sup> *Ibidem*, 146-147.

<sup>457</sup> *Ibidem*, 137.

<sup>458</sup> *Ibidem*, 126.

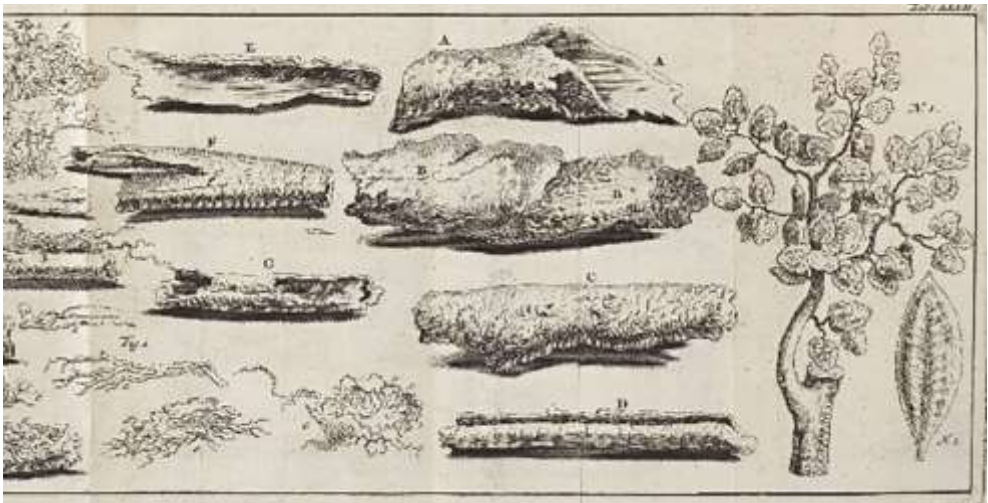
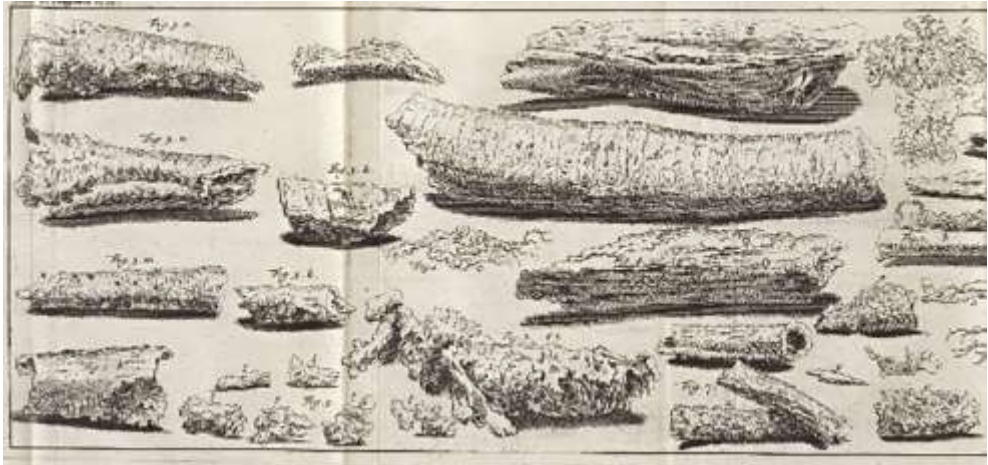


Figure 22. Illustration of samples of Peruvian bark, that accompany the articles of Willem van Ranouw. The image of the plant itself (bottom right) was modelled after Pomet's *Histoire Generale des Drogues* of 1694.

knowledge as a pharmacist and *naturalia* collector. All these men were **experts in their field, and in Van Ranouw's mind at least, it was obvious** that the fragmentary bits of information about cascarilla presented a coherent unity.

There were, however, three closely related problems that produced a **lot of contradictory knowledge about cascarilla in Van Ranouw's days: the name of the substance; the plant that produced it; and the place from whence it came.** For Lémery, cascarilla was still a *herba nuda*: a substance devoid of cultural connotations, as had once been the case with Peruvian bark as well. Although his *Dictionnaire* usually ends each description with an etymological explanation of the name of a substance, Lémery fails to do so in the case of 'Eleaterium'. It is therefore unclear when this name was first used, and why. The first publication that was exclusively devoted to cascarilla, published in 1721 by the French chemist Gilles-François Boulduc (1675-1741)<sup>459</sup>, **asserted that the name 'Elaterium'** for cascarilla was a reference to the squirting cucumber (*Ecballium elaterium*). This plant, which had already been described by Dioscorides, had a bitter taste that was similar to cascarilla, but Boulduc admitted that the substances shared no other characteristics.<sup>460</sup> A more sensible explanation for the name **was given by Hendrik van Raat: 'Elaterium'** referred to the island Eleuthera in the Bahamas. Whether the name was chosen because cascarilla came from this island was doubtful, however, according to Van Raat. The name could also have resulted from the mesh-up of an earlier **name for cascarilla, 'Cortex de lateribus'**.<sup>461</sup> Whatever the case, the association between cascarilla and the Bahamas persisted. Especially the publication **of Mark Catesby's ground-breaking work** about American nature, *The Natural History of Carolina, Florida and the Bahama Islands*, did much to consolidate the dissociation of cascarilla and Peruvian bark.

#### *Botanical Disambiguation and Medical Testing of Cascarilla*

In volume 2 **of Catesby's Natural History**, published in 1743, there is a **description of cascarilla or 'The Ilathera Bark'**, derived from shrubs which

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<sup>459</sup> [G.-F. Boulduc], "Sur le Chacril", *Histoire de l'Académie Royale des Sciences, Année 1719*, (1721) 53-56. Boulduc wrote most of this volume and appears frequently in the text itself, but he is nowhere mentioned as the author. Only his eulogy in the same journal (from 1742) mentions the publication about cascarilla as his.

<sup>460</sup> Ibidem, 54. Cf. P. Dioscorides, *De Materia Medica*. Transl. by Y.L. Beck (Hildesheim, Zürich and New York: Olms-Weidmann 2005) 305, i.e. Book IV, 150.

<sup>461</sup> Van Ranouw, "Vierde Verhandeling", 138.

**“grow plentifully on most of the Bahama Islands”.**<sup>462</sup> With Catesby, then, linguistic confusion resulted in a geographical shift in knowledge about cascarilla, from Peru to the Caribbean.

This, however, was not so much a resolution of ambiguous knowledge, but rather a retrospective realization of ambiguous information, that few authors had been aware of before Catesby published his work. Cascarilla had always been regarded as somehow similar to Peruvian bark, including Peruvian provenance. After Catesby, both assumptions had to be rejected. Nowadays, cascarilla is regarded as the species *Croton eluteria*, a plant native to the Caribbean, but naturalized in other parts of tropical America.<sup>463</sup> *Croton* species are part of the *Euphorbiaceae* family, which is **highly diverse, but characterized by tricapsular fruits**. Catesby’s description is certainly about a *Croton*, as he mentions **“tricapsular pale green Berries”**. **Peruvian bark, however, derives from *Cinchona* species**, from the very different family *Rubiaceae*. Although Linnaeus would be the first to define the species of Peruvian bark and cascarilla in the 1750s, the definite botanical separation of the two was already evident with Catesby several years earlier, especially because Catesby was the first to add an image of cascarilla to his description. Half-hidden behind the image of a copper-belly snake, the reader can see a branch of cascarilla (see Figure 23). As early as 1738, however, a patchwork image, that is clearly based on Catesby, could already be found in a dissertation about cascarilla by P.A. Boehmer, supervised by Friedrich Hoffmann (1660-1742) at the University of Halle, which offered the first extensive description of

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<sup>462</sup> M. Catesby, *The Natural History of Carolina, Florida and the Bahama Islands*, 2 vols. (London: Printed at the Expence of the Author; and Sold by W. Innys and R. Manby, Hauksbee, and by the Author 1731-1743), vol. 2, 46, ‘An *Ricinoides Aeleagni folio?*’: **“The *Ilathera* Bark. These Shrubs grow plentifully on most of the *Bahama* Islands, seldom above ten Feet high, and rarely so big as a Man’s Leg, tho’ ’tis probable, that before these Islands were exhausted of so much of it, that it grew to a larger Size: The Leaves are long, narrow, and sharp-pointed, and of a very pale light green Colour; at the Ends of the smaller Branches grow Spikes of small hexapetalous white Flowers, with yellow *Apices*, which are succeeded by tricapsular pale green Berries, of the Size of Peas, each Berry containing three small black Seeds, one in every *Capsule*. The Bark of this Tree being burnt, yields a fine Perfume; infused in either Wine or Water, gives a fine aromatic Bitter.”**

<sup>463</sup> The taxonomy of *Croton*, and especially *C. eluteria*, is still a matter of debate among botanists. B.W. Van Ee, R. Riina and P.E. Berry, “A Revised Infrageneric Classification and Molecular Phylogeny of New World *Croton* (Euphorbiaceae)”, *Taxon*, 60:3 (2011) 791-823, recognize 712 American *Croton* species.

cascarilla (Figure 24).<sup>464</sup> **Catesby's and Boehmer's images differ significantly from the first realistic image of Peruvian bark, in La Condamine's description from 1738 (Figure 25).**<sup>465</sup>

If Peruvian bark and cascarilla were derived from very different plant species, the oldest evidence about cascarilla may have to be reassessed. In the mid-eighteenth century, *Croton eluteria* was not yet a narrowly defined species. Both *Croton* and *Cinchona* were defined by Linnaeus in his *Species Plantarum* (1753)<sup>466</sup> and *Genera Plantarum* (1754).<sup>467</sup> **Catesby's cascarilla, however, was arranged by Linnaeus in another genus, as *Clutia cascarilla*.**<sup>468</sup> **Later it was realized that Linnaeus's *Clutia eluteria* and *Clutia cascarilla* belonged in the genus *Croton*, and both *Croton eluteria* and *Croton cascarilla* can be found in later works, like Beets's handbook on medicinal substances.**<sup>469</sup> Currently, all four variants are regarded as synonyms of one species: *Croton eluteria*.<sup>470</sup> None of the candidate species for cascarilla, however, are described as coming from **Peru in Linnaeus's work.**<sup>471</sup> Therefore Pomet, and several authors who reused his information, were probably not writing about cascarilla from *Croton* species. We can hardly blame him for this. It should be emphasized that until the publications by La Condamine and Catesby, all information about Peruvian bark and cascarilla was derived not from plants, but from

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<sup>464</sup> P.A. Boehmer, *De Cortice Cascarillae eiusque Insignibus in Medicina Viribus* (Halae: Ex Officina Grunertiana 1738). Apparently, then, Catesby's image was already available before the official publication of his second volume in 1743.

<sup>465</sup> La Condamine, "Sur l'Arbre du Quinquina", after p. 244.

<sup>466</sup> C. Linnaeus, *Species Plantarum, exhibentes Plantas rite cognitatas. Ad Genera relatas, cum Differentiis Specificis, Nominibus Trivialibus, Synonymis Selectis, Locis Natalibus, Secundum Systema Sexuale digestas*, 2 vols. (Holmiae: Impensis Laurentii Salvii 1753), vol. 1, 172 (*Cinchona*) and vol. 2, 1004 (*Croton*).

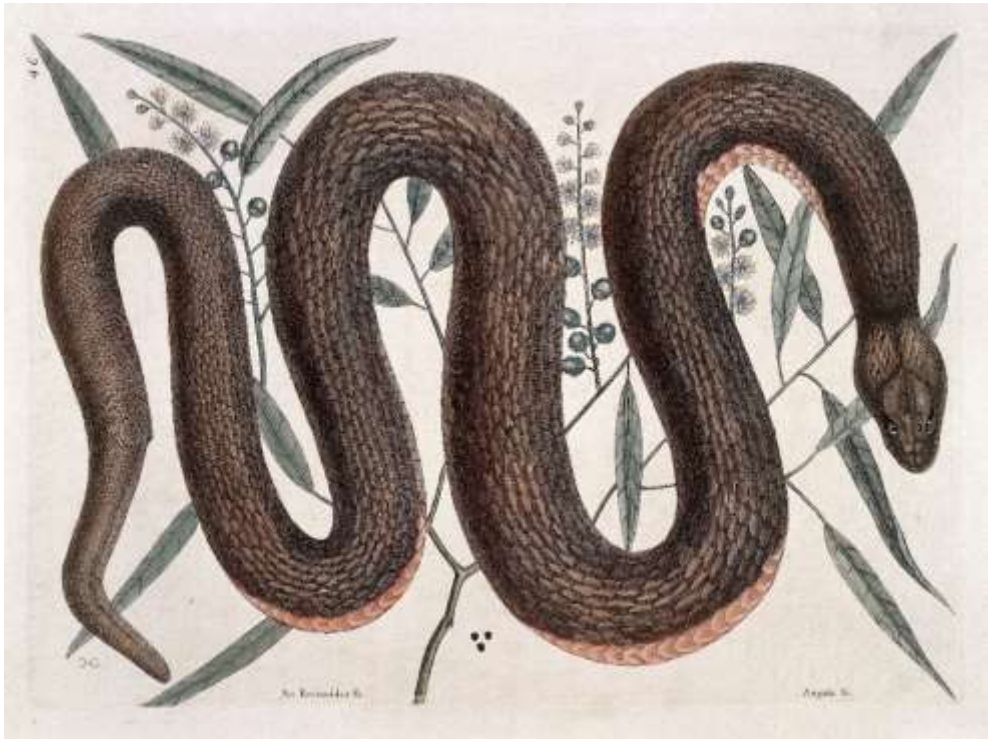
<sup>467</sup> C. Linnaeus, *Genera Plantarum. Eorumque Characteres Naturales Secundum Numerum, Figuram, Situm, et Proportionem omnium Fructificationis Partium. Editio Quinta ab Auctore reformata et aucta* (Holmiae: Impensis Laurentii Salvii 1754) 79, no. 108 (*Cinchona*) and 436, no. 960 (*Croton*).

<sup>468</sup> Linnaeus, *Species Plantarum*, vol. 2, 1042.

<sup>469</sup> Beets, *Woordenboek van Droogerijen*, vol. 1, 548-549.

<sup>470</sup> <http://www.theplantlist.org/tpl1.1/record/kew-49852>, accessed on 07-12-2017.

<sup>471</sup> The evidence here is dubious. Beets, *Woordenboek van Droogerijen*, vol. 1, 548, maintains that the plant described by Linnaeus grows in Peru, Paraguay, and the Bahamas. Linnaeus himself, however, says in *Species Plantarum*, vol. 2, 1042, that *Clutia cascarilla* "Habitat in Carolina" and *Clutia eluteria* "Habitat in Indis". Here, the 'Indies' are probably America, judging from one of Linnaeus's sources: Albertus Seba, *Locupletissimi Rerum Naturalium Thesauri accurata Descriptio, et Iconibus artificiosissimus expressio, per Universam Physices Historiam*, 4 vols. (Amstelaedami: Apud J. Wetstenium, & Gul. Smith, & Janssonio-Waesbergios 1734-1765), vol. 1, 55-56, tab. 35, fig. 3. The plant that is depicted there is indeed described as an American species: "Ricinus dulcis, arborescens, Americanus". However, Seba's description is not likely about either a *Clutia* or a *Croton* species.



*Figure 23. Illustration of cascarilla in Catesby's book, behind a copper-belly snake. The image is on the unnumbered page preceding the description of both snake and bark.*



Figure 24. Illustration of cascarilla, in the description by Boehmer from 1738.

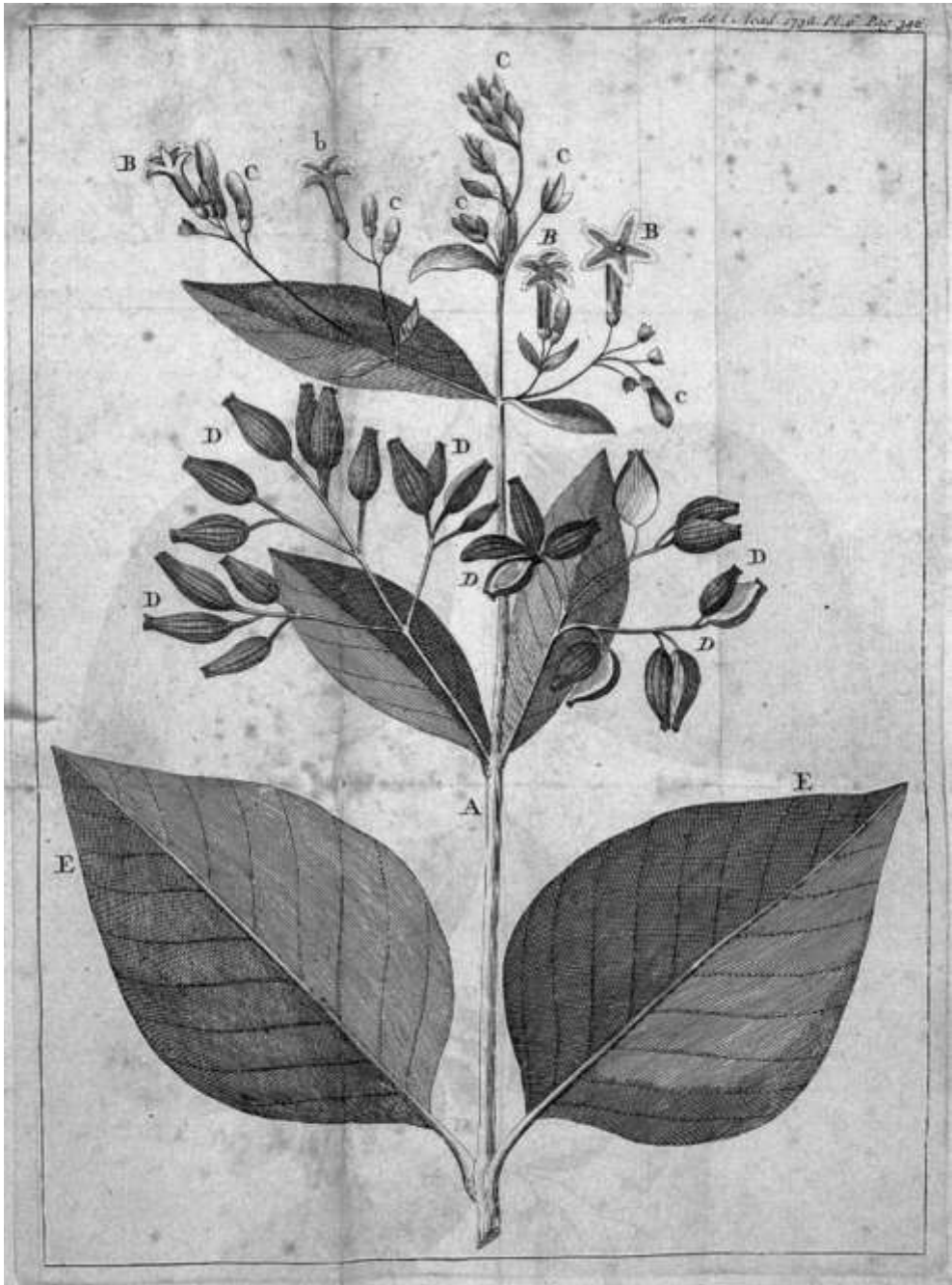


Figure 25. Illustration of Peruvian bark ('Quinquina'), accompanying the description by La Condamine from 1738.



dried botanical samples. Still, Pomet's information is not necessarily wrong: the name cascarilla has been, and still is used in Peru for species other than *Cinchona* or *Croton*.<sup>472</sup>

Meanwhile, the history of testing cascarilla bark for its medicinal properties followed a trajectory that seems to have been largely independent from the quest to disambiguate its name, plant of origin and geographical provenance. In this respect, cascarilla differed from Peruvian bark, where tests with wildly diverging results were largely responsible for the early controversy about its usefulness. The second volume of **Roland Sturm's book from 1659, which did much to foster appreciation of Peruvian bark**, was entirely devoted to medical trials (see also Chapter 1). The successful medical application of cascarilla probably went back as early as **Pomet's days. Boulduc relates how Louis XIV's personal physician, Guy-Crescent Fagon (1638-1718) confided to him how he successfully resorted to cascarilla for treating intermittent fevers, when 'true' Peruvian bark was in short supply.**<sup>473</sup> Later, research in German territories laid the **basis for cascarilla's medical application in Europe. The various steps have been recorded in quite some detail by the French physician and chemist Étienne François Geoffroy (1672-1731), in his *Tractatus de Materia Medica* from 1741.**<sup>474</sup> The book was made accessible to a larger audience by the abridged English translation of Ralph Thicknesse (1719-1790) from 1749.<sup>475</sup> According to this work, testing with cascarilla in tinctures and infusions, against epidemic fevers, was first conducted successfully by Johann Ludwig Apinus (1668-1703), professor of medicine in Altdorf, near Nuremberg. Apinus was associated with the circle of research in chemical properties of substances, that surrounded Georg Ernst Stahl (1659-1734). Stahl was even more confident about the qualities of cascarilla:

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<sup>472</sup> L.P. Kvist e.a., "Identification and Evaluation of Peruvian Plants Used to Treat Malaria and Leishmaniasis", *Journal of Ethnopharmacology*, 106:3 (2006) 390-402, there 396, mentions the example of *Remijia peruviana*, a Peruvian plant which is still used to treat malaria, and which belongs to the *Rubiaceae* family, like *Cinchona*.

<sup>473</sup> Boulduc, "Sur le Chacril", 55. See also Jarcho, *Quinine's Predecessor*, 63-64.

<sup>474</sup> E.F. Geoffroy, *Tractatus de Materia Medica, sive De Medicamentorum Simplicium Historiâ, virtute, delectu & usu*, 2 vols. (Parisiis: Sumptibus & impensis Joannis Desaint & Caroli Saillant 1741), vol. 2, 202-208.

<sup>475</sup> R. Thicknesse, *A Treatise on Foreign Vegetables. Containing An Account of such as are now commonly used in the Practice of Physick. With their Descriptions, chymical Analyses, Virtues, Doses, and various Effects. Chiefly taken from the Materia Medica of Steph. Fran. Geoffroy, M.D.* (London: Printed for J. Clarke, J. Whiston, and S. Baker 1749) 99-105.

The celebrated Stahl, in particular, tells us, that he has found this Bark to be an excellent Medicine in Distempers of the Breast, wherein it has a lenient, discutient, and calming Property: That in a Peripneumony, Pleurisy, and especially in a Diarrhoea attending acute Fevers, and a Dysentery, it more effectually mitigates (as he is pleased to speak) than any other Remedy whatsoever.<sup>476</sup>

Not everybody readily agreed to assign so many virtues to cascarilla, however. Johann Juncker (1679-1759), professor of medicine in Halle, approached cascarilla with more caution, even though he was a staunch **follower of Stahl's medical views. Juncker argued that cascarilla should** only be applied in cases of intermittent fever, where Peruvian bark might have too much of an astringent effect.<sup>477</sup> Geoffroy concludes, and Thicknesse with him,

that it is proper in all intermitting Fevers, whether malignant or not, but rarely in other continual malignant and contagious Fevers.<sup>478</sup>

The story so far suggests a few assumptions about the European commodification of cascarilla in the late seventeenth and early eighteenth century. First, the botanical and geographical origins of cascarilla were very unclear for scholars until the publications by La Condamine and Catesby. These publications disambiguated 'true' Peruvian bark from the new cascarilla bark, and assigned a clear, distinct place of origin to both. Second, however, these ambiguities had little effect on the appropriation of cascarilla in European medicine. Nothing like the *querelle de quinquina*, which greatly disturbed the medical debate about Peruvian bark in mid-seventeenth century Europe (especially France), seems to have affected the acceptance of cascarilla. Although this is not the place to investigate this in more detail, perhaps the separate trajectories of botanical/geographical exploration and medical testing were the result of different centres of learning. Botanical disambiguation was a major concern mainly for English and French scholars, while most of the medical testing took place in German academic centres.

In the Dutch Republic, cascarilla was gaining importance in the 1720s already, and the fever epidemic of 1727 did much to consolidate its importance as a valuable medicinal substance. In Amsterdam, the medical

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<sup>476</sup> Ibidem, 103.

<sup>477</sup> Ibidem, 104.

<sup>478</sup> Ibidem.

and commercial trajectories of cascarilla intertwined, due the efforts of Albertus Seba (1665-1736). The famous collector and wholesaler of medicaments, whom we already encountered as an important source for Linnaeus<sup>479</sup> and the supplier of bark samples to Van Ranouw, is best known for his large collections of naturalia. His first collection was sold to czar Peter the Great in 1716<sup>480</sup>, while the second was eternalized in a massive, four-volume catalogue, which was painstakingly compiled over the course of more than three decades.<sup>481</sup>

But Seba was also a practising apothecary in Amsterdam. Occasionally, we encounter his name in the archival records for public auctions of drugs, like those that were described in Chapter 2.<sup>482</sup> During one auction, in October 1727, he and several druggists bought batches of Peruvian bark, but Seba also managed to get his hands on a batch (three seroons) of *sacorille*.<sup>483</sup> The spelling, apparently a dutchification of the French *chacrilie*, suggests unfamiliarity with the substance, either on the part of the seller who sold the goods; of the broker who organized the auction; or of the printer who printed the catalogue. Some bidding must have taken place before Seba secured the batch for himself. It was estimated at 7,5 *stuivers*, but sold for three *stuivers* more. This was not the first auction of drugs that included cascarilla: one barrel of *cascarille*

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<sup>479</sup> See note 471.

<sup>480</sup> J. Driessen, "De Tsaar en de Apotheker: Peter de Grote en de Collectie van Albertus Seba", *Ons Amsterdam*, 46:12 (1996) 290-294; J.I. Driessen-van het Reve, *De Kunstkamera van Peter de Grote: De Hollandse Inbrenge, Gereconstrueerd uit Brieven van Albert Seba en Johann Daniel Schumacher uit de Jaren 1711-1752* (Hilversum: Verloren 2006).

<sup>481</sup> Seba, *Locupletissimi*. The publication process of the catalogue has been studied by Margócsy, *Commercial Visions*, Chapter 3. The heterogeneous sources of the catalogue have been studied by P. Bos, "Rariteiten op Reis: De Invloed van Albertus Seba's Contacten met Reizigers op de Totstandkoming van zijn Rariteitenkabinet", *Studium*, 8:1 (2015) 1-17. The collection was auctioned in 1752: *Catalogus Van de Uitmunten Cabinetten [...] nagelaten door wylen den Heere Albertus Seba* ([Amsterdam]: s.n. 1752). The copy that was filled in by the organizing brokers during the auction (with prices and names of buyers) is in the University Library of Amsterdam.

<sup>482</sup> Seba's name occurs eleven times in the records for three auctions (dated 15-08-1726, 12-09-1726 and 20-10-1727). Much more data about Seba as a wholesaler in medicinal substances may be found in archival records from the Dutch East India Company (VOC). Seba is known to have often purchased goods from the Company directly, for substantial sums of money. See D.A. Wittop Koning, "Zum 250. Todestag von Albertus Seba", *Bulletin van de Kring voor de Geschiedenis van de Pharmacie in Benelux*, 73 (1988) 61-66, there 63.

<sup>483</sup> Amsterdam City Archives, 5069, inv. no. 5 (20-10-1727). It is unclear what the exact weight of three seroons would have been.

had been sold the previous year.<sup>484</sup> **Seba's** purchase of cascarilla in 1727 would not be of obvious significance, had it not been for the fever epidemic in the same year, during which time Seba was apparently studying his cascarilla samples for publication purposes. **Seba's research** into cascarilla was published posthumously, in 1737. **Catesby's** observations, which had been **available for Boehmer's dissertation in 1738 (so before the official publication of Catesby's second volume about American nature)**, must still have been unavailable to Seba at the time when he wrote his own account. Seba still professed some older assumptions about cascarilla, like its resemblance to Peruvian bark and its provenance from the same region as Peruvian bark. He acknowledged the usefulness of cascarilla in continuous and intermittent fevers, either as a crude substance or mixed with Peruvian bark, which it could strengthen and improve (*auget & emendat*). An extract of cascarilla with wine spirit was especially beneficial for the stomach, according to Seba.<sup>485</sup> **Seba's account suggests that cascarilla was a more tolerable substance** than Peruvian bark, both as a medicinal substance with milder operations in the human body, and as an commodity.

## 5.2. The Fever Epidemic of 1727-1728

It might seem odd to argue that cascarilla might have gained some of the ground that Peruvian bark had lost as a result of the epidemic of 1727. The advertisements for one secret remedy, the 'Miraculous Antifebrile Salt', advertised frequently that the remedy did not contain Peruvian bark, **"or anything like it" (of iets diergelyks)**.<sup>486</sup> Surely another bitter, astringent febrifuge from the New World, which partially shared a history with Peruvian bark in terms of naming and provenance, would have counted as a similar substance. In the previous paragraph, however, **Seba's account** already showed that cascarilla was not disliked for some of the qualities that it shared with Peruvian bark. But to what extent was cascarilla appreciated, and Peruvian bark disliked? And what role did the

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<sup>484</sup> Amsterdam City Archives, 5069, inv. no. 4 (12-09-1726). The barrel was sold to Amsterdam druggist Abraham Wouters for 8,75 *stuivers*, the same price at which it had been valued by the brokers.

<sup>485</sup> A. Seba, "Historia exoticorum quorundam medicamentorum simplicium", *Acta Physico-Medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum*, 4 (1737) LXII, 226-232: "VII. Cortex Cascali, ex nova Hispania. Cascarilla similis, at longior est & arctius convolutus, extus coloris ex albo cinerei, intus ruffi, saporis amaricantis aromatici. Natalis ei locus idem est, qui Cortici Chin-China, cui etiam proxime accedit. In febribus tam continuis, quam intermittentibus, usurpatur vel solus, vel Cortici Peruviano remixtus, cujus vim auget & emendat. Extractum ejus cum spiritu vini paratum ventriculo debiliori egregie medetur."

<sup>486</sup> For the first time in the *Amsterdamse Courant*, 16-12-1727.

fever epidemic of 1727-1728 play in bringing commercial changes to the market for fever remedies?

*Advertising for Secret Remedies without Peruvian Bark*

Advertisements for secret remedies provide a good starting point to find out more about the fever epidemic of 1727-1728. Whenever we encounter remedies in advertisements in Dutch newspapers from the eighteenth century, these can generally be classed as secret remedies, as was discussed before. Although 'secrecy' in early modern science and medicine is nowadays often highly conceptualized, the secrecy of advertisements can be (and, in this paragraph, will be) understood from a practical point of view, both commercially and legally. Those who invented a remedy, or those who distributed a remedy on behalf of an inventor (i.e. *in commissie*), had a stake in keeping the contents of the remedy a secret. Local entrepreneurs could have good medical knowledge and competence—or none at all—but their remedies were usually produced and distributed outside of regular apothecary shops. As such, these remedies were often not controlled by the medical profession, and the contents were not known to anyone but the inventor. Disclosure of the ingredients of secret remedies could create a dual problem: forgery by other irregular medical practitioners, and thus loss of income; and/or legal procedures from regular physicians, who might regard such remedies as frauds.

It is therefore particularly striking to find Peruvian bark, with highly negative connotations, in Dutch newspaper advertisements for fever remedies during the 1720s and 1730s. It is not mentioned as an ingredient in these advertisements. Quite the contrary: the advertisements explicitly say that the remedy does *not* include Peruvian bark. Explicitly mentioning the absence of an otherwise obvious febrifuge ingredient was apparently regarded as a unique selling point of these secret remedies. After the 1730s, this practice disappeared again. From late 1727 onwards, these advertisements thus exhibit an extraordinary advertising feature, that requires explanation. The number of such advertisements is fairly modest. The details of the advertisements and remedies are given in Table 6. In the 4861 advertisements for fever remedies in Dutch newspapers from the period 1680-1799, that were collected in Database 2, only 88 mention Peruvian bark at all; 64 of these are from the period 1720-1740 (none from the period before that); and these 64 advertisements are about eight different remedies.<sup>487</sup> These eight were apparently tapping into a market of patients who disliked

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<sup>487</sup> Cf. note 491 below, for an explanation of these numbers.

Peruvian bark for some reason. The first advertisement to do so appeared in the *Leydse Courant* in November 1727. The advertisement described

an expert remedy against the currently prevailing fevers, which cures many in a few days, and others in a dragging way [*sleepender-wys*]; also taking away the otherwise long-lasting accidents [*toevallen*], caused either by the fevers or dangerous medicines, such as disease [*zugt*] and pain in the legs, puffiness [*bezetheid*] in the belly, the diaphragm, the crop of the stomach and so on.

The remedy could be bought at the bookshop of J. Hayman in Amsterdam, for 20 *stuivers*. **The advertisement ends explicitly: "Everyone can be assured that there is no Peruvian bark in it."**<sup>488</sup>

This example shows the main characteristics of these 64 advertisements, that are worth investigating in more detail. Peruvian bark is indeed mentioned for its absence, which, if correlated to the rest of the advertisement, may be associated with the unsuccessful or undesirable treatment of fever. The fever, moreover, is described in terms of current events, like an epidemic taking place around the time when the advertisement was published. This advertisement is, in fact, the second of two advertisements that were found for this remedy. The other was published two weeks earlier, with the same contents, except Peruvian bark was not mentioned.<sup>489</sup> Advertisements that mention Peruvian bark also started to appear for one other remedy in late 1727. The '**Miraculous Antifebrile Salt**' (*Sal Mirabile Antifebrile*), invented by an English '**physician**' (*geneesmeester*), was advertised from October 1727 onwards. The intentional purpose may have been to compete with the other remedy, for the same audience. If so, then the Miraculous Salt probably won the battle. It described its usefulness in much the same terms as the earlier remedy,

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<sup>488</sup> *Leydse Courant*, 24-11-1727: "Te Amsterdam by J. Hayman, Boekverkoper op de Cingel, op den hoek van de Huyszittensteeg, over de Warmoessluys, is te bekomen een expert Middel tegen de nu regeerende KOORTSEN, waar door veele in weinig dagen, en andere sleepender-wys geneezen; teffens ook wegneemende de anders lang nablyvende Toevallen, 't zy door de Koortsen of periculeuse Medicamenten veroorzaakt, als zugt en pyn in de Beenen, bezetheid in de Buyk, 't Diaphragma, de Krop van de Maag &c. to 20 Stuyvers. NB. Een iegelyk word verzeekerd dat hier geen CHINA inkomt."

<sup>489</sup> *Amsterdamse Courant*, 11-11-1727.

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Total
1727				1/2			2/4		3/6
1728							13/13		13/13
1729						2/2	1/19		3/21
1730		3/3			4/4		0/1		7/8
1731		19/19			2/4		0/2		21/25
1732		2/17			3/3				5/20
1733		0/11	1/2					3/3	4/16
1734	8/8	1/1			0/1				8/10
1735							0/1		0/1
1736									0/0
1737							0/1		0/1
Total	8/8	24/51	1/2	1/2	9/12	2/2	16/41	3/3	64/121

*Table 6.* Occurrences of Peruvian bark in advertisements for fever remedies, 1727-1737. The eight remedies for which advertisements with Peruvian were found have been numbered horizontally at the top. A brief description of each is given below. Shown in the table is the number of advertisements that mention Peruvian bark, and the total number of advertisements, separated by a slash, for each remedy and **for each year**. E.g.: (7), the 'Sal Mirabile Antifebrile', was advertised 19 times in 1729, but only once including Peruvian bark, and altogether only 16 times in 41 advertisements.

**(1).** The 'widely known Sal Antifebrile or Salt against Fevers' (alom berugt Sal Antifebrile of Tegens Koorts-Zout). For sale in commission (18 *stuivers* per bottle) at the bookshops of D. Jemans and Van Egmond in Amsterdam, and in coffee houses in Rotterdam (Haasverberg), Delft (Appeldoorn), The Hague (Van Santen) and Utrecht (Engers). This remedy might be identical to (7) below. Cf. note 476.



**(2).** Remedy by 'a certain Doctor Medicinae in Holland'. For sale (18 *stuivers* per bottle) in commission at the same locations as (1), except for Jemans in Amsterdam and Appeldoorn in Delft.

**(3).** An 'incomparable and sovereign remedy' (weergaloos en souverain Middel), for 6 guilders and 6 *stuivers*. The address where it can be bought could be had from Floris van Brievingh in Rotterdam.

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(4). An **'expert remedy'**, which was for sale in commission at the bookseller Hayman in Amsterdam, for 20 *stuivers*.

(5). A **'well-tested, newly invented remedy'** (welbeproeft en nieuw uytgevonden Middel), **later called 'delicious and salutary'** (overheerlyk en heylzaam). For sale in commission at the bookseller Anthony Outgers in Amsterdam, for 2 guilders.

(6). The **'very famous Dutch Fever Powder'** (zeer beroemde Hollandse Koortspoejer) **invented by 'a very renowned practitioner in Holland'**. For sale in commission at the bookseller D. Verbrugge in Rotterdam, for 16 *stuivers* per half-ounce.

(7). The **'Sal Mirabile Antifebrile'**, **invented by 'an English physician'**. Sold in commission at various book shops and coffee houses which changed from time to time, but mostly the same as (1) and (2), for 18 *stuivers* per bottle.

(8). Remedy, invented and sold by Cornelis Oly, Medicinae Doctor in Edam.



[...] putting an immediate end to the distress [*benaeuwthedens*], vomiting, [and] heavy, swirling and beating aches of the head, by which these fevers commence, especially in these times.<sup>490</sup>

This advertisement describes in more detail the symptoms of the prevailing fevers, against which it is useful. For 18 *stuivers* (slightly cheaper than its competitor), it could be purchased in the bookshop of the widow of Jacob van Egmond, in Amsterdam. For this remedy, 41 advertisements were found, 37 of which appeared between October 1727 and January 1730.<sup>491</sup> This may not indicate greater commercial success, but at least it demonstrates greater public visibility of this remedy. In any case, the **producers of the 'Miraculous Antifebrile Salt'** quickly expanded their business, by setting up a distribution network of vendors throughout the province of Holland, as can be seen in later advertisements. Besides Van Egmond in Amsterdam, and Dirk Lakeman in Leiden, whose profession is uncertain<sup>492</sup>, these were all coffee houses: Haasverberg in Rotterdam, Van Santen in The Hague, Appeldoorn in Delft, and De Waal in Haarlem.<sup>493</sup> The exclusion of Peruvian bark from the remedy was mentioned in advertisements until January 1730 as well.<sup>494</sup>

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<sup>490</sup> *Amsterdamse Courant*, 23-10-1727: "'t Sal Mirabile Antifebrile, 't welk uytroeyt, alle gedurige, anderen, derden, en vierdendaegse Koortsen, in 2 a 3 ingevingen, en doende terstond ophouden de Benaeuwthedens, Brakingen, swaere, drayende en kloppende pynen des hoofds, waer mede deeze Koortsen, voornamentlyk in deeze tyd, haer begin nemen, gelyk zeer veele kunnen getuygen, die hier door geneezen zyn geworden; als ook wonderlyk tegens het zuur of soode in de Maeg, nemende dat terstond weg; Werd in commissie verkogt by de Wed. J. van Egmond op de Reguliers-breedstraet tot Amsterdam, uytgevonden door een Engels Geneesmeester; 't glaesje kost 18 stuyvers."

<sup>491</sup> The other four were found in 1731 (2x), 1735 and 1737. Also, eight advertisements were found in the *Leydse Courant* in 1734, which closely resemble the advertisements for the 'Sal Mirabile Antifebrile'; for instance, the remedy in these advertisements is called 'Sal Antifebrile'. The phrasing in these advertisements is slightly different, however; it could also be a counterfeit. Therefore, they are classed in the database as a separate remedy. See also note 82 above, and the remark in no. (1) in the caption of Table 6.

<sup>492</sup> A man named Dirk Lakeman is mentioned as the director of the printing house that produced the *Leydse Courant* in 1726, in W.P. Sautijn Kluit, "De Hollandsche Leidsche Courant", in: *Jaarboek van de Maatschappij der Nederlandse Letterkunde* (Leiden: E.J. Brill 1871) 3-86, there 40.

<sup>493</sup> *Amsterdamse Courant*, 16-12-1727.

<sup>494</sup> Peruvian bark is not mentioned in advertisements in the *Amsterdamse Courant*, 23-10-1727 and the *Leydse Courant*, 17-12-1727, but is present in 16 advertisements, starting in the *Amsterdamse Courant*, 16-12-1727, until the *Leydse Courant*, 28-01-1729 (the date of this issue is incorrect in Delpher, it should be 26-02-1729). Another

As illustrated by these two remedies, advertisements for fever remedies around 1727 might include one of two new themes, or both: the absence of Peruvian bark, and the applicability for 'currently prevailing fevers'. Given their novelty, it is reasonable to assume a correlation between the two themes. Excluding Peruvian bark from fever remedies apparently appealed to an audience that had bad experiences with that substance during a fever outbreak around 1727. Therefore, retracing the epidemicity of fever in this period will shed light on the trajectories of both Peruvian bark and cascarilla.

### *Another Hidden History: The Fever Epidemic of 1727-1728*

What is known about an epidemic fever around the year 1727? Frankly, very little. If the advertisers who excluded Peruvian bark from their remedies responded to public disapproval, then the epidemic must have started in the Fall of 1727, when the first advertisements about Peruvian bark appeared. Dutch newspapers do not offer any information, however, as they mainly discussed foreign news. Most news regarding fevers between July 1727 and June 1728 is concerned with individual cases of feverish kings, queens, dukes and princes, throughout Europe.<sup>495</sup> The same goes for yearbooks like the *Europische Mercurius* which, however, does associate the high death rate in Amsterdam with the raging fevers in that city in 1727.<sup>496</sup>

The yearly death rate in Amsterdam between 1720 and 1740 shows the great impact of fever in 1727, as can be seen in Table 7/Figure 26. The year 1727 was the deadliest year for Amsterdam during these two decades: there were 13755 burials, i.e. an increase of 49% as compared to 1726, and more than double the figure of 1725. The *Europische Mercurius* related how in the final week of October 1727, 672 people died, or one in every fifteen minutes; the highest death rate thus far.<sup>497</sup> It has been calculated that in 1727, 6,3% of the population of Amsterdam died, of which the highest percentage (3,3%) in the last four months of the year.<sup>498</sup>

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23 advertisements were found where Peruvian bark is not mentioned, the last one in July 1737.

<sup>495</sup> To substantiate this claim, a query was formulated in Delpher for instances of fever and spelling variants in Dutch ('koorts', 'koortsen', 'koortzen' and 'koors'), in newspaper articles between July 1727 and June 1728, which gave 50 results.

<sup>496</sup> *Europische Mercurius*, 39:1 (1728) 54.

<sup>497</sup> Ibidem. The mortality figures for Amsterdam were derived from *Statistiek der Bevolking van Amsterdam*, 179.

<sup>498</sup> J.Z. Kannegieter, "Hevige Sterfte te Amsterdam in 1727", *Maandblad van het Genootschap Amstelodamum*, 59:3 (1972) 49-56.

Year	Alkmaar	Amsterdam	Assendelft	Beemster	Broek	Delft	Edam	Leiden	Rotterdam
1720	527	7819	97	91	33	693	105	2589	2244
1721	421	7632	77	85	34	589	105	1981	1928
1722	517	8421	93	80	26	507	150	1920	1734
1723	423	7119	120	88	17	551	99	1989	2060
1724	495	7622	127	84	41	859	112	1598	1963
1725	395	6787	86	72	33	470	89	1443	1780
1726	406	9255	78	117	21	521	132	1693	2198
1727	714	13755	150	114	39	607	187	2370	2168
1728	756	11164	140	139	63	647	227	2496	2233
1729	554	9618	153	101	40	732	131	2741	2105
1730	526	8912	156	95	31	823	151	1889	1649
1731	642	8383	132	97	33	594	125	2061	1745
1732	489	7332	92	98	31	495	148	1540	2000
1733	450	10691	109	100	37	610	137	1614	1959
1734	410	7760	100	71	25	696	101	2372	1674
1735	348	6533	72	74	20	482	130	1382	1587
1736	436	9206	134	92	32	470	130	1461	1602
1737	590	9291	115	71	10	550	101	1728	1968
1738	400	7762	62	90	23	481	114	1968	1817
1739	406	7507	90	103	24	547	123	1826	1698
1740	394	10056	91	53	22	555	105	1813	1907

*Table 7.* Number of burials in cities in Holland, 1720-1740. The columns reflect the number of burials, except for Amsterdam and Beemster, which reflect the total number of deaths.

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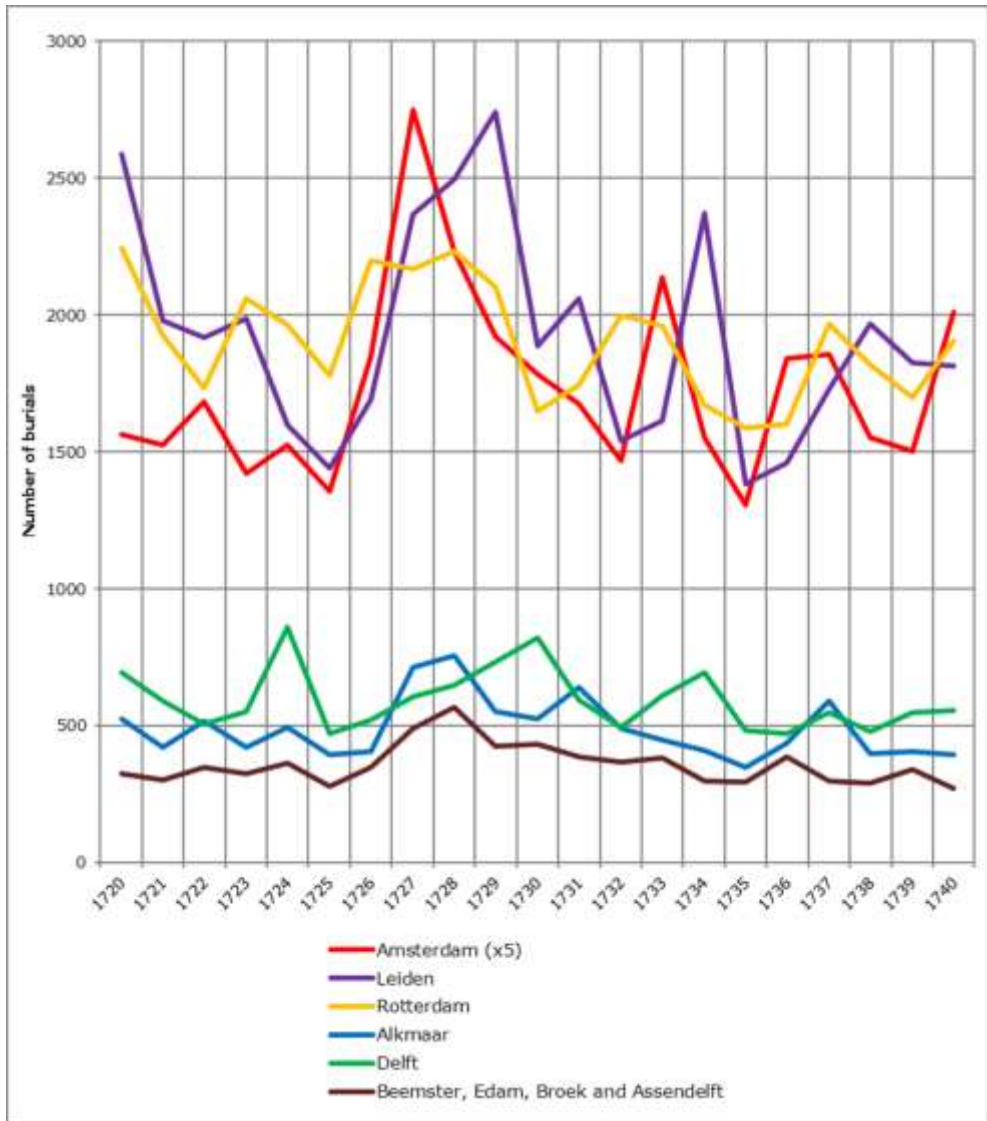


Figure 26. Number of burials in cities in Holland, 1720-1740.

As the figures for Amsterdam show, the rather high mortality continued into 1728. The outbreak was not confined to Amsterdam. The exact geographical range of the epidemic is hard to determine, but seems to have been confined to certain urban centres in the province of Holland.<sup>499</sup> For instance, people suffered from fever in the city of Hoorn, where the epidemic lasted until April 1728.<sup>500</sup> There was a mortality peak in Enkhuizen in the same period (from September 1727 until June 1728), which may have been related to the same outbreak.<sup>501</sup> Table 7/Figure 26 also shows the death rate for other cities in Holland, for which yearly figures are available. Apart from Amsterdam, there was a high death rate in Leiden<sup>502</sup> **and in the cities of the 'Noorderkwartier'** to the north of

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<sup>499</sup> Considering Holland's history as a marshy area, the outbreak of fever might have been an instance of endemic malaria. Other areas in the Dutch Republic and Europe suffered from a similar environment, but these were apparently not affected in 1727. In London, which also experienced regular outbreaks of fever, 28418 people died in 1727, of which 'only' 4728 (17%) from fever, i.e. the second cause of death after convulsions (*stuypen*) from which 8231 people died (29%). See the *Amsterdamse Courant*, 08-01-1728. For the Dutch Republic, the identification of the epidemic of 1727 as a case of endemic malaria is debatable, but Brouwer, "Malaria", 144, regards the epidemic as such, and he includes the cities of Harlingen and Leeuwarden in Friesland in his analysis. Cf. notes 508, 515 and 534.

<sup>500</sup> J. Buisman, *Duizend Jaar Weer, Wind en Water in de Lage Landen, Deel 5: 1675-1750* (Franeker: Uitgeverij Van Wijnen 2006) 542-543 and 544. Yearly mortality figures for Hoorn are unknown. L. Kooijmans, *Onder Regenten: De Elite in een Hollandse Stad, Hoorn 1700-1780* ([Dieren]: De Bataafsche Leeuw 1985) 17-18 and 235n17, discusses the death rate in Hoorn on the basis of burials in the Grote Kerk, which counted for approximately one third of all burials in the city. Kooijmans gives data with ten-year intervals, but there is a peak during the decade 1720-1729 (ibidem, 222).

<sup>501</sup> R.T.H. Willemsen, *Enkhuizen tijdens de Republiek: Een Economisch-Historisch Onderzoek naar de Stad en Samenleving van de 16e tot de 19e Eeuw* (Hilversum: Verloren 1988) 105-107 and 113 (figure iv.6). The epidemic was most severe in the months of October-November 1727 and April 1728, with well over 100 burials during each month. Willemsen identifies the mortality peak as epidemic dysentery (ibidem, 112-116).

<sup>502</sup> The yearly death rate in Leiden was extracted from archival material (Leiden Regional Archives, 0501A, I.B.1.5.3, inv. nos. 1332-1335). The general trend could already be observed in N.W. Posthumus, *De Geschiedenis van de Leidsche Lakenindustrie*, 3 vols. (The Hague: Martinus Nijhoff 1908-1939), vol. 3, 103n8; in C.A. Davids, "De Migratiebeweging in Leiden in de Achttiende Eeuw", in: H.A. Diederiks, D.J. Noordam and H.D. Tjalsma (eds.), *Armoede en Sociale Spanning: Sociaal-Historische Studies over Leiden in de Achttiende Eeuw*. Hollandse Studiën 17 (Hilversum: Uitgeverij Verloren 1985) 137-156, there 143 (fig. 8.3); and in D.J. Noordam, "Demografische Ontwikkelingen", in: S. Groenveld (ed.), *Leiden: De Geschiedenis van een Hollandse Stad, Deel 2, 1574-1795* ([Leiden]: Stichting Geschiedschrijving Leiden 2003) 42-53, there 47-50. Posthumus and Davids give figures with five-year intervals, and Noordam provides a graph, but none of them has analysed the mortality peak of 1727-1728.

Amsterdam.<sup>503</sup> Other cities, however, show no high death rate around 1727-1728. Cities like Delft<sup>504</sup> and Rotterdam<sup>505</sup> experienced relatively high mortality in the second half of the 1720s, but if these peaks are relatable to disease, it was probably not epidemic fever.<sup>506</sup> Therefore, the fever epidemic seems to have raged especially in Amsterdam, Leiden and the cities of the 'Noorderkwartier'.

### **Boerhaave's Treatment and Experience of Epidemic Fever**

The absence of regular news about this fever epidemic is as striking as its apparent severity. Very few modern studies even mention a fever epidemic in these years. Kannegieter gives mortality figures and briefly discusses the social impact of the epidemic on public life in Amsterdam.<sup>507</sup> De Vries and Van der Woude suggest that this may have been the earliest recorded malaria epidemic in the Netherlands.<sup>508</sup> For a clearer understanding, it would be valuable to consult first-hand accounts of the epidemic. The years 1727-1728 fall 'in between' some of the important sources for this period, so there are relatively few sources that can offer a glimpse of fever experience and treatment during this episode.<sup>509</sup>

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<sup>503</sup> A.M. van der Woude, *Het Noorderkwartier: Een Regionaal Historisch Onderzoek in de Demografische en Economische Geschiedenis van Westelijk Nederland van de Late Middeleeuwen tot het Begin van de Negentiende Eeuw*, 3 vols. (Wageningen: H. Veenman & Zonen 1972), vol. 1, 197-208, discusses the relationship between high mortality and epidemic diseases, but not with specific reference to 1727-1728.

<sup>504</sup> T. Wijsenbeek-Olthuis, *Achter de Gevels van Delft: Bezit en Bestaan van Rijk en Arm in een Periode van Achteruitgang, 1700-1800* (Hilversum: Verloren 1987) 410 (Bijlage 6). The figures in Table 7/Figure 26 are only about the burials in the Oude Kerk and Nieuwe Kerk.

<sup>505</sup> G.J. Mentink and A.M. van der Woude, *De Demografische Ontwikkeling te Rotterdam en Cool in de 17e en 18e Eeuw: Een Methodisch en Analyserend Onderzoek van de Retroacta van de Burgerlijke Stand van Rotterdam en Cool* ([Rotterdam]: Gemeentearchief Rotterdam 1965) 126-127 (the nos. come from the column 'Totaal III').

<sup>506</sup> W. Rutten, '*De Vreselijkste Aller Harpijen': Pokkenepidemieën en Pokkenbestrijding in Nederland in de Achttiende en Negentiende Eeuw: Een Sociaal-Historische en Historisch-Demografische Studie* (Wageningen: Landbouwwuniversiteit Wageningen, and 't Goy-Houten: HES Uitgevers 1997) 75-76, relates most eighteenth-century mortality peaks to smallpox, except for the fever epidemic of 1727-1728, which he identifies as malaria. Still, he regards the peak in Leiden in 1727 as smallpox again.

<sup>507</sup> Kannegieter, "Hevige Sterfte".

<sup>508</sup> De Vries and Van der Woude, *First Modern Economy*, 49. It is unclear where their identification of malaria is based on. Cf. notes 499, 519 and 534.

<sup>509</sup> The prolific physician and writer Willem van Ranouw, who practiced in Amsterdam, had died in 1724. Both the physicians Albrecht von Haller (1707-1728) and Johannes Gessner (1709-1790), students of Boerhaave, were in Leiden and Amsterdam in 1727, but they left for England and Paris, respectively, at the end of July. See L. Kooijmans,

Luckily, there is one excellent source that contains both. Herman Boerhaave (1668-1738), the most famous physician of his era, describes the epidemic in two letters to Joannes Baptista Bassand (1680-1742), court physician to the Duke of Savoy and the imperial family in Vienna. In the first letter, the word fever is not mentioned, but it clearly concerns an epidemic disease:

[...] an autumn epidemic [*autumnalis epidemicus*] of a rather dangerous nature and fatal to many has attacked our part of the country so that there are sufferers everywhere. Never have I had more patients to treat, although I have long since given up my practice (doing rounds); I have seen all of them cured by an appropriate emetic, diluting medicines, Polychrest salt, Contrayerva [root], and opium. Finally I fell ill myself, but far worse than the other sufferers I had seen. Indeed it was so serious that I and others around me thought that my end was nigh. But our only Lord and Master has willed otherwise, glory be to God.<sup>510</sup>

The severity of the epidemic is clear enough from this account, but Boerhaave is rather pragmatic, when he discusses the seemingly obvious range of adequate remedies. Apparently, everyone was cured. The epidemic occupied **Boerhaave's** thoughts more heavily than this, however. The second letter to Bassand went into more detail about the nature of both the disease and its treatment:

It broke out after a long period of hot weather and extreme dryness. The fever was atypical [*anomala*], and was accompanied by continual vomiting, most violent headaches, and a cerebral inflammation which was soon fatal, or while seeming to abate, it quickly rose again, attended by obvious swelling of the abdomen, vomiting and subsequent decease. Others have been livid, pale and dropsical throughout the entire winter.<sup>511</sup>

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*Het Orakel: De Man die de Geneeskunde Opnieuw Uitvond: Herman Boerhaave 1669-1738* (Amsterdam: Uitgeverij Balans 2011) 215 and 251. Daniel Gabriel Fahrenheit (1686-1736) worked in Amsterdam at the time of the epidemic, and corresponded with Boerhaave, among others, but no letters are known from the critical months of the epidemic.

<sup>510</sup> Herman Boerhaave to Joannes Baptista Bassand, 07-11-1727, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 248-251. **Boerhaave's account of the epidemic** is also discussed by Kooijmans, *Orakel*, 230-231.

<sup>511</sup> Herman Boerhaave to Joannes Baptista Bassand, 23-01-1728, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 252-257.

**Although Boerhaave's treatment was successful, other patients evidently died from fever.** Boerhaave initially thought that he would not succumb to the disease himself. He drank pure milk as a health preservative<sup>512</sup>, and had frequent exercise (horse-riding).<sup>513</sup> However, he eventually fell ill as well, which made him apply his treatment on himself:

But on 13 October I was attacked by the disease which gripped me more violently than anyone else I had seen. For among all those patients, I had only seen two who died of it [...]. I treated myself in the same way as all the others. On the first day I took an emetic, on the second an ounce of cream of tartar, on the third the same, and on the fourth two enemas. Throughout this period I drank a simple decoction of barley mixed with a large quantity of elderberry juice and Polychrest salt. By means of this treatment I first purged the intestines and cleared the head. But I was troubled by great weakness, almost to the point of swooning; then I took copious draughts of Rhine wine with lemon juice, sugar, and toast; and on the fourteenth day I underwent three purges, and subsequently revived my weakened body by drinking Peruvian bark, made like tea, for several days in the daytime; thereupon I recovered completely, rose from my bed and seem to feel stronger than previously.<sup>514</sup>

Boerhaave had more trouble curing himself than others. After ridding himself of the febrile matter which caused the disease, he was troubled by weakness for quite some time. Peruvian bark features as the final step in his treatment, which prompted his full recovery. Always a workaholic, Boerhaave immediately set himself to writing a tract about venereal disease, as he was still unable to resume his teaching obligations.<sup>515</sup>

**Boerhaave's** attitude towards Peruvian bark was ambivalent. Once he confided to his student Julien Offray de la Mettrie (1709-1751) that

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<sup>512</sup> R.E. Verwaal, *Fluid Bodies: Physiology and Chemistry in the Eighteenth-Century Boerhaave School* (dissertation; Groningen: University of Groningen 2018), Chapter 4.

<sup>513</sup> With specific reference to fever prevention, Willem van Ranouw had already pointed to the beneficial effects of exercise some years before. See [W. van Ranouw], *Esculapius*, 1 vol. ([Amsterdam]: s.n. [1723]) 225-231.

<sup>514</sup> Herman Boerhaave to Joannes Baptista Bassand, 23-01-1728, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 252-257.

<sup>515</sup> *Ibidem*. See also G.A. Lindeboom, "Boerhaaves Krankheiten", *Sudhoffs Archiv für Geschichte der Medizin und der Naturwissenschaften*, 39:2 (1955) 161-177, there 170, which argues that Boerhaave's disease (and, by implication, the epidemic) was an instance of typhoid or paratyphoid fever. Cf. notes 499, 508 and 534.



Peruvian bark had done more harm than good, and should never have been discovered.<sup>516</sup> When he wrote about fever treatment to Bassand, he argued **briefly that Peruvian bark "is rarely or never necessary."**<sup>517</sup> Other letters, however, show that Boerhaave used the bark himself on several occasions. He suggested a number of remedies to Bassand in 1717, to treat a violent disease of the Princess of Savoy, who had fallen ill after giving birth. The final step of the treatment was an infusion of several ingredients boiled in wine, including Peruvian bark, to be taken four times a day, at regular intervals.<sup>518</sup> Many years later, in 1733, Boerhaave suggested an adapted version of this same remedy to Willem Roëll (1700-1775), professor of anatomy in Amsterdam, for treating a woman. This remedy was to be taken three times a day.<sup>519</sup> In his letters to Bassand, the weak health of the Princess of Savoy was a recurring theme, and Boerhaave prescribed infusions with Peruvian bark a few more times. In 1716, he suggested a lengthy treatment of five steps, the fourth of which ran thus:

To strengthen with the utmost prudence. An infusion of up to one scruple of Peruvian bark in a little honey-water surpasses other methods, if it is taken daily for a long period.<sup>520</sup>

Later that same year, Boerhaave again prescribed an infusion of bark in wine for the Princess, and he also suggested a similar medicinal wine for **Bassand's own illness, to be taken "in the afternoon at five o'clock after one or two hours of moderate exercise."**<sup>521</sup> Boerhaave even acted as

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<sup>516</sup> Kooijmans, *Orakel*, 286. It is unclear from which source this anecdote derives.

<sup>517</sup> Herman Boerhaave to Joannes Baptista Bassand, 08-12-1733, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 324-329.

<sup>518</sup> Herman Boerhaave to Joannes Baptista Bassand, 02-11-1714, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 112-117. The remedy contained, apart from Peruvian bark, rind of caper root, pomegranate rind, tamarisk bark, oak leaves and pomegranate blossom.

<sup>519</sup> Herman Boerhaave to Willem Roëll, 03-06-1733, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 3, 46-51. This remedy contained the same ingredients as the one in the previous footnote, except for the oak leaves. Extra ingredients in the later recipe were cinnamon bark, red sandalwood and oxylapath (i.e. sorrel) root.

<sup>520</sup> Herman Boerhaave to Joannes Baptista Bassand, 24-03-1716, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 128-137.

<sup>521</sup> Herman Boerhaave to Joannes Baptista Bassand, 29-12-1716, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 136-143.

commercial intermediary for Bassand, when he sent him 12 pounds of Peruvian bark in 1717.<sup>522</sup>

Whenever Boerhaave did mention Peruvian bark, it was mostly in similar contexts: as a late or final step in the treatment, never at the start; as part of an infusion in some sweet liquid (usually wine), but never as a crude substance; and for multiple times a day and/or several days in a row. If we think of Peruvian bark as an essential early modern remedy **against fevers, Boerhaave's use of it appears far less important. Peruvian bark was always part of a longer treatment process, and can hardly be regarded as the focal point of Boerhaave's fever therapy.**<sup>523</sup> In the epidemic of 1727, Peruvian bark was used to great advantage by Boerhaave, but again as part of a larger process. Moreover, the epidemic did not seem to change his opinion about Peruvian bark in any way. If we assume that the distrust towards Peruvian bark, that we encountered in advertisements for fever remedies, was somehow correlated to the epidemic of 1727, it may not have caused distrust among prominent physicians like Boerhaave.

#### *The Impact of Epidemic Fever in Leiden and Amsterdam*

Boerhaave was an illustrious figure, but can his account be regarded as representative? There are some other sources about Leiden, that were published long after the epidemic took place, to add context to **Boerhaave's experience.**<sup>524</sup> Gerard van Swieten (1700-1772), who had been a student of Boerhaave and was a practising physician in Leiden at the time of the epidemic, kept careful notes of his medical practice during this period. These observations were published posthumously in 1782 as *Constitutiones Epidemicae*. Volume 1 starts with a brief account of the epidemic, before **Van Swieten's medical** observations from day to day. Moreover, there are short notes for the months August-December 1727, though **Van Swieten's** notes are absent for January-April 1728.<sup>525</sup> The brevity of his account in this period could be explained by the fact that he

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<sup>522</sup> Herman Boerhaave to Joannes Baptista Bassand, 26-04-1717, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 144-157. The same batch also included other exotics: ipecacuanha root, rhubarb and opium.

<sup>523</sup> Wilson, "Fever", 397-398, discusses Boerhaave's views about fever.

<sup>524</sup> Most of the sources that are discussed in the following section, and some others, can be found H.F. Thyssen, *Over de Herfstkoortsen te Amsterdam, bijzonder over die van het jaar 1826* (Te Amsterdam: bij P. Meyer Warnars 1827) 26-28, esp. 28n19.

<sup>525</sup> G. van Swieten, *Constitutiones Epidemicae et Morbi Potissimum Lugduni-Batavorum observati ex eiusdem adversariis*. Ed. by M. Stoll, 2 vols. (Vindobonae et Lipsiae: apud Rudolphum Graefferum 1782), vol. 1, 1-2 and 36-39.

fell ill himself in November, like Boerhaave a few weeks earlier. He got better quite soon, after having consulted Boerhaave, who suggested similar remedies as he had applied himself.<sup>526</sup> Furthermore, another **account can be found in Salomon de Monchy's (1716-1794)** study of medicine at sea. De Monchy recalled a lecture from his student days by Herman Oosterdijk Schacht (1672-1744), a colleague of Boerhaave at the time of the epidemic, who taught theoretical and bedside medicine. Oosterdijk Schacht maintained that purgative remedies had been used with success during the epidemic of 1727, as they had been in 1720.<sup>527</sup> The Amsterdam physician Theodorus van Zelst, who had studied in Leiden, also confirmed the successful use of purgatives in 1727-1728.<sup>528</sup>

The comparison with other fever epidemics is a theme that recurs more often. The epidemic of 1719-1720, which raged in all coastal provinces of the Dutch Republic, has certainly been described in more detail than the one of 1727-1728, and might have been of a similar nature.<sup>529</sup> In the Fall of 1779, there was again a fever epidemic, of a similar scale as in 1727-1728. During one week, more than 300 people died in Amsterdam. Still, this figure was much lower than it had been during the worst weeks of late 1727, even though the number of ill people was similar to 1727. According to physicians in Amsterdam, fewer people succumbed to fever in 1779, thanks to the increased use of Peruvian bark.<sup>530</sup> But Boerhaave had used Peruvian bark in 1727, and the effects of the bark on patients had been significant. Theodore Tronchin (1709-1781), one of Boerhaave's pupils, later recalled the colic that fever

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<sup>526</sup> Ibidem, 38-39. Van Swieten's own experience may have caused his trips to Noordwijk, to gather medicinal herbs, between 1727-1729. See F.T. Brechka, *Gerard van Swieten and his World 1700-1772* (The Hague: Martinus Nijhoff 1970) 81.

<sup>527</sup> S. de Monchy, "Verhandeling van de Oorzaaken, Genezing en Voorbehoeding der gewoone Ziekten van ons Scheepsvolk, 't geen naar de West-Indien vaart", *Verhandelingen uitgegeven door de Hollandsche Maatschappye der Weetenschappen te Haarlem*, 6: 1 (1761) 1-185, there 111. For De Monchy and Oosterdijk Schacht, see Lindeboom, *Dutch Medical Biography*, 1360-1362 and 1471-1472, respectively.

<sup>528</sup> T. van Zelst, *Libellus Singularis, de Podagra, et Dolore Colico, Scorbutico Simili, Pictonico Aemulo, Per sex Annos durante, subitò in Podagram mutato, Victo, & Curato* (Lausannae: Apud Marc. Michael. Bousquet 1760) 162.

<sup>529</sup> Brouwer, "Malaria", 144. Van Ranouw, "Vyfde Verhandeling", 306-308, discusses his many experiences with Peruvian bark against the epidemic fever of 1719, where **purgatives were also very beneficial. Van Ranouw describes the fevers as 'Febres Anomaliae', which is similar to Boerhaave's description eight years later.** See also J. de Koker, *Dissertatio theoretico-practica inauguralis. De Morbo Epidemico Anni 1719* (Lugd. Bat.: Apud C. Wijhoff 1720).

<sup>530</sup> *Nieuwe Nederlandsche Jaerboeken. Vyftiende Deel* (Te Amsteldam: By de Erven van F. Houttuyn, Te Leiden: By P. van der Eyk en D. Vygh 1780) 17.

patients suffered from in 1727, as a result of treatment with Peruvian bark:

Being soothed by the bark, while the putrid bile continued to work, she [i.e. the colic] affected the mesentery and the membranes of the intestines to such an extent, that the accident [*toeval*] of colic pain was an indubitable sign of preceding fever. The remnants of that disease, which would still be active years later, accustomed the physicians to that disease: oh, if only that had been the case with the remedy as well. One could often see the poor sufferers, who resulted from it, passing on the street like ghosts; bloodless, deadly pale; with crooked hands, flabby arms, their voice hoarse and faint; yes, some were even speechless.<sup>531</sup>

This vivid description of the effects of Peruvian bark reveals what impact **such a treatment might have on patients. Tronchin's description is** reminiscent of the ways in which producers of fever remedies described the negative effects of Peruvian bark in their advertisements. Patients **who recognized Tronchin's description would** undoubtedly be receptive to fever remedies without Peruvian bark.

Would the situation in Amsterdam have differed from Leiden? The mortality figures for Amsterdam seem to tell a different story than the successes described by Boerhaave in Leiden, but his success was uncharacteristic for the situation in the city, as we have seen: Leiden experienced a mortality peak in 1727-1728 as well. Were physicians in Amsterdam struggling with the epidemic, like Boerhaave and Van Swieten in Leiden? Probably, but there are very few sources. The medical scene in Amsterdam has ambivalent characteristics between 1720 and 1740, and the fever epidemic seems to be virtually absent.

On the one hand, medicine in Amsterdam offers a picture of medical harmony and progression. In 1726, the year before the epidemic, the medical profession in Amsterdam had just gone through a positive development, with the publication of the *Pharmacopoea Amstelaedamensis renovata*. This was the first entirely revised edition of **the city's pharmaceutical manual since Nicolaas Tulp's first edition of 1636.**<sup>532</sup> Like its predecessor, the pharmacopoeia of 1726 dictated to

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<sup>531</sup> T. Tronchin, "Verhandeling over het Kolyk van Poitou", *Uitgezogte Verhandelingen uit de Nieuwste Werken van de Societeiten der Wetenschappen in Europa en van andere Geleerde Mannen*, 2 (1757) 589-612, there 598-599. The fever is described as a 'bilious fever' (*galkoorts*).

<sup>532</sup> *Pharmacopoea Amstelaedamensis renovata* (Amstelaedami: Apud Petrum vanden Berge 1726). Between 1636 and 1726, several other, sometimes unofficial editions, had been published. See the Appendix.

apothecaries in Amsterdam the crude substances (*simplicia*) they were supposed to have in stock, and the basic preparations that they should be able to make from these. This edition was compiled by the five inspectors of the Collegium Medicum (see Figure 27), which consisted of three physicians (the dean Hendrik van Bronckhorst, Caspar Commelin and Daniël van Buren) and two apothecaries (Jeronimus de Bosch and Martinus Haasbaart). In the pharmacopoeia, Peruvian bark was also included, both as a required product in apothecaries—as it had been since the edition of 1682—and in two basic remedies: an extract and a tincture of Peruvian bark.<sup>533</sup> In other words, Peruvian bark had been a staple drug for over forty years in Amsterdam, when the epidemic broke out in 1727.

On the other hand, the medical scene in Amsterdam in the 1720s and 1730s may not have been so well-equipped to tackle a severe fever epidemic. When fever<sup>534</sup> broke out in 1727, the burgomasters consulted the Collegium Medicum on the course of action that should be taken. The Collegium installed two extra physicians in the plague house (*Pesthuis*), one of whom got ill himself.<sup>535</sup> Soon, however, the Collegium had other things on its mind. A fierce conflict broke out over nepotism and medical jurisdiction, involving the Collegium Medicum, apothecaries, surgeons and the city authorities.<sup>536</sup> This conflict of interests spawned a range of pamphlets, mainly directed against the Collegium and especially the person of Van Bronckhorst. The epidemic seems not to have been connected to the issues revolving around the Collegium Medicum in this period.<sup>537</sup>

To sum up, then, the medical trajectory in Amsterdam is recorded too fragmentarily to perform a proper analysis of the responses to the

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<sup>533</sup> Ibidem, 3, 36 and 98.

<sup>534</sup> L. Kooijmans, *De Doodskunstenaar: De Anatomische Lessen van Frederik Ruysch* (Amsterdam: Bert Bakker 2004) 382, calls it a contagious hot fever (*besmettelijke 'hete koorts'*). This might point to typhus rather than malaria. Cf. notes 499, 508 and 515.

<sup>535</sup> Ibidem, 382.

<sup>536</sup> A. Mooij, *Doctors of Amsterdam: Patient Care, Medical Training and Research (1650-2000)*. Transl. by B. Jackson (Amsterdam: Amsterdam University Press 2002) 96-97; Kooijmans, *Doodskunstenaar*, Chapter 10. The issue revolved around the surgical training of medical practitioners in Amsterdam. The Collegium Medicum, headed by Van Bronckhorst, and the apothecaries of Amsterdam, on the one hand, sent a delegation to Paris to increase the surgical knowledge of its members. The city authorities and the surgeons of Amsterdam, on the other hand, sent their own delegation to Paris, which caused a fierce clash of interest among all those involved.

<sup>537</sup> Kooijmans, *Doodskunstenaar*, 404-408, situates the first pamphlet, *Samenspraak der dooden, tusschen Hippocrates en Huc ten Dimus* (published in 1731), in the Fall of 1727.



*Figure 27.* Inspectors of the Collegium Medicum in Amsterdam, painted by Cornelis Troost in 1724. Around the table, from left to right: Hendrik van Bronckhorst, Jeronimo de Bosch, Daniël van Buren, Martinus Haasbaart and Caspar Commelin.

epidemic of 1727, and the position of Peruvian bark in fever therapy. Inferences about the epidemic can be made, however, if we shift our attention from the domain of medicine, to commerce. Especially the trade in crude medicinal substances can offer a glimpse of the attitude towards Peruvian bark in Amsterdam in the early decades of the eighteenth century.

### 5.3. Commercial Competition between Peruvian Bark and Cascarilla in the Aftermath of the Epidemic

In the previous paragraph, it was argued that the fever epidemic of 1727-1728 created ambivalent attitudes towards Peruvian bark. Advertisements for secret remedies voiced a concern for the negative effects which the bark might have on patients (and which would of course be absent when the advertised remedies would be applied instead). In the medical domain, physicians like Boerhaave did not use Peruvian bark on a large scale. He refrained from using it if he could, but he nonetheless included it unproblematically in his own fever therapies, if necessary. To **explain Peruvian bark's negative** connotations, it is therefore useful to answer the question where things went wrong. In this paragraph, data from trade records will be used to supplement the information about fever experience and treatment, that was explored in the previous paragraph.

#### *Increasing Availability of Peruvian Bark and Cascarilla*

Could it be, during the epidemic of 1727, that patients found Peruvian bark repulsive because of its inherent properties, or because of the ways in which it was applied? If the bark was wrongfully applied, e.g. because of overdosing, overlong application, or a wrong mode of administration, can we blame practitioners for maltreatment? After decades of experience with Peruvian bark, physicians might be expected to have found relatively safe ways of application, especially for such a primordial indication as fever. But of course, the fever was an anomalous one. Accordingly, Boerhaave was cautious in his application of remedies, including Peruvian bark. An account like that of Tronchin, on the other hand, reveals the detrimental effects which treatment with Peruvian bark could also have.

In another scenario, not those who prescribed Peruvian bark should be blamed for the unsatisfactory course of action taken during the epidemic (a thesis for which there are insufficient data anyway), but the substance itself. In other words, the solution to the mortality crisis of 1727-1728 might be found in the commercial domain, rather than the medical domain. We are particularly well-informed about trade in Peruvian bark in Amsterdam in the early decades of the eighteenth century,

especially when compared to the Spanish records about transatlantic trade in this period, which are very fragmentary. As was already discussed in Chapter 2, Peruvian bark arrived in Cádiz each year with the *flotas*, which brought the bulk of goods from Spanish South America to Europe: mainly gold and consumer products, like tobacco, cacao and indigo. As fleets did no longer arrive every year by the early eighteenth century, the system deteriorated. Therefore, register ships from various countries were allowed by Spain to trade directly with the New World, adding to the volume imported by the fleets. No systematic records were kept during this period, so the cumulative volume of fleets and register ships is impossible to determine in detail, as can be glanced from Table 8/Figure 28.

More coherent commercial data can be found for public auctions of **drugs in Amsterdam. Several members of the Brokers' Guild there were** starting to develop the drug trade into a niche market in the early decades of the eighteenth century, as was discussed in Chapter 2 as well. The public auctions of goods, that were organized by these brokers, were sanctioned by the city authorities, to distinguish official brokers from unofficial ones. As a result, auction activities have left a substantial amount of data for scholars to investigate. For the period 1720-1740, the archival record is incomplete, but it can be supplemented by data from newspaper advertisements, in which these same auctions were announced (cf. Table 4).

Altogether, Peruvian bark occurred frequently at public auctions of drugs, as can be seen in Figure 29. Each year, a fair number of auctions was organized, where crude drug components were sold, mainly to local druggists in Amsterdam. Quite a number of auctions included Peruvian bark, which indicates that the bark was generally available to medical practitioners and patients in the city during the period 1720-1740. Figure 29 already demonstrates the fluctuating availability of bark from year to year, with an expected peak in 1727, when more bark than usual would have been demanded. However, the data has more to offer if we zoom in on the auctions for which we know the actual number of units that was sold, which can be seen in Table 9. In archival records and advertisements, these units are given as **trade units, i.e. 'manageable'** batches like chests, barrels and seroons.<sup>538</sup> While little more than eighty

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<sup>538</sup> The real contents (in terms of weight) of any of these trade units requires further research, so an analysis of the number of trade units is currently the closest we can



Year	Spanish <i>flotas</i> to Cádiz	Register ships to Cádiz
1720		240
1721	96	377,25
1722		138
1723		2212,75
1724	265	
1725		
1726		
1727		
1728		
1729		10127
1730	180	
1731		804
1732		1597,5
1733		
1734	496	827,5
1735		
1736		1293
1737	670	2580
1738		1580
1739		
1740		

Table 8. Global influx of Peruvian bark in Spain, in *arrobas*, 1720-1740.

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get to the trade 'volume' of Peruvian bark, that was auctioned in Amsterdam. *Seroons*, *ceroenen* in Dutch, was one of the most common trade units for Peruvian bark. The word derives from the Spanish *zurrónes*, which referred to animal skins, in which the bark was wrapped, and then sewn together on both ends. See also Boumediene, *Colonisation du Savoir*, 194.

## New Drugs for the Dutch Republic

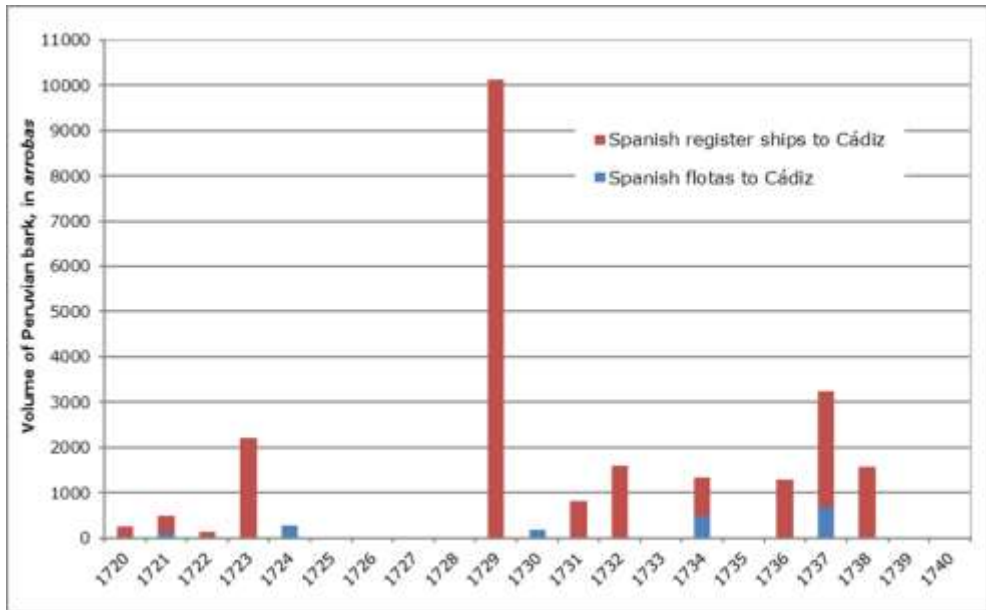


Figure 28. Global Influx of Peruvian bark in Spain in *arrobas* (1 *arroba* = c. 11,5 kg), 1720-1740.

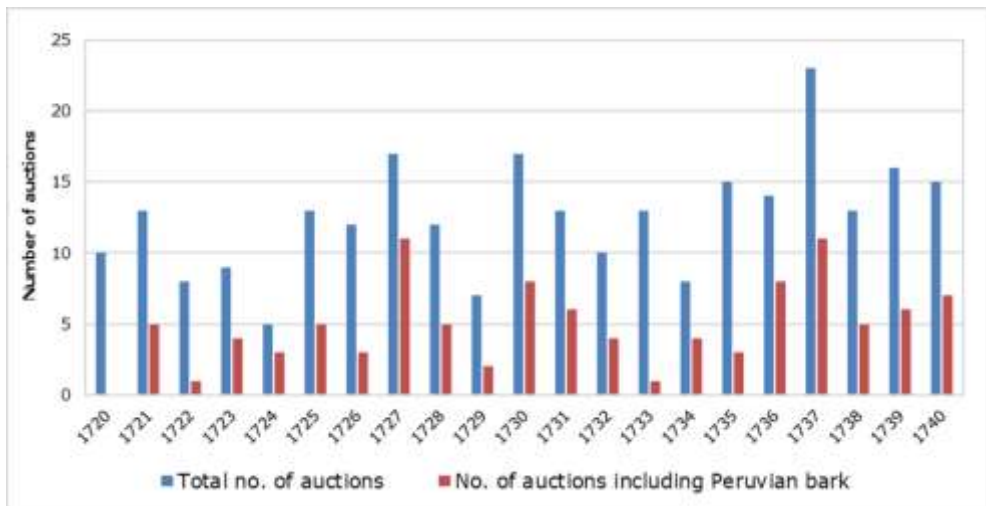


Figure 29. Auctions of drugs in Amsterdam, and the number of auctions that included Peruvian bark, 1720-1740.

or ninety units were auctioned per annum in earlier years, the number of units tripled in 1727, to 244 units. Only 86 (35,3%) of these were sold in the first half of the year, the rest was auctioned in late Summer and Fall. This points to a quick commercial response to the fever epidemic.

It is interesting to see who bought Peruvian bark at these auctions. For instance, at the auction of September 9, 1727, ten seroons and one chest of bark were auctioned, but only the chest seems to have been sold, to Amsterdam druggist Jacob Castelijjn.<sup>539</sup> At the next auction of Peruvian bark, on October 20, all units (48 seroons and 1 small bag, sold in 24 parcels) were sold, mainly to Amsterdam druggists and to brokers in drugs.<sup>540</sup> The same goes for the auction of November 25, which included 42 seroons and a small bag, sold in 22 parcels. Only the small bag was not sold this time.<sup>541</sup> During the final auction of the year (on December 12), 14 seroons were auctioned in seven parcels, but only three of these were eventually sold.<sup>542</sup> In all these auctions from the second half of 1727, the prices estimated by the brokers (i.e. the sum which a parcel was expected to realize) and the prices that were actually paid, did not diverge very much. Apparently, little bidding took place to drive up the price. This seems to indicate that, regardless of the large amount of Peruvian bark that was on offer in Amsterdam in the midst of the epidemic, no rush of any kind seems to have taken place, or to have driven up prices. In other words, more Peruvian bark was available (and probably: required) during the epidemic than in other years, but auction records do not indicate either scarcity or saturation on the market.

All in all, the trade records for Peruvian bark do not offer a strong explanation why Peruvian bark was disliked in 1727. The amount of Peruvian bark that was available seems to have been adequate. The bark was of acceptable quality, because damaged batches were usually indicated at auctions. The arrival of shipments of Peruvian bark in Spain was usually mentioned in Dutch newspapers, but only rarely is there any

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<sup>539</sup> Amsterdam City Archives, 5069, inv. no. 5 (05-09-1727).

<sup>540</sup> Amsterdam City Archives, 5069, inv. no. 5 (20-10-1727). As the database of auctions of drugs in Amsterdam is still under construction, even the basic biographical information about these druggists is still largely unknown. When parcels were sold to brokers in drugs—the same people who organized the auctions—this probably indicates that these parcels were destined for their clients (druggists and/or apothecaries) in other cities. See also Chapter 2 above, esp. note 242.

<sup>541</sup> Amsterdam City Archives, 5069, inv. no. 5 (25-11-1727).

<sup>542</sup> Amsterdam City Archives, 5069, inv. no. 5 (10-12-1727).

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Year	A. Number of auctions, including Peruvian bark	B Number of auctions in A, with specified amounts	C. Number of units of Peruvian bark in auctions from B	D. Specified units of Peruvian bark, from C
1720				
1721	5	2	76	76 seroons
1722	1	1	8	8 seroons
1723	4	3	95	95 seroons
1724	3	1	10	10 seroons
1725	5	4	96	82 seroons, 14 barrels
1726	3	3	80	68 seroons, 6 barrels, 6 small chests
1727	11	11	244	241 seroons, 1 barrel, 1 chest, 1 small bag
1728	5	3	93	65 seroons, 28 barrels and seroons
1729	2	2	106	106 seroons
1730	8	7	270	259 seroons, 11 bales
1731	6	5	128	105 seroons, 22 barrels, 1 small bag
1732	4	2	44	40 seroons, 4 barrels
1733	1	1	14	14 seroons
1734	4	2	113	113 seroons
1735	3	2	80	80 seroons
1736	8	8	131	51 seroons, 32 barrels, 4 small barrels, 9 chests, 30 small bales, 3 bags
1737	11	11	114	108 seroons, 5 barrels, 1 small barrel
1738	5	5	119	73 seroons, 38 barrels, 8 bales
1739	6	6	122	116 seroons, 5 barrels, 1 bag
1740	7	7	165	133 seroons, 9 barrels, 20 small barrels, 1 box, 2 small chests

*Table 9.* Public auctions in Amsterdam, including Peruvian bark, 1720-1740. For the auctions where the amounts have been specified in archival records and/or newspaper announcements (column B), specifications are given in columns C and D.<sup>543</sup>

<sup>543</sup> Original diminutive forms in Dutch have been retained, i.e. both barrels (*vaten*) and small barrels (*vaatjes*) have been included in the table.

hint in newspapers about quality issues.<sup>544</sup> According to one author, the bulk of Peruvian bark that was shipped from Loja to Europe was of an inferior variety, while the best varieties were destined for the Spanish empire itself.<sup>545</sup> The consistent selling of batches of Peruvian bark at public auctions in Amsterdam, however, rather suggests that there were no great concerns about the quality of Peruvian bark among brokers and buyers.<sup>546</sup>

Although no dislike for Peruvian bark can be observed in the domain of trade, the epidemic of 1727 did consolidate a commercial trajectory for cascarilla. In auctions records, the new febrifuge substance recurred frequently after 1727. The occurrence of cascarilla in auctions is shown in Table 10, which shows similar data as Table 9 did for Peruvian bark. Auction records demonstrate that cascarilla was quite regularly available, though in much smaller quantities than Peruvian bark. It is possible that **the supply of cascarilla was related to the 'aftershocks' of Peruvian bark's** unpopularity. When the number of advertisements for secret remedies, that excluded Peruvian bark from their ingredients, increased again around 1730 (see Table 6), the supply of cascarilla rose as well. Cascarilla was apparently a popular product: there are names of buyers for all the units in Table 10, for which an archival record has survived. A peak was reached at the auction of August 7, 1737, when 104 units of cascarilla were sold to brokers and druggists in Amsterdam, for 12-14 guilders per 100 pounds.<sup>547</sup>

If the epidemic of 1727 consolidated the commodification process of cascarilla, the process of codification had already begun some years before the epidemic. Codification of cascarilla followed a fuzzier track than Peruvian bark half a century earlier, which had quickly been included in all Dutch pharmacopoeias, after Amsterdam set the example by including it in the edition of 1682. The pharmacopoeia of Alkmaar was the first municipal **pharmaceutical handbook to include cascarilla (as 'Coscorielje'),**

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<sup>544</sup> One example can be found in the *Leydse Courant* (01-02-1734), about the arrival of 220000 pounds of Peruvian bark in Spain. The news item mentions that letters from Panama already complained about the bad condition (*slecht vertier*) of the shipment.

<sup>545</sup> J. Gray and W. Arrot, "An Account of the Peruvian or Jesuits Bark, by Mr. John Gray, F. R. S. now at Cartagena in the Spanish West-Indies; extracted from some Papers given him by Mr. William Arrot, a Scotch Surgeon, who had gather'd it at the Place where it grows in Peru", *Philosophical Transactions*, 40 (1737-1738) I, 81-86, there 82. Cf. Maehle, *Drugs on Trial*, 276.

<sup>546</sup> Overall, however, it is reasonable to assume that a lot of bark may have been of inferior quality. According to Jarcho, *Quinine's Predecessor*, 203-204, there are numerous reports about spoilage of bark in eighteenth-century Spanish records.

<sup>547</sup> Amsterdam City Archives, 5069, inv. no. 9 (07-08-1737).

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Year	A. Number of auctions, including cascarilla	B. Number of auctions in A, with specified amounts	C. Number of units of cascarilla in auctions from B	D. Specified units of cascarilla, from C
1720				
1721				
1722				
1723				
1724				
1725				
1726	1	1	1	1 barrel
1727	1	1	2	3 seroons
1728				
1729				
1730	2	2	25	5 barrels, 20 bales
1731	2	2	37	23 bales, 14 barrels
1732				
1733				
1734				
1735				
1736	4	4	5	4 barrels, 1 small barrel
1737	3	3	108	97 <i>scavassen</i> , <sup>548</sup> 11 barrels
1738	2	2	5	5 barrels
1739	1	1	1	1 barrel
1740				

Table 10. Public auctions in Amsterdam, including cascarilla, 1720-1740.

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<sup>548</sup> It is unclear if and how *scavassen* (also spelled as *schavassen* or *cabassen*) should be translated. The word refers to a type of basket, sometimes with a handle, see <http://gtb.inl.nl/iWDB/search?actie=article&wdb=WNT&id=M029363&lemma=kabas>.

in 1723.<sup>549</sup> Cascarilla was included in the pharmacopoeias of Amsterdam (1726, but not 1723), Haarlem (1741, but not 1735), Utrecht (1749), Leiden (1751, but not 1732), The Hague (1758, but not 1738) and Dordrecht (1766). It was not adopted in the pharmacopoeias of Rotterdam (editions in 1728, 1735, 1736), Groningen (1729) or Leeuwarden (1731, 1736, 1745, 1775).<sup>550</sup> Furthermore, pharmacopoeias show that the best-available knowledge about Peruvian bark was not immediately incorporated either. The pharmacopoeia of The Hague from **1758 still mentioned Linnaeus's cascarilla species from the East Indies as the true substance, even though Catesby's work had canonized the Caribbean species for pharmaceutical use.**<sup>551</sup> Once again, this shows that cascarilla was more easily tolerated as a new substance than had been the case with Peruvian bark.

### *Competition between Febrifuges on Opposite Sides of the Medical Market*

Evidence from the domain of trade, therefore, indicates that Peruvian bark was not clearly disliked during the epidemic of 1727-1728, but there was enough room for the new febrifuge cascarilla to position itself as a possible alternative. Where does this leave us with regard to the status of Peruvian bark after the epidemic? Some advertisers continued to *exclude* Peruvian bark from their remedies, and thus to *include* it in their advertisements. The distribution of this theme was already shown in Table 6, for all eight remedies that ever mentioned the bark in their advertisements. Only a few advertisements mentioned Peruvian bark in 1727. In 1728, only the producers of the 'Sal Mirabile Antifebrile' kept including Peruvian bark in their advertisements, but the theme almost disappeared from newspapers thereafter. That is, until 1730, when several remedies suddenly began to include the theme again. Thereafter, it popped up every now and then. As late as 1737, the producers of the 'Sal Mirabile Antifebrile' advertised that their remedy cured all sorts of fever, like it always had,

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<sup>549</sup> *Pharmacopoea Almeriana galeno-chymica* (Almeriae: Apud Joannem van Beyerem 1723) 8.

<sup>550</sup> See the Appendix for details about these publications.

<sup>551</sup> *Pharmacopoea Hagana, ex Auctoritate Magistratus Poliatrorum Opera tertium instaurata et aucta* (Hagae Comitum: Apud Viduam Frederici Boucquet 1758) 10: "Cascarilla. Clutia, foliis cordato-lanceolatis. Linn. Flor. Zeyl. 366. Cascaril, Indiaansche Bast."

as can be confirmed by a great many people, who have used it, [and as] its healing powers have been found to be abundant in the year 1727, etcetera.<sup>552</sup>

Thus, the negative connotations that began to surround Peruvian bark in advertisements appeared especially in the years *after*, not *during* the epidemic. Perhaps a new wave of aversion against Peruvian bark was sparked in 1730, when the import volume of both Peruvian bark and cascarilla in Amsterdam reached a high level again, similar to that of 1727 (see Tables 10 and 11). Perhaps a new outbreak of fever occurred, which created new fears among the public. Or perhaps the negative recollection about Peruvian bark treatment **lingered on in people's minds**, invigorated by the sight of those who still suffered from the effects, **like in Tronchin's** account.

It is hard to correlate trade volumes and secret remedies more closely, as they represented opposite ends of the medical market: the substances sold at auctions were only crude ingredients for more complex remedies, whereas secret remedies were the most nontransparent kind of processed remedies, with ingredients that were no longer known or disclosed. Still, as the previous discussion has aimed to show, various trajectories of Peruvian bark can be correlated to explain the responses to the fever epidemic of 1727. Peruvian bark can be regarded as a theme that was used in advertisements to address a specific market segment of patients. Certainly, some patients would have been receptive for the language of advertisements because of their own bad experiences in fever treatment, but the evidence we have suggests that this was probably not a collective sentiment. During and after the epidemic, there was enough Peruvian bark available, which was used moderately by physicians, and there were possible alternatives, like cascarilla. It is only in the recurrence of Peruvian bark in advertisements, in the aftermath of 1727, that we can observe the imprint of the experience with epidemic fever on collective memory.

A question that might still be asked is where bad experiences of patients could have originated in the first place. As has been shown, there is little evidence of physicians who used Peruvian bark during the epidemic. It is possible that when advertisers assured their audience that they did not use Peruvian bark, they were distancing themselves from other advertisers who still included bark in their remedies, and kept silent about it. In that case, we are dealing with secret remedies opposing *other*

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<sup>552</sup> *Leydse Courant*, 15-07-1737: "[...] gelyk als met zeer veele, die het gebruykt hebben, kan bevestigd worden, ook deszelfs heilzaame krachten overvloedig bevonden zyn in den Jaare 1727 &c." This advertisement does not mention Peruvian bark.



secret remedies, not 'regular' remedies that were prescribed by physicians and composed by apothecaries. Or, in other words, the Peruvian bark theme might reflect *internal* competition within the market of irregular practitioners and remedies. It is reasonable to assume that the inclusion of bark in secret remedies might sometimes have caused negative experiences of patients. The dosing of substances in secret remedies was hardly regulated at the same level as in regular medical practice. Descriptions of the negative effects of Peruvian bark in advertisements, or in **Tronchin's account**, are reminiscent of the modern toxicological effects of quinine. Although the language of early modern irregular practice cannot be equated with modern medical jargon (nor can the effects of Peruvian bark be equated with those of pure quinine), the toxicology of quinine might have been familiar to early modern observers as well:

With therapeutic doses, patients often experience "cinchonism." Common features include nausea, vomiting, decreased hearing acuity, tinnitus, and headache. Tachycardia is often noted. Diarrhea and abdominal pain are less frequently observed. The skin may be warm and flushed. As plasma concentrations rise, visual disturbances, including blindness, are common. Patients experience vertigo, dystonia, syncope, ventricular dysrhythmias (including torsades de pointes [i.e. abnormal heart rhythm]), and hypoglycemia. The average lethal oral dose of quinine is 8 g, although a dose as small as 1.5 g has been reported to cause death. Delirium, coma, and seizures usually occur only after severe overdoses and may be associated with myocardial depression.<sup>553</sup>

Although it is impossible to prove, many producers of secret fever remedies must have included Peruvian bark in their products: the bark was available in large quantities, and of reasonable quality. Toxicological side effects might therefore have been a real danger, even if these were not generally acknowledged in the eighteenth century. If so, then the advertisers of secret remedies *without* Peruvian bark attempted to attract patients whose bad experiences had been caused by similar secret remedies *with* Peruvian bark. **This is an example of secrecy's boomerang effect: the intended safeguarding of the producers' interests worked against them, when patients became the victim of their surreptitious practices.**

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<sup>553</sup> R.S. Hoffmann e.a. (eds.), *Goldfrank's Manual of Toxicologic Emergencies* (New York: McGraw-Hill 2007) 485-486.

One final observation concerns the competition between remedies in regular medicine. Although aversion against Peruvian bark may have been confined to irregular medical practice as an advertising strategy, the arduous recovery of Herman Boerhaave suggests that academic physicians also had difficulty in finding an appropriate therapy for the fever of 1727. Thus, the epidemic engendered different strategies with different people. Physicians like Boerhaave applied cautious therapies, where Peruvian bark was only used if necessary; advertisers could exclude Peruvian bark from their remedies, to distance themselves from other irregular practitioners and to have a unique selling point; brokers engaged in trade of Peruvian bark on a large scale, but also facilitated the use of new remedies like cascarilla. The epidemic invigorated competition on the medical market, which caused various actors to apply their own strategy. These commercial approaches ultimately reconnected the trajectories of Peruvian bark and cascarilla, in the aftermath of the epidemic.

### Conclusion: Epidemics as a Window on the Commodification of Drugs

The fever epidemic of 1727-1728 must have caused more suffering in Holland than what is suggested by the personal accounts that are left. In Amsterdam, it caused grief for the famous, old anatomist Frederik Ruysch (1638-1731), who lost his son and intended successor Hendrik to the illness.<sup>554</sup> In Leiden, it incapacitated Herman Boerhaave for quite some time, which made him contemplate his health and strengthened him in his decision to give up his chairs of botany and chemistry in 1729.<sup>555</sup> The epidemic also provided an incentive for more research. In Utrecht, it caused Pieter van Musschenbroek (1692-1761) to start recording meteorological phenomena, to investigate the relationship between the weather and the origins of disease.<sup>556</sup>

These few personal experiences demonstrate that the disease must have left a considerable imprint on society as a collective, consisting of diverse individual experiences with epidemic fever. These experiences are also reflected in the trajectories of Peruvian bark and cascarilla. The histories of these substances had been related before, but their position as medical commodities was changed as a result of the fever epidemic. The sudden need for more remedies meant that more people became heavily involved with febrifuge substances, which is why the epidemic is

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<sup>554</sup> Kooijmans, *Doodskunstenaar*, 382.

<sup>555</sup> Kooijmans, *Orakel*, 239.

<sup>556</sup> Buisman, *Duizend Jaar, Deel 5*, 504, 543, 548 and 550-551.

such a fruitful topic of research to study commodification processes of drugs. Patients may have had an aversion towards Peruvian bark, perhaps based on negative experiences during the epidemic. Producers of secret fever remedies saw this as a commercial opportunity to address a specific segment of patients, by addressing the issue of Peruvian bark in their advertisements. A physician like Boerhaave dealt with epidemic fever as best as he could, and pragmatically applied or renounced Peruvian bark as the situation required, both on his patients and himself. Merchants and brokers traded in Peruvian bark and cascarilla during the epidemic, as they increasingly did in the early decades of the century anyway, thus consolidating their practice and position as intermediaries in the global chain of commerce. Curious collectors like Seba studied samples of the little-known cascarilla, and published about it. Both knowledge and goods were shared, like Seba did when he shared samples of bark with Van Ranouw some years before. In other words, the trajectories of Peruvian bark and cascarilla were greatly affected by these various attitudes, which intensified during and after the epidemic.

The epidemic of 1727-1728 can be regarded as the glue that tied the different trajectories of Peruvian bark and cascarilla together, albeit implicitly for most of the time. The advertisements that mention Peruvian bark hint at reigning fevers during 1727 and 1728, but give no details as to their causes, course or ending. Herman Boerhaave in Leiden discussed the epidemic in quite some detail, but only twice, to one of his most trusted correspondents, Bassand. For Amsterdam, no personal accounts about the epidemic are known, so we only have the mortality figures to inform us about the severity of the disease there, plus the import figures for crude substances. Meanwhile, cascarilla had already been commodified to a large extent in Dutch medicine, judging from its inclusion in several pharmacopoeias. Its significance, however, increased when the substance itself began to be traded regularly, around the time of the epidemic. Investigations and publications by men like Van Ranouw and Seba reveal the interconnection between commerce and research in the process of disambiguating knowledge about both Peruvian bark and cascarilla. At the time of the epidemic, there was already a clear, general interest in these substances, and in knowledge about them. The key publications about both substances would only be published a couple of years later. As such, the epidemic of 1728-1728 contributed significantly to consolidate the commodification process of cascarilla and the re-establishment of Peruvian bark on the medical marketplace.

Information about the causes and consequences of the fever epidemic, and its effects on the trajectories of remedies, was derived from a variety of sources. What this chapter has aimed to show is that only the

combination of these sources (mortality figures, imports data, newspaper advertisements, personal accounts of physicians, pharmaceutical handbooks, and so on) makes it possible to unravel the hidden context of a forgotten epidemic, beyond a purely medico-historical analysis. The diversity of attitudes and responses to the epidemic has revealed strong commercial and cultural dimensions, that are not likely to surface in medical sources. All available sources must be considered, to avoid the pitfall of unilateral explanations: advertisements for secret remedies offer a useful, but one-sided image of negative public responses to epidemic **fever, while Boerhaave's personal experience are overly positive about his** successful treatment. Moreover, close-reading of sources about drug trajectories during a short time span, like an epidemic, should always be embedded in broader historical processes by means of distant reading. The application of 'big data', whether already existing or newly generated, is an important asset for such research.

# Chapter 6. Creating Time Capsules for Historical Research in the Early Modern Period: Reconstructing Trajectories of Plant Medicines<sup>557</sup>

## Introduction

The previous chapters have explored the interactions of fever and fever remedies (both crude substances like Peruvian bark, and secret fever remedies) on various levels. In each chapter, various sources were consulted to arrive at a more complete historical picture of the mechanisms that made commercial success and commodification of fever remedies possible, or not. Methodologically, the assemblage of systematic data collections has been at the heart of the research in this dissertation. Diachronic developments could only be observed when they surfaced from a wealth of digital data, that was mostly extracted from newspaper advertisements, while a meaningful role to singular, synchronic historical events could only be offered within the context of larger developments on the medical market. This approach has opened new windows on the relationship between diseases and remedies in the early modern period.

Still, the means to collect the data that were used for the previous chapters, and the analytical instruments that were employed to create an actual historical narrative, have been largely manual in character, or semi-automatic at best. Given the magnitude of the primary source material that is yet to be explored, however, it is highly desirable that future research can benefit from previous efforts to deal with such collections, and that existing digital data collections are stored, integrated and reused in meaningful ways. For this reason, this final chapter offers a different perspective on the study of drug trajectories. It presents a digital platform, called Time Capsule<sup>558</sup>, that was created with the explicit **purpose to offer researchers in the history of pharmacy an 'easy point of**

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<sup>557</sup> An abridged version of this chapter, co-authored by Kalliopi Zervanou, Marijn Koolen, Peter van den Hooff, Frans Wiering, Wouter Alink and Toine Pieters, was published in M. Hasanuzzaman e.a. (eds.), *Proceedings of the 4<sup>th</sup> International Workshop on Computational History (HistoInformatics 2017)*, Singapore, November 6, 2017 (CEUR-WS.org, online: [ceur-ws.org/vol-1992/paper\\_2.pdf](http://ceur-ws.org/vol-1992/paper_2.pdf)).

<sup>558</sup> <http://www.timecapsule.nu>. **The name of the project is a reference to Andy Warhol's project of the same name, where the artist collected everyday artefacts in cardboard boxes for decades, which reveal Warhol's mental world as physical 'time capsules'.**

**access' to explore, use and enrich** integrated collections of data, related to the history of early modern pharmacy.

Historical research requires analysis of disparate and incomplete data, where the 'building blocks' for creating a narrative are usually scattered. The researcher aims beyond the most obviously relevant sources, towards discovering hints and unexpected connections in seemingly unrelated documents. For this reason, this chapter argues that for historians to profit from the full potential of information technology applications in their research, three general challenges should be addressed:

- **Access:** relevant information is scattered across digital sources with limited metadata and content information. The challenge is to enrich semantic metadata and integrate sources in a way that fits historical research methodology.
- **Presentation:** close reading of large and semantically interrelated digital data is not only constrained by the manual effort that is required from users, but close reading may also obfuscate larger trends and patterns in such complex data. The challenge is to establish the right form of distant reading that aggregates and summarizes large digital material in a meaningful and relevant way.
- **Validation:** digital information and digital research methods have accentuated the need for transparency. The challenge is to establish methods for tracing and validating the research process and the arguments and claims that are based on it.

This chapter attempts to address these three challenges for digital historical research in a case study: an exploration of the trajectories of a particular botanical drug component in the Netherlands, in the early modern period. The historical evidence that is needed to reconstruct these trajectories is hidden in large amounts of heterogeneous, dispersed and unrelated digital data, which were brought together in the historical research platform of the Time Capsule system. Because this approach diverges significantly from the approach of previous chapters, the use of the time Capsule system will be **followed step by step, from the user's** perspective. In that way, this case study illustrates how semantic integration of diverse historical data sources, into a single linked data knowledge structure, has practical applicability for historical research.

In Time Capsule, solutions have been implemented to address the challenges of information access, presentation and validation, that were outlined above. Time Capsule integrates a variety of botanical, linguistic, archaeological and historical data, in a single historical knowledge graph. In this way, semantic links re-contextualize initially scattered data, while

researchers are provided with a single access point for data querying and analysis through multiple, interdisciplinary collections. In addition, temporal and geographical visualizations present meaningful aggregates for researchers. Finally, system queries and results can be saved and shared in a *'time capsule'*, which allows users to retrace steps of the search process, to validate the usefulness of results, and to share these with other researchers.

This chapter is structured as follows. The first paragraph presents current approaches to issues related to metadata and semantic integration of heterogeneous data. The second paragraph provides an overview of **Time Capsule's** data sources and methodology, for **interrelating and enriching disparate data sources**. **Time Capsule's** functionalities are discussed in the third paragraph, from the user's perspective. This paragraph includes an extensive example, drawn from the history of pharmacy, of the reconstruction of a drug trajectory in the seventeenth and eighteenth centuries. Finally, the results of this type of research, the wider applicability of the Time Capsule system for other fields of research, and plans for future work are discussed in the conclusion.

## 6.1. Background and Related Work

Data integration is a common issue in database research, because of the challenges associated with reconciling disparate database schemas and semantics, so as to support comprehensive data querying. An obvious solution is the integration of all data in a single repository, the so-called 'in-advance approach' or 'data warehousing'<sup>559</sup>, but such static integration does not cater for updates in the original sources. More loose and dynamic approaches include database schemas mapping<sup>560</sup>, and the use of semantic knowledge resources and ontologies to address potential semantic conflicts.<sup>561</sup> For cultural heritage databases, different metadata

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<sup>559</sup> J. Widom, "Integrating Heterogeneous Databases: Lazy or Eager?", *ACM Computing Surveys*, 28A: 4 (1996).

<sup>560</sup> C. Batini, M. Lenzerini and S.B. Navathe, "A Comparative Analysis of Methodologies for Database Schema Integration", *ACM Computing Surveys*, 18: 4 (1986) 323-364; C. Parent and S. Spaccapietra, "Issues and Approaches of Database Integration", *Communications of the ACM*, 41: 5 (1998) 166-178.

<sup>561</sup> J.A. Blake and C.J. Bult, "Beyond the Data Deluge: Data Integration and Bio-Ontologies", *Journal of Biomedical Informatics*, 39: 3 (2006) 314-320; V. Kashyap and A. Sheth, "Semantics-Based Information Brokering: A Step towards Realizing the Infocosm", in: N.R. Adam, B.K. Bhargava and Y. Yesha (eds.), *Proceedings of the Third International Conference on Information and Knowledge Management* (New York: ACM

standards are currently applied, both within and across different institutions. For example, bibliographic data is generally described using the MARC21 standard<sup>562</sup>, while archival data is described by EAD.<sup>563</sup> There is an ongoing effort for standardization and integration of data formats and data sources through standard data models, such as CIDOC-CRM<sup>564</sup> and TEI.<sup>565</sup>

Attempts for integration of diverse metadata schemas include mappings across schemas<sup>566</sup>; mappings of metadata to ontologies, either ad-hoc manually developed ontologies<sup>567</sup>, or cultural heritage standard ontologies, such as CIDOC-CRM<sup>568</sup>; data conversion to a recommended metadata schema, such as SKOS<sup>569</sup>; or conversion to a common data model, such as the Europeana Data Model.<sup>570</sup> However, metadata typically consists of bibliographic descriptions (e.g. author/creator, title), or physical descriptions (e.g. size, shape, material). Very often, metadata is related to the actual data semantics and content (e.g. persons or events mentioned), or metadata is missing, or it is inconsistent in the amount of detail provided. Thus, it is of limited use for non-curator experts to find

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1994) 363-370; E. Mena e.a., "OBSERVER: An Approach for Query Processing in Global Information Systems Based on Interoperation across Pre-Existing Ontologies", *Distributed and Parallel Databases*, 8:2 (2000) 223-271; G. Wiederhold, "Mediators in the Architecture of Future Information Systems", *Computer*, 25:3 (1992) 38-49. The use of ontologies has also become a common practice in botany, although not yet with a focus on history: R.L. Walls e.a., "Ontologies as Integrative Tools for Plant Science", *American Journal of Botany*, 99:8 (2012) 1263-1275.

<sup>562</sup> Library of Congress, MARC standards (2010), <http://www.loc.gov/marc/index.html>.

<sup>563</sup> Library of Congress, Encoded Archival Description (EAD), version 2002 (2002), <http://www.loc.gov/ead/>.

<sup>564</sup> M. Doerr, "The CIDOC Conceptual Reference Module: An Ontological Approach to Semantic Interoperability of Metadata", *AI Magazine*, 24:3 (2003) 75-92.

<sup>565</sup> TEI Consortium, TEI P5: Guidelines for Electronic Text Encoding and Interchange, version 2.7.0 (September 16, 2014), <http://www.tei-c.org/Guidelines/P5/>.

<sup>566</sup> L. Bountouri and M. Gergatsoulis, "Inter-Operability between Archival and Bibliographic Metadata: An EAD to MODS Crosswalk", *Journal of Library Metadata*, 9:1/2 (2009) 98-133.

<sup>567</sup> S.-H. Liao, H.-C. Huang and Y.-N. Chen, "A Semantic Web Approach to Heterogeneous Metadata Integration", in: J.-S. Pan, S.-M. Chen and N.T. Nguyen (eds.), *Computational Collective Intelligence: Technologies and Applications*. Lecture Notes in Artificial Intelligence 6421 (Berlin and Heidelberg: Springer-Verlag 2010) 205-214.

<sup>568</sup> I. Lourdi, C. Papatheodorou and M. Doerr, "Semantic Integration of Collection Description: Combining CIDOC/CRM and Dublin Core Collections Application Profile", *D-Lib Magazine*, 15: 7/8 (2009).

<sup>569</sup> A. Miles and J.R. Pérez-Agüera, "SKOS: Simple Knowledge Organisation for the Web", *Cataloging & Classification Quarterly*, 43:3/4 (2007) 69-83.

<sup>570</sup> Europeana Network Association, Europeana Data Model – Mapping Guidelines, version 2.3 (2016), <http://pro.europeana.eu/page/edm-documentation>.



the required information. Approaches that address such shortcomings in metadata include substitution of the diverse metadata structures with automatic indexing<sup>571</sup>, and enrichment of existing metadata with automatically acquired terms and relationships.<sup>572</sup>

Another important challenge lies in data integration for access beyond warehouses. To address such a challenge requires an approach that allows integration and use of disparate data on the Web. Linked Data was developed as a response to this challenge.<sup>573</sup> It proposes the use of RDF (Resource Description Framework), a general-purpose metadata language for representing information on the Web<sup>574</sup>, which is often combined with a formal ontology specification in OWL (Web Ontology Language), a language built on top of RDF that is designed to represent complex knowledge about concepts, things and relationships between things.<sup>575</sup> RDF and OWL provide a flexible way to describe abstract concepts and things in the form of 'RDF triples', which consist of a subject, an object and a predicate. The subject and object refer to things and the predicate specifies the relationship between them, thus making explicit the relationships among concepts and things, or things and their properties. For example, a botanical remedy (i.e. the subject) is referred to (**'isReferredTo', i.e. the predicate**) in a certain medical book (the object); and it is derived from (**'isDerivedFrom', another predicate**) a certain plant species (another object). In this way, the linked data approach manages both to integrate data sources, and to support data access on the Web, beyond a single data repository.

A detailed discussion on using linked data for cultural heritage is provided by Hyvönen.<sup>576</sup> An example of implementing content

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<sup>571</sup> M. Koolen e.a., "Unified Access to Heterogeneous Data in Cultural Heritage", in: D. Evans, S. Furui, C. Soulé-Dupuy (eds.), *Computer-Assisted Information Retrieval (Recherche d'Information et ses Applications): RIAO 2007* (Pittsburgh: Carnegie Mellon University 2007) 108-122.

<sup>572</sup> K. Zervanou e.a., "Enrichment and Structuring of Archival Description Metadata", in: K. Zervanou and P. Lendvai (eds.), *Proceedings of the 5<sup>th</sup> ACL-HLT Workshop on Language Technology for Cultural Heritage, Social Sciences, and Humanities* (Portland: s.n. 2011) 44-53.

<sup>573</sup> T. Heath and C. Bizer, *Linked Data: Evolving the Web into a Global Data Space* ([San Rafael]: Morgan & Claypool Publishers 2011).

<sup>574</sup> W3C, RDF Schema 1.1, W3C Recommendation (February 25, 2014), <http://www.w3.org/TR/2014/REC-rdf-schema-20140225/>.

<sup>575</sup> W3C, OWL 2 Web Ontology Language Document Overview (Second Edition), W3C Recommendation (December 11, 2012), <http://www.w3.org/TR/2012/REC-owl2-overview-20121211/>.

<sup>576</sup> E. Hyvönen, "Semantic Portals for Cultural Heritage", in: S. Staab and R. Studer (eds.), *Handbook on Ontologies* (Berlin and Heidelberg: Springer 2009) 757-778.

harmonization for a set of diverse resources has been investigated, for example, for a public online portal to cultural resources in Finland<sup>577</sup> and in the Europeana cultural multimedia platform.<sup>578</sup> Once data is structured according to linked data standards, it can be searched and queried semantically. Although this can be done with general-purpose tools (as suggested e.g. by Hogan et al.<sup>579</sup>), domain-specific tools may be preferred to take full and direct advantage of linked data semantic annotations, as in the Time Capsule approach.

## 6.2. Data Integration for the History of Drug Trajectories

In this paragraph, the technological approach to cultural heritage data as Linked Data will be put to practical use. The data sources that were assembled and integrated in the Time Capsule project are introduced for their **contribution to Time Capsule's knowledge structure**. Then, the infrastructure of the Time Capsule platform is explained, with special emphasis on the multi-disciplinarity and the historical nature of the domain that was addressed in designing it.

### *Time Capsule: Data Sources*

In Time Capsule, a variety of pharmaceutical, botanical and linguistic knowledge resources have been semantically interconnected. Originally, these data sources existed primarily in the form of structured or semi-structured data. An overview of these data sources is given in Table 11. In the Time Capsule system, these data sources are also connected to relevant external linked data sources, such as DBpedia<sup>580</sup>. In principle, these could be extended with any other available linked data source.

The *Pharmaceutical-Historical Thesaurus*, developed by the Foundation for Pharmaceutical Heritage (*Stichting Farmaceutisch Erfgoed*), covers terminology related to botanical drug components, such as names and spelling variants of the various botanical remedies, the plants of origin and the parts of the plant that were used in medical practice in the past (like seeds, roots and barks). The information is

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<sup>577</sup> E. Makela, E. Hyvönen and T. Ruotsalo, "How to Deal with Massively Heterogeneous Cultural Heritage Data: Lessons Learned in CultureSampo", *Semantic Web*, 3: 1 (2012) 85-109.

<sup>578</sup> B. Haslhofer e.a., "Augmenting Europeana Content with Linked Data Resources", in: A. Paschke, N. Henze and T. Pellegrini (eds.), *I-SEMANTICS 2010: Proceedings of the 6<sup>th</sup> International Conference on Semantic Systems* ([New York]: ACM 2010).

<sup>579</sup> A. Hogan e.a., "Searching and Browsing Linked Data with SWSE: The Semantic Web Search Engine", *Journal of Web Semantics*, 9: 4 (2011) 365-401.

<sup>580</sup> S. Auer e.a., "DBpedia: A Nucleus for a Web of Open Data", in: K. Aberer e.a. (eds.), *The Semantic Web. Lecture Notes in Computer Science 4825* (Heidelberg: Springer-Verlag 2007) 722-735.

derived from pharmacopoeias: official pharmaceutical handbooks, that apothecaries on a municipal level were obliged to use. Nearly one hundred editions of pharmacopoeias were issued between 1636, when the first official edition was published for Amsterdam, and 1795, which was the final edition before the publication of the first national pharmacopoeia (see the Appendix for a full list of editions). These manuals dictated to apothecaries which crude drug components (*simplicia*) they were supposed to have in stock, and the basic medicinal recipes they were supposed to prepare with these. The thesaurus contains the lists of required botanical drug components from ten editions of pharmacopoeias. **It also contains documentation information, such as the curator's name** and various notes about the entries. It was developed with a proprietary thesaurus management tool<sup>581</sup>, which internally stores the data as an SQLite database.

The *Economic Botany Database* from Naturalis Biodiversity Center encodes botanical information about approximately eight thousand plants in MS Excel format. The principal objective of the database lies in classifying information about uses (e.g. as dye, remedy, or food) of a given plant species. The data also includes botanical taxonomic information, geographical origin and common names (English, Dutch and other), including descriptions of the physical specimen that is in the collection of Naturalis.

The data from *Brahms*, the collection management system of Naturalis Biodiversity Center, consists of the three former herbaria of Wageningen, Leiden and Utrecht University, which amount to 2.8 million records of plant specimens. In addition to botanical names for plant species, family and genus, the National Herbarium also provides information about a **specimen's geographical origin, such as longitude, latitude and elevation**. In Time Capsule's linked data structure, the National Herbarium provides the canonical, modern botanical name and taxonomic classification for plant species and the basis upon which other plant mentions, in other data sources, were resolved.

The *Snippendaalcatalogus* from the Hortus Botanicus of Amsterdam encodes botanical information about the botanical garden in Amsterdam in 1646, when it was supervised by Johannes Snippendaal (1616-1670). **The digital catalogue contains both the plant names from Snippendaal's physical catalogue from 1646, plus the botanical additions that were made**

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<sup>581</sup> MultiTes Pro, <http://www.multites.com/productspro.htm>.

on top of it in later centuries.<sup>582</sup> This data source provides crucial historical botanical nomenclature and taxonomic information and mappings of **Snippendaal's pre-Linnaean names**, but also obsolete scientific names from the nineteenth century, and current scientific names.

The *Boekhouder-Generaal Batavia*<sup>583</sup> is a MySQL database that was developed at Huygens ING. It contains information about the trade of commodities, as it can be found in the yearly accounting books (*Boekhouder-Generaal*) of the Dutch East India Company. The database contains records for most years of the eighteenth century.

*RADAR*<sup>584</sup> is a relational archaeo-botanical database in MS Access format, developed at the Cultural Heritage Agency (*Rijksdienst voor het Cultureel Erfgoed*), with information about botanical macro-remains, that were collected during archaeological excavations in the Netherlands.

Finally, the *Chronological Dictionary*<sup>585</sup>, developed at the Meertens Institute, contains information about lemmas in the Dutch language: their meaning, semantic class (based on a set of predefined, hierarchically structured concepts), etymology, chronology and references to their first written appearance in Dutch.

### *Time Capsule: Domain Ontology*

The Time Capsule system adopts a linked data approach for data source integration. Solving the disparities that exist among data sets is of enormous importance before they can be integrated, because, according to Huggett,

data are theory-laden and relationships are constantly changing **depending on context [...] data are created by specific people**, under specific conditions, for specific purposes, all of which inevitably leads to data diversity.<sup>586</sup>

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<sup>582</sup> Snippendaal, the catalogue and the botanical garden have been studied in detail in F. Bouman, B. Baljet and E. Zevenhuizen (eds.), *Kruidenier aan de Amstel: De Amsterdamse Hortus volgens Johannes Snippendaal (1646)* (Amsterdam: Amsterdam University Press 2007).

<sup>583</sup> <http://resources.huygens.knaw.nl/boekhoudergeneraalbatavia>.

<sup>584</sup> H. van Haaster and O. Brinkkemper, "RADAR, a Relational Archaeobotanical Database for Advanced Research", *Vegetation History and Archaeobotany*, 4:2 (1995) 117-125.

<sup>585</sup> N. van der Sijs, *Chronologisch Woordenboek: De Ouderdom en Herkomst van onze Woorden en Betekenissen* (Amsterdam and Antwerpen: Uitgeverij I.J. Veer 2001), in the DBNL.

<sup>586</sup> J. Huggett, "Promise and Paradox: Accessing Open Data in Archaeology", in: C. Mills, M. Pidd and E. Ward (eds.), *Proceedings of the Digital Humanities Congress 2012* (Sheffield: HRI Online Publications 2012).

For this reason, a particular challenge in this integration process lies in re-purposing and establishing explicit semantic relationships among historical data in various digital formats, created for a variety of purposes and within the context of different research disciplines, such as linguistics, pharmacy, medicine, (ethno)botany and history.

In the Time Capsule approach, a domain ontology is central: one that formally defines a set of concepts (such as drug components, plants, or reference sources) and their respective properties and relationships. The domain ontology that is used as the backbone for the Time Capsule system is the *Pharmaceutical-Historical Thesaurus*, because this data set contains the most essential entities for research in the history of pharmacy: historical variants of names for plants and drug components. The individual data sources are then converted into RDF, and key concepts are mapped to our domain ontology (Figure 30). In the conversion process, ambiguities and spelling inconsistencies are semi-automatically identified; certain non-relevant information is filtered out (e.g. curator information); and the data with explicit relations among synonyms, term language, explicit temporal information and geographical coordinates information is enriched. These latter relationships are semi-automatically acquired from geographical databases, such as GeoNames<sup>587</sup>, or historical geographical resources, such as the list of Dutch East India company trading posts.<sup>588</sup>

The Time Capsule domain ontology formally defines the concepts, their properties, and interrelations of the notions salient to our case study of drug trajectories. Nevertheless, it has been designed in such a way, that it should be extensible and applicable to other domains, that are related to the global exchange of knowledge and goods in the past. Currently, the principal concepts in the ontology revolve around three notions: *Naturalia*, or natural entities, preferably on a species level, such as plants or animals; *Drug Components*, or substances derived from naturalia, such as plant parts and their properties; and *Reference Sources*, or sources of information for data, their properties and relationships as they are stated in data instances; which originate from text documents or physical specimen references.

Apart from designing the ontology to be extensible and re-usable as much as possible, based on the input from experts on history, biology and botany, three particular challenges had to be addressed, that relate to **Time Capsule's domain: (i) variation, (ii) ambiguity and, (iii) scientific**

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<sup>587</sup> <http://www.geonames.org/>.

<sup>588</sup> <https://www.vocsite.nl/>.

Data set	Original format	Size (RDF triples)
Pharmaceutical-Historical Thesaurus	SQLite	72.339
Economic Botany Database	MS Excel	174.663
Brahms	Darwin Core	44.348.662
Snippendaalcatalogus	proprietary database	38.048
Boekhouder-Generaal Batavia	MySQL	9.468.155
RADAR	MS Access	2.494.117
Chronological Dictionary	CSV	19.296

Table 11. Time Capsule's data sources.

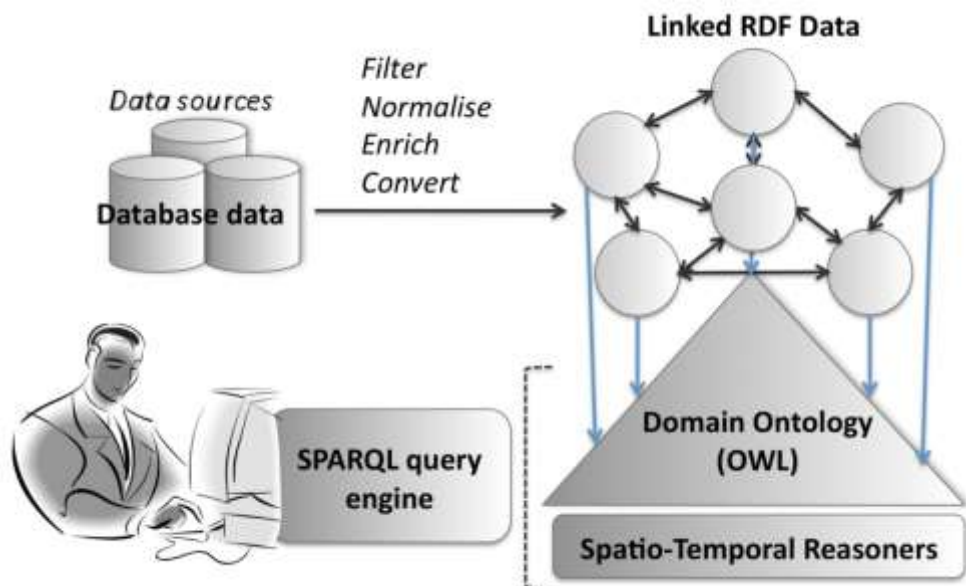


Figure 30. Overview of Time Capsule's digital architecture.

evolution of terms. First, *variation* is a common phenomenon in scientific terminology (even more so in historical text sources), where spelling conventions are still uncommon and the scientific nomenclature is not yet standardised. Figure 31 provides an example of names for substances that can be found in **Time Capsule's data** sources and that may, or may not, refer to the same drug component. Secondly, *ambiguity* is related to variation and is exacerbated by under-specification, vagueness and uncertainty in historical sources. For example, a reference to '*Radix Chelidonii*' or **simply** '*Chelidonii*' does not clarify whether the remedy originates from the plant that was called *Chelidonium major* (greater celandine, *Chelidonium majus* L.) or *Chelidonium minor* (lesser celandine, *Ficaria verna* Huds.) in the past. It might also be the case that a drug component is associated, under a single name, to different plants or plant parts (e.g. root or bark), in different reference sources. Finally, *scientific evolution* of concepts is a particular challenge, that is mostly related to the domain of the history of science. The evolution of human knowledge and science, from e.g. the early modern period to modern times, inherently affects both the concepts and the terminology that is used, as well as the organisation and classification of knowledge itself. In designing the knowledge structure, therefore, the system had to account for multiple '**versions**' of knowledge about the world at different moments in time.

Figure 32 illustrates Time Capsule's approach to the challenge of scientific evolution of terms. The concepts that are associated with *Naturalia* (in dark red), either *Vegetabilia*, *Animalia* or *Mineralia*, originate from the classification of knowledge in the early modern period, whereas the taxonomy of *Kingdom*, *Order*, all the way down to *Species*, is based on modern botanical classification (in green). In the Time Capsule ontology, both knowledge versions are modelled in the same knowledge structure and it is attempted to provide mappings and links, where possible, across time, so that the historian or other user can access all relevant data for longer time frames.

In order to address variation and ambiguity, an ontology structure has been adopted, as illustrated in Figure 33. This structure has two important benefits: (i) it separates statements about a given concept in a reference source from the concept instance itself; and (ii) it does not resolve ambiguity, but rather follows a fuzzy classification, which allows an instance of e.g. a drug component to be associated to multiple plants of origin. In this way, the Time Capsule system attempts to stay faithful to any information stated in a reference source, while the inherent bias in the knowledge modelling of the system is reduced as much as possible, **and ambiguity and variation are left open to a researcher's interpretation.**

Artemisia absinthium  
Artemisia absynthium  
Absinthium incanum, foliis compositis latiuscule multidis  
Gemeen alsem

Figure 31. Example of name variants for remedies in Time Capsule, possibly derived from absinthe wormwood (*Artemisia absinthium*).

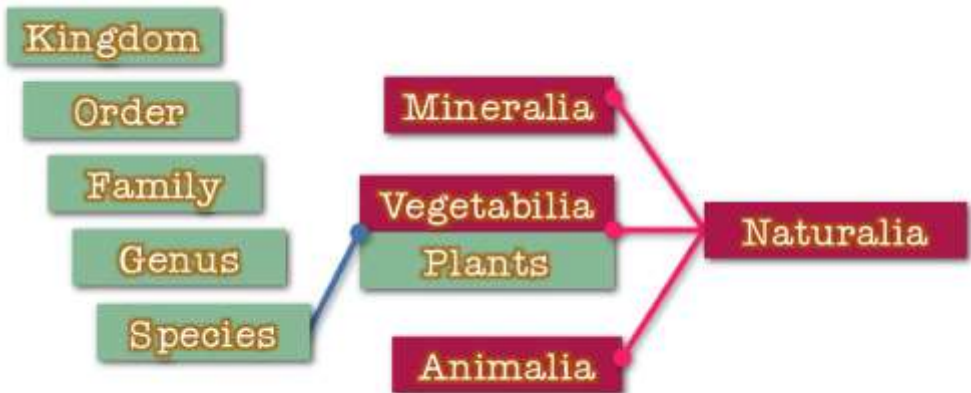


Figure 32. Historical concept mappings in the Time Capsule ontology.



In the example in Figure 33, the instance of a plant concept (*Dictamnus albus* L.), relates to the mention *Dictamnus albus* L. in the *Snippendaalcatalogus* and the *National Herbarium* references, via the property 'hasVariant'. According to the mention in the *Snippendaalcatalogus*, this plant species, *Dictamnus albus* L., 'isReportedToProduce' two remedies, one drug component originating from the root of the plant, *Radix Fraxinella*, and one originating from the bark, *Cortex Fraxini*. In this example, we can also see that there is a physical specimen of the plant that is mentioned in the *National Herbarium*: a specimen originating from the University of Wageningen collection, with ID WAG 1255711 (and respective geographical coordinates of the specimen origin, which are not included in Figure 33). In this way, similar data in heterogeneous collections can be correlated in a single knowledge graph.

### 6.3. Application Domain and Case Study

The previous paragraph discussed the technological background of the Time Capsule system. In this paragraph, the functionalities of this system are explored by means of an extensive historical case study of a particular drug component, asafoetida.

#### *Early Modern Drug Trajectories of Asafoetida*

The domain of application for this work relates to research in the history of pharmacy. In particular, the focus is on cultural heritage data sources that reveal (parts of) trajectories of botanical drug components in the Low Countries, from the sixteenth century, when natural drug components from the East and West Indies started penetrating Europe, until the introduction of chemical and synthetic drugs, roughly in the mid-nineteenth century.

As has been discussed in the General Introduction, drug trajectories are the developmental processes of remedies in various domains, such as commerce, science or society. Trajectories in different domains can be studied synchronically, to trace the interconnections between them or between various remedies; or diachronically, to trace long-term patterns in the commodification of one or more remedies. Throughout this dissertation, the trajectories of an exotic substance like Peruvian bark, and the interrelations between this and other fever remedies on the one hand and the disease itself on the other, have been the central focus of attention: how is success or failure of new remedies shaped, and how does this process relate to networks of circulation for both knowledge and

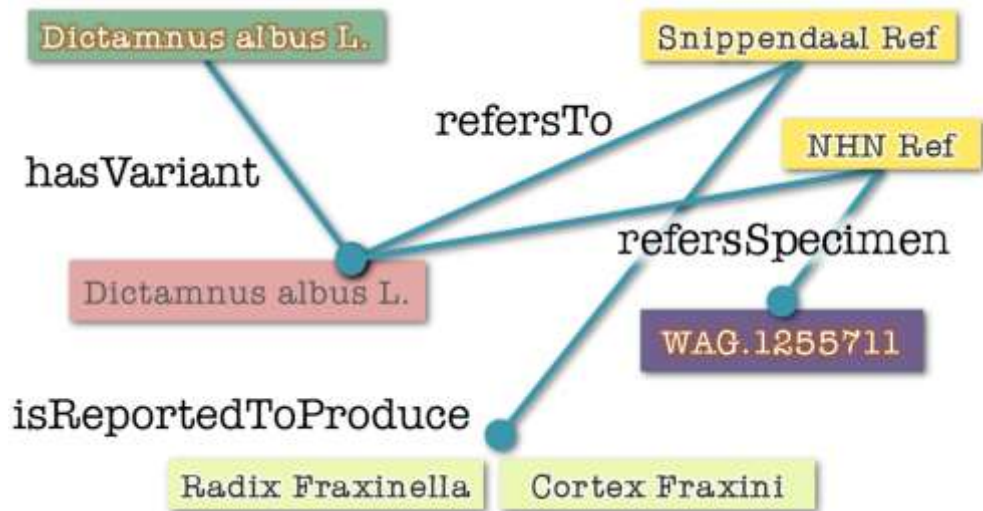


Figure 33. Example of a plant mention in various reference sources in Time Capsule. The connection of *Dictamnus albus* to both 'Radix Fraxinellae' (dittany root) and 'Cortex Fraxini' (bark of the ash tree) is botanically incorrect, but was found like this in the Snippendaalcatalogus.

commodities in the early modern Low Countries? In this chapter, this approach is extended with a methodological addition: can a digital platform significantly improve the quality of a historical narrative, by communicating with **a researcher's** pre-existing knowledge and insights, that are gathered by traditional methodology.

Time Capsule is precisely meant to contribute to these methodological issues, by providing researchers with the aggregated data that is required for new information and connections between data to surface. This is difficult for an individual researcher to produce by means of conventional historical research alone. Moreover, the Time Capsule system is aimed at assisting the researcher in analysing these vast amounts of data, by providing spatiotemporal visualizations, that give clues for a meaningful interpretation. In this way, existing historical narratives will be enriched.

In designing an interface and an online platform for information access, one should consider that the potential users may not be domain or system experts. It is often difficult for non-expert users to perform queries, either because they are unfamiliar with the required terminology, or with the available information and the underlying data model. Time **Capsule's** solution to this issue lies in providing two querying strategies in the Time Capsule research platform interface: one that supports *faceted exploratory search and browsing* of information by means of links, and keyword auto-completion suggestions; and one that supports the *creation of ad hoc queries*. The exploratory search mode is intended to engage a wider audience and reveal to both expert and non-expert users the content and structure of the underlying data. The user interface allows easy construction of ad hoc queries, by means of a user-friendly query wizard, which supports the creation of RDF SPARQL queries.<sup>589</sup>

To illustrate the usefulness and user-friendliness of the Time Capsule system, this section discusses an extensive example, where a researcher focuses on information for a drug component called *Asafoetida*, a resinous gum that was used in pharmacy from the sixteenth century onwards. The choice for *asafoetida* requires some explanation, as it has little to do with either fever or Peruvian bark, the entities that have been the focus of attention throughout this dissertation. *Asafoetida* was a gum, not a bark; it was derived from the East Indies, not the West Indies; it had been known since Antiquity, so was not an entirely new discovery in the Age of Exploration; and it had become known again, used and codified firmly by the sixteenth century, whereas Peruvian bark only became known in the second quarter of the seventeenth century. And yet, such a radically

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<sup>589</sup> E. Prud'hommeaux and A. Seaborne, SPARQL Query Language for RDF, W3C Recommendation (January 15, 2008), <https://www.w3.org/TR/rdf-sparql-query/>.

different choice for another remedy might reveal various interesting similarities and differences between asafoetida and Peruvian bark, which can again point to more general hypotheses about the success or failure of exotic substances on the medical market in Europe.

A brief historical introduction about asafoetida is required, in order to sketch the context in which any findings from the Time Capsule system might fit. The discussion of Time Capsule's **data sources in the previous** paragraph has made it clear that many kinds of information may be found in the system, but certainly not every angle will be possible to pursue further by using Time Capsule only. Sources from before the early modern period are scarcely available in the system still, as are medical textbooks, apart from pharmacopoeias. Asafoetida, however, was already known in Antiquity, and written testimony about the substance from ancient writers served as a basis for further inquiries in later centuries, as it did for so many other substances.

Asafoetida is a substance with both medical and culinary applications: it is still commonly used in Indian cuisine as well as in traditional medicine.<sup>590</sup> Its historical use in European medicine has scarcely received any attention from researchers, even though it was a staple drug in European medical practice from the sixteenth century onwards. The substance, which is derived from the plant *Ferula assa-foetida*<sup>591</sup>, was already mentioned by Dioscorides (first century A.D.), as a variant of the Mediterranean plant *silphium*, which is believed to have become extinct some decades after Dioscorides wrote his work.<sup>592</sup> According to Dioscorides, asafoetida was an alternative for *silphium*, because of its milder operations in the body:

One should know that the Cyrenaic [i.e. *silphium*], even if one tasted a tiny amount of it, causes the entire body to break out immediately in a sweat and that it has a very gentle smell, so that **the taster's mouth smells only briefly. The Median and Syrian [i.e. asafoetida] are decidedly weaker and their smell is rather foul.**<sup>593</sup>

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<sup>590</sup> Modern uses of asafoetida are discussed in M. Iranshahy and M. Iranshahy, "Traditional Uses, Phytochemistry and Pharmacology of Asafoetida (*Ferula assa-foetida* Oleo-Gum-Resin) – A Review", *Journal of Ethnopharmacology*, 134:1 (2011) 1-10.

<sup>591</sup> <http://www.theplantlist.org/tpl1.1/record/kew-2808328>, accessed on 01-03-2018.

<sup>592</sup> Fertig and Pfister, "Coffee, Mind and Body", 232-233.

<sup>593</sup> The entry on *silphium* is in Book III, Chapter 80 of Dioscorides, *De Materia Medica*, 217-218.

Asafoetida experienced a resurgence of European interest in the early modern period, mainly sparked by the work of the Portuguese physician and naturalist Garcia de Orta (c. 1501-1568) in Goa. Like Dioscorides, Orta noted the strong smell of asafoetida—which is why it was known as ‘devil’s dung’ in many European languages—and he furthermore described its effects in stomach conditions and as an aphrodisiac.<sup>594</sup> Orta’s work, and commentaries upon it, remained one of the most important sources about asafoetida in Europe until the turn of the eighteenth century.<sup>595</sup> The substance was codified in handbooks early on, and can be found, for instance, in the first edition of the herbal by Rembert Dodoens (1517-1585) from 1554.<sup>596</sup>

First-hand knowledge about asafoetida was scarce after Orta. However, it continued to be a topic of interest in global knowledge circulation, as exemplified, for instance, by a letter written in 1696 by EIC surgeon Samuel Browne in India, who sent asafoetida seeds to the London apothecary and naturalist James Petiver (c. 1665-1718).<sup>597</sup> Around the same time, asafoetida was also included in the medical handbooks of Pierre Pomet (1694), who maintained that it was used to some extent in medicine<sup>598</sup>, and Nicolas Lémercy (1698), according to whom asafoetida was used against all sorts of hysteria, and especially in veterinary medicine, for treating horses.<sup>599</sup> Only in 1712, however, was the first extensive description of asafoetida published, as part of the *Amoenitatum*

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<sup>594</sup> G. de Orta, *Colloquies on the Simples & Drugs of India*. Ed. and ann. by F.M. de Ficalho, transl., introd. and index by C. Markham (London: Henry Sotheran and Co. 1913) 40-52. Asafoetida is discussed in the seventh colloquy. See also I.G. Županov, “Drugs, Health, Bodies and Souls in the Tropics: Medical Experiments in Sixteenth-Century Portuguese India”, *Indian Economic Social History Review*, 39: 1 (2002) 1-43, there 8 and 19.

<sup>595</sup> Important commentaries were those by Carolus Clusius (1526-1609) and Jacobus Bontius (1592-1631): G. de Orta, *Aromatum, et Simplicium aliquot Medicamentorum apud Indos nascentium Historia: Nunc verò primùm Latina facta, & in Epitomen contracta à Carolo Clusio Atrebate* (Antverpiae: Ex officina Christophori Plantini 1567) 21-29; J. Bontius, *De Medicina Indorum. Lib. IV. 1. Notae in Garçiam ab Orta. 2. De Diaeta Sanorum. 3. Meth. Medendi Indica. 4. Observationes e Cadaveribus* (Lugduni Batav.: Apud Franciscum Hackium 1642) 1-2.

<sup>596</sup> R. Dodoens, *Crüijdeboeck* (Tantwerpen: by Jan vander Loe 1554) 336-337.

<sup>597</sup> Winterbottom, *Hybrid Knowledge*, 122 and 252n70.

<sup>598</sup> Pomet, *Histoire Generale des Drogues*, 254-255.

<sup>599</sup> Lémercy, *Dictionnaire*, 57. This is a reference to the third edition, from 1716. Asafoetida was probably already in the first edition of this work, which was published in 1698. The only digitized copy of this first edition, however, from the University of Toronto Library, does not have a title page, but is described as the first edition in the library catalogue. See <https://archive.org/details/traituniversel00lm>. Asafoetida is on p. 73.

*Exoticarum* by the German naturalist Engelbert Kaempfer (1651-1716), which was based on Kaempfer's journeys through East Asia (1683-1693).<sup>600</sup> New knowledge about asafoetida poured into Europe still at the end of the eighteenth century, as exemplified by the exchange of information between the Scottish physicians Matthew Guthrie (1743-1807) in Russia and John Hope (1725-1786) in Edinburgh.<sup>601</sup>

### ***The Time Capsule System: Exploring Digital Data about Devil's Dung***

This brief introduction into the history of asafoetida is an important asset for an analysis of the substance in aggregated digital collections. A lot of the information presented so far concerns core elements of the history of **asafoetida, yet these cannot be retraced in Time Capsule's data sources**, simply because these sources were created and structured for different purposes than the reconstruction of drug trajectories. Knowledge exchange in letters, and dissemination of knowledge in printed works, are not at the heart of most data sources in the Time Capsule system, but they are common starting points in many historical narratives about exotic remedies, as has been discussed at length in previous chapters. Now, the exciting next step is to see in which ways the Time Capsule system can complement the embryonic narrative, which a quick survey of textual sources has made it possible to take shape.

The first and most obvious way of tracing information about Asafoetida in the Time Capsule system is by searching for it in the 'Drug Components' tab (see Figure 34). The 'Drug Components tab' is part of the faceted search interface that was discussed in the previous section. It allows users to browse through the Time Capsule platform for, in this case, all system knowledge that is related to drug components. With the auto-complete function in the search text box (on the left-hand side of the screen, indicated by the magnifying glass), several spelling variants for this drug component pop up (i.e. the list with red bullets below the search text box in Figure 34). Clicking on any of them will show the information that can be found in the reference sources for this drug component: six different spelling variants; four *Reference sources* that mention this substance; a map that highlights the publication location of the *References*; and a list with a total of 25 references for this drug component, which are all derived from one data set: the *Pharmaceutical-Historical Thesaurus*.

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<sup>600</sup> E. Kaempfer, *Amoenitatum Exoticarum Politico-Physico-Medicarum Fasciculi V, Quibus continentur Variæ Relationes, Observationes & Descriptiones Rerum Persicarum & Ulterioris Asiae* (Lemgoviae: Typis & Impensis Henrici Wilhelmi Meyeri 1712) 535-553.

<sup>601</sup> Romaniello, "True Rhubarb?", 20-21; J. Hope, "Description of a Plant yielding Asa foetida", *Philosophical Transactions*, 75 (1785) V, 36-39.

At this stage, no information is shown in the 'Produced By Plant' header in Figure 34, which means that there is not any explicit information, i.e. relationship, in the knowledge graph about the plant species from which the drug component asafetida is derived. However, the system provides other options to proceed. As illustrated in Figure 35, the query 'asafetida' also gives results in the 'Naturalia' tab, which is another part of the faceted search functionality in the Time Capsule platform (like the 'Drug Components' tab), and which allows users to browse and search for information that is related to all plant species information in the system. In the 'Naturalia' tab section, querying for 'asafetida' reveals that this is also a spelling variant for the plant from which the drug component with the same name derives: *Ferula assafoetida*. The result for this query shows several spelling variants for the plant, which are similar, but not identical, to the spelling variants for the drug component asafetida. Unsurprisingly, there are not any drug components for this plant mentioned under the 'Produces Drug Components' header: we already saw that the explicit relationship/link between this plant and its respective drug component is absent.

However, we discover additional information next to the Name Variants, namely a list of reported Uses. These data, which originate from the *Economic Botany Database*, provide a number of possible contexts in which we might encounter asafetida. Apart from its use in medicine, asafetida is used in food, in spiritual cures and as an essential oil. Moreover, above the Name Variants we can find a text description about the plant genus and a photo, both resulting from linking Time Capsule's data to DBPedia's linked open data. DBPedia informs us that the asafetida plant genus originates from Central Asia. This makes the historical use of asafetida in European pharmacy all the more interesting, because it would have required an intercontinental supply chain.

The information from DBPedia is corroborated by the integrated data in Time Capsule, as visualized in the map on the same page with results, illustrated in Figure 36. Apart from some expected locations in Europe, and one undefined pointer in the Dutch Caribbean, we also see one location pointer in India, where we would expect a marker for the plant's natural distribution, i.e. a location of the plant's origin that is mentioned in botanical specimen data.

At this stage, the information that was gathered by traditional and digital means lead our intuition to explore the Asian connection in more detail—the one that we came across in several of the data collections in

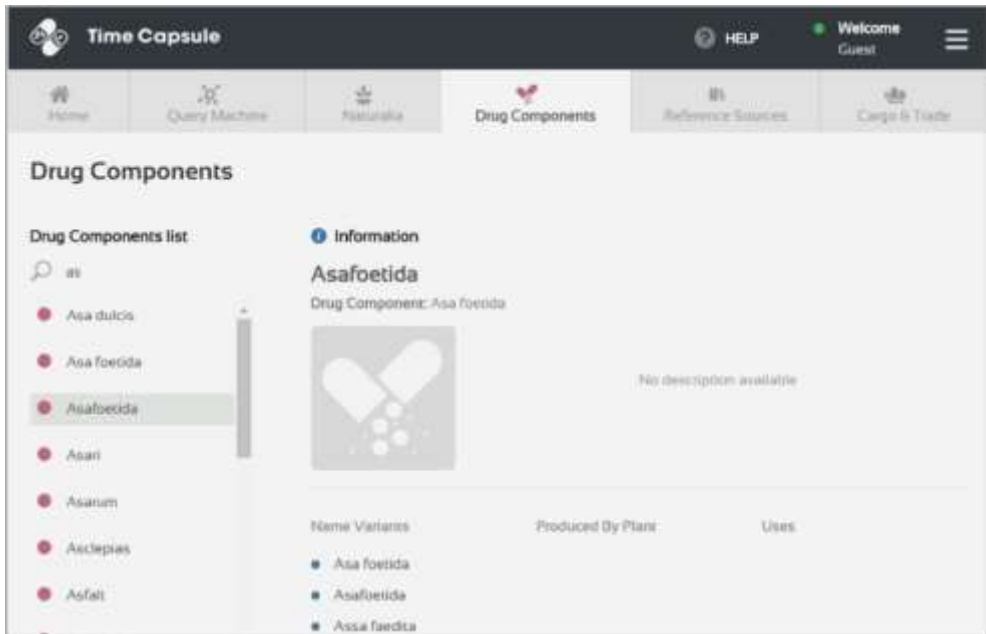


Figure 34. Screenshot of results for *asafoetida* in the 'Drug components' tab.

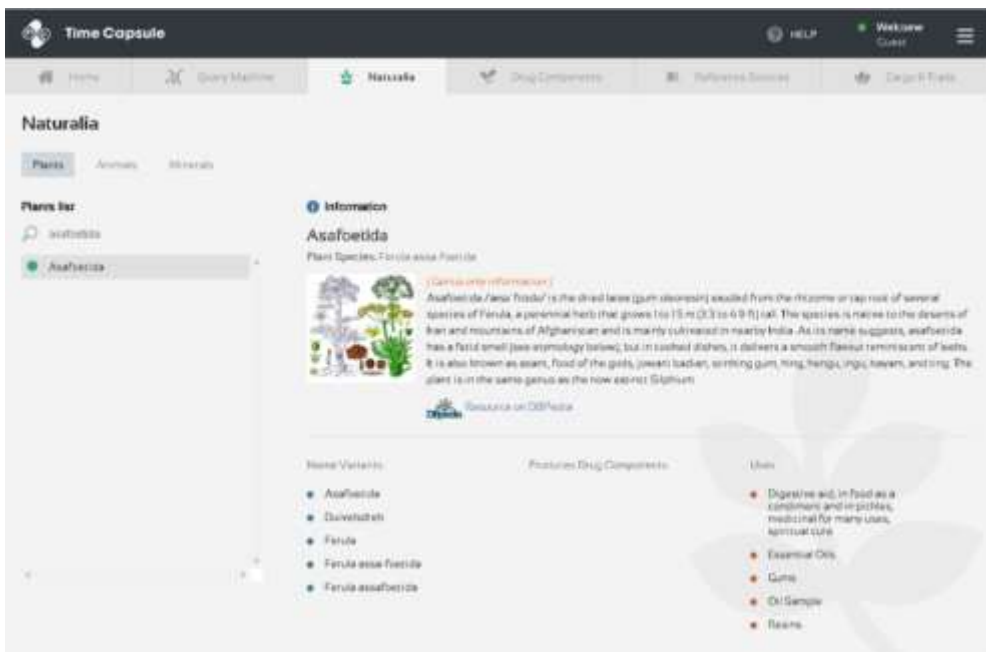


Figure 35. Screenshot of results for *asafoetida* in the 'Naturalia' tab.



the Time Capsule system—and investigate whether we can discover any additional information about the complex commercial trajectory of asafoetida in the past. After all, the quick survey of primary sources and secondary literature at the start of this section did imply the existence of a long supply chain, but gave little information about actual trade patterns. Therefore, we can use the query ‘asafoetida’ once more to browse in the ‘Cargo & Trade’ tab. Once again, this is part of the faceted search options in the Time Capsule platform, which allows users to browse and search for information related to cargo, that was carried by ships of the Dutch East India Company in the eighteenth century. In this case, we want to investigate whether Asafoetida is found in any of these cargo records, as a trade commodity.

The results are illustrated in Figure 37. The green leaf next to the cargo icon in the search bar indicates that we are indeed dealing with a vegetable substance, namely a cargo item that has been classified as a natural, vegetable substance. This leaf symbol is the result of the integrating and enrichment process that the *Boekhouder-Generaal Batavia* data set underwent before being included in the Time Capsule infrastructure. This reindexing of the data in the *Boekhouder-Generaal Batavia* makes it possible to recognize and filter out cargo items of vegetable origin.<sup>602</sup> The query result shows 61 journeys where asafoetida was part of the cargo. We know this result to be somewhat inaccurate, because journeys are sometimes listed more than once, if more than one location of departure or arrival is mentioned in the original data (e.g. a journey departing from Kharg in Persia is listed twice, once departing from ‘Kharg’ and once from ‘Persia’). **These results show that most of the ships that carried asafoetida followed one of two routes: either within the South-East Asian region, where only the place of destination was a Dutch settlement, or between South-East Asia and the Dutch Republic. In other words, the results from the ‘Cargo & trade’ tab provide promising data for further analysis of asafoetida’s main supply routes. The substance was apparently purchased in a region that was not controlled by the Dutch (India); then shipped to a Dutch emporium (usually Sri Lanka, or Batavia); and then shipped to the Dutch Republic.** Details of one of these 61 journeys, departing from the Coromandel coast in India to Jaffna on Sri Lanka on August 31, 1767, reveal that this is an example of the South-East Asian trade route described above, as can be seen in Figure 38. The ship carried, among other things, a modest amount of 167 pounds of

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<sup>602</sup> Other materials were also classified in this reindexing process, but currently, these cannot be filtered out in the same way as vegetable substances.

## New Drugs for the Dutch Republic



Figure 36. Screenshot of the map with geolocations for the plant species *asafoetida*.

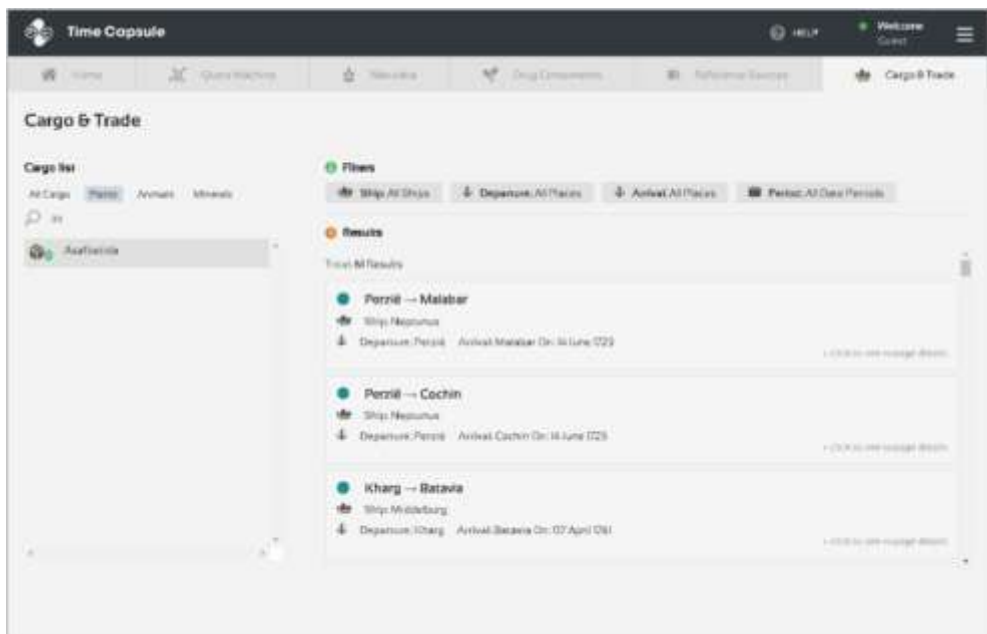


Figure 37. Screenshot of results for *asafoetida* in the 'Cargo & Trade' tab.

**asafoetida: 'modest', because other ships carried up to thousands of pounds of this substance.**

We now know that asafoetida was shipped regularly from South-East Asia to the Dutch Republic by the Dutch East India Company, in substantial quantities, over the course of the eighteenth century. This observation is significant when compared to what the common printed sources have to say about the supply route of asafoetida. Pomet maintained in 1694 that the French supply of asafoetida went mainly through London.<sup>603</sup> Earlier still, Bontius related how the Dutch East India Company kept large amounts of asafoetida in its Asian warehouses, which was mainly sold to the inhabitants of Java for money or goods.<sup>604</sup> But in the eighteenth century, as Time Capsule has shown, the Dutch became an important supplier of asafoetida for the European market as well. We can now try to determine to what extent there was demand for this **substance. This will be done not by browsing, but by using the 'Query Machine' (see Figure 39).** The 'Query Machine' implements, on the Time Capsule interface, the part where the user may form ad hoc RDF SPARQL queries, using a user-friendly query wizard.

The Query Machine allows the user to build a custom query, in this case: **'Show me All Reference Source(s) that mention Asafoetida'**. The system gives six results, all of them from pharmacopoeia references, among which are two editions of the pharmacopoeia of Amsterdam (those of 1636 and 1660). We know this result to be incomplete, because we know from our domain expertise that asafoetida is mentioned in virtually every early modern pharmacopoeia. For this reason, we would expect at least ten pharmacopoeias to surface in the results, since the *Pharmaceutical-Historical Thesaurus* contains data from ten editions. However, although the results are not as precise as we thought, they still provide enough input to pursue our research further: the results indicate that apothecaries were supposed to use asafoetida in Amsterdam in the mid-seventeenth century already. Because we know that the pharmacopoeia of Amsterdam was the official guide in many cities, our expectation is supported that both supply and demand were substantial.

In this example, we jumped from one tab to another, using the results acquired at each step as input to extend our search strategy and

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<sup>603</sup> Pomet, *Histoire Generale des Drogues*, 255.

<sup>604</sup> Bontius, *De Medicina Indorum*, 8. The story can still be found almost a century later, in the second edition of a compilation of translated works on exotic medicine: J. Bontius, W. Piso and G. Markgraf, *Oost- en West-Indische Warande. Tweede Druk (t'Amsterdam: By Jacobus Hayman 1734)* 123-125.



knowledge about our main subject. In the process, we stumbled on deficiencies that inevitably show up in the data, but the search process never reached a dead end. Of course, the heterogeneous breadcrumbs that were pieced together do not constitute a complete narrative about the history of asafoetida. There are many more dimensions than can currently be traced in our system, such as the various uses we came across, other than as a medicinal substance. Still, the fact that these bits and pieces could be found within one system has helped a great deal in reconstructing a significant part of the historical trajectories of asafoetida. The system allowed us to rapidly assemble very different kinds of information, in a way that sustains the intuitive strategy of the researcher. It also showed connections that were not in the original data sources, and hence would not have surfaced if a researcher had sifted through the individual data sources manually. In that way, the Time Capsule system provides a substantial **improvement of the researcher's digital toolkit**, allowing him to save time while retaining an exploratory search strategy, and to stay in command of the research process, while outsourcing time-consuming parts to a digital search mechanism. The reduced effort in piecing this information together is made possible by the substantial effort of high-quality data integration, but this step needs to happen only once, in order to support a variety of subsequent explorations.

### Conclusion: Time Capsule Improves the Historical Toolkit

In this chapter, the Time Capsule system and research platform were introduced, which contribute to innovative digital history in several ways. It offers a new historical data model and knowledge resource, and a novel approach for historical research. The system is built in such a way that it may not only be useful for researchers who are interested in early modern drug trajectories from different angles, but also for researchers who are interested in building, using and sharing similar research infrastructures.

Through semantic data integration, historians can query and analyse early modern historical data as a single knowledge graph and contextualize relevant information from various sources and aspects: botanical, linguistic, historical, ethnological, archaeological and so on. Another important benefit for contextualisation lies in making explicit the relationship of data to the dimensions of space and time, which allows the virtual, spatiotemporal 'reconstruction' of knowledge transfer trajectories. Combining knowledge that is contained in different data resources requires a substantial research effort, due to the diversity and ambiguity of the original data. If different data sources are available to the researcher, but they are not interlinked, then the added value of having access to more data is rather limited, because the researcher continuously

has to perform manual mappings and disambiguations when switching between resources. Domain knowledge modelling in the Time Capsule ontology and data source integration, in an interlinked knowledge graph, produces richer query results, that are less time-consuming to obtain; that have transparent and retraceable data provenance; that are more trustworthy for a user than their original data constituents, due to contextualisation; and that are thus better suited as building blocks for constructing a historical narrative.

Regarding the analysis of trends and patterns across data sets, distant reading methods stand or fall with the completeness and quality of the underlying data. Global patterns are hard to trace, given that the available data sets are limited to specific organizations, that gathered the information which is relevant and available to them. Obtaining and meaningfully adding information on the quality of digitization and data integration is far from trivial, as certain quality issues may remain hidden under the surface. Also, there currently is little consensus on a proper methodology of digital sources and digital tool criticism. That is why domain expertise is essential in the stages of both digitization and integration of data. However, for data constituents that provide a fairly accurate and complete image (e.g. when an organization like the VOC applied a uniform, sustained method of describing the plants that were destined for shipment), the links among the data allow analysis of patterns beyond what would be possible for an individual researcher to query by himself. As more data sets are added, in combination with information about their completeness and their digitization and integration quality, the potential for pattern and trend analysis increases significantly.

The example of *asafoetida* has clearly illustrated the practical results that can be achieved when combining a digital strategy like Time Capsule with a traditional approach to primary sources and secondary literature. Although *asafoetida* was a wholly different substance than Peruvian bark, the trajectories of both substances can be reasonably compared. The differences manifest themselves clearly: *asafoetida* was known and used in Europe much earlier than Peruvian bark, and the embedding of *asafoetida* in traditional culture was better known—and probably better appreciated—than the native connotations that surrounded Peruvian bark. *Asafoetida* did not experience anything like the fierce medical quarrels that surrounded Peruvian bark, yet in both cases commodification preceded the proper understanding of the substance, on a medical and **botanical level**. **Kaempfer's crucial publication** about *asafoetida* lagged decades behind on the medical appropriation of *asafoetida*, as did **La Condamine's publication** about Peruvian bark. But in trade, both

substances were firmly established as commodities well before the medical debates about their usefulness had ended, although the Dutch had a more stable position in the supply of asafoetida than the brokers of Amsterdam had in the trade of Peruvian bark. Although asafoetida was quite generally used in medical practice, the amounts of asafoetida that we find on e.g. VOC ships does not suggest that supply of this substance had as much effect on its commodification process as it did in the case of Peruvian bark.

In the current version of our system, structured data sources have been processed and integrated, and made accessible via a graphical interface for querying the aggregated data.<sup>605</sup> Moreover, additional work is required in optimizing the various data visualizations, which are key to understanding such complex data structures. More substantial future work includes the extension of our system to additional collections. The Time Capsule knowledge base can be easily enriched with mineral and animal drug components and other substances beyond the domain of *Naturalia*. The platform offers many possibilities to connect to other data sets in the future<sup>606</sup>, that could provide us with information on how, for example, asafoetida found its way across Europe after it came from Asia to the Netherlands. Finally, a major asset would be to investigate ways to connect further with unstructured data sets, especially digital. full text sources. Historical documents provide a wealth of additional information, as well as valuable contexts for interpreting structured data. Using the existing knowledge resource for processing and linking unstructured historical text to Time Capsule's **current** data model is a valuable challenge to enrich the trajectories of commodities in the past once more.

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<sup>605</sup> A user study regarding the interface is in progress, and a detailed report on the data modelling and integration process will also be published separately.

<sup>606</sup> An example could be the Sound Toll Registers, <http://www.soundtoll.nl/index.php/en/>.

## Conclusion

On June 24, 1728, several months after the fever epidemic which caused him so much trouble, Herman Boerhaave wrote one of his lengthy letters to his trusted correspondent Bassand in Vienna. The letter gives a rare **insight in Boerhaave's ideas about new** remedies from across the world. In general, he did not regard them with much esteem. Boerhaave had used leaves of 'acmella' (*Acmella oleracea*) from Sri Lanka, against bladder stones<sup>607</sup>, but he confided to Bassand that "[t]hey have far less strength than is claimed." The Chinese ginseng root (*Panax ginseng*) was **too expensive**. "The smell, taste, nature and strength seem to me to be particularly like that of the root of the common fennel. Twenty-five to **thirty Dutch guilders are paid for one ounce of the genuine root.**" Saint Ignatius beans (*Strychnos ignatii*) from the Philippines were not a popular hype anymore. "It was formerly sold at a high price, now at a low one. **Secrets which have been revealed decline in value.**" The root of the South American 'parera brava' (*Cissampelos glaberrima*) "is rare and is spoken of highly by foolish physicians, who do not know their subject, but are always seeking something to make it appear that they have tried **everything and left no stone unturned.**" Only mongi root<sup>608</sup> could be regarded as "an excellent remedy, but it is most rare."<sup>609</sup> And in the end, Boerhaave knew better-known plants as a substitute for each.<sup>610</sup>

In a nutshell, Boerhaave regarded many exotic, medicinal plants as unnecessary, because they were scarce, expensive, medically fashionable, and/or less effective than better-known substances. His letter is revealing about the non-medical connotations that accompanied new remedies, when they became available on the medical market in Europe. Boerhaave was well aware of the commercial interests that were at stake when new remedies were introduced. In this way, the most famous physician of his day was not so far removed from advertisers of secret remedies: all were part of the same medical system, in which such

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<sup>607</sup> Kooijmans, *Orakel*, 227.

<sup>608</sup> *Radix Mongi*. It is unclear which plant this is; Boerhaave only says that it comes from Sri Lanka.

<sup>609</sup> Herman Boerhaave to Joannes Baptista Bassand, 24-06-1728, in: Lindeboom (ed.), *Boerhaave's Correspondence*, vol. 2, 268-271.

<sup>610</sup> *Ibidem*: "In my opinion fennel-root may well be substituted for Ninzin root, Ipecacuanha for Paraguay, Agrimony and Betony for Acmeella, Common Rue for Mongi, Centaury for the St. Ignatius' Bean and Hartwort (*Aristolochia*) for Parera Brava."



issues as availability, price or medical fashion were as important for the successful commodification of remedies as was their medical efficacy.

The first goal of this dissertation has been to show that the commodification process of fever remedies in the early modern period hinged on many circumstances, apart from the inherent therapeutic properties of medicinal substances. Many people were involved in the commercial exploitation of these remedies. The chapters in this dissertation have demonstrated how various individuals and groups were in part dependent on selling fever remedies for their livelihood, like brokers who sold crude Peruvian bark in Amsterdam, or producers of secret remedies who praised the virtues of their products in advertisements. It was their sustained involvement with fever remedies which fostered the commodification of these products: by advertising over and over again in a public medium like newspapers, they acquainted a general audience (much larger than their target audience) with products that were guised in complex medical terminology. Newspaper readers were able to understand this terminology on a practical level. They had to know what these terms referred to, before they could decide whether the contents were relevant to them. In other words, they possessed a degree of **'pharmaceutical literacy', which was particular to their medical world:** a world in which plant-based medicine was still part and parcel of pharmaceutical theory and practice. Advertisers used terminology which they thought would appeal to pre-existing knowledge among their readers. It can be inferred from this, for example, that readers were able to distinguish between the most important fever types. This is a notable result: there was apparently a common frame of reference among the public for quite specific knowledge about disease types. In case of fevers, a translation of knowledge was somehow made from the medical to the public domain (e.g. through popular vernacular handbooks), through which a simplified version of fever classifications became common knowledge. More research is needed to substantiate this claim for other classes of diseases and remedies.

The second goal of this dissertation has been to reconstruct the commercial trajectory of fever remedies by applying a mixed-methods approach, that combines conventional and digital methodology to historical sources. This dissertation started with the observation that the commercial trajectory in the early modern commodification process of remedies has received comparatively little attention from scholars. At the same time, it was demonstrated that the interconnections between the commercial and other trajectories of fever remedies can be reconstructed in much more detail than has been done before, if digital resources and methods are properly used. All the chapters in this dissertation were

written on the basis of an iterative approach, in which the interaction between researcher and digital data were central: whether in the case of manually jumping back and forth through a collection of personal correspondence (Chapter 1); semi-automatically gathering, organizing and analysing commercial data from digitized newspaper advertisements (Chapters 2-5); or systematically asking specialized historical questions to the newly created digital platform Time Capsule, that was explicitly designed to aid historians in browsing and querying historical data (Chapter 6).

The central question of this dissertation was how promotional campaigns contributed to the commodification of remedies. Sustained advertising in newspapers at the hands of various commercial mediators is one part of the answer, as was discussed above. Likewise, a degree of **'pharmaceutical literacy' on the part of a large audience of prospective customers** is also part of the answer. Promotional campaigns of all sorts helped to gain publicity for remedies, as well as for the people who had a stake in the commodification process of these products. Various dimensions have been explored: the personal or collective experience of disease, by patients and physicians; the medical fashion at court, as experienced by courtiers and visitors; the efforts of brokers to position themselves as essential go-betweens in the global chain of commerce; the wish of irregular medical practitioners to reach a certain audience of patients; or their attempts to increase the geographical scope of medical practice; these and many other, unexplored contexts provide the background of a general commodification process of remedies in the eighteenth century.

Promotional campaigns for remedies in newspapers, which cannot be studied in terms of commercial success, were analysed through distribution networks, on a regional and national level. Brokers acted as go-betweens to procure apothecaries and druggists in and beyond Amsterdam with medicinal substances. Coffee houses and book shops operated as retail locations for irregular remedies, which was one way for advertisers to enlarge their audience beyond their local, personal reach. Another way was for them to offer the possibility of sending remedies by mail. This was an early kind of mail-order pharmacy, which enabled advertisers to address potential customers worldwide. Mail-order pharmacy in the eighteenth century is a feature of medical advertising which has received virtually no attention from historians so far. Digitized newspapers offer a promise to fill this gap in our knowledge about the global reach of commercial medicine in this period.

Newspaper advertisements were the driving force behind these developments, not only through their contents, but also by their shape.

Advertisements for auctions of drugs and for secret fever remedies both acquired a simple, formulaic character during the eighteenth century. This fairly simple feature of advertising proved to have a lasting effect on the successful business of advertisers. The character of these advertisements was highly recognizable to readers. Advertisements by brokers announced only the basic information that prospective attendants of the auctions had to know. Advertisements for secret remedies contained many recurring and (*pace* Gotti) modern-looking themes to promote their products, in order to be recognizable and memorable.

These findings are a valuable addition to what modern scholars have argued about the spread of natural knowledge in the early modern world. These studies have stressed that the global circulation of knowledge and goods acquired a strong commercial character.<sup>611</sup> However, the commodification processes that were studied in this dissertation interconnect the commercial trajectory of fever remedies with more familiar (although similarly important) themes from modern secondary literature, such as the difficulties involved in disambiguating unknown plant species on the basis of samples; or the many trials to reach safe and useful dosages of substances. As such, newspaper advertisements have a lot of solid data to add with regard to the practical problems of supply and availability of substances, and the appreciation of substances by society at large.

Therefore, the market for fever remedies is a good example of how **medicinal products became 'big business'** in the eighteenth century: they exemplify how local and regional economies managed to acquire (inter)national coverage. This eighteenth-century process of professionalisation can be regarded as a prelude to globalisation processes in the nineteenth century. The sustained availability of specialized remedies, for an audience as big as the world, vividly illustrates early modern globalisation, in which exotic products became known to and were understood by everyone, shaking off their exoticism and becoming accepted commodities for a European audience.

In Chapter 1, it was observed that knowledge about an ambiguous disease entity like fever, and a little-known exotic remedy like Peruvian bark, were very much discussed in letters and *salon* meetings, well before the acceptance of the latter took shape at the court of Paris around 1680. To unravel the process of knowledge circulation in this seminal stage of **the bark's trajectory** in society at large, requires various assumptions

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<sup>611</sup> The literature I refer to here (about natural knowledge and specific exotic substances) is mentioned throughout the footnotes of this dissertation, esp. in notes 18-19, 36-37, 175-178 and 445.

about occurrences and uses of the bark. Scholarly letters, like those that were written by Christiaan Huygens, provide a lot of clues: certainly also about the nature of fever and possible remedies, but especially about the personal experience of fever and fever treatment. The fever of **Christiaan's brother** Lodewijk in 1663 provides a clear example of this process. **Huygens's** knowledge about fever types and therapies, which were discussed in scholarly *salons* in Paris, mingled in his letters with an intuitive hope that an unknown remedy like Peruvian bark might prove useful against **his brother's disease**, which was as unknown to Huygens as to the average observer. In this case, scholarly interpretations of diseases or remedies fused with cultural perceptions.

Once Peruvian bark was culturally accepted and had become a medical commodity around the turn of the eighteenth century, the supply chain was gradually taken over by local intermediaries, as was discussed in Chapter 2. Brokers in Amsterdam came to deal exclusively with medicinal products, which meant that they became the prime connoisseurs, on whom clients on the local, regional and national level depended for the procurement of drug components. The advertising practices of brokers in newspapers gave them a broad reach of potential clients, while their product knowledge simultaneously lent them an aura of trustworthiness. The occurrence of Peruvian bark, in the auctions that were organized by them, demonstrates that the archival and printed materials, which their activities have left, can greatly increase our knowledge and understanding of the supply and availability of *materia medica* from across the world. For one thing, the activities of brokers in Amsterdam demonstrate that the eighteenth-century drug trade was resilient: whenever a global political or economic crisis occurred, imports could stagnate almost overnight, but they also recovered quite rapidly. As a commodity, Peruvian bark had a European market which had a need for a relatively stable trade regime. Brokers in Amsterdam were part of the commercial chain that made this possible.

Meanwhile, on the opposite side of the medical market, producers of secret remedies began to use advertisements as a medium to promote a range of irregular medical products and services, which was the topic of Chapter 3. For irregular practitioners, advertising was not a means to acquire a reputation of reliability, but rather to obscure their medical qualifications. Instead, their advertisements attempted to address certain patients, to which end they reused medical terminology, without much consideration for medical accuracy. Nonetheless, their reuse of terminology for fever must have rung a bell with their intended audience. The ambiguity that surrounded fevers enabled them to appeal to certain patients, and the seemingly unproblematic use of medical language

helped rather than hindered them to achieve this goal. Just as brokers transformed their advertising practice into a standard feature of their commercial activities, so also did producers of secret remedies increasingly regard advertising as an effective means to reach a larger audience. As such, advertising was not restricted to irregular practitioners, because some physicians and apothecaries also resorted to advertising to promote their own secret preparations.

At the same time, the practice of advertising for secret remedies opened **new possibilities to address a clientele beyond one's own locality**, as was discussed in Chapter 4. Much in the same way as the brokers of Amsterdam advertised for auctions that could benefit clients beyond the city of Amsterdam, so the producers of secret remedies were able to expand their territorial reach to a regional, national, even international level. Their practice changed as a result: because their remedies were detached from the person of their original inventor, they transformed into medical commodities in their own right. The shifting success rate of geographical expansion is demonstrated by the diachronic trajectories of **various remedies: both locally oriented remedies like the 'fever jars' of Smalle Ee**, as well as larger businesses that could afford to advertise **frequently for decades, like the producers of the 'Swiss herbal tea'**. The success of advertising for secret remedies, with the intention of territorial expansion, depended on the willingness of producers to engage in advertising, and on their capacity to create a supralocal distribution network.

But the commodification of remedies related not only to the personae who dealt with them. Other circumstances like epidemics could also affect commodification, as was observed in Chapter 5. Differences across various domains were made visible in the analysis of the commodification process of Peruvian bark and cascarilla bark, in the wake of the fever epidemic of 1727-1728. While the supply of Peruvian bark in the domain of brokers shows a peak during a *regional* epidemic outbreak, the general pattern of imports of bark rather followed political and economic developments in *global* trade (as shown in Figure 10). At the same time, however, when zooming in on the imports of drug components in the years surrounding the epidemic of 1727-1728, it can be observed that the supply of Peruvian bark increased in direct response to the epidemic, while a new substance, cascarilla, was gaining prominence as an alternative febrifuge. At the same time, the availability of secret fever remedies (as shown in Figure 13) also had much to do with occurrences of epidemic

fever.<sup>612</sup> A certain segment of society could distrust the bark for reasons of personal experience. Advertisements reveal a latent disapproval of Peruvian bark as an ingredient of fever remedies, which would outlast the epidemic of 1727-1728 for several years, as a theme in newspapers to promote fever remedies.

What these case studies have shown is that advertising, for various agents with various intentions, became a structural feature of the Dutch medical marketplace of the eighteenth century: advertising transformed from an occasional, experimental strategy into a structural feature for **local, commercial mediators to address an audience beyond one's own locality**. This sheds a new light on various debates in modern secondary literature, especially those that were discussed in the Introduction to Chapter 3. The analysis of advertisements shows that no clear **development like a 'reconfiguration of the body'** (as argued by Harold Cook<sup>613</sup>) can be observed in how advertisers used terminology for fevers. The nature of fever, as it comes down to us in medical handbooks, retained a level of ambiguity throughout the eighteenth century, which demonstrates that no general shift occurred in medicine towards greater appreciation of specific remedies (that acted on a specific disease entity) at the cost of panaceas: not nearly every fever type was clearly defined at the time. Likewise, no development can be observed in advertisements that transformed **Peruvian bark into the first 'real' specific remedy**. **Nor can we observe an opposite development from 'specific' to 'universal' remedies**. Rather, advertisements reveal a tango between a remedy and its applications. The use of language for fevers in advertisements shows a shifting appreciation for specific remedies or panaceas every few years. Whether this shifting process also took place in public perception of diseases and remedies cannot be deduced from advertisements, which only offer an indirect point of access to public understanding of a simplified version of theoretical medicine. If a new perception of the human body took root in eighteenth-century medicine, this did not translate to the commercialized version of medicine, that we encounter in advertisements.

Similarly, advertisements show that the growth of the market for irregular remedies experienced **a 'golden age' already in the mid-eighteenth century**. This is much earlier than was argued e.g. by Frank Huisman, on the basis of regulations for advertising in the nineteenth century.<sup>614</sup> Irregular practitioners often tried to expand their market by

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<sup>612</sup> Thyssen, *Over de Herfstkoortsen*, 20-42, discusses various fever epidemics in Amsterdam, during which periods the number of advertisements (in Figure 13) was also unusually large, esp. in 1779-1780.

<sup>613</sup> Cook, "Markets and Cultures".

<sup>614</sup> Huisman, "Patiëntenbeelden", 213.

means of advertising: an opposite development when compared to the geographical contraction that characterized regular practitioners in the course of the century (see the Introduction to Chapter 4). The costs of advertising and the risks of forgery were not generally an obstacle for many producers, to get involved in advertising. With regard to brokers, their growing advertising practice reveals a remarkable case of commercial prosperity, in an age that is still often qualified in terms of relative economic decline (see the Introduction to Chapter 2).

At the same time, a study of advertisements opens new windows on the past. We can observe the circulation process of knowledge and goods for many products which are otherwise hidden from our view: this goes for both crude drug components and for secret remedies. We can observe the quick commercial response in the case of an epidemic: relevant febrifuge substances were quickly available in substantial quantities, in the first weeks of the epidemic of 1727-1728. This observation is all the more remarkable, given the fact that the epidemic has not left many traces in other primary sources. Thus, data from newspaper advertisements can help to understand the shifting dynamics of supply and demand on the medical market, which is otherwise hard to trace.

Furthermore, the comparative analysis of the commercial trajectories of Peruvian bark and cascarilla in Chapter 5 offers an additional framework to guide this type of research. The history of cascarilla can be retraced to **a large extent on the basis of data about its febrifuge 'big brother' Peruvian bark**. Trajectories of remedies did not only interconnect across domains for individual substances, but also in a comparative perspective across related substances. A similar process was at work in the quest for digital data about asafoetida in Chapter 6. Although not historically comparable to Peruvian bark in terms of geographical provenance, availability, applications and so on, the history of asafoetida engendered some of the same questions as for Peruvian bark, e.g. about the role of key publications as a driving force in the commodification process, or the existence of regular imports to guarantee a sustained supply. What these two chapters have shown is that browsing digital data exemplifies a bottom-up approach that is especially useful to trace **'hidden histories'** like commodification processes: by searching for the right terms (both in my own, newly generated data from advertisements, and in the reused data from the Time Capsule project), I was able to extract knowledge about historical processes that are not explicitly described in sources.<sup>615</sup>

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<sup>615</sup> This advantage of bottom-up digital research was stressed e.g. by Huistra and Mellink, "Phrasing History", 222.

A lot of the material that was used for this dissertation can be classed as **'big data'**. For research in the early modern period, this term should be used with caution. The amount of primary source material that is left will always reflect just a snippet of the past, and it requires historical skill to use these fragments as building blocks for a convincing historical narrative. **'Big data' for historical research has often not so much to do** with the actual size of digitized sources (in terms of scanned pages or terabytes), but rather with the level of difficulty and interpretation that they contain in their metadata, and the possibilities they offer to users for enrichment and reuse.<sup>616</sup> As such, digital tools and methods that have been created over the years (including those that were developed for the purpose of this dissertation) can never replace traditional historical methodology.<sup>617</sup>

**The nature of the 'big data' that was used for this dissertation varied** between collections. The scholarly letters from the ePistolarium (that was developed by Huygens ING) are a fruitful source for all sorts of topics, as the inquiry in the correspondence of Christiaan Huygens in Chapter 1 has shown. Still, concepts for remedies are hard to trace in this collection, **even though many medical practitioners were part of Huygens's scholarly network. Since many letters are not part of a 'chain' of letters back and forth** between the same correspondents, many occurrences of remedies in letters appear to be virtually isolated. It requires a lot of historical puzzle-solving to put such instances in context: the diversity of remedies (and of spelling variants to describe them) makes it difficult to trace them systematically. When Huygens mentions Peruvian bark once in a letter, there is no context available to infer how Huygens understood the term or where he got it from. In other words, keyword search queries do not readily give results that can say something about remedies as concepts.<sup>618</sup>

The historical newspapers in Delpher, that were used for Chapters 2-5, offer much more material: nearly 10.000 advertisements, for secret remedies and for auctions of drugs. The size of this collection is a great promise for future research, because there is a range of other topics for

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<sup>616</sup> Zaagsma, "On Digital History", 23, discusses the nature of historical 'big data'. He rightly warns digital historians about the supposedly more 'scientific' nature of digital historical data as 'evidence', as opposed to the more traditional 'interpretation' of historical hermeutics.

<sup>617</sup> Admittedly, by now an omnipresent theme in texts on digital humanities methods, e.g. in Zaagsma, "On Digital History", 17 and 24; and in J. van Eijnatten, T. Pieters and J. Verheul, "Big Data for Global History: The Transformative Promise of Digital Humanities", *BMGN / Low Countries Historical Review*, 128:4 (2013) 55-77, there 58 and 75.

<sup>618</sup> The problem of translating search results (i.e. words) into topics is addressed e.g. by Huistra and Mellink, "Phrasing History", 224.



which the number of advertisements over a long period of time must run in the thousands. However, there was no easy way to process these data: the collection needed a lot of manual and semi-automatic pre-processing before the data were really useful for this dissertation. Delpher does not offer any metadata below the level of newspaper pages, which means that all the information that pertains exclusively to individual advertisements (named entities for persons, places, products, and so on) had to be extracted, structured and analysed in a semi-automatic way. This could only be done after corrected full text had been generated, because the quality of the OCRed text of eighteenth-century newspapers in Delpher is good enough to perform keyword search queries, but not full text analysis. An advantage here, as we have seen, is that eighteenth-century advertisements are usually formulaic texts, which makes them easier to recognize and analyse than newspaper articles.<sup>619</sup> The custom approach to structure Database 1 and 2 creates another drawback, when these newly generated data are to be returned to the National Library for future researchers to use: the customized data is about individual advertisements, **a level that cannot be reached in Delpher's original data.** Researchers and institutions should therefore engage in a dialogue from the start of their research process, to reach decisions about the wishes and possibilities for research, but also about the contents and structure of enriched data, for the purpose of storage and reuse afterwards.<sup>620</sup>

How challenging the reuse of existing data sets can be has been demonstrated by the Time Capsule platform, that was used for Chapter 6. Many digital collections have created easy access to a range of heterogeneous sources. Few initiatives, however, have successfully enabled researchers to study these collections in an integrated way, beyond the level of advanced keyword searches. A platform like Time Capsule offers the possibility to explore a range of structured digital data sets, in a user-friendly way. In Chapter 6, the example of *asafoetida* demonstrated that platforms like this can really contribute to the digital methodology of historical research. At the same time, however, it must be admitted that generic digital solutions to historical problems are a

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<sup>619</sup> In this respect, the remark by M. Wevers, *Consuming America: A Data-Driven Analysis of the United States as a Reference Culture in Dutch Public Discourse on Consumer Goods, 1890-1990* (dissertation; [Utrecht]: self-published 2017), 33n53, **that "[t]he repetition of phrases and a more limited vocabulary make it easier to detect trends in advertisements [i.e. when compared to articles] through using computational analyses", is probably as much true for the eighteenth century as for later periods.**

<sup>620</sup> The importance of collaboration between data providers and users is stressed e.g. by Huistra and Mellink, "Phrasing History", 226.

utopia.<sup>621</sup> Each historical research question requires a customized approach: there might be elements that could be reused for a different topic (a system like Time Capsule could be reused for questions relating to e.g. historical botany, art history, maritime history, or historical linguistics), but it is not self-evident that methodologies can instantly be transferred from one domain to another.

One essential aspect of the use of Time Capsule for this dissertation has been my own involvement in the development of the system.<sup>622</sup> From the start of the project, the system was expressly intended to answer the kind of research questions that I had in mind. This opened up more challenges than could be imagined. The nature of the data sets that were kindly provided by various institutions, that acted as project partners, were highly diverse, and offered no obvious way of integration. On top of that, the *Pharmaceutical-Historical Thesaurus*, which was to become the backbone of the Time Capsule system, was transformed from a two-dimensional thesaurus into a three-dimensional ontology, as a prerequisite before the integration with other data sets. This offered many new possibilities, but at the same resulted in loss of understanding of the contents of the original thesaurus. In the development process of the Time Capsule system, my own participation as a researcher in the iterative construction process proved to be far more challenging than anticipated. Concrete research questions took time to crystallize, which means that the desired structure and functionalities of the Time Capsule system transformed along the way. Nevertheless, the development process proved to be very instructive from a research perspective, as it forced me to formulate explicit demands, which the system had to meet. Since the construction of a historical narrative is often based on implicit assumptions and tacit knowledge of the researcher, this technological demand for explication was as painstaking as it was helpful to reach desirable, useful and feasible research questions.<sup>623</sup>

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<sup>621</sup> Although it is often assumed that existing computational knowledge is adequate to tackle most historical questions (see Zaagsma, "On Digital History", 12), it is problematic for digital history tools and platforms to transcend the domain-specific boundaries in which they were created; in this respect, Piersma and Ribbens, "Digital Historical Research", 83, emphasize the recurring problems that computers do not automatically follow the workflow of historians; and that historical sources are by nature heterogeneous (as was very much true for Time Capsule as well).

<sup>622</sup> The importance of involving users in the creation of digital data and platforms is stressed e.g. by Zaagsma, "On Digital History", 26-27; and by Van Eijnatten, Pieters and Verheul, "Big Data", 60.

<sup>623</sup> Putnam, "The Transnational and the Text-Searchable", 388, stresses the need for transparency in digital history. Many historians still use what she calls an "invisible

A mixed-methods approach such as was used for this dissertation, i.e. a combination of using integrated digital data and newly generated historical data, implies that a researcher must continuously alternate between close and distant reading methods. Only then can key elements in large data collections be observed, that can no longer be queried by hand. This is no easy process. Close reading of premodern medical advertisements by scholars in the past was done on a much smaller scale, usually on the basis of samples with regular intervals. This dissertation, on the other hand, has attempted to include all relevant material from digitized newspaper advertisements. Some material has certainly been missed: the aim of completeness is an illusion. And yet the chosen approach (relatively simple keywords as queries; quick scanning for relevance; and semi-automatic extraction of relevant entities) led to a **'natural' endpoint in the** iterative process, when new spelling and OCR variants that were found as collateral results brought no more new advertisements to the surface.<sup>624</sup> Along the way, the chosen approach has brought various innovative topics to the surface, not all of which could be studied extensively (e.g. mail-order pharmacy, the emergence of patient information leaflets, price developments of secret remedies, and so on). Furthermore, the fruitful integration of data from advertisements in a historical narrative has only been possible by connecting these findings to more conventional sources, as they have often been used before in historical studies, like medical handbooks, letters, and so on. In this way, rash conclusions, that could easily be arrived at on the basis of brief advertisements, are avoided.

Public data sets and platforms are increasingly available for historians. However, newly generated historical data, like the collections of advertisements that were used for this dissertation, will always have a certain degree of domain-specificity: even data about public auctions of drugs and about secret remedies require a different approach. What the Time Capsule platform has shown is that domain-specificity does not

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method", instead of making their search strategies explicit. Likewise, Piersma and Ribbens, "Digital Historical Research", 95, stress the need for a mentality change among historians, to make their digital reasoning explicit.

<sup>624</sup> This is not to say that I am unaware of possible 'false negatives' (i.e. relevant material that was not found). My approach to trace 'collateral' results (as discussed in the 'Methodology' section of the General Introduction) has helped to find additional advertisements for secret remedies and auctions, that did not surface with keyword searches. Huistra and Mellink, "Phrasing History", 223, address the issue of 'false negatives' as well. My 'collaterals' approach aligns with their programmatic statement that "we must think about other search technologies than the standard keyword search currently offered by most digital repositories. To do so, we must figure out how to use keywords to our advantage so that we can use multiple words to describe a topic, while being able to filter out irrelevant results" (p. 224).

necessarily preclude the reuse of data: in Time Capsule, data from very different domains (history, botany, archaeology, linguistics, etcetera), was fruitfully integrated by means of a Linked Data approach. If public storage, reuse and enrichment of historical, digital research data should become normative in historical methodology, such initiatives at data integration should remain the focus of attention, for both individual researchers and the institutions from which big data collections often derive. Otherwise, digital historical data will remain as invisible as the contents of many secret remedies from the past.

## Appendix. Pharmacopoeias in the Low Countries (1636-1795)

The chapters in this dissertation contain many references to pharmacopoeias. Pharmacopoeias were (and are) pharmaceutical manuals. In the early modern period, they were published on the municipal level, with the intention of enforcing a uniform practice among apothecaries in a given city. Most early modern pharmacopoeias contained two parts. The first section (generally called *sectio prima* in Latin or *eerste afdeling* in Dutch) listed the crude substances (*simplicia*) that apothecaries were supposed to have in stock. These were usually categorized according to the three kingdoms of nature: vegetable substances (roots, barks, woods, herbs and leaves, flowers, seeds, fruits, flours, liquid juices, and gums and resins, in that order); animal substances; and mineral substances. Further sections described the recipes that apothecaries were supposed to make with these substances: both preparations (i.e. processed forms of *simplicia*) and more complicated, composite remedies (*composita*, i.e. remedies made from crude substances and/or preparations), like pills, syrups, electuaries, powders, oils, unguents and plasters.

In older secondary literature, there have been substantial debates about the definition of pharmacopoeias, and about the question which publications should count as such. The presence of the word 'pharmacopoeia' in a title does not always point to an official pharmacopoeia: unofficial manuals used 'pharmacopoeia' in the title as well, while some official editions did not do so, but instead carried words like 'dispensatorium' or 'antidotarium' in their titles. Other issues relate to the difference in status between Latin editions and Dutch translations; and between entirely new editions and reprints with only minor changes.

Moreover, one pertinent issue has focused on the usefulness of pharmacopoeias as a representative primary source for research into early modern pharmaceutical practices, following the work of Alexander Tschirch (1856-1939).<sup>625</sup> Tschirch called pharmacopoeias 'a mirror of their time', but subsequent research has highlighted the conservative, solidified

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<sup>625</sup> A. Tschirch, "Die Pharmakopöe, ein Spiegel ihrer Zeit", *Janus*, 10 (1905) 281-294, 337-351, 393-405, 449-460, 505-522.

nature of the pharmaceutical knowledge that can be found in many pharmacopoeias.<sup>626</sup> These manuals were hardly ever at the forefront of new developments in contemporary pharmacy, and they were generally slow in incorporating updated information in new editions. This is demonstrated, for instance, by the sketchy codification process of cascarilla in pharmacopoeias, as discussed in Chapter 5. The observance of the regulations, that were described in pharmacopoeias, should be another concern for historians who use these manuals. Most early modern pharmacopoeias were compiled not by apothecaries, but by physicians. This caused a lot of dissatisfaction among the apothecaries, who were supposed to use these books, but who were often barely consulted before publication. Even when apothecaries were included in the production of a new edition, as in the case of the entirely revised pharmacopoeia of Amsterdam of 1726 (which was discussed in Chapter 5), apothecaries still voiced a lot of concerns before and after publication.<sup>627</sup> As a result, it is highly uncertain for many editions to what extent they were really useful for apothecaries. For instance, it might have been the case that apothecaries did not use some of the *simplicia* from the first section of their pharmacopoeia, for whatever reasons (such as availability, price, or presumed efficacy), while they might have used others that were not mentioned in the *sectio prima*. The lack of (scholarly interest in) primary sources **from apothecaries' own perspective**, makes it impossible to assess the true importance of pharmacopoeias.

Still, pharmacopoeias offer an easy, first point of access for many issues related to early modern pharmacy, and as such they cannot be disregarded by historians in that field. Thankfully, there has been a renewed interest in pharmacopoeias among scholars in recent years.<sup>628</sup> For that reason, it is useful to reexplore the available editions for the Low Countries as well. This Appendix offers an updated list of pharmacopoeias

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<sup>626</sup> E. Hickel, "Die Pharmakopöe, ein Spiegel ihrer Zeit (Tschirch)?", *Medizinhistorisches Journal*, 6 (1971) 207-212.

<sup>627</sup> An example is the book by apothecary Jacob van Halmaal, *Ontleding over d'Amsterdamsche Apotheek, ofte Nodige Opmerkingen over de handelingen der Compositien en Praeparatien van de selve* (t'Amsterdam: By Jan ten Hoorn 1689).

<sup>628</sup> D.L. Cowen, *Pharmacopoeias and Related Literature in Britain and America, 1618-1847* (Aldershot: Ashgate 2001); K. van Ommen, "Op Recept: Apothekershandboeken en Farmacopoeën", in: A. van der Lem (ed.), *J.M.H. van de Sande's Bibliotheca Pharmacia: Catalogus bij een Tentoonstelling in de Universiteitsbibliotheek Leiden, 5 Oktober 2012-31 December 2013* (Leiden: Universiteitsbibliotheek Leiden 2012) 47-65; S. Anderson, "'The Rejection of Tradition in Favour of Experience: The Publication of British Pharmaceutical Texts Abroad 1670 to 1890", *Pharmaceutical Historian*, 47:2 (2017) 21-32.

from the Low Countries, based on the work of W.F. Daems and L.J. Vandewiele, and additions by them and by D.A. Wittop Koning.<sup>629</sup> All editions that were mentioned by these authors have been included in this list (conventionally starting with the pharmacopoeia of Amsterdam from 1636), even the editions that do not seem to fit here. This includes several editions from northern France, several editions that are price lists (*taxa*) rather than pharmaceutical handbooks, and an occasional translation of, or supplement to, another edition.

The pharmacopoeias have been listed chronologically. Full title descriptions are given, and on the left is the city for which the edition was published, plus the year of publication, as a quick reference guide. Whenever additional information should be given on top of what Daems, Vandewiele and Wittop Koning have said, this can be found in the footnotes. Furthermore, the full list can also be found on the website of the Dutch Pharmaceutical Heritage Foundation (*Stichting Farmaceutisch Erfgoed*), including a link to a digitized version, whenever this is available.<sup>630</sup>

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<sup>629</sup> W.F. Daems and L.J. Vandewiele, *Noord- en Zuidnederlandse Stedelijke Pharmacopeeën* (Motsel-bij-Antwerpen: Drukkerij-Uitgeverij Itico, and Joppe: Uitgeverij Littera Scripta Manet 1955); *idem*, "Nog over Noord- en Zuidnederlandse Stedelijke Pharmacopeeën", *Bulletin van de Kring voor de Geschiedenis van de Pharmacie in Benelux*, 15 (1957) 20-23; D.A. Wittop Koning, "Bijdrage tot de Bibliografie van de Amsterdamse Farmacopee", *Pharmaceutisch Weekblad*, 116 (1981) 147-151.

<sup>630</sup> [www.stichtingfarmaceutischerfgoed.nl/projecten/gedigitaliseerde-farmacopees](http://www.stichtingfarmaceutischerfgoed.nl/projecten/gedigitaliseerde-farmacopees).

Abbreviated title	Full title
(1) Amsterdam 1636 <sup>631</sup>	<i>Pharmacopoea Amstelredamensis, Senatus Auctoritate munita</i> (Amstelredami: Apud Guilliellmum & Iohannem Blaeu 1636)
(2) Amsterdam 1636 <sup>632</sup>	<i>Pharmacopoea Amstelredamensis, Senatus Auctoritate munita. Editio altera Ab erroribus, quibus scatebat Prior, repurgata, &amp; integritati Autographi restituta</i> (Franequera: Apud Bernardum Berentsma 1636)
(3) Amsterdam 1636 <sup>633</sup>	<i>Pharmacopoea Amstelredamensis, Senatus Auctoritate munita. Editio altera Ab erroribus, quibus scatebat Prior, repurgata, &amp; integritati Autographi restituta</i> (Amstelodami: Apud Abrahamum Iacobi 1636)
(4) Amsterdam 1639 <sup>634</sup>	<i>Pharmacopoea Amstelredamensis, Senatus Auctoritate munita, &amp; recognita. Editio tertia</i> (Amstelredami: Apud Ioh. & Cornelium Blaeu 1639)
(5) Lille 1640	<i>Pharmacopoeia Lillensis, jussu Senatus edita, optima quaeque Pharmaca à Medicis ejusdem Urbis selecta &amp; usitata continens, in officinis publicis habenda</i> (Lillae Gallo-Flandricae: Typis Simonis le Francq 1640)
(6) Brussels 1641	<i>Pharmacopoeia Bruxellensis: jussu Amplissimi Senatus edita</i> (Bruxellae: Typis Joannis Mommarti 1641)
(7) Amsterdam 1643	<i>Pharmacopoea Amstelredamensis, Senatus Auctoritate munita, &amp; recognita. Editio quarta</i> (Amstelredami: Apud Iohannem Blaeu 1643)
(8) Amsterdam 1650	<i>Pharmacopoea Amstelredamensis, Senatus Auctoritate munita, &amp; recognita. Editio quinta</i> (Amstelaedami: Apud Ioannem Blaeu 1650)
(9) Amsterdam 1651	<i>Pharmacopoea Amstelredamensis, Senatus Auctoritate munita, &amp; recognita. Editio novissima</i> (Amstelodami: Apud Joan. Janssonium 1651)

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<sup>631</sup> Also published as facsimile: *Facsimile of the first Amsterdam pharmacopoeia 1636*. Introd. by D.A. Wittop Koning (Nieuwkoop: B. de Graaf 1961).

<sup>632</sup> Largely identical reprint of (1), apart from the title page.

<sup>633</sup> Largely identical reprint of (1), apart from the title page.

<sup>634</sup> Although (2) and (3) were reprints with the label *editio altera*, no 'official' second edition was published by Blaeu himself. There may have been a (yet undiscovered) 'official' *editio altera*, or Blaeu knew about (either of) the two existing *editiones alterae*, and went on with publishing the 'official' third edition himself, so as not to break the numerical chain of editions.



- (10) Valenciennes 1651 *Pharmacopoeia Valentianensis, iussu et Auctoritate amplissimi Senatus elaborata, et in Civium Salutem edita* (Valentianis: Typis Ioannis Boucher 1651)
- (11) Ghent 1652 *Antidotarium Gandavense sive Medicamentorum Componendorum a Pharmacopeis Gandavensibus observanda Methodus, Senatu mandante, a Medicis lubenter obsequentibus, In commune Patriae bonum Compendiosè concinnata* (Gandavi: Typis Balduini Manillii 1652)
- (12) Utrecht 1656 *Pharmacopoea Ultrajectina, Senatus Auctoritate edita & munita* (Trajecti ad Rhenum: Typis Gisberti à Zyll, & Theodori ab Ackersdyck 1656)
- (13) Amsterdam 1659<sup>635</sup> *Pharmacopoea Belgica; Or, The Dutch Dispensatory, Revised and Confirmed by the Colledge of Physitians at Amsterdam. Wherein is described, I. The Vertues, Qualities, and Properties of every Simple. II. The Vertues and Use of Compounds. III. Directions and Cautions in giving all Medicines. Whereunto is added, the Compleat Herbalist: Being a Physicall Discourse of all common Herbs and Fruits, shewing their Natures, Vertues, and Qualities, as they are frequently used in Medicines; Together with many excellent Receipt, whereby every One (by Gods help) may preserve himself. Rendred into English for the benefit of our Nation* (London: Printed by E. C. for Edw. Farnham, and Robert Horn 1659)
- (14) The Hague 1659 *Pharmacopoea Hagiensis Communi Collegii Medici ejusdem Loci Opera adornata* (Hagae Comitum: Apud Joannem Tongerloo 1659)
- (15) Amsterdam 1660 *Pharmacopoea Amstelredamensis, Senatus Auctoritate munita, & recognita. Editio sexta* (Amstelaedami: Apud Ioannem Blaeu 1660)

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<sup>635</sup> This is an English translation of the pharmacopoeia of Amsterdam, but is unclear which edition was translated.

- (16) Antwerp 1661 *Pharmacia Antverpiensis galeno-chymica A Medicis Iuratis, & Collegij Medici Officialibus nobiliss. ac ampliss. Magistratus iussu edita. Praeter Pharmaceutica magis necessaria, Chymica usitatoria, & brevem facilemque conficiendi modum, Multa reservata, secreta, & curiosa complectens ante hac numquam evulgata. Uti ex pagella proximè, & Indice in fine Libri sequentibus, videre est. Atque his tam ad Pharmacopaeorum quietem, quam Civium omnium commoditatem, singulorum Medicamentorum pretia ex mandato eiusdem Magistratus apposita* (Antverpiae: Apud Georgium Willemsens 1660 [= 1661])
- (17) Ghent 1663 *Antidotarium Gandavense, Nobilissimi Amplissimique Senatus Iussu, denuo correctius editum* (Gandavi: Typis Balduini Manilij 1663)
- (18) Utrecht 1664 *Pharmacopea Ultrajectina Senatus auctoritate munita. Editio Nova* (Trajecti ad Rhenum: Apud Theodorum ab Ackersdijck 1664)
- (19) Brussels 1671 *Pharmacopoea auctior, et correctior, jussu nobilissimi, amplissimique Senatus Bruxellensis edita, Operâ & studio sex Collegij Medici Assessorum, Cum Privilegio Catholicae Regiae Majestatis* (Bruxellae: Apud Petrum Hacquebaut 1671)
- (20) Amsterdam 1677<sup>636</sup> *Pharmacopoea Amstelredamensis Senatus auctoritate munita & recognita* (Amstelaed.: Sumpt. Henri Wetstenii [1677?])
- (21) Sri Lanka 1679 Piélat, B., *Insulae Ceyloniae Thesaurus medicus, Vel Laboratorium Ceylonicum* (Amstelodami: Apud Henricum & Theodorum Boom 1679)
- (22) Amsterdam 1682 *Pharmacopaea Amstelredamensis, Of d'Amsterdammer Apotheek, In welke allerley Medicamenten, zijnde tot Amsterdam in 't gebruik, konstiglijk bereid worden. Als ook Des selfs krachten en manier van ingeven* (Amsterdam: By Jan ten Hoorn 1682)

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<sup>636</sup> Daems and Vandewiele (p. 48.) list this title as 'Pharm. Amstel. 1701?'; the only extant copy in the Netherlands (in the university library of Amsterdam) has no title page, only a title image. The library catalogue mentions 1677 as year of publication, which is more likely than 1701. Another copy, at the library of the University of Wisconsin-Madison, also lacks a title page.

- (23) Amsterdam 1683 *Pharmacopaea Amstelredamensis, Of d'Amsterdammer Apotheek, In welke allerlei Medicamenten, zijnde tot Amsterdam in 't gebruik, konstiglijk bereid worden. Als ook Des selfs krachten en manier van ingeven. Tweede Druk (t'Amsterdam: By Jan ten Hoorn 1683)*
- (24) Amsterdam 1686<sup>637</sup> *Pharmacopaea Amstelredamensis, Of d'Amsterdammer Apotheek, In welke allerlei Medicamenten, zijnde tot Amsterdam in 't gebruik, konstiglijk bereid worden. Als ook Des selfs krachten en manier van ingeven. Den derden Druk Naukeurigh oversien (t'Amsterdam: By Jan ten Hoorn 1686)*
- (25) Leeuwarden 1687 *Pharmacopoea Leovardiensis Galenico-Chymica, Collegii medici ejusdem Loci Operâ adornata. & Magistratus Authoriate Munita (Leovardiae: Apud Gerardum Hoogslag 1687)*
- (26) Leeuwarden 1687 *Leeuwarder apotheek Na de Galenisch-Chymiçe manier door het Collegie der Medicijns Aldaar opgemaakt, En door des E. E. A. Magistraats Authoriteit bevesticht; Doch op versoek van den Boekverkoper in duits gebracht met eenigen bygevoegde nuttigheden, Gebruijcken &c: nu Vermeerdert, en Sorghvuldiglijk van der selver Fauten in alles wel gesuyvert, ende verbeterd. Door F. J. Winter M. D. (Te Leeuwarden: By Gerardus Hoogslag 1687)*
- (27) Saint-Omer 1689 *Pharmacopoeia Audomarensis correcta, nobilissimi atque aequissimi ejusdem Urbis Senatus jussu edita (Audomari: Apud Ludovicum Carlier 1689)*
- (28) Amsterdam 1690 *Pharmacopaea Amstelredamensis, Of d'Amsterdammer Apotheek, In welke allerlei Medicamenten, zijnde tot Amsterdam in 't gebruik, konstiglijk bereid worden. Als ook Des selfs krachten en manier van ingeven. Den vierden Druk Naukeurigh oversien (t'Amsterdam: By Jan ten Hoorn 1690)*

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<sup>637</sup> Also published as facsimile: *Pharmacopaea Amstelredamensis, of d'Amsterdammer Apotheek (1686)* (Tilburg: F.A.H. Peeters 1986).

- (29) Leeuwarden 1692 *De correcte Leeuwarder Apotheek volgens de Galenisch-Chymice Methode Door het Collegie der Medicine Doctoren Aldaar opgemaakt. Ende Door des E. E. A. Magistraats Autoriteit bevestigd. Althans Met bygevoegde Nuttigheden, Gebruiken &c. vermeerderd: nu op het naaukeurigste verbeterd; En met een Register der Siekten, &c. verrijkt. Door Feyo Joannes Winter Univ: Medic: Doctor. Den vierden Druk (tot Leyden: By Fredrik Haaring 1692)*
- (30) Leeuwarden 1692 *De Correcte Nederduitse Leeuwarder Apotheek Volgens de Galenisch-Chymice Methode Door het Collegie der Medicine Doctoren Aldaar, in 't Latijn eerst opgemaakt: Ende Door des E. E. A. Magistraats Autoriteit bevestigd. Doch Op 't versoek der Liefhebbers althans vertaalt, de Nuttigheden, Gebruiken, &c. hier allerwegen by gedaan, in alles nu ten nauwkeurigsten gesuivert; Ook met een Register der Siekten &c. noch verrijkt, en dese aldus vermeerderd ende verbeterd Ten vierdenmaale. Door Feyo Joannes Winter Univ: Medic: Doctor (Tot Leyden: By Fredrik Haaring 1692)*
- (31) Haarlem 1693 *Pharmacopoea Harlemensis Senatus Auctoritate munita (Harlemi: Apud Wilh. van Kessel, et Amstelodami: Apud Joannem ten Hoorn 1693)*
- (32) Haarlem 1693 *Pharmacopoea Harlemensis; Of de Haarlemmer Apotheek: In welke allerlei Geneesmiddelen, zynde tot Haarlem in 't gebruik, konstiglyk bereid werden. Uit het Latyn vertaald, en met des zelfs krachten en manier van ingeven vermeerderd door Abraham Bogaert, Apotheker te Amsterdam (t'Amsterdam: Gedrukt by Jacobus van Hardenberg 1693)*
- (33) Haarlem 1693 *De verbeterde Haarlemmer Apotheek: In welke allerlei Geneesmiddelen, zynde tot Haarlem in 't gebruik, konstiglyk bereid worden. Door het Collegie der Medicijne Doctoren aldaar in 't Latijn eerst opgemaakt, en Door des E. E. Achtb. Magistraats autoriteit bevestigd. Nu met des zelfs krachten en manier van ingeven vermeerderd. En in 't Neerduyts gebracht door Abram Bogaert, Apotheker tot Amsterdam (Amsterdam: By Jan ten Hoorn 1693)*
- (34) Lille 1694 *Pharmacopoeia Lillensis, galeno-chymica, jussu nobilissimi amplissimique Senatus edita, Selectiora continens Medicamenta ex optimis Authoribus deprompta (Lillae Gallo-Flandricae: Typis Joannis Chrisostomi Malte 1694)*

- (35) Leeuwarden 1696 *Leeuwarder Apotheek Na de Galenisch-Chymiſche manier, Door zorgvuldigen arbeid van 't Collegie der Medicijns aldaar opgemaakt, en door des E. E. A. Magistraats Authoriteit bevestigd. In duits gebracht alleen door F. J. Winter M. D. De Tweede Druk (t'Amsterdam: By Jan ten Hoorn 1696)*
- (36) Bruges 1697<sup>638</sup> *Vanden Zande, J., Pharmacopoeia Brugensis, jussu nobilissimi, amplissimique Senatus in Lucem aedita (Brugis: Typis Christophori Cardinael 1697)*
- (37) Amsterdam 1698 *Pharmacopoea Amstelredamensis, of d'Amsterdammer Apotheek, In welke allerlei Medicamenten, zynde tot Amsterdam in 't gebruik, konstiglyk bereid worden. Als ook Des selfs kragten en manier van ingeven. Den vyfden Druk vermeerderd en verbeterd (t'Amsterdam: By Jan ten Hoorn 1698)*
- (38) Leeuwarden 1698 *Pharmacopoea Leovardiensis Galenico-Chymica, Collegii medici ejusdem Loci Operâ adornata, & revisa, ac Magistratûs Autoritate Munita. Editio secunda (Leovardiae: Apud Gerardum Hoogslag, & Christianum Tjallingh 1698)*
- (39) Amsterdam 1701 *Pharmacopoea Amstelredamensis, in qua Medicamenta, quae Amstelodami in usu sunt, artificiose praeparantur ut et eorum Vires et Doses (Lugduni Batavorum: Apud Cornelium Boutestein 1701)*
- (40) Brussels 1702 *Pharmacopoea Bruxellensis Senatûs Autoritate munita. Editio altera (Bruxellis: Typis Francisci Foppens 1702)*
- (41) Haarlem 1702 *De verbeterde Haarlemmer Apotheek; Door des Raads Achtbaarheid bekrachtigt: Uit het Latyn vertaalt, en met des selfs krachten en manier van ingeven vermeerderd. Door Abraham Bógaert, Apotheker en Chyurgyn. De tweede druk (t'Amsterdam: By Jan ten Hoorn 1702)*

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<sup>638</sup> Also published as facsimile: J. vanden Zande, *Pharmacopoeia Brugensis [Bruges - 1697]: facsimile reprint* (Ghent: Christian de Backer 1973).

- (42) Leeuwarden 1702<sup>639</sup> *Leeuwarder Apotheek Na de Galenisch-Chymiçe manier, Door sorgvuldigen arbeid van 't Collegie der Medicijns aldaar opgemaakt, en door des E. E. Agtbare Magistraats Authoriteit bevestigd. In duits gebracht alleen door F. J. Winter M. D. De Derde Druk, na het laadste Latijnse Exemplaar gecorrigeert (t'Amsterdam: By Jan ten Hoorn 1702)*
- (43) Amsterdam 1706 *Pharmacopoea Amstelredamensis, of d'Amsterdammer Apotheek, In welke allerlei Medicamenten, zynde tot Amsterdam in 't gebruik, konstiglyk bereyd worden. Als ook Des selfs kragten en manier van ingeven. Den sesden Druk vermeerdert en verbetert (t'Amsterdam: By Jan ten Hoorn 1706)*
- (44) Dordrecht 1708 *Pharmacopoea Dordracena galeno-chymica. Magistratus Auctoritate munita (Dordraci: Apud Joannem van Braam 1708)*
- (45) Rotterdam 1709<sup>640</sup> *Pharmacopoea Roterodamensis galeno-chymica, of Rotterdamsche galenische en chymische Apotheek (Te Rotterdam: By Barent Bos, en De Wed. van Elias Yvans 1709)*
- (46) Leeuwarden 1712 *De Leeuwarder Apotheek, Volgens de Galenische en Chimische wyze; Door den arbeit van 't Genoodschap der Artzen dier Stede opgemaakt en nagezien, en door d'achtbaarheid der Majestraat bevestigd. Naar den tweeden Latynschen Druk in 't Nederduitsch vertaalt. De vierde Druk (t'Amsterdam: By Nicolaas ten Hoorn 1712)*
- (47) Amsterdam 1714 *Pharmacopoea Amstelredamensis, of d'Amsterdammer Apotheek, In welke allerlei Medicamenten, tot Amsterdam in 't gebruik zynde, konstiglyk bereyd worden. Als ook Desselfs kragten en manier van ingeven. Zevende Druk vermeerdert en verbetert (t'Amsterdam: By Nicolaas ten Hoorn 1714)*

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<sup>639</sup> Also published as facsimile: *Leeuwarder Apotheek: Na de Galenisch-Chymiçe manier* (Tilburg: F.A.H. Peeters 1983).

<sup>640</sup> Also published as facsimile: *Pharmacopoea Roterodamensis galeno-chymica, of Rotterdamsche galenische en chymische Apotheek* (Tilburg: F.A.H. Peeters 1983).

- (48) Haarlem 1714 *De verbeterde Haarlemmer Apotheek: In welke allerlei Geneesmiddelen, tot Haarlem in 't gebruik zynde, konstiglyk bereid worden. Door het Collegie der Medicijne Doctoren aldaar in 't Latijn opgemaakt. En door des Raads Achtbaarheid bekrachtigt. Uit het Latyn vertaalt, en met desselfs krachten en Manier van ingeeven vermeerdert. Door Abraham Bógaert, Apotheker en Chirurgyn. Derde Druk (Te Haarlem: by Wilhelmus van Kessel, En te Amsterdam: by Nicolaas ten Hoorn 1714)*
- (49) Leiden 1718 *Pharmacopoea Leidensis, amplissimorum Magistratum Auctoritate instaurata (Lugduni Bataavorum: Apud Samuelem Luchtmans 1718)*
- (50) Leeuwarden 1720 *De Leeuwarder Apotheek, Volgens de Galenische en Chimische wyze; Door den arbeit van 't Genoodschap der Artzen dier Stede opgemaakt en nagezien, en door d'achtbaarheid der Majestraat bevestigd. Naar den tweeden Latynschen Druk in 't Nederduitsch vertaalt. De Vyfde Druk (T'Amsterdam: By Nicolaas ten Hoorn 1720)*
- (51) Dordrecht 1722 *Pharmacopoea Dordracena galenico-chymica. Magistratus Auctoritate munita. Editio secunda multo auctior & emendatior (Dordraci: Apud Joannem van Braam 1722)*
- (52) Alkmaar 1723 *Pharmacopoea Almeriana galeno-chymica (Almeriae: Apud Joannem van Beyerem 1723)*
- (53) Amsterdam 1723 *Pharmacopoea Amstelredamensis, of d'Amsterdammer Apotheek, In welke allerlei Medicamenten, tot Amsterdam in 't gebruik zynde, konstiglyk bereyd worden. Als ook Desselfs kragten en manier van ingeven. Achtste Druk vermeerdert en verbeterd (t'Amsterdam: By Nicolaas ten Hoorn 1723)*
- (54) Amsterdam 1726 *Pharmacopoea Amstelaedamensis renovata (Amstelaedami: Apud Petrum vanden Berge 1726)*
- (55) Alkmaar 1726<sup>641</sup> *Pharmacopoea Almeriana galeno-chymica. Editio secunda, Aucta & Correcta (Almeriae: Apud Joannem van Beyerem 1726)*
- (56) Rotterdam 1728 *Pharmacopoea Roterodamensis galeno-chymica, of Rotterdamsche galenische en chymische Apotheek (Te Rotterdam: By Philippus Losel 1728)*

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<sup>641</sup> Also published as facsimile: *Pharmacopoea Almeriana 1726, Supplementum ad Pharmacopoeam Alcmarianam [1779], Wet voor Doctoren en Apothecars binnen de Stad Alkmaar [1795]: facsimile reprint (Ghent: Christian de Backer 1973).*

New Drugs for the Dutch Republic

- (57) Groningen 1729 *Pharmacopoea Groningana* (Groningae: Typis Gesinae Elamae 1729)
- (58) Amsterdam 1731 *Pharmacopoea Amstelredamensis, of Amsterdammer Apotheek, In welke allerlei Medicamenten, tot Amsterdam in 't gebruik zynde, konstiglyk bereyd worden. Als ook Derzelve kragten en manier van ingeven. Negende Druk, vermeerderd en verbeterd (t'Amsterdam: By Nicolaas de Wit 1731)*
- (59) Leeuwarden 1731 *De Leeuwarder Apotheek, Volgens de Galenische en Chimische wyze; Door den arbeit van 't Genootschap der Artzen dier Stede opgemaakt en nagezien, en door d'achtbaarheid der Magistraat bevestigd. Naar den tweeden Latynschen Druk in 't Nederduitsch vertaalt. De Sesde Druk (T'Amsterdam: By Nicolaas de Wit 1731)*
- (60) Douai 1732 *Pharmacopoeia Duacena galeno-chymica nobilissimi et amplissimi Senatus Auctoritate et jussu Munia & Edita* (Duaci: Typis Jacobi Fr. Willerval 1732)
- (61) Leiden 1732 *Pharmacopoea Leidensis, amplissimum Magistratum Auctoritate instaurata. Editio altera priori emendatior* (Lugduni Batavorum: Apud Samuelem Luchtmans 1732)
- (62) Amsterdam 1733 *Vernieuwde Amsterdamsche Apotheek, In Nederduitsch overgebracht* (Te Amsterdam: By Pieter vanden Berge 1733)
- (63) Haarlem 1735 *De verbeterde Haarlemmer Apotheek: In welke allerlei Geneesmiddelen, tot Haarlem in 't gebruik zynde, konstiglyk bereid worden. Door het Collegie der Medicyne Doctoren aldaar in 't Latyn opgemaakt, En door des Raads Achtbaarheid bekrachtigt. Uit het Latyn vertaalt, en met desselfs krachten en Manier van ingeven vermeerderd. Door Abraham Bogaart, Apotheker en Chirurgyn. Vierde Druk (Te Amsterdam: By Nicolaas de Wit 1735)*
- (64) Rotterdam 1735 *Pharmacopoea Roterodamensis galeno-chymica of Rotterdamsche galenische en chymische Apotheek* (Rotterdam: By Nicolaas de Wit 1735)
- (65) Amsterdam 1736 *Pharmacopoea Amstelredamensis, of Amsterdammer Apotheek, In welke allerlei Medicamenten, tot Amsterdam in 't gebruik zynde, konstiglyk bereid worden. Als ook Derzelve kragten en manier van Ingeven. Negende Druk, Vermeerderd en Verbeterd (t'Amsterdam: By Gerrit de Groot 1736)*



- (66) Haarlem 1736 *De verbeterde Haarlemmer Apotheek: In welke allerlei Geneesmiddelen, tot Haarlem in 't gebruik zynde, konstiglyk bereid worden. Door het Collegie der Medicynne Doctoren aldaar in het Latyn opgemaakt, En door des Raads Achtbaarheid bekrachtigt. Uit het Latyn vertaalt, en met desselfs krachten en Manier van Ingeeven vermeerderd. Door Abraham Bógaart, Apotheeker en Chirurgyen. Vierde Druk (t'Amsterdam: By Gerrit de Groot 1736)*
- (67) Leeuwarden 1736<sup>642</sup> *De Leeuwarder Apotheek, Volgens de Galenische en Chimische wyze; Door den arbeit van 't Genoodschap der Artzen dier Stede opgemaakt en nagezien, en door d'achtbaarheid der Magistraat bevestigd. Naar den tweeden Latynschen Druk in 't Nederduytsch Vertaalt. De Sesde Druk (t'Amsterdam: By Gerrit de Groot 1736)*
- (68) Rotterdam 1736 *Pharmacopoea Roterodamensis galeno-chymica of Rotterdamsche, galenische en chymische Apotheek (t'Amsterdam: By Gerrit de Groot 1736)*
- (69) The Hague 1738 *Pharmacopoea Hagana ex Auctoritate Magistratus Poliatrorum Opera instaurata et aucta (Hagae-Comitum: Apud Fredericum Boucquet 1738)*
- (70) Brussels 1739 *Pharmacopoea Bruxellensis Senatûs Auctoritate munita. Editio altera (Bruxellis: Typis Viduae Foppens [1739])*
- (71) Amsterdam 1741 *Pharmacopoea Amstelredamensis, of Amsterdammer Apotheek, In welke allerlei Medicamenten, tot Amsterdam in 't gebruik zynde, konstiglyk bereyd worden. Als ook Derzelve kragten en manier van ingeven. Tiende Druk, vermeerderd en verbeterd (t'Amsterdam: By Gerrit de Groot 1741)*
- (72) Haarlem 1741 *Pharmacopoea Harlemensis galeno-chemica, Senatus Auctoritate munita (Harlemi: Ex Officina Petri van Assendelft 1741)*

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<sup>642</sup> The relationship between this edition and (59) is unclear, as both are described as the sixth edition of the pharmacopoeia of Leeuwarden.

- (73) Liège 1741<sup>643</sup> *Pharmacopoea Leodiensis, in qua Describuntur Medicamenta tam simplicia quàm composita, ordine sequenti in tres partes distributa. In Prima Simplicia omnia. In Altera Composita galenica. In Tertia chimica Remedia. Cum adjuncta Taxa & Indice. Omnia ad usum Medicorum Patriae Leodiensis (Leodii: Typis Everardi Kints 1741)*
- (74) Brussels 1742 *Brusselsche Apotheek, Door het gezag van de Magistraat bevestigd, En naar de tweede Latynsche Druk in het Nederduitsch Vertaald (t'Amsterdam: By Gerrit de Groot 1742)*
- (75) Leeuwarden 1745 *De Leeuwarder Apotheek, Volgens de Galenische en **Chimische wyze; Door den arbeid van 't** Genoodschap der Artzen dier Stede opgemaakt en **nagezien, en door d'achtbaarheid der Magistraat** bevestigd. Naar den Tweeden Latynschen Druk in het Nederduytsch Vertaald. De Zevende Druk (t'Amsterdam: By Gerrit de Groot 1745)*
- (76) Batavia 1746<sup>644</sup> *Bataviasche Apotheek Waarin begreepen zyn zodanige enkele en gecomponeerde **geneesmiddelen als 'er in de Hospitaals en Stads** Apotheek zullen bewaart worden (Batavia: Gedrukt in 't Casteel by 's E. Comps. Drucker C. J. Weichberger 1746)*
- (77) Utrecht 1749 *Pharmacopoea Ultrajectina nova (Trajecti ad Rhenum: Apud Jacobum à Poolsum 1749)*
- (78) Leiden 1751 *Pharmacopoea Leidensis, amplissimorum Magistratum Auctoritate instaurata. Editio tertia prioribus auctior & emendatior (Lugduni Batavorum: Apud Samuelem Luchtmans et Filios 1751)*
- (79) Dunkirk 1752<sup>645</sup> *Series seu Tabula alphabetica Medicamentorum tam Simplicium, quam Compositorum, Quae in omnibus ac singulis Urbis Dunkercanae Pharmacopoliis rectè parata, & modernae Medicorum Praxi accommodata, in aegrorum levamen semper praestò esse debent (Dunkercae: Typis Nicolai Weins 1752)*

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<sup>643</sup> Also published as facsimile: *Pharmacopoea Leodiensis 1741: facsimile*. Introd. by L.J. Vandewiele (Ghent: Christian de Backer 1975).

<sup>644</sup> Also published as facsimile: *Bataviasche Apotheek (1746)* (Tilburg: F.A.H. Peeters 1981).

<sup>645</sup> Daems and Vandewiele consistently list this title as *Codiculum Dunkercae*, but this name does not appear on the title page.

- (80) Mons 1755 *Codex Medicamentarius amplissimi Senatus Montensis Auctoritate munitus* (Montibus Hannoniae: Ex Typographia Henrici Bottin 1755)
- (81) Amsterdam 1756 *Pharmacopoea Amstelredamensis, of Amsteldammer Apotheek, In welke allerlei Medicamenten, te **Amsteldam in 't gebruik zynde, konstiglyk bereid** worden. Als ook Derzelve kragten en manier van ingeven. Elfde Druk, vermeerderd en verbeterd (**t'Amsteldam: By Gerrit de Groot 1756**)*
- (82) Ghent 1756 *Pharmacopoea Gandavensis nobilissimi Senatūs Monitu concinnata, ejusque jussu edita* (Gandavi: typis Joannis Meyer [1756])
- (83) The Hague 1758 *Pharmacopoea Hagana, ex Auctoritate Magistratus Poliatrorum Opera tertium instaurata et aucta* (Hagae Comitum: Apud Viduam Frederici Boucquet 1758)
- (84) Brussels 1759 *Pharmacopoea Bruxellensis Senatūs Authoritate munita. Editio altera* (Bruxellis: Apud Vid. Aeg. **Stryckwant & Antonium d'Ours 1759**)
- (85) The Hague 1762 *Haegsche Apotheek, op het Gezag der Magistraet, door den Arbeid der Stads-Doctoren, Volgens, den laetsten vernieuwden en verbeterden Latynsche Druk vertaeld (**In 'sGravenhage: By Johannes de Cros 1762**)*
- (86) Dordrecht 1766 *Pharmacopoea Dordracena galenico-chimica. Magistratus Auctoritate munita. Editio tertia multo auctior & emendatior* (Dordraci: Typis Bramianis 1766)
- (87) Amsterdam 1767 ***Vernieuwde Amsterdamsche Apotheek, In 't Nederduitsch overgebracht. En thans van ingesloopen Drukfouten gezuiverd*** (Te Amsterdam: By Jan Morterre 1767)
- (88) Leiden 1770 *Pharmacopoea Leidensis, amplissimorum Magistratum Auctoritate instaurata. Editio Quarta* (Lugduni Batavorum: Apud Sam. et Joh. Luchtmans 1770)
- (89) Lille 1772 *Pharmacopoea jussu Senatus Insulensis tertio edita* (Insulis Flandrorum: Typis J. B. Henry 1772)

- (90) Leeuwarden 1774 *De Leeuwarder Apotheek, volgens de Galenische en Chimische wyze; Door den arbeid van 't Genoodschap der Artzen dier Stede opgemaakt en nagezien, en door de Achtbaarheid der Magistraat bevestigd. Naar den Tweeden Latynschen Druk in het Nederduytsch Vertaald. De Zevende Druk* (Te Leeuwarden: Ter Drukker. van H. A. de Chalmot 1774)
- (91) Brussels 1775 *Brusselsche Apotheek, Door het Gezag van de Magistraat bevestigd, En naar de tweede Latynsche Druk in het Nederduitsch Vertaalt* (Te Amsterdam: By Johannes van Seggeren en Zoon 1775)
- (92) Alkmaar 1779<sup>646</sup> *Supplementum ad Pharmacopoeam Alcmariamam* (Alcmariae: Apud Viduam Jacobi Maagh 1779)
- (93) Ghent 1786 *Pharmacopoea Gandavensis nobilissimi Senatus jussu renovata* (Gandavi: Typis Judoci Begyn 1786)
- (94) Tournai 1786 *Taxatio medicamentorum, Tam Simplicium selectiorum & debite mundatorum, quàm Compositorum Galeno-Chymicorum, Lege Artis Praeparatorum juxtà Codicem specialiter Insulensem anno 1772 editum, aliasque Orthodoxas Pharmacopaeas, quorum pleraque in Pharmacopoliis hujus Urbis Tornacensis reperiri debent; à tribus Collegii Medici delegatis fideliter conscripta cùm honesto pretio, Pecuniâ Brabantinâ communi indicato; Ponderibus & Mensuris probè delineata; nec non in ordinem alphabeticum concinnè digesta; varias in Classes, notis intercalaribus adjunctis, divisa: postea ab omnibus dicti Collegii Membris, ordine solito Congregatis, confirmata. Postremo consentanea Pharmacopaeorum optatis hinc exploratis* (Tornaci: Ex Officinâ Adriani Serré 1786)
- (95) Ghent 1787<sup>647</sup> *Pharmacopoea Gandavensis nobilissimi Senatus jussu renovata: Adjunctae sunt variae Adnotationes criticae & instructivae à P. van Baveghem, Ejusdem Urbis Pharmacopoea* (Gandavi: Typis Ludovici le Maire 1787)

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<sup>646</sup> Also published as facsimile. See note 641.

<sup>647</sup> The relationship between this edition and (93) is unclear. Daems and Vandewiele only describe (93) in detail. The editions must be related, because both contain the same letter of consent by the Collegium Medicum, dated March 5, 1787.

- (96) Haarlem 1790 *Pharmacopoea Harlemensis galeno-chemica, Senatus Auctoritate munita* (Harlemi: Ex Officina C. B. van Brussel 1790)
- (97) Amsterdam 1792<sup>648</sup> *Pharmacopoea Amstelodamensis nova* (Amstelodami: apud Petrum Henricum Dronsberg 1792)
- (98) Amsterdam 1795 *De nieuwe Amsterdamsche Apotheek. Uit het Latyn vertaald* (Te Amsterdam: By Pieter Hendrik Dronsberg 1795)

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<sup>648</sup> Wittop Koning, "Bijdrage tot de Bibliografie", 150, believed that another edition must have existed, based on a title image that is identical to the one from (97), but with the year '1793' on it. However, no copy of such a book has ever surfaced.

## Bibliography

The early modern municipal pharmacopoeias (published between 1636 and 1795), which are frequently referred to throughout this dissertation, have not been included here. They are listed separately in the Appendix.

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## New Drugs for the Dutch Republic

### *Websites*

The websites from which images were derived can be found in the List of Maps, Tables and Figures.

Alle Amsterdamse Akten:

<http://alleamsterdamseakten.nl/>

Brieven als Buit:

<http://brievenalsbuit.inl.nl/zeebrieven/page/search>

Correspondence Guy Patin:

<http://www.biusante.parisdescartes.fr/patin/>

Dutch Craft Guilds:

<https://dataverse.nl/file.xhtml?fileId=1427&version=1.0>

ePistolarium:

<http://ckcc.huylgens.knaw.nl/epistolarium/>

Etymologiebank:

<http://www.etymologiebank.nl/>

Farmacotherapeutisch Kompas:

<https://www.farmacotherapeutischkompas.nl/>

Geïntegreerde Taalbank:

<http://gtb.inl.nl/>

Gekaapte Brieven:

<http://www.gekaaptebrieven.nl/>

Introduction to the Inventory of the Amsterdam City Archives, 366 (Archive of the Guilds):

<https://archief.amsterdam/inventarissen/printversie/366.nl.pdf>

The Plant List:

<http://www.theplantlist.org/>

Stichting Farmaceutisch Erfgoed, list of digitized versions of municipal pharmacopoeias:

<https://www.stichtingfarmaceutischerfgoed.nl/projecten/gedigitaliseerde-farmacopees>

Time Capsule:

<http://www.timecapsule.nu/>

## Samenvatting (Summary in Dutch)

Nieuwe Geneesmiddelen voor de Nederlandse Republiek. De Commodificatie van Koortsmiddelen in Nederland (ca. 1650-1800)

Dit proefschrift onderzoekt het commodificatieproces van geneesmiddelen in Nederland tussen 1650 en 1800. Commodificatie is gekarakteriseerd als een historisch transformatieproces, waarbij kennis en goederen eerst incidenteel worden aangeprezen, maar zich geleidelijk ontwikkelen tot verhandelbare goederen, waarvoor structureel geadverteerd wordt en die herkend en erkend worden door brede lagen van de bevolking. Het gaat dan om gecodificeerde producten, waarvoor een consequente terminologie ontstaat en die aan bepaalde standaarden voldoen, qua uiterlijk en kwaliteit. Die terminologie en standaarden zijn deels in krantenadvertenties terug te vinden.

Trajecten van geneesmiddelen zijn het uitgangspunt voor dit onderzoek, als perspectief op het commodificatieproces. Trajecten beschrijven de ontwikkeling van geneesmiddelen in verschillende domeinen, zoals handel, geneeskunde en samenleving. Trajecten kunnen door de tijd heen (diachroon) worden onderzocht, of met een vergelijkend perspectief over een korter tijdsbestek (synchroon). In dit proefschrift worden de trajecten van koortsmiddelen onderzocht, met name kinabast: de bast van *Cinchona*-soorten uit Peru, die in de vroegmoderne tijd met name tegen koorts werd gebruikt. De actieve stof kinine uit deze bast zou later tegen malaria gebruikt worden.

Voor dit onderzoek is gebruik gemaakt van een combinatie van conventioneel, analoog bronnenonderzoek en vernieuwend, digitaal onderzoek, waarbij de afwisseling van *close* en *distant reading* van beide brontypen centraal staat. Ten aanzien van het digitale onderzoek bieden historische krantenadvertenties een vruchtbare kijk op het commodificatieproces van geneesmiddelen. Historische kranten zijn op grote schaal digitaal beschikbaar in Delpher, het platform van de Koninklijke Bibliotheek waarop Nederlandse historische bronnen zijn ontsloten. Allerlei typen adverteerders op de medische markt hadden een commercieel belang om grotere bekendheid te geven aan hun goederen en diensten, en dat promotiemateriaal is massaal in kranten terug te vinden. Dit proefschrift maakt op grote schaal gebruik van systematische, digitale datacollecties. Duizenden advertenties uit de achttiende eeuw

worden voor het eerst systematisch ingezet om de medische markt in Nederland te onderzoeken. Daarnaast is gebruik gemaakt van het Time Capsule-platform, een digitale onderzoeksomgeving waarin verschillende datasets over het historische gebruik van medicinale planten zijn geïntegreerd. Dit platform is parallel aan het historisch onderzoek voor dit proefschrift gerealiseerd, binnen het gelijknamige project.

Krantenlezers in de achttiende eeuw hadden een ander soort **'farmaceutische geletterdheid'** dan hedendaagse krantenlezers: zij leefden in een wereld waarin alle lagen van de medische markt werkten met geneesmiddelen die gemaakt waren van natuurlijke grondstoffen, en waarin ziektebeelden niet zo duidelijk omlijnd waren als tegenwoordig. Ter illustratie: er bestonden in de vroegmoderne tijd veel onduidelijkheden over koorts en kinabast, zowel in het medische als in het publieke domein. Voor koortsen bestond geen statische medische theorie of classificatie. Voor kinabast bestond taalkundige verwarring met andere geneesmiddelen, en ook de geografische en botanische herkomst van het middel waren lang onduidelijk. Krantenlezers waren vertrouwd met de eigentijdse medische terminologie en de onduidelijkheden die ziekten en geneesmiddelen omringden, en zij konden snel beoordelen of medische advertenties in kranten voor hen relevant waren. De vraag die in het proefschrift centraal staat is in hoeverre promotiecampagnes, met name in kranten, hebben bijgedragen aan het commodificatieproces van nieuwe (exotische) geneesmiddelen. Daarom wordt vooral gekeken naar het commerciële traject van geneesmiddelen.

Het eerste hoofdstuk onderzoekt de verspreiding van kennis over kinabast en acceptatie van het product kinabast, zoals te vinden is in brieven uit de tweede helft van de zeventiende eeuw. De correspondentie van de beroemde Nederlandse geleerde Christiaan Huygens staat hierbij centraal. Huygens werd enthousiast over het relatief nieuwe middel kinabast in de context van de ziekte van zijn broer Lodewijk in 1663. Uit Christiaans brieven blijkt dat hij de koorts van zijn broer kon relateren aan zijn ervaringen in Parijs, waar kort daarvoor een koortsepidemie had gewoed. Nog persoonlijker werd zijn ervaring door de ziektegeschiedenis van Anna Bergerotti, een zangeres aan het Franse hof, die bevriend was met de familie Huygens. Haar snelle herstel door het gebruik van kinabast werd in haar omgeving met grote belangstelling gevolgd. Op basis van deze ervaring suggereerde Huygens het gebruik van kinabast bij zijn broer, ook al verschilden de ziektegevallen van Anna Bergerotti en Lodewijk Huygens behoorlijk, vanuit eigentijds medisch oogpunt. Het is moeilijk om op basis van dit soort anekdotische geschiedenissen een algemener beeld te schetsen van de uitwisseling van kennis over kinabast in geleerde **kringen en het publieke domein. Door Huygens' gangen na te gaan in het**



**Parijs van de jaren 1660 en zijn 'medische netwerk' te analyseren, komen** wel allerlei aanknopingspunten aan de oppervlakte, die aannemelijk maken dat Huygens al bij verschillende gelegenheden (zoals in *salons*) kennis had genomen van de succesvolle toepassingsmogelijkheden van kinabast. Tegen die achtergrond is het nauwelijks toevallig te noemen dat hij het middel in 1663 zelf aanpreeft voor de ziekte van zijn broer. Dit onderstreept het feit dat de acceptatie van kinabast in het publieke domein, in de tweede helft van de zeventiende eeuw, vooruitliep op het precieze begrip en de codificatie van het middel in het medische domein.

In hoofdstuk 2 staat de beschikbaarheid van kinabast in Nederland centraal. Een deel van de verklaring voor de onbekendheid van kinabast in de late zeventiende eeuw schuilt in de betrokkenheid van de jezuiten in de aanvoer. Hun monopoliepositie in de handel verdween in de eerste decennia van de achttiende eeuw. In Amsterdam ontwikkelde de handel in 'drogerijen' (*de facto* natuurlijke grondstoffen voor geneesmiddelen) zich tot een specialisme van een selecte groep makelaars (d.w.z. beëdigde leden van het Makelaarsgilde) in Amsterdam. Dit is de eerste keer dat de werkwijze en het succes van dit type makelaars op grote schaal wordt onderzocht. De activiteiten van makelaars, met name de organisatie van publieke veilingen van aangevoerde goederen, hebben veel archiefmateriaal nagelaten. Uit een collectie van ca. 4500 krantenadvertenties, waarin zulke veilingen werden aangekondigd, valt het karakter van de handel in kinabast in de achttiende eeuw af te lezen. Terwijl de werkwijze van makelaars hetzelfde bleef, nam de omvang van de handel toe of af, al naar gelang de wereldwijde politieke en economische ontwikkelingen. Snel herstel van de handel, in tijden van crisis, toont de veerkracht aan van de handel in drogerijen. De rol van makelaars was hierin essentieel. Door te adverteren spraken zij een regionale of zelfs landelijke markt aan. Voor verkopers was de tussenpositie die makelaars innamen een groot voordeel: makelaars kenden potentiële kopers; zij bepaalden de groothandelsprijzen van producten in hun domein; zij namen de organisatie van het verkoopproces over van verkopers; en zij boden door hun productkennis een zekere kwaliteitsgarantie, waardoor de handel een element van onpartijdigheid en vertrouwen kreeg in de totstandkoming van transacties.

**Behalve grondstoffen voor geneesmiddelen waren er aan de 'andere kant' van het medische marktspectrum ook medische producten, die in** de achttiende eeuw een eigen commodificatieproces doormaakten. In hoofdstuk 3 staan irreguliere koortsmiddelen centraal, dat wil zeggen een categorie geheimmiddelen die naast de reguliere geneeskunde (van artsrecept en apotheekbereiding) voor patiënten beschikbaar was. Voor dit type producten is een collectie van ca. 5000 krantenadvertenties

onderzocht. Geheimmiddelen waren, in de eenvoudigste zin van het woord, geneesmiddelen waarvan de samenstelling geheim werd gehouden door de producent, meestal vanuit commerciële overwegingen. Advertenties voor koortsmiddelen laten de diversiteit van de spelers op de medische markt goed zien: voor veel adverteerders is moeilijk na te gaan in hoeverre zij te typeren zijn als 'reguliere' of 'irreguliere' beoefenaars. Reguliere medische beroepen (artsen, chirurgijns, apothekers en vroedvrouwen) werden (semi-)professioneel opgeleid, georganiseerd en gecontroleerd. De adverteerders van koortsmiddelen konden daartoe behoren, maar vaak was dat niet het geval. Ook de geadverteerde middelen zelf bevinden zich vaak in het grijze gebied **tussen 'regulier' en 'irregulier': producenten konden hun eigen recept aan de man brengen (irregulier) of een gecommmercialiseerde versie van een officieel recept uit een apothekershandboek verkopen (regulier)**. Er bestond nauwelijks juridische regulatie van geheimmiddelen. Toch werd er veel geadverteerd voor geheimmiddelen, ondanks het risico dat vervalsers de naam en de reputatie van bestaande middelen voor eigen gewin konden hergebruiken. De achttiende eeuw is daardoor met recht aan te duiden als het eerste tijdperk van grootschalig medisch adverteren. Dit in tegenstelling tot de heersende opvatting in moderne historische literatuur, waar die aanduiding voor de negentiende en twintigste eeuw wordt gebruikt.

Advertenties voor geheime koortsmiddelen bevatten veel terugkerende, discursieve elementen, die als vroege 'marketingtrucs' kunnen worden aangeduid. Het gaat vaak om anonieme producenten met onduidelijke kwalificaties en geneesmiddelen die in superlatieven worden aangeprezen, zonder dat precieze informatie over de samenstelling of werking wordt prijsgegeven. Geheimmiddelen werden vaak aangeprezen als panacees: middelen die voor uiteenlopende aandoeningen te gebruiken waren. Hoewel het praktische succes van adverteren voor geneesmiddelen (in termen van verkoopcijfers) nauwelijks te meten is, laat een langetermijnperspectief wel zien, dat de mogelijkheid om een grotere afzetmarkt aan te boren gedurende de hele achttiende eeuw een aansprekend motief bleef voor nieuwe adverteerders. Koortsmiddelen kwamen veel voor, mede doordat de terminologie voor koortsen uit de **reguliere geneeskunde vrij eenvoudig kon worden 'hergebruikt' door adverteerders**. Zij konden hiermee een specifieke groep patiënten aanspreken. De precieze betekenis van medische termen kon daardoor gemakkelijk transformeren. Belangrijk hierbij is dat, ondanks ingrijpende ontwikkelingen in medische theorievorming, de classificatie van **koortstypen in de reguliere geneeskunde niet 'sluitend' gemaakt kon worden in de achttiende eeuw**. Zowel in medische handboeken, als in

advertenties voor geheimmiddelen, bleef men daarom gebruik maken van ambigue termen voor koortstypen. Een geleidelijke verschuiving van holistisch naar meer reductionistisch denken in de geneeskunde (of vice versa), die in medisch-historische literatuur over de achttiende eeuw is waargenomen, is niet in advertenties terug te zien. Commerciële belangen speelden voor adverteerders een hoofdrol in het gebruik van medische terminologie.

De aantrekkingskracht die van adverteren uitging en de mogelijkheid om een groter publiek aan te spreken resulteerden niet alleen in een groeiend aantal adverteerders. In hoofdstuk 4 wordt beargumenteerd dat adverteren ook zorgde voor een grotere geografische reikwijdte van geheimmiddelen: producenten adverteerden in de kranten van verschillende steden en hadden vaak een netwerk van verkooppunten in verschillende steden, meestal koffiehuisen of boekwinkels. Deze ontwikkeling is des te interessanter, omdat binnen de reguliere geneeskunde juist een omgekeerde ontwikkeling valt waar te nemen. Artsen gingen steeds vaker op lokaal niveau werken, omdat de beroepsgroep onder druk stond. In de late achttiende eeuw groeide het aantal artsen. Hun autoritaire positie werd ondermijnd doordat patiënten steeds vaker meerdere medische beoefenaars tegelijkertijd raadpleegden. Op lokaal niveau werden artsen weer het eerste contactpunt voor patiënten en konden zij zich profileren als huisarts. Zo herwonnen zij autoriteit, konden zij beter in hun levensonderhoud voorzien en werkten zij irreguliere beoefenaars tegen. Adverteerders gingen juist over tot geografische expansie door te adverteren, waarbij het contact tussen geneesheer en patiënt op afstand plaatsvond en een onpersoonlijk karakter kreeg. Territoriale expansie van geheimmiddelen en hun producenten is op alle niveaus waarneembaar. Individuele, lokale producenten konden door te adverteren een groter afzetgebied bereiken, maar hetzelfde gold voor grote, landelijk opererende producenten. Hun praktijk kreeg daardoor een commercieel, soms bedrijfsmatig karakter, waarin langdurig adverteren een bewuste marketingstrategie lijkt te zijn geweest. Het is in veel gevallen onduidelijk wat producenten motiveerde om te gaan adverteren. Ook de motieven van de eigenaars van verkooppunten, om als distributielocatie te dienen, zijn moeilijk te achterhalen. Het mogelijke commerciële voordeel van adverteren was ongetwijfeld de belangrijkste drijfveer, hoewel het daadwerkelijke succes meestal niet te achterhalen is. Het risico van vervalsing en de kosten van adverteren waren voor veel producenten blijkbaar geen grote barrière. De mogelijkheid om geneesmiddelen per post te sturen laat de ambitie van producenten zien: zelfs de optie om wereldwijd te leveren komt vaak voor

in advertenties. Dit is een vroeg voorbeeld van geografische expansie van de medische markt, naar een wereldwijd publiek.

Hoewel kinabast het bekendste koortsmiddel van de achttiende eeuw was, zijn er in bronnen uit het handels- en medische domein veel meer exotische grondstoffen te vinden, die met meer of minder succes standaardproducten werden in de apotheek. Veel producten hebben een kleiner medisch en/of commercieel belang gehad dan kinabast en zijn daardoor lastiger te traceren in bronnen. Het is echter goed mogelijk om **de trajecten van 'verwante' geneesmiddelen samen te onderzoeken**. Die aanpak staat centraal in hoofdstuk 5, met als voorbeeld cascarilla-bast: een koortswerend middel uit de Nieuwe Wereld, net als kinabast. Cascarilla was al bekend in Europa in de laatste decennia van de zeventiende eeuw, maar kwam in Nederland pas op de voorgrond in het kader van de koortsepidemie, die in 1727-1728 woedde in een aantal Hollandse steden. Hoewel de epidemie moeilijk te traceren is in geschreven bronnen (de enige uitgebreide bron is het persoonlijk verslag van Herman Boerhaave uit Leiden), laten demografische gegevens van enkele steden in deze jaren de grootste sterftepiek van de eerste helft van de achttiende eeuw zien. Het verloop van de ziekte wordt daarnaast duidelijk uit importcijfers, van zowel kinabast als cascarilla. De handel kon snel inspelen op de grotere vraag naar koortswerende middelen en beide soorten bast komen in deze jaren vaker dan voorheen voor in publieke veilingen van drogerijen in Amsterdam. Hoewel deze handel vanuit commercieel perspectief waarschijnlijk adequaat was, bestond er ook weerstand. Advertenties voor koortsmiddelen benoemen, in de nasleep van de epidemie, vaak dat middelen géén kinabast bevatte, waarmee producenten inspeelden op negatieve ervaringen die sommige patiënten met kina bast gehad konden hebben. Door data uit verschillende trajecten samen te brengen en te combineren is het dus mogelijk om een epidemie vrij nauwkeurig te traceren.

De voorgaande hoofdstukken maakten zoveel mogelijk gebruik van systematische gegevens, maar dit type onderzoek zou veel efficiënter uitgevoerd kunnen worden als gegevens in één systeem toegankelijk zijn. Daarom is Time Capsule tot stand gebracht: een digitaal platform voor onderzoek naar het historische gebruik van medicinale planten (zie [www.timecapsule.nu](http://www.timecapsule.nu)), dat in hoofdstuk 6 wordt toegelicht. In Time Capsule zijn databronnen van verschillende partners semantisch geïntegreerd als Linked Data. Daarmee is Time Capsule het eerste Linked Data-platform in Nederland voor wetenschapshistorisch onderzoek. De gegevens zijn zeer divers: historisch, economisch, taalkundig, (archeo)botanisch en medisch-farmaceutisch. Belangrijke pijlers van de gekozen structuur zijn goede toegankelijkheid, presentatie en

deugdelijkheid van de geïntegreerde data. Gebruiksgemak voor diverse groepen gebruikers is daarnaast een belangrijk aspect. Door middel van *browsing* wordt de gebruiker met tabbladen naar bepaalde hoofdtypen informatie geleid: planten, geneesmiddelcomponenten, bronnen, of handelsgegevens. Daarnaast is er de Query Machine, waarmee gebruikers gerichte zoekvragen kunnen opbouwen, door middel van vooraf gedefinieerde SPARQL-queries. Het is mogelijk om spatiotemporele visualisaties van de data te maken en om verschillende planten of geneesmiddelcomponenten te vergelijken. Het hoofdstuk illustreert de functies van het systeem door een testcasus van één product: asafoetida (duivelsdrek), een gomhars uit Centraal-Azië, dat sinds de zestiende eeuw in Europa bekend was. Door in Time Capsule te zoeken naar asafoetida krijgt de gebruiker meerdere aanknopingspunten voor verder onderzoek, met name over het commerciële traject: de handelsstroom waarmee asafoetida in de achttiende eeuw in Nederland terechtkwam. De verschillende manieren van zoeken in Time Capsule ondersteunen het intuïtieve denkproces van de onderzoeker. Gegevens die worden gevonden bieden input om binnen het platform verder te zoeken. Zo faciliteert Time Capsule vernieuwend onderzoek, zonder het **onderzoeksproces 'over te nemen'**. **De herkomst van gegevens is** voortdurend te traceren, waardoor het onderzoeksproces expliciet wordt gemaakt en zoekopdrachten kunnen worden geëvalueerd en hergebruikt. Op die manier biedt het platform geïntegreerde gegevens die als basis kunnen dienen voor een historisch narratief.

Het proefschrift illustreert het belang van het commerciële traject van geneesmiddelen in vroegmodern Nederland: de spelers op de medische markt stonden veel dichter bij elkaar stonden dan eerder gedacht. Een beroemd arts als Herman Boerhaave was zich terdege bewust van allerlei factoren die het succes van geneesmiddelen bepaalden, naast de eigenlijke werking, zoals medische mode, beschikbaarheid en prijs. Veel en diverse historische actoren hadden een commercieel belang op de markt voor geneesmiddelen en haalden daar inkomsten uit. Het brede publiek kon de diversiteit van de medische markt teruglezen in de **pagina's van de krant, waarin allerlei medische advertenties stonden**. Om de relevantie van zulke advertenties te kunnen duiden had men in de vroegmoderne tijd een eigen soort farmaceutische geletterdheid, die eigen was aan de wereld waarin men leefde: een wereld waarin geneesmiddelen nog grotendeels van natuurlijke grondstoffen werden gemaakt, zowel binnen de reguliere als de irreguliere geneeskunde. Adverteerders konden inspelen op zowel de kennis die lezers hadden over geneesmiddelen, als op de emoties die zij daarbij ervaarden. Advertenties uit de achttiende eeuw laten zien dat het krantenlezende publiek tot op

zekere hoogte bekend moet zijn geweest met de aard van verschillende koortstypen en van kinabast.

Adverteerders ontwikkelden zich tussen 1650 en 1800 tot een succesvolle marketingstrategie voor meerdere spelers op de medische markt: voor makelaars die grondstoffen verhandelden, maar ook voor producenten van geheimmiddelen. Hun adverteerderspraktijken droegen bij aan een globaliserende medische markt, waarin geneesmiddelen wereldwijd hun weg vonden als producten van en naar de Nederlandse Republiek. Dit proces van commodificatie laat zien dat geneesmiddelen hun karakter als onbekende, **geheimzinnige goederen konden 'afschudden' en zich konden ontwikkelen tot producten die voor iedereen bekend en beschikbaar waren.** Tegelijkertijd toont de analyse van het commerciële traject van geneesmiddelen aan hoe, in de competitie tussen producten, sommigen wel of juist niet succesvol konden worden op de medische markt.

Het systematisch onderzoeken van grote, digitale databestanden is essentieel om dit soort historische ontwikkelingen aan het licht te brengen. Het is wenselijk dat technologische initiatieven blijven inspelen op de vraag om gegevens digitaal te ontsluiten, doorzoekbaar te maken en voor hergebruik te structureren en op te slaan. Time Capsule is daartoe een initiatief geweest, maar biedt zeker geen generieke oplossingen voor digitaal geesteswetenschappelijk onderzoek. Dat is een utopie. Wat Time Capsule wel heeft aangetoond is de voortdurende noodzaak dat onderzoekers nauw samenwerken met de instituten waar de digitale data oorspronkelijk zijn gegenereerd en/of ontsloten. Gebruikers moeten direct betrokken worden bij *digital history*-projecten die beogen om uiteindelijk hun onderzoeksvragen beter te kunnen beantwoorden. Dit vereist van onderzoekers de bereidheid om het eigen onderzoeksproces tegen het licht te houden en inzichtelijk te maken, zodat digitale oplossingen optimaal op hun wensen aansluiten.

## Curriculum vitae

Wouter Klein was born in Gouda on May 2, 1987. He studied History at **Leiden University, where he obtained both his Bachelor's (2008) and Research Master's degree (2010, *cum laude*)**. In 2012-2013, he worked as a Junior Researcher at Utrecht University, under supervision of prof. dr. Toine Pieters. He assisted in various activities for the *digital humanities* projects BILAND and Time Capsule. For Time Capsule, he co-developed a digital thesaurus of historical terminology for drug components, which was to become the backbone of the technological infrastructure behind the Time Capsule platform and website. Between 2013 and 2017, he worked as a PhD Candidate at Utrecht University, supervised by Toine Pieters. He (co-)authored several chapters/articles in international peer-reviewed publications. Besides his research, he coordinated and lectured a course on the history of medicines to Master students in Pharmacy at Utrecht University. Simultaneously, he worked as a guest researcher at Huygens ING in The Hague and Amsterdam.

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Between 1650 and 1800, advertising for remedies became a standard strategy for all kinds of actors on the medical marketplace of the Netherlands. This period can be regarded as the first golden age of medical advertising, predating the era of mass media in the nineteenth and twentieth centuries. Thousands of medical advertisements can be found in newspapers during this period. Eighteenth-century newspaper readers had their own 'pharmaceutical literacy', related to their medical world of largely plant-based medicine. This literacy enabled them to understand and assess the contents of medical advertisements. Advertising, especially in newspapers, could transform unknown medicinal substances and preparations into commercialized products. The majority of new medicinal products became commodities before they were clearly understood in the medical domain. The practice of advertising itself transformed from an occasional experiment into a structural, appealing strategy to promote remedies. Every local producer of remedies could advertise, to increase the visibility of his products to a regional, national, and even international audience. In that sense, medical advertising presents an early modern example of a bottom-up, cross-cultural expansion of the medical market. Comparing the trajectories of various remedies over time reveals the dynamic, varying degree of success of new remedies. This dissertation presents the commercial trajectories of fever remedies, especially Peruvian bark, as exemplary cases.