

**Georg Joseph Kamel (1661–1706):  
A Jesuit Pharmacist at the Frontiers  
of Colonial Empires**

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This dissertation is submitted for the degree of  
Doctor of Philosophy

August 2019



**Declaration**

This dissertation is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text.

It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my dissertation has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text

It does not exceed the prescribed word limit for the relevant Degree Committee.





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### **Abstract**

This dissertation confronts persistent questions about how knowledge travelled across geographic and socio-cultural spaces and about how diverse local knowledge traditions came to shape global knowledge in the age of colonialism. I explore these issues through the lens of the career of the Jesuit pharmacist Georg Joseph Kamel (1661–1706) and the communications of medical and natural knowledge between the early modern Philippines and Europe. Sent as a missionary to the Spanish outpost in Manila, Kamel found himself engaged in encounters between European and local traditions, and in worldwide networks of knowledge exchange that spanned the Spanish, English, Dutch and Portuguese colonial empires. My main concern is Kamel's participation in the global commerce of medical and natural knowledge. Seeking to decentre previous narratives of the mobility of early modern knowledge and recover agencies previously regarded as peripheral, I use Kamel's activities to demonstrate how agents from diverse cultures and with different goals built functional relationships which facilitated worldwide movements of knowledge. This dissertation traces movements of knowledge from the point of local production, through entanglements between European and non-European traditions, and thence to worldwide movements and receptions in Europe and beyond. In this way, it shows how a Philippine medicinal plant used by indigenous communities became a global commodity, and how local knowledge thus attained global mobility. Kamel's activities highlight that input from local traditions, and from agents across the social spectrum were essential to the production and mobilisation of knowledge, which was negotiated in complex cross-cultural situations. By pluralising the sites, agents and traditions involved, I point towards new geographies of early modern knowledge.



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## Acknowledgements

Over the course of this PhD, I have been blessed with an extraordinary group of friends and colleagues, who have helped me immensely along this journey. A complete list of debts would run nearly as long as this whole dissertation, but I would like to use this space to express my gratitude to the people and institutions who have contributed the most to making this dissertation what it is today.

First and foremost, I owe great debts of gratitude to my three supervisors, without whom this dissertation would have never been completed. I still struggle to understand how fortunate I have been to work with the complete team of the *Cultures of Natural History*. I am most grateful to Emma Spary for supporting me with her incredible knowledge and patience, for her perceptive comments on my written and presented work and for continuously challenging me to push my own boundaries and develop as a researcher and as a person. I would like to express my deepest gratitude to Jim Secord for his inspiring comments and ideas, for his undying enthusiasm and encouragement and for his incisive questions that helped me never lose track of the larger picture and always interrogate the categories underlying my work. Nick Jardine has been the true father of this project, providing guidance and encouragement since its embryonic stages during my MPhil. I would like to thank him for his great wisdom and generosity, for his close and perceptive reading of my work and for always having his door open for discussion. I would also like to thank Aileen Fyfe for introducing me to the history of science, for encouraging me to pursue my interests further and for seeing something in me and this project even at a stage when there was barely anything to see. Lastly, I am most grateful to my two examiners, Dániel Margócsy and Patrick Wallis, for reading my work with such attention and care, for their insightful and generous feedback, for pressing me hard on my arguments, as well as for their lenience.

I would like to acknowledge the financial and administrative support received from several agencies and institutions. I am grateful to the UK Arts and Humanities Research Council for the generous funding in the form of Doctoral Studentship and Research Training Support Grant and for the award from the Student Development Fund. Furthermore, I would like to thank for the many research and travel grants awarded by the History and Philosophy of Science Department in Cambridge, Darwin College, the British Society for the History of Science, the History of Science Society, the Oxford Fell Fund, the University of Göttingen and the Linnean Society. These awards have enabled me to travel far and wide to present my work, meet new friends and colleagues, organise workshops and conferences and comb through various archives and libraries scattered across the world.

I have profited immensely from the opportunity to meet colleagues at conferences and workshops that I have attended over the past years. Audiences at the meetings of the History of Science Society,

the British Society for the History of Science, the European Society for the History of Science and the Cabinet of Natural History gave valuable feedback on earlier drafts of many of my chapters. I found the opportunities to present at the following workshops and conferences particularly useful: *Ischia Summer School*, *European Commerce and the Consumption of Materia Medica (1670–1730)* in Cambridge, *Translating Medicine in the Pre-Modern World* at the Wellcome Institute, *Collecting and the Knowledge of Objects (1700–1900)* in Göttingen, *Materia Medica on the Move II* in Amsterdam and *Remembering James Petiver (1665–1718)* at the Linnean Society. Lastly, I am most grateful to Pamela Smith for lending me the opportunity to participate in the *Making and Knowing Project*, and I am thankful to Columbia University and the University of Toulouse for their financial and institutional support which made that possible.

My research has greatly benefitted from my affiliation with the Natural History Museum in London. I am most grateful to Mark Carine and Charlie Jarvis from the Sloane Herbarium for helping make that possible, for their guidance and training in handling herbarium collections and for encouraging me in my research. I would also like to thank Andreia Salvador, Jon Ablett and Sue Ryder for helping me access and make sense of historical mollusc and insect collections. Lastly, I am obliged to Paul Cooper and Andrea Hart for their kind assistance in the Natural History Museum Library and Archives.

I am indebted to the help and generosity of the librarians, archivists and other staff at Cambridge University Library, the Whipple Library, British Library, Archives of the Philippine Province of the Society of Jesus, Archives of the University of Santo Tomas, Archivo General de Indias, Archivum Romanum Societatis Iesu, Biblioteca Nacional de España, Bibliothèque du Muséum National d'Histoire Naturelle, Moravský zemský archiv, Národní archiv, Natural History Museum and Real Academia de la Historia. Furthermore, I am grateful to Nicole Guibout and Françoise Bérard at the Institut de France, Christine Alexander and David Coomes at the Cambridge Herbarium Library and Sandy Paul at the Wren Library. Bernard Deprez and Yannick Van Loon from the Maurits Sabbe Library have not only been of great help in accessing the relevant materials at their institution, but also incredibly supportive of my project, and have faithfully supplied me with useful tips and references throughout my PhD. I am also most grateful to Bernard for his help with my stay in the Philippines and for his company and friendship. Lastly, I would like to thank Giuseppe Dierna for his help with accommodation in Rome and Marie-Baienne Khder and Konstantin Babenko for tolerating my presence in their humble abode in Paris for so many days.

My stay in the Philippines would never have been so productive and enjoyable without the generous help of several individuals. I am much obliged to Kathleen Gutierrez and her father Hermes for their extraordinary kindness and for offering countless valuable advice and contacts. I am truly grateful to

Domingo Madulid, Maribel Agoo and John Rey Callado for their most appreciated help during my fieldwork and for their friendship, company and support during my stay. I would also like to express my deepest gratitude to Jaroslav Olša Jr and Jan Vytopil from the Embassy of the Czech Republic in Manila, who went far out of their way in helping me make my stay as fruitful as possible. Anna Labrador, Luisito Evangelista and the staff of the National Museum in the Philippines have been incredibly welcoming and greatly supportive of my project. I am most grateful to Anna for the opportunity to contribute to the newly created display on natural history in the early modern Philippines. René Javellana and Ricky Trota José have been most helpful and patient in satisfying my endless queries about both primary and secondary sources on the Philippines. I am thankful to Sr Anicia Co and the sisters from the Congregation of the Religious of the Virgin Mary for their generous welcome, support and hospitality. I would like to thank the following individuals for interesting conversations and for their help and support during my stay: Jay Picardal, Cheek Fadriquela, Maria Jovita Zarate, Raymond Santiago, Corazón Alvina and Merce Planta. I am also grateful to Ryan Paul Ibarra for being the best host I could have hoped for. Lastly, my fieldwork in Ifuago has greatly benefitted from conversations with Marcelino Bullizay, Efren Lupais and his uncle Lolo Lupais. I am also most grateful to Benji and David Candelario and to José Pagado and his fellow *mumbaki* for permitting me to attend their healing ritual in Bayninan and for patiently answering my questions.

When not travelling the world, the History and Philosophy of Science Department and the Darwin College have been my home and I would like to thank their staff for their pastoral and administrative support. I am particularly grateful to Tamara Hug for her inexhaustible generosity and patience when dealing with my inept queries and sorting out my mistakes and confusions.

During my academic peregrinations I have met many wonderful scholars who have helped me become a better historian of science and have contributed to my research by offering ideas, advice and much needed criticism. I would especially like to thank Dorit Brixius and José Beltrán, who have shared this journey with me since its earliest stages and remained close friends and academic companions throughout. Furthermore, I am grateful to Steph Mawson for her extensive advice on research and sources on the Philippines and to Wu Huiyi for her help with Jesuit sources. I would also like to thank the following individuals for their insightful feedback and useful conversations: Tara Alberts, Monica Azzolini, Oana Baboi, Geoff Bil, Samir Boumediene, Mary Brazelton, Ben Breen, Liam Brockey, Jenny Bulstrode, Matthew Crawford, Karel Černý, Sietske Fransen, Silvia De Renzi, Paula De Vos, Florike Egmond, Mariana De Campos Françaço, Omri Bassewitch Frenkel, Dominik Hünninger, Peter Jones, Natalie Kaoukji, Lauren Kassell, Wouter Klein, Roy MacLeod, Catarina Madruga, Katrina Maydom, Noah Moxham, Kathleen Murphy, Pepe Pardo-Tomás, Juan Pimentel, Justin Rivest, Simon Schaffer, Sujit Sivasundaram, Laia Portet i Codina, Valentina Pugliano, Edwin Rose, Joan-Pau Rubiés, Mary

Terrall, Andrés Vélez Posada, Tim Walker, Anna Winterbottom, Genie Yoo, Jean-Paul Zuñiga and Ines Županov. If you do not find yourself listed, please consider yourself included.

I would like to thank my friends in Cambridge, Prague and beyond for their invaluable moral support and for helping me steer the ship along this turbulent journey. In particular, I would like to thank the CZ/SK crew in Cambridge and especially arcivýtržník Jirka Lhotka, for our insanities were often the only source of sanity in this mad place. A special shout out also goes to Claudia Baisini, who has been like an older sister to me, always ready to pick up the pieces, offer her support and act as a voice of reason.

My special and deepest thanks and gratitude go to Laura, who has been nothing short of amazing and my rock in the final leg of this journey. I could not have wished to have anyone else by my side. I could never thank you enough for your love, your strength and your understanding and for bringing me joy and hope at my darkest hours. Thank you from the bottom of my heart for always believing in me and for never letting me lose faith.

Finally, I wish to dedicate this dissertation to my mother Tamara, my father Jiří and my sister Anna-Marie. I hope you forgive me for this cliché, but no words could express how grateful I am for everything that you have done for me. Let me thank you at least for your love, care, inspiration and encouragement along the way and, especially, for never letting me lose track of what is truly important. To you, I owe everything, each success and every achievement. This dissertation is as much yours as it is mine.



## **Abbreviations**

AGI: Archivo General de Indias, Seville

AGN: Archivo General de la Nación, México

APP-SJ: Archives of the Philippine Province of the Society of Jesus, Quezon City

ARSI: Archivum Romanum Societatis Iesu, Rome

BAV: Biblioteca Apostolica Vaticana, Vatican City

BL: British Library, London

BNE: Biblioteca Nacional de España, Madrid

GBIB: Maurits Sabbe Library, Katholieke Universiteit Leuven

IF: Institut de France, Paris

LOC: Library of Congress, Washington DC

MZA: Moravský zemský archiv, Brno

NA: Národní archiv, Praha

NHM: Natural History Museum, London

RAH: Real Academia de la Historia, Madrid

UST: Archives of the University of Santo Tomas, Manila

## **Note on translations**

Unless otherwise indicated, all translations from primary and secondary sources into English are my own. I am grateful to Anna-Marie Kroupová for her help with translations from the German language.



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## Introduction

It is necessary to be barbarous with the barbarians, polite with peoples of intelligence, of the most ordinary life in Europe, austere to excess among the penitents of the Indies, decently dressed in China and half-nude in the forests of Madurai.

Louis Le Comte, French Jesuit missionary in China (1688–1691)<sup>1</sup>

Be all things to all men, so that we may gain all for Christ.

St Paul (1 Corinthians 9:22), favourite passage of Ignatius of Loyola<sup>2</sup>

Nearly everyone is familiar with the beautiful flower of camellia. Even those who have never seen one will have tasted the leaves of its most widely known species, *Camellia sinensis*, which are prepared as tea: a beverage enjoyed by cultures all around the world and second in consumption only to water. This elegant and significant plant bears the name of Georg Joseph Kamel (1661–1706), a Jesuit pharmacist from the Bohemian Lands, sent as a missionary to the Philippine archipelago. Born on the fringes of early modern Europe, Kamel bid farewell to his native soil aged 25 and set out on a long journey that took him across two oceans and three continents to the periphery of the world as he knew it. In his adopted homeland, he quickly emerged as a medical authority and acquired extensive expertise in Philippine *materia medica* and natural riches more broadly. Kamel's access to and knowledge of Philippine nature enabled him to participate in a worldwide network of knowledge exchange which extended from México to London and spanned the boundaries of the Spanish, English, Dutch and Portuguese empires. From his workshop in Manila, Kamel managed to gain membership in the *societas eruditorum*, generate considerable revenue through trade in curiosities and publish treatises on Philippine nature in Europe. His was a life spent constantly in motion, lived across the frontiers of empires and continents, of cultures and languages and of traditions and confessions.

This thesis will use this extraordinary life as a lens to understand how early modern knowledge travelled across geopolitical and socio-cultural spaces and explore how local traditions came to shape global knowledge in the age of colonialism. Whilst Kamel's activities would be considered marginal in previous narratives of the mobility of knowledge, here I argue that they bring into focus a range of questions and practices central to our understanding of the production and communication of early modern science. My main concern lies in the global commerce of medical and natural knowledge. I investigate how Kamel used his involvement as a trader of useful and curious plants, and as an intermediary between European and local agents to carve out a position for himself within hierarchies

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<sup>1</sup> F. Hsia 2009: 1.

<sup>2</sup> For example, Barthel 1984: 182; Dorsey 1998: 399; F. Hsia 2009: 1.

of knowledge and patronage. Located at the intersection between different scales and communities, Kamel therefore connects local practices with global flows.

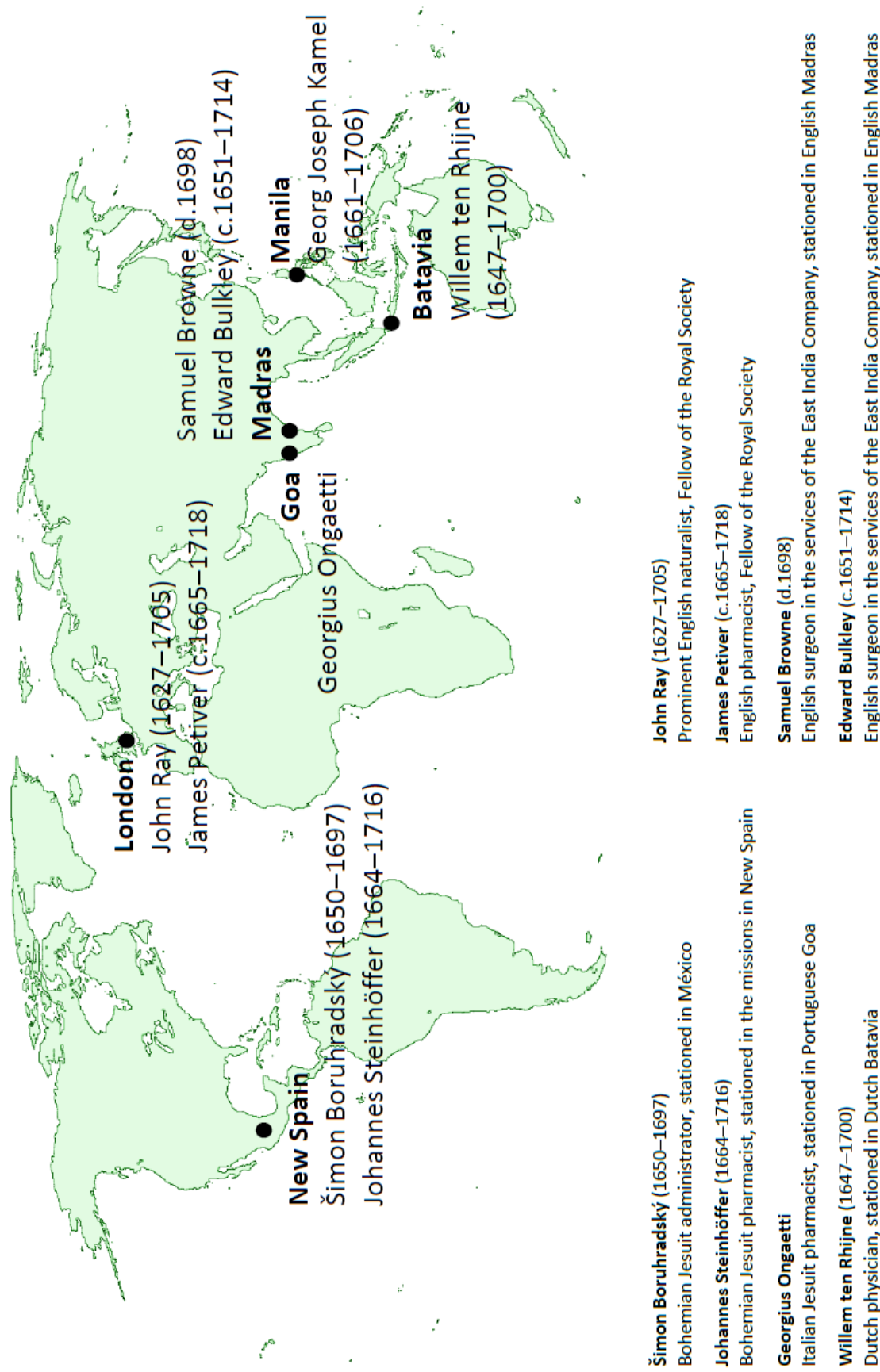
The focus of this thesis is on the conditions of mobilising information and objects between the early modern Philippines and Europe. I will use Kamel's agency to trace movements of knowledge from the point of local production, through entanglements between European and indigenous traditions, and thence to worldwide movements and receptions in Europe and beyond. On the one hand, I seek to demonstrate how agents from different cultures and with different goals built functional relationships that facilitated worldwide movements of knowledge. On the other, I show how a medicinal plant used by Philippine indigenous communities became a global commodity, and how local knowledge attained worldwide mobility. Due to his situation and activities, Kamel brings together the networks of the Society of Jesus, the Indo-Pacific trade, migration and empire, scholarly correspondence and global commerce in drugs and natural curiosities. Kamel's projects are thus illustrative of negotiations between different communities and concerns, as well as juxtaposing the deployment of knowledge in religious, intellectual, commercial and imperial contexts. I will use these circumstances to open up new perspectives on the production and mobilisation of knowledge in the early modern era, which reflect the plurality of the sites, agencies and traditions involved.

To reconstruct the activities of Kamel and his associates, I draw on archival sources in five languages from three continents. Among these are 11 volumes that contain descriptions of approximately 2,000 plants, more than 600 animals and a few dozen fungi, monsters and minerals, as well as around 1,000 images of diverse *naturalia*, all in Kamel's hand. This material formed the core of the seventeen works penned by Kamel: most of his descriptions of plants were published as an appendix to John Ray's monumental *Historia plantarum* ('History of Plants', vol. 3, 1704), and sixteen essays on various aspects of Philippine nature came out in *The Philosophical Transactions*, but a great deal remains in manuscript form. Furthermore, around 300 natural specimens collected by Kamel are currently held in the Natural History Museum in London.<sup>3</sup> Finally, there are several dozen letters that document the exchanges between Kamel and his correspondents (Appendix 1). Among these were fellow members of the Society of Jesus in Spanish and Portuguese dominions; Dutch and English medical practitioners stationed across the Indian Ocean worlds; and members of the Royal Society in London (Figure A).

Despite these voluminous resources and the historical insights that they promise, Kamel has received little scholarly attention. More than sixty years after its publication, a brief monograph

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<sup>3</sup> During my PhD, I have produced a catalogue of these collections for the Natural History Museum in London. Available online at <https://tinyurl.com/y689ppgw>.



**Figure A:** Kamel's networks of correspondence.

authored by Josef and Renée Gicklhorn remains the best available account.<sup>4</sup> This biographical narrative, however, drew on a relatively narrow sample of available primary sources. An English digest of the book was published soon after by Leo Cullum.<sup>5</sup> Three more recent pieces, authored by Raquel Reyes and Sabine Anagnostou, have offered overviews of Kamel's activities but have merely scratched the surface.<sup>6</sup> In his homeland, Kamel remains an obscure figure: there is only Miloš Volf's interwar nationalistic piece, Josef Entner's work combining elements of fact with fiction and a recent doctoral thesis suffering from factual errors and misinterpretations.<sup>7</sup> Beyond all this, Kamel has earned only several brief, predominantly biographical notes in both scholarly and popular articles.<sup>8</sup> None of these works provide a sufficient account of Kamel's wide-ranging activities. This thesis is therefore the first comprehensive study of Kamel and his activities, which integrates all known primary sources.

## 1. How does knowledge travel?

It is now commonly accepted that all science is situated.<sup>9</sup> If that is the case, how does science claim global applicability? As Steven Shapin has asked, "[i]f [...] science is a local product, how does it travel with what seems to be unique efficiency?"<sup>10</sup> For science to be successful, it has to be able to travel; to travel, it must rely on intermediaries that take it from place to place. For this reason, James Secord has called for an "understanding of science as a form of communication" which would bring into focus the agency of such mediators.<sup>11</sup> By conceptualising knowledge making as an act of communication, we can follow the trajectories of people, information and objects and, therefore, study relationships and phenomena across contexts and scales, from the local to the global. In this thesis, I understand 'global' in terms of scale and movement and use the term 'cross-cultural' to describe knowledge production. This comes with a caveat: as Sujit Sivasundaram has cautioned, few processes were truly global in their extent and, moreover, 'globe' refers to a Western representation of the world.<sup>12</sup> However, for the lack of better terminology, I employ the term 'global' to denote developments that can be considered to have occurred on a scale above the local or regional. In

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<sup>4</sup> Gicklhorn and Gicklhorn 1954.

<sup>5</sup> Cullum 1956.

<sup>6</sup> Reyes 2009; Anagnostou 2011; 2015.

<sup>7</sup> Volf 1939; Entner 2006; Pokorný 2012.

<sup>8</sup> Backer 1869: 1022–1023; Vidal y Soler 1886: 10–12; Robinson 1906; Merrill 1926: 44–45; Reilly 1956; Dandy 1958: 145–148; Stearn 1958: 189–190; Costa 1961: 556–558; Winter 1974; Koláček 1983; Novák 1992; Anderson 2007: 299; Donko 2012.

<sup>9</sup> Ophir and Shapin 1991; Golinski 1998; Jasanoff 2004. For the spatial turn in history of science, see Livingstone 2003; Finnegan 2008.

<sup>10</sup> Shapin 1995a: 307.

<sup>11</sup> J.A. Secord 2004: 661.

<sup>12</sup> Sivasundaram 2019.



Sivasundaram's words, global "does not denote a total or singular history". Rather, "[t]he writing of the global must consider both connections and disconnections [which] will uncover the web of linkages and the intermediaries that made science travel."<sup>13</sup>

Networks of communication have emerged as a suitable model for visualising movements of science and investigating exchanges of both material and immaterial entities, patterns of power and influence, as well as negotiations between actors and personae. Actor–Network Theory and related sociological projects have proved helpful in embedding knowledge production within networks of translation.<sup>14</sup> To examine the critical question of how agents could exercise power at a distance and how science could claim global validity, Bruno Latour developed a widely cited model built around centres of calculation.<sup>15</sup> Concerned chiefly with what is distinctive about modern science, he illustrated how cycles of knowledge accumulation in centres of calculation contributed to the imposition of Western intellectual dominion on other cultures.<sup>16</sup> Although of some applicability to the high imperial period, this model has drawn extensive critique, particularly for its neglect of local agency, its hierarchisation of centres and peripheries, and the supposed immutability characterising its media for knowledge distribution, or 'mobiles' in the words of Latour.<sup>17</sup> His telescopic view through the metropolitan lens does not do justice to the complexity of negotiations, routes and agencies that communication of knowledge involved.

For this reason, the decentralisation of networks of knowledge has been identified as a major task for historians of science.<sup>18</sup> Previous accounts of the mobility of early modern knowledge have largely been built around European corporations and iconic figures and have often remained restricted by national frameworks. Attempts to decentre such narratives have explored developments outside Europe, but still commonly focus on accumulations of knowledge in European national and institutional centres. Within such narratives, Kamel's projects would be relegated to a marginal role. Here, I use Kamel's activities to challenge Eurocentric narratives, recover agencies previously considered peripheral and pluralise the sites, agents and traditions involved in the production of early modern knowledge. In keeping with David Arnold's plea to see European ventures overseas as "more than just a series of independent national narratives; to view them instead in a comparative,

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<sup>13</sup> Sivasundaram 2010a: 96.

<sup>14</sup> Callon 1986; Latour 1987; 1988; Law 1992.

<sup>15</sup> Latour 1987: 215–257.

<sup>16</sup> See also McClellan and Regourd 2011.

<sup>17</sup> For example, Bravo 1999; Spary 2008; Roberts 2009; Cruikshank 2014: 127–153. See also Kroupa et al. 2018: 549–550.

<sup>18</sup> For example, Raj 2006; 2010; Schaffer et al. 2009; Sivasundaram 2010b.

transnational perspective,” I also trace movements of information and objects across the frontiers of different empires.<sup>19</sup>

Rather than treating Kamel as a node or centre, my concern is with mechanisms of exchange. I focus especially on the link between Kamel and his most diligent correspondent: James Petiver, London apothecary and member of the Royal Society. I argue that by switching attention from static centres to dynamic movements, we gain additional tools for decentring scientific networks. By focusing on the mobility of knowledge rather than its accumulation in different centres, my thesis points towards new geographies of knowledge. Despite my preoccupation with movement, this approach differs from the recent flood of studies that have traced worldwide circulations of goods and information: a method that has privileged knowledge that travels and yielded distorted views of interconnected worlds. As pointed out by Fan Fa-Ti, such an “image of smooth circulation probably doesn’t encourage a critical analysis of, say, power relations in science.”<sup>20</sup> By focusing on the processes of exchange, and following Secord in treating the transmission of all knowledge as a process of communication, we gain better appreciation of the human agencies involved, and of the fragility of networks. Although the early modern period was characterised by a more intensive movement of people, objects and information on an increasingly global scale, this mobilisation required enormous material and human investment, and consignments remained subject to what Noël Golvers has termed the “tyranny of distance”.<sup>21</sup> I will use Kamel’s communications to point to some of the elements that could cause disruptions, from geography and weather to political or personal conflicts.

## **2. Local encounters, global movements**

Historians now generally agree that the emergence of modern science was closely connected to early modern colonial encounters.<sup>22</sup> Rather than being invented in Europe and subsequently diffused globally, knowledge was made in complex interactions that took place worldwide and involved a broad range of people from different places and cultural traditions. Sivasundaram has cautioned against accounts in which “science is a bundle of things or practices which comes fully formed or with great intentional force to intrude into the [...] periphery.”<sup>23</sup> Such narratives see science as a tool imposed upon people and nature rather than a set of practices that developed and adapted in response to local environments and traditions. These local agencies and especially those of non-

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<sup>19</sup> Arnold 1996: 11.

<sup>20</sup> Fan 2012: 252.

<sup>21</sup> Golvers 2012: 23.

<sup>22</sup> For example, Bayly 2004; Raj 2006; Schaffer et al. 2009; Elshakry 2010; Safier 2010; Sivasundaram 2010b; Chakrabarti 2014.

<sup>23</sup> Sivasundaram 2014: 237.

European agents remain difficult to access, particularly since these traces were frequently effaced in colonial sources.<sup>24</sup> Recent studies have developed methodologies that yield closer insights into non-European and non-élite actions. I will draw on these approaches in my bid to use Kamel's projects to recover some of the diverse agencies involved in the production and mobilisation of knowledge.

The collection of essays in *The Brokered World*, edited by Simon Schaffer, Lissa Roberts, Kapil Raj and James Delbourgo, has brought into focus the figure of the go-between.<sup>25</sup> As "someone who articulates relationships between disparate worlds or cultures by being able to translate between them," a go-between can epitomise the crucial work of mediation and "encompass the materials and objects in transit."<sup>26</sup> With Kamel constantly brokering between different flows of knowledge, he represents an ideal instance of a particular type of a go-between. Whilst he serves here as the main focal point, I use his activities to bring to life the agencies of a wide range of figures, from missionaries, traders and indigenes to colonial medical practitioners and European scholars, as well as of the objects and practices that mediated between them.

In using the agency of a particular individual to show how the natural world of the Philippines was constructed and mobilised, I also draw on the methodologies of global microhistories.<sup>27</sup> By following individual characters with lives that traversed socio-cultural, geopolitical and other boundaries, we can use their lived experiences as keyholes through which to view the worlds they inhabited: the daily practices they engaged in, the contacts and clashes they faced and the cultural identities, or personae, they constructed and embraced. My employment of the concept of persona draws on a special issue devoted to this subject, edited by Lorraine Daston and Otto Sibum.<sup>28</sup> Florence Hsia's book concerned with Jesuit knowledge production in China has shown how suitable the Jesuits are for investigations of self-fashioning and different modes of scholarly life.<sup>29</sup> By tracing how Kamel and Petiver donned the masks of scholar, healer, correspondent or trader, I seek to answer Gadi Algazi's plea to explore how personae were appropriated, negotiated and jointly produced by social actors, as well as consider these cultural templates "not only diachronically but also as concurrent options".<sup>30</sup> Here, I am especially concerned with the impact of movement and travel. I investigate how

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<sup>24</sup> For example, Pratt 1992; Schiebinger 2004; Bleichmar 2005; Schiebinger and Swan 2005.

<sup>25</sup> Schaffer et al. 2009.

<sup>26</sup> *Ibid.*: xiv, xxv.

<sup>27</sup> Revel 1996; Terrall 2006; Ogborn 2008; Trivellato 2011; Breen 2013; Ghobrial 2014; Skuncke 2014.

<sup>28</sup> Daston and Sibum 2003: 3. For early modern identity and self-fashioning, see also Greenblatt 1980; Zemon Davis 1983a; 1987; L. Jardine 1993; Biagioli 1994.

<sup>29</sup> F. Hsia 2009.

<sup>30</sup> Algazi 2016: 27. For a case study which uses personae as cultural templates and which examines how these were adopted, assigned, transformed or rejected, see A. Secord 2003.

Kamel and Petiver adopted different personae and genres in diverse contexts, whilst negotiating their respective positions within hierarchies of knowledge and patronage.

Previous investigations of cross-cultural interactions have commonly employed the concepts of the contact zone and hybridity. Contact zones, due to their restriction to a specific time and space, are unsuitable for tracing dynamic encounters and movements of knowledge characteristic of Kamel's activities.<sup>31</sup> As for hybridity, in his seminal study of the scallops of St Brieuc Bay, Michel Callon has shown how different agents – fisherman, scientists and scallops – became interlocked in an inherently hybrid structure, in which the series of activities involved could not be disentangled into commercial, intellectual or environmental concerns.<sup>32</sup> This approach is useful in examining how agents who had not interacted before could be mobilised in one network. However, the concept of hybridity has been criticised for conveying a false idea of coherence and connectedness that misrepresents the multifaceted nature of interactions, which were often violent and short-lived. Moreover, the holistic and static view of culture that hybridity conveys fails to account for cultural dynamism and tends to produce dichotomous accounts: a hybrid is always a finished product created through the fusion of two or more entities.<sup>33</sup> As Suman Seth has pointed out, the awareness "[t]hat knowledge is hybrid [...] may be considerably less important than how such hybridity is enacted and regulated."<sup>34</sup>

This thesis therefore embraces the concept of entangled knowledge, proposed by Ralph Bauer and Marcy Norton.<sup>35</sup> Rather than suggesting the unilateral impact of one culture upon another, restricted to a specific time and place, entanglement suggests ongoing confrontations and attends to the wide array of modalities of cross-cultural interactions. This approach echoes the work of Anna Lowenhaupt Tsing, who has developed the metaphor of frictions to replace the view of globalisation as a series of clashes between cultures and instead capture the diverse social interactions that have made up our world.<sup>36</sup> Entanglements and frictions point to the broad range of agencies involved in the local production of knowledge, the complex nature of which cannot be reduced to models of cooperation or resistance alone. This methodology thus also highlights the fact that we cannot equate local with indigenous knowledge.<sup>37</sup> Whilst the latter continues to be denied the privileges of mobility

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<sup>31</sup> For contact zone, see Pratt 1992; Schiebinger 2004. For its critiques, see Roberts 2009; Raj 2011; Bauer and Norton 2017: 9.

<sup>32</sup> Callon 1986. See also Shapin 1994: xxvi; Daston and Galison 2007.

<sup>33</sup> Dean and Leibsohn 2003; Burke 2009: 34–65; Bauer and Norton 2017; Gómez 2017; Subrahmanyam 2018. See also Kroupa et al. 2018: 555–556.

<sup>34</sup> Seth 2009: 380.

<sup>35</sup> Bauer and Norton 2017.

<sup>36</sup> Lowenhaupt Tsing 2005.

<sup>37</sup> See also Osseo-Asare 2014: esp. chap. 2; Bil 2016.

and globality – terms which continue to be associated chiefly with Europeans and ‘Western’ science – my concern here is to examine how indigenous knowledge reached mobility on a worldwide scale.

Through the optic of Kamel and his work, I will trace the processes in which different traditions became locally entangled and investigate how indigenous knowledge came through in his treatises. In these texts, local meanings and processes had largely become obscured by Kamel’s attempts to translate locally-produced knowledge into frameworks comprehensible to European readers. I demonstrate, however, that close attention to the practices of knowledge making, paired with the use of broader sets of sources, provide insights into local agencies and trajectories. In retrieving these traces, I follow the lead of scholars such as Neil Safier, Iris Montero Sobrevilla and Pablo Gómez, whose work has shown how to tease out non-European agencies from European sources.<sup>38</sup> Through the lens of Kamel’s efforts to translate and appropriate local knowledge of Philippine nature, I will address how shared, credible meanings were created which enabled communication of knowledge across different contexts and on a global scale.<sup>39</sup>

This thesis thus echoes Seth’s plea that “‘globality’ will have to be understood as locally situated production.”<sup>40</sup> As Alix Cooper reminds us, the expanding global trade which flooded early modern Europe with foreign goods and knowledge inspired heated debates about the value of the local and the foreign, and shaped how the Europeans themselves understood their own indigenous cultures and landscapes.<sup>41</sup> As a link between local practices and global flows, Kamel highlights the fact that “attaining a global picture is not a question of transcending or erasing local practices but of giving more attention to practices of circulation on a wide variety of scales,” as voiced by Secord.<sup>42</sup> Scholars have explored how agents in Europe sought to collect and represent the world, commonly through the lens of metropolitan collections and publications.<sup>43</sup> By contrast, Kamel’s activities reveal the troublesome nature of the processes that underlay the making of the ‘global’, or of the image conveyed by large European collections such as that of Hans Sloane (1660–1753), in which most of Kamel’s materials eventually ended up.

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<sup>38</sup> Safier 2010; 2017; Montero Sobrevilla 2016; 2018; Gómez 2017.

<sup>39</sup> Shapin and Schaffer 1985; N. Jardine 1991a; J.A. Secord 2004.

<sup>40</sup> Seth 2009: 380.

<sup>41</sup> Cooper 2007. See also Pugliano 2009.

<sup>42</sup> J.A. Secord 2004: 666–667.

<sup>43</sup> Schmidt 2015; Delbourgo 2017.

### 3. Science and empire in Spanish colonial worlds

Science has long been a central concern of imperial history.<sup>44</sup> Traditionally, science has been understood as a handmaiden of European empires in their bid to impose power and authority on the colonies and the colonised.<sup>45</sup> For more than a decade, historians of science have been striving to rethink this top-down perspective by investigating the local dynamics of knowledge production. These efforts have demonstrated that transfers of knowledge cannot be reduced to a centre-periphery model, highlighting the limits of imperial control and revealing the busy cross-cultural settings in which the intellectual and cultural worlds of Europeans and non-Europeans became inextricably entangled.<sup>46</sup>

Studies of the Spanish Empire have been at the forefront of these developments. The last fifteen years have seen a great revival of interest in science in the Spanish Empire. The resultant research has supplanted the mark of the *leyenda negra*, or the biased portrayal of Spain and its possessions in historical sources and modern historiographies, both of which had relegated the developments in Spain to peripheral roles in early modern science.<sup>47</sup> Instead, scholars have revealed vibrant cultures of empirical and utilitarian knowledge gathering promoted by the Crown's strong commitment to scientific research, especially in natural history and botany.<sup>48</sup> Whilst some of these works have largely demoted non-European agencies to supporting roles in the Spanish-driven emergence of modern science, recent studies have provided fresh perspectives on the treatment of local knowledge and the complex cross-cultural power relations.<sup>49</sup> Their authors have emphasised that non-European knowledge systems were not merely ancillary or reactive to European institutionalised practices. Furthermore, they have cautioned that efforts to cherry-pick cases which can be interpreted as non-European contributions to European science only reinforce the dichotomy between the West and the rest, as well as failing to do justice to the coherence of other systems of knowledge.

This body of literature has emphasised the heterogeneous ethnic conglomerate that made up the Spanish Empire, from Italian and German-speaking experts to indigenous and creole cultures. Together with the political structure of the Spanish monarchy, organised as a consortium of kingdoms and viceroyalties, this diversity has helped historians to eschew portrayals of the Empire as a monolithic structure. Instead, it has been represented as a decentred network of multiple nodes in which colonial agendas were constantly vying with imperial ones. The relationship between empirical

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<sup>44</sup> Bayly 1996; 2004; Miller and Reill 1996; MacLeod 2000; Chakrabarti 2014.

<sup>45</sup> For example, Pratt 1992.

<sup>46</sup> For example, Fan 2004; Raj 2006; Delbourgo and Dew 2008; Safier 2008; Ramos and Yannakakis 2014; Winterbottom 2016; Brixius 2017; Parsons 2018.

<sup>47</sup> For the Spanish *leyenda negra*, see Cañizares-Esguerra 2005; Pimentel and Pardo-Tomás 2017.

<sup>48</sup> Pimentel 2000; Cañizares-Esguerra 2001; 2004; 2005; 2006; De Vos 2003; 2006; 2007a; Barrera-Osorio 2006; Bleichmar et al. 2009; Bleichmar 2012; Slater et al. 2014; Pimentel and Pardo-Tomás 2017.

<sup>49</sup> Brosseder 2014; Ramos and Yannakakis 2014; Boumediene 2016; Montero Sobrevilla 2016; Gómez 2017.

information and imperial power, traditionally emphasised by scholars, has recently been questioned by the works of Neil Safier, Samir Boumediene, Matthew Crawford and Arndt Brendecke.<sup>50</sup> Rather than an undisputed marriage between knowledge and power, these authors have pointed to the tensions between imperial, scientific and commercial concerns amidst the complex interactions between local knowledge and global processes. Tensions between global ambition and local agencies have therefore emerged as one of the most crucial factors of scientific cultures in early modern Spanish colonial worlds.

Literature on the Spanish Empire has been dominated by focus on the Atlantic, which has overshadowed Spanish engagements in the Pacific and the Philippines.<sup>51</sup> Although the past decade has seen growing interest in this field, research has predominantly been concerned with two main themes. Firstly, scholars have used the trans-Pacific Manila Galleon trade as a global lens to integrate Manila within the Spanish Empire and a worldwide network of early modern trade and economy.<sup>52</sup> Recently, Rainer Buschmann and others have called for examinations of the Pacific “oceanic space not just as a linear crossing with the Manila Galleon’s flow of commodities, but also as an area governed by the circulation of peoples and their histories”.<sup>53</sup> Secondly, accounts of the early modern Philippines have largely revolved around the processes of Hispanisation and Christianisation of indigenous cultures, which have often been presented in an overly benign and beneficial light, as well as downplaying non-European agency.<sup>54</sup> More recent studies have emphasised the destructive nature of Spanish colonialism but have continued to suggest that indigenous populations were passive in the face of empire, their cultures decimated by colonisation.<sup>55</sup> The works of Vicente Rafael, Stephanie Mawson and René Javellana have restored indigenous agency and resistance to this picture.<sup>56</sup>

Rather problematically, much previous historical scholarship on the Philippines has drawn on *The Philippine Islands, 1493–1898*, a multivolume compilation of colonial archival documents gathered and translated into English by Emma Blair and James Robertson.<sup>57</sup> Glòria Cano has been particularly vocal in her critique. In her words, the series is “an indispensable tool of historical propaganda in the service of U.S. colonial administration” which has produced a skewed image of the Philippine history

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<sup>50</sup> Safier 2008; Boumediene 2016; Brendecke 2016; Crawford 2016; Crawford and Gabriel 2019.

<sup>51</sup> For critiques of Atlantic history, see Cañizares-Esguerra 2003; Cañizares-Esguerra and Breen 2013; Kroupa et al. 2018: 544–547.

<sup>52</sup> Schurz 1959; Bauzon 1981; Yuste 1984; Flynn and Giráldez 1994; 1996a; 1996b; Bjork 1998; Giráldez and Flynn 2002; Giráldez 2015; Tremml-Werner 2015, 2017.

<sup>53</sup> Buschmann et al. 2014: 5. See also Buschmann 2014.

<sup>54</sup> Phelan 1959; Costa 1961; Cushner 1971; Chaunu 1976; Reed 1978; Spate 1979; Javellana 2000; Crossley 2011.

<sup>55</sup> Cannell 1999; Dery 2006; Newson 2017.

<sup>56</sup> Rafael 1988; Mawson 2013; 2016a; 2016b; Javellana 2017.

<sup>57</sup> Blair and Robertson 1903–1909.

by disseminating biases and inaccuracies.<sup>58</sup> Rather than resorting to these materials, this dissertation draws on original research and sources from archives in Spain, Mexico and the Philippines.

The Spanish rationalised their colonial project in the Philippines predominantly through missionary work and trade with China.<sup>59</sup> Although Manila soon became a key colonial entrepôt in East Indies, the city sustained a fragile Spanish presence, which struggled to impose control on the broader archipelago, largely due to a shortage of financial, human and other resources. The prime agents of the Spanish imperial project were members of religious Orders. Especially outside Manila, these were often the only representatives of the Spanish authority who continuously interacted with indigenous populations. For a combination of political and economic reasons, the colony was essentially administered from New Spain rather than from Europe. Under the Treaty of Tordesillas, the eastward route around Africa fell into the Portuguese sphere of influence, and later became increasingly controlled by the Dutch and the English, bitter enemies of Spain. Moreover, by the late sixteenth century, Ming China had converted its monetary and fiscal systems to a silver standard, which generated an immense demand for this precious metal, extensively mined by the Spanish in the Americas.<sup>60</sup> Upon transport across the Pacific, American silver could be sold with profits as high as 100% or more.<sup>61</sup> Enormous quantities were brought every year by the Manila Galleon, dispatched from Acapulco by the Viceroyalty of New Spain alongside a consignment of material, fiscal and military aid. This impatiently anticipated *socorro* ('aid') or *situado* ('salary') were essential for sustaining the Spanish presence in the Philippines.

Already prior to the Spanish arrival, Manila had been a major trading centre deeply embedded within regional commercial networks, which interwove the worlds of the Indian Ocean, from China to Indochina and from India to Indonesia.<sup>62</sup> With the trans-Pacific crossing joining the world at the seams, Manila quickly emerged as one of the hearts of the Spanish Empire's commerce, a fact which local colonists would not omit to emphasise. For example, the Jesuit *procurador*, Magino Sola, who later became one of Kamel's superiors in Manila, described the port in 1658 as "the centre of everything, most endowed with fruits of such rich a trade [of both of the Indies]", which made "Lisbon and Seville the most opulent cities of our nation".<sup>63</sup> By the eighteenth century, Manila had become a cross-cultural and polyglot hub; the Jesuit chronicler Pedro Murillo Velarde even "believe[d] that there is no

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<sup>58</sup> Cano 2008a: 3; 2008b; 2013.

<sup>59</sup> For a general history of the Philippines, see for example Watson Andaya and Andaya 2015.

<sup>60</sup> See especially the work of Dennis Flynn and Arturo Giráldez.

<sup>61</sup> Hawkley 2016.

<sup>62</sup> Quiason 1966; Chaudhuri 1978: 208–213; Reid 1988; 1990; 1993.

<sup>63</sup> Sola 1658: 7v, "...las Ciudades mas opulentas de nuestra nacion han sido Lisboa, y Sevilla, porque van a parar a ellas las flotas de entrambas Indias. Gozando, pues, Manila, como centro de todo, con mas comodidad del fruto de tan ricos comercios..." The role of the *procurador* was to take care of the mission's finances.



city in the world where so many nations meet,” listing nearly 50 different ethnic groups and nations from all four continents in support of his claim.<sup>64</sup> As a bridge between America and Asia that hosted a diverse, cross-cultural population, the Philippines emerge as a region ‘in between’ and a missing link in networks of global connections. This thesis uses the communications between Kamel and his associates to follow Birgit Tremml-Werner’s lead in “integrating the Manila Galleon into south east Asian trading networks”.<sup>65</sup> I will demonstrate that tapping into these networks, served largely by merchants and navigators of non-European origin, was essential both for the success of European colonial projects and for transactions of knowledge across the frontiers of empires. Thus, I highlight the role of local traders as brokers of knowledge.

Histories of medicine in the Philippines have been confined to a few overviews, whilst histories of science have received little attention beyond the Bourbon Reforms that launched more systematic forays into crop agriculture in the late eighteenth century.<sup>66</sup> The recent PhD thesis from Omri Bassewitch Frenkel has explored earlier Spanish efforts to ‘bioprospect’ for spices in the Philippines and transplant them into American possessions.<sup>67</sup> His conclusions about the indirect and rather marginal role of the Crown echo those of Crawford and Safier. Perhaps due to the preoccupation of historians with European markets and institutions, the traffic of plants and the associated knowledge across the early modern Pacific has been a neglected topic. Focusing especially on the *materia medica* used by Kamel and his colleagues in Manila, I will point to the magnitude and implications of this intercontinental exchange. I will also use the lens of medical care and drug consumption in Manila to provide insights into the relationship between science, medicine and empire in the Philippines.

#### 4. Science and the Society of Jesus

Few organisations in the history of mankind have produced a body of sources concerned with natural and medical knowledge from all over the world comparable to that generated by the Society of Jesus. Its wide-ranging activities make the Jesuits an ideal focal point for this thesis, providing a platform that integrates spiritual, imperial, scientific and commercial concerns with movement across different scales and contexts.<sup>68</sup> If natural and medical knowledge gained a prominent position within the Order, it was because its acquisition resonated with the religious goals of the Society. Ignatius of Loyola, who founded the Order in 1534, instigated two decisive – and pragmatic – directions the

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<sup>64</sup> Murillo 1749: 5r–5v, “...creo, que no ay en el mundo ciudad, donde concurran tantas naciones, como en esta...”

<sup>65</sup> Tremml-Werner 2015: 142.

<sup>66</sup> Díaz-Trechuelo 1966; Planta 2001; 2017; Sales Colín 2005; Joven 2012.

<sup>67</sup> Bassewitch Frenkel 2017: 120–189. See also De Vos 2005; 2006. For bioprospecting, see Schiebinger 2004.

<sup>68</sup> O’Malley et al. 2000; 2006.

Jesuits would pursue in order to extend and consolidate the Catholic faith: education and missions. In contrast to regular clergy, tied predominantly to their parishes and monasteries, Ignatius placed emphasis on mobility: the Jesuits were to seek active engagement with the outside world and travel wherever God needed them the most.<sup>69</sup> The Society's transnational nature gave its members access to virtually every Catholic territory, from Chile to New France and from Angola to the Philippines. As perhaps the first truly global association, the Jesuits could gather information from the remotest regions of the world, surpassing early modern state institutions in their reach.

Recent scholarship has emphasised that missionising alone inherently involved scientific practices, which makes any labels such as Jesuit- or missionary-scientist superfluous.<sup>70</sup> Since the Jesuit conversion strategy involved long-term residency and eagerness to learn new languages, Stephen Harris has termed members of the Society "masters of translation [...] in both the linguistic and Latourian sense".<sup>71</sup> Londa Schiebinger has argued that the Europeans' inability or unwillingness to learn local languages was one of the major factors that limited exchange of knowledge in colonial worlds, an issue that did not concern the Society.<sup>72</sup> Collecting information about local nature was integral to the Jesuit agenda, since this knowledge enabled the Order to operate efficiently in remote regions of the world. The study of nature also possessed clear spiritual dimensions. In *Spiritual Exercises* (written in 1522–1524, published in 1548), Ignatius urged his readers "[t]o see how God dwells in creatures – in the elements, giving being, in the plants, causing growth, in the animals, producing sensation, and in humankind, granting the gift of understanding."<sup>73</sup>

The Society was greatly adept at converting the information gathered into further social, economic and intellectual credit. This included justifying its monopoly in Catholic education, which provided a steady source of both income and well-trained recruits; gaining prestige as authors in various fields of art and science; and, as Ignatius himself advised, using news and specimens from overseas as "sauce for the taste of a certain curiosity" of wealthy aristocrats and prospective patrons.<sup>74</sup> The Society also established a network of plantations and pharmacies across the world, which enabled it to participate in the global trade in drugs and commodities and generate immense profits.<sup>75</sup> Although canon law forbade the Jesuits to purchase wares made by others with the intention

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<sup>69</sup> O'Malley 1984; 1993; Harris 2000; Clossey 2008.

<sup>70</sup> F. Hsia 2009: 2–3; Asúa 2014: 314–315.

<sup>71</sup> Harris 2005: 74. For the importance of vernacular languages in the Jesuit missionary and scholarly work, see Dorsey 1998; Asúa 2008; Prieto 2011: 13–35.

<sup>72</sup> Schiebinger 2004: 83–84.

<sup>73</sup> Ignatius 1548: §235.

<sup>74</sup> Harris 2000: 213.

<sup>75</sup> Martín 1968: 97–118; Anagnostou 2005; 2015; T.D. Walker 2007; 2010; 2013. In the decade prior to its suppression, Jesuit estates in Peru alone generated a yearly rent of 500,000 pesos (Martín 1968: 173–176). To

to sell these for profit, the clergy was allowed to vend goods that they had produced or grown themselves.<sup>76</sup> In the service of its corporate motto *Ad maiorem Dei gloriam* ('To the greater glory of God'), the Society recruited nature herself as an ally.

Previously, historians of science have used the Society of Jesus as a case study for the centralisation of knowledge. Harris especially has shown how the Jesuit administrative networks enabled efficient circulation of materials and information between Rome and overseas missions.<sup>77</sup> Although these narratives explain why the Society's archives hold extensive records of knowledge traditions from all over the world, they have reduced the role of Jesuit missionaries to that of simple providers of data for the Society's broader agendas. The recent works of Luke Clossey, Paul Nelles and others have undermined views of the Society as a centrally controlled organisation, but these studies have largely been concerned with spirituality, scribal production and administration, and mostly limited to the Society's institutional frameworks.<sup>78</sup> With Kamel mediating between different knowledge flows from his workshop in Manila, his activities are ideally suited to an exploration of Jesuit knowledge production and communication from a decentred perspective.

Under the recent 'global turn' in the history of science, the Society has come to be understood as a model global organisation. Clossey and Dominique Deslandres especially have demonstrated that even the Jesuits themselves conceived of their enterprise in global terms.<sup>79</sup> Due to their engagement in documenting non-European traditions and in trading in curiosities, drugs and other commodities, the Jesuits have emerged as influential brokers who mediated knowledge transactions that crossed state and cultural boundaries and extended to a worldwide scale. The attention of scholars to Jesuit production and communication of natural and medical knowledge has recently supplanted an earlier focus on mathematics, astronomy and natural philosophy, domains of knowledge associated with the so-called 'Scientific Revolution'.<sup>80</sup> Scholars such as Timothy Walker, Sabine Anagnostou, Ines Županov and others have explored a wide range of Jesuit medical activities across a diversity of sites, offering valuable methodologies and comparative cases for my investigations of Kamel's medical projects.<sup>81</sup> Rather than focusing on specific aspects of the missionary situation or tracing circulations of particular drugs, here I seek to provide an integrated account of Jesuit medical practices. To do so, I will trace

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put that into perspective, the whole Viceroyalty of Peru has been estimated to produce a net annual income of one million pesos (Crow 1992: 221).

<sup>76</sup> For example, Cushner 1967; Alden 1996: 529.

<sup>77</sup> Harris 1996; 1998; 2000; 2005.

<sup>78</sup> Clossey 2008; Martínez-Serna 2009; Nelles 2015.

<sup>79</sup> Deslandres 2003; Clossey 2008.

<sup>80</sup> Dear 1987; Elman 2002; Feingold 2002a; 2003; F. Hsia 2009; Jami 2012.

<sup>81</sup> Martín 1968: 97–118; Anagnostou 2005; 2007; 2015; Greer 2005; Županov 2005a; 2008; T.D. Walker 2007; 2010; 2013; Prieto 2011: 36–87; Puente-Ballesteros 2011; 2012; Asúa 2014: 96–163; Boumediene 2016; Crawford 2016.

the global life of the Philippine medicinal plant *igasur* that was introduced in early modern Europe as a drug called the St Ignatius bean, whilst situating its production, appropriation and commodification into the local Philippine context. Thus, I will show how the Jesuits turned native *materia medica* used by indigenous communities into globally deployed and marketed commodities.

Jesuit involvements in natural history have received considerably less attention. The recent works of Wu Huiyi, Andrés Prieto, Miguel de Asúa and others have shed light on some of the Jesuit practices and motivations involved in documenting, classifying and interpreting the natural world.<sup>82</sup> In dialogue with this scholarship, I will explore the practices employed by Kamel and embed them within the broader landscape of the Society to demonstrate how Jesuit knowledge practices were shaped by institutional affiliation. In particular, I will focus on the role of empiricism in the Society's engagements with nature. Recent studies of the Spanish Empire have stressed that science and empirical practices tended not to develop within academies, museums and salons but within commercial and cross-cultural contexts and as part of the imperial and bureaucratic contest.<sup>83</sup> They have called into question traditional 'Baconian' understandings of what it meant to experiment, pointing instead to more nuanced and pluralist notions of testing and trialling.<sup>84</sup> In virtually all fields of early modern science throughout the Spanish Empire, religious missionaries were at the forefront of intellectual production. Rather paradoxically, therefore, the missionaries' activities have largely been absent in accounts of early modern empirical cultures, and few authors have considered in detail the role of spirituality in colonial knowledge production. I will use Kamel's projects to provide insights into local negotiations of knowledge and the role of spirituality therein. I will make preliminary comments on the existence of a culture of empirical testing within the Society, rooted in the Jesuit formation and underpinned by spiritual concerns: an area which I argue calls for further research.

## 5. Trading in natural and medical knowledge

The search for natural and medical knowledge has been identified as a crucial driver of European colonialism and a defining feature of early modernity.<sup>85</sup> Recent histories of the movements of drugs and other natural substances have brought new insights into issues such as the development of empirical approaches to knowledge, the rise of global commerce and cross-cultural knowledge

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<sup>82</sup> Huffine 2005; Millones Figueroa and Ledezma 2005; Prieto 2011; Asúa 2014; Wu 2015; 2017a.

<sup>83</sup> Especially Barrera-Osorio 2006; Cañizares-Esguerra 2006; Bleichmar 2012.

<sup>84</sup> See also Leong and Rankin 2017.

<sup>85</sup> Schiebinger and Swan 2005; Breen 2017.

production.<sup>86</sup> Thus, understanding the trade in remedies and natural curiosities has vital implications for our considerations of the making of the modern world. Yet what drove these transactions? Early modern scholarly networks have traditionally been understood as driven by reciprocal gift-exchange, associated above all with the gentlemanly disinterest in financial recompense. This erudite code of conduct has been recognised as a defining feature of the so-called ‘Republic of Letters’, a worldwide intellectual community.<sup>87</sup> However, recent studies have underscored that artisans, merchants and other agents across the social spectrum, for whom money was an issue, were extensively involved in exchanges of early modern knowledge, and staked a claim for participation in the Republic of Letters. Scholars have explored the ways in which mercantile concerns could enter learned communications, portraying financial trade as an alternative strategy to gift-giving, as well as highlighting the links between early modern science, trade and empiricism. Therefore, a considerable part of early modern scientific activity would be lost to us if commercial exchanges were disregarded.<sup>88</sup>

Here, I will use transactions between Kamel and Petiver to examine how commercial and gentlemanly modes worked independently or in tandem, or how early modern agents selected their strategies to maximise gains in terms of capital and credit. Kamel and Petiver are ideally suited for exploring the overlapping worlds of science and commerce. Their apothecary vocation enabled them to tap into the commerce of drugs and curiosities on the one hand, and erudite spheres on the other.<sup>89</sup> Given Kamel’s affiliation with the Society of Jesus and Petiver’s active membership in the Royal Society, they were also both associated with organisations that blended intellectual orientation with interests in useful knowledge.<sup>90</sup> To explore these transactions, I conceptualise networks of knowledge exchange as systems of human interaction, or as markets, in which agents could invest different kinds of resources to produce credit, capital and value.

I define the materials that travelled within these systems – letters, specimens and other “things-in-motion”, in Arjun Appadurai’s words – as extensions of ‘self’ into the network, or as claims about knowledge and one’s own identity and status.<sup>91</sup> I will demonstrate how early modern agents deployed these items as instruments to accrue credit and negotiate between different personae and

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<sup>86</sup> For example, Grove 1995; Carney 2001; Smith and Findlen 2002; Schiebinger and Swan 2005; H.J. Cook 2007; Cooper 2007; Chakrabarti 2014; Margócsy 2014; Osseo-Asare 2014; Terrall 2014; Gänger 2015; Schmidt 2015; Crawford and Gabriel 2019.

<sup>87</sup> Mauss 1923; Daston 1991a; Goodman 1994; Shapin 1994; Goldgar 1995; Zemon Davis 2000; E.H. Cook 1996; Bots and Waquet 1997.

<sup>88</sup> Spary 2000; 2005a; Smith and Findlen 2002; Müller-Wille 2003; te Heesen 2005; H.J. Cook 2007; Kinukawa 2013; Margócsy 2013; 2014.

<sup>89</sup> Spary 2005a; Pugliano 2012a; 2018.

<sup>90</sup> For the Royal Society in the late seventeenth and early eighteenth century, see da Costa 2002a; 2002b; 2009; Marples 2019; Moxham 2019.

<sup>91</sup> Appadurai 1986: 5.

modes of exchange. Although objects could be traded for material returns in the form of gifts or money, I argue that their mobilisation also enabled Kamel and Petiver to accrue cultural, social and symbolic forms of capital, as defined by Pierre Bourdieu.<sup>92</sup> The use of these methodologies yields new insights into the relationship between early modern trade and science and, especially, into the questions of how terms of exchange were established; how specimens were constituted and how social standing operated within networks; and how social credit and value were generated in knowledge transactions. I highlight the crucial role that movement played both in the production of different forms of capital and in the construction of things-in-motion as objects of science or commodities.

The practical and the material turn are crucial to these considerations.<sup>93</sup> The understanding of science as rooted in material practices, as well as of objects as testaments to historical evidence and agency, has enabled historians to situate and analyse knowledge production in the routines of everyday social and public life. By tracing the movement of materials deployed by Kamel and Petiver in networks of communication, I seek to integrate different practices of knowledge, from collecting and scribal culture to correspondence and print. I will demonstrate how specimens, letters and other things-in-motion transcended the distance between different geographical and socio-cultural spaces and mediated between missionaries and indigenes, practitioners and patrons and authors and audiences. Using this optic, I seek to answer Emma Spary's plea to write the colonial history of natural knowledge "as a process, negotiation, and exchange, rather than as event(s)".<sup>94</sup>

## 6. Overview of the chapters

The four chapters of this thesis are built around the different personae and practices that Kamel employed in his projects. Chapter I revolves around his role as a healer and a missionary and considers his medical practice, from his early life and training to his investigations and use of *materia medica* in the Philippines. In addition to the daily practices in Kamel's pharmacy, I explore two cases representative of parallel systems of healing that operated differently in terms of their aims, clientele and economies of cure: namely, the Spanish Royal Hospital administered by the Crown and the activities of Catholic priests. I will use these models to investigate what constituted a cure in late seventeenth-century Manila. Whilst priestly engagements are illustrative of the overlaps between medical and spiritual economies of healing, the drugs used by Kamel and the royal hospital point to

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<sup>92</sup> Bourdieu 1973; 1986.

<sup>93</sup> N. Jardine et al. 1996; Smith 2004; Roberts et al. 2007; Spary and Klein 2010; Terrall 2014; Curry et al. 2018; MacGregor 2018.

<sup>94</sup> Spary 2005b: 189.

the colonists' scepticism towards new substances and their adherence to Old World remedies. Although Kamel adopted native *materia medica*, I argue that he investigated Philippine nature chiefly with the aim of identifying plants that could serve as substitutes for Old World medicines, which were too expensive for the Jesuits to import. By situating Kamel's projects within the broader medical marketplace, I will draw an account of colonial medicine in early modern Manila.

Chapters II and III are closely associated, focusing on the practices of Petiver and Kamel, respectively, as collectors, correspondents and traders. I explore how the pair built networks of correspondence and used them to negotiate between different personae, as well as mobilise a variety of assets to accrue knowledge and status. By tracing the letters, specimens and other things-in-motion deployed, I investigate how value and credit were generated in knowledge transactions on the one hand, and how collectors negotiated the boundaries between the worlds of learning and commerce on the other hand. I use the exchanges between Kamel, Petiver and their correspondents to demonstrate how knowledge could be communicated in the face of distance, cultural differences and personal and political conflicts. These transactions reveal the diversity of agencies that mediated transmissions of knowledge on a global scale, as well as the complex trajectories that things-in-motion underwent before ever reaching – or failing to reach – their destinations.

Lastly, Chapter IV deals with the treatises that Kamel penned about Philippine nature, and with his construction of a persona of scholar and naturalist. I explore how he gathered and used different forms of evidence in building his authority as a learned author and in producing credible knowledge about Philippine flora. I am especially concerned with Kamel's efforts to appropriate local nature into frameworks understandable to European readers, or to establish shared and compatible meanings that could be communicated across distance and contexts. By focusing on traces of non-European traditions in Kamel's work, I investigate how indigenous knowledge travelled from local to global contexts. Although some of these traces were obscured by Kamel or lost in translation between the Philippines and Europe, I argue that it is in recovering these processes that we gain insights into cross-cultural knowledge encounters. I conclude with the reception and legacy of Kamel and his work in Europe and discuss some of the reasons behind his eventual fall into oblivion.





## Chapter I

### Curing Bodies and Saving Souls: Consuming Medicine in Late Seventeenth-Century Manila

The first chapter is concerned with the activities that laid foundations for the remarkable career of Kamel. Through the lens of his medical practice and status as a healer in Manila, I will explore how and why he travelled to the Philippines, established himself as a medical expert, as well as gained extensive knowledge of local medicinal plants and natural world. I will demonstrate that Kamel's presence in the Philippines can be seen as the result of intersecting relations between the Church, the Spanish Crown, medicine and empire. To elucidate these intersections, I will foreground Kamel's medical practice in the broader projects of healing in Manila, orchestrated by the Crown and the Church, the two main colonial authorities seeking to regulate the local medical marketplace.<sup>95</sup> Whenever applicable, I will also contextualise these activities with developments in Spanish America and other relevant colonial settings.

In contrast to Spanish America, history of medicine in the early modern Philippines has received scarce attention to date. Francisco Guerra and Mercedes Planta have assembled comprehensive catalogues of colonial hospitals in the archipelago and of the uses of Philippine *materia medica* during the Spanish colonial era, respectively.<sup>96</sup> Cheek Fadriquela has compiled an extensive inventory of different kinds of Philippine wood and its uses recorded during the colonial period, including medicinals.<sup>97</sup> From the handful of broader studies, Ostwald Sales Colín's work on the early seventeenth century stands out in terms of depth.<sup>98</sup> Whilst these studies provide solid overviews of some of the diseases, drugs and practices in the early modern Philippines, we are missing a thorough, comprehensive account of colonial history of medicine that would be firmly embedded within local socio-cultural contexts. To reconstruct the situation in the medical marketplace in Manila at the turn of the eighteenth century and thus derive an account of colonial history of medicine in the Philippines, I will draw on three sets of rare, surviving and previously unexplored sources: registers of drugs handled by the Spanish Royal Hospital, the annals of the Society of Jesus and Kamel's medical records. These three cases are representative of parallel systems of healing that operated differently in terms of their aims and clientele and, especially, the therapies used. In their collection of papers concerned with the medical marketplace, Mark Jenner and Patrick Wallis have argued that "we need to attend to the cultural and social construction of particular medical goods and services if we are to understand what was being supplied" and grasp "the nature of exchange and value in medicine".<sup>99</sup> In

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<sup>95</sup> Bantug 1953: 41–50; Guerra 1994: 535–578; Sales Colín 2005; Joven 2012.

<sup>96</sup> Guerra 1994: 535–578; Planta 2017: 135–203.

<sup>97</sup> Fadriquela 2013.

<sup>98</sup> Sales Colín 2005. See also Bantug 1953; Planta 2001; Andrade Jr 2005; Joven 2012.

<sup>99</sup> Jenner and Wallis 2007: 3, 12.

resonance with this plea, I will focus on the kinds of remedies deployed by the three main protagonists to investigate what constituted a cure, by whom and for whom.

Despite the extensive involvement of the clergy in early modern medical care, few authors have paid close attention to religious healing. David Gentilcore and Mary Lindemann have taken seriously the use of religious cures and pointed to the efforts of the Church to intervene in and regulate the medical marketplace; Lauren Kassell and Tara Alberts have demonstrated how spiritual economy could flow into medical and commercial economies; and Ines Županov has used religious healing acts as sites of cross-cultural encounter.<sup>100</sup> Drawing on their work, I will investigate the efforts of Jesuit missionaries to construct miraculous cures and religious remedies imbued with spiritual powers, which attested to the superiority of Christianity and assisted the spiritual crusade. I will use these activities to provide insights into the operation of spiritual economies and hierarchies, as well as into spiritual understandings of the body. I demonstrate that the missionaries understood the body of the indigene as a site of conflict between Christian and demonic forces, into which they sought to intervene by deploying religious remedies ultimately to gain possession of the indigenous soul. I will conclude that by conceptualising the soul as a form of commodity, we could gain a useful tool for investigating religious involvements in the medical marketplace.

Previous studies concerned with the consumption of drugs in colonial contexts have tended to highlight the insufficiency of European remedies in new worlds and the colonists' hunger for the local 'green gold'.<sup>101</sup> The daily practices in the Spanish Royal Hospital and Kamel's pharmacy provide a markedly different view, pointing instead to the colonists' scepticism towards foreign substances and to their adherence to Old World drugs, associated with the Galenic medical tradition. I will show that whilst the Crown supplied its Royal Hospital with tons of Old World medicines brought at high cost across the Pacific, Kamel browsed Philippine nature for plants that could serve as substitutes for the scarce and expensive European remedies. Although Kamel adopted native plants whilst royal institutions relied on imported medicines, I argue that their understandings of what constituted a cure were underpinned by identical Galenic concerns with the body; any differences in the remedies employed can largely be ascribed to disparities in funding. The Spanish suspicion of the substances encountered in new worlds has recently been stressed by Linda Newson and Rebecca Earle.<sup>102</sup> In her study of pharmacists' practices in early colonial Peru, Newson has attributed this preoccupation with Old World drugs and humoral medicine to the deep entrenchment of the Galenic doctrine, backed by

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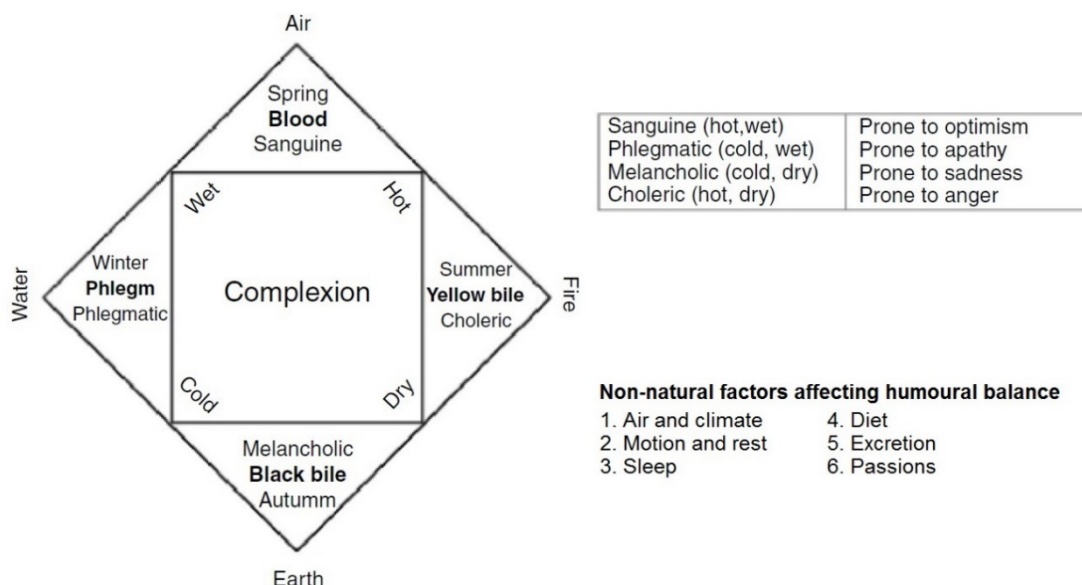
<sup>100</sup> Gentilcore 1998: 156–176; Kassell 2005; Županov 2005a; 2008; Lindemann 2010: 235–280; Alberts 2019.

<sup>101</sup> For example, Barrera-Osorio 2002; Schiebinger 2004; 2005; Schiebinger and Swan 2005; Chakrabarti 2007.

<sup>102</sup> Earle 2012; Newson 2017.

the institutions of the *Protomedicato* and Inquisition.<sup>103</sup> Here, I will critically examine Newson's claims in light of the evidence from Manila and the Spanish colonial worlds more broadly.

Rather than in the Spanish espousal of Galenism *per se*, I will situate the adherence to Old World humoral remedies within the association between climate, bodies and substances that Galenism posited. In this respect, I draw on the work of Earle who has shown that in order to counter the detrimental influences of non-European climates, the Spanish extensively supplied their overseas possessions with European foods. The Galenic system postulated an intricate link between bodies, substances and environments: through the four Galenic qualities – hot, cold, wet and dry – the human body was tied to the wider macrocosm (Figure 1.1). Different substances, ailments and climates were characterised in terms of these qualities: for example, ginger was hot; the Philippine climate was wet; and dysentery was a cold disease, the treatment of which thus required abstaining from cold substances such as green vegetables and other forms of coldness. Similarly, specific kinds of humoral balance, or complexions, were closely associated with the environment: for instance, the Spanish constitution was tied to the Spanish climate. Changes in the environment, diet and other factors then affected the overall humoral balance. Therefore, by moving to a different climate or consuming inappropriate substances, Spanish colonists would risk deterioration of their constitution, which could even lead to death. It was for this reason, as Earle has claimed, that the Spanish extensively imported their own food to America. I will suggest extending this argument to the consumption of drugs and argue that the Crown, as well as pharmacists such as Kamel, favoured Old World humoral medicines



**Figure 1.1:** The Graeco-Roman humoral theory (adapted from Earle 2012: 27).

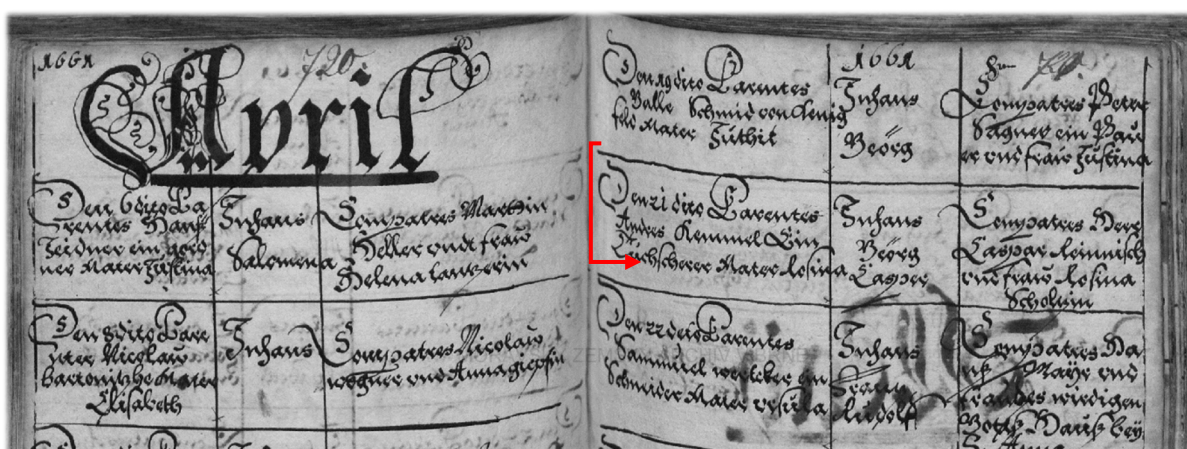
<sup>103</sup> *Protomedicato* was an official board of medicine charged with training, examining and supervising medical practitioners in the Spanish realms.

because they were considered better suited to protecting the colonists' bodies in the face of unfamiliar substances and climates. By exploring the tensions between foreign and familiar cures, this chapter thus contributes to recent debates about the interactions between local identities and global processes.<sup>104</sup>

Lastly, I use movements of drugs and associated information – through trans-Pacific communications, the Crown's consignments and Kamel's local networks – as a window to glimpse into exchanges of medical knowledge across cultures, traditions and continents. To gather information about Philippine nature and *materia medica*, Kamel built an extensive web of local informants, which predominantly relied on the Jesuit missionary machine. In addition to tracing these networks, I will explore some of the strategies used by the Jesuits to tap into local knowledge. Furthermore, through the lens of the practices in both Kamel's pharmacy and the Spanish Royal Hospital, I will discuss the integration of chemical and American medicines into the Spanish pharmacopoeia, as well as their introduction in early colonial Manila. In this context, the Philippines emerge as a stage of encounters and entanglements between the medical traditions of Europe, Asia and America.

### 1.1. Georg Joseph Kamel and his Philippine mission

Let me start with a consideration of Kamel's origins, training and journey to the Philippines. Georg Joseph Kamel was born on 21 April 1661 in Brno, Moravia (present-day Czechia).<sup>105</sup> According to his birth register, his father was Andres Kemmel, a cloth-shearer, and his mother was Rosina (Figure 1.2). Kamel's name appears as Georg Casper; he was probably named after the nearest important saint (St George, 23 April) and his godfather Caspar Reinisch. It is unclear why Kamel later changed his middle name to Joseph; perhaps this was the name he chose for his confirmation. Little is known about



**Figure 1.2:** Kamel's birth record (MZA, fond E 67, no. 16858, římskokatolický farní úřad Brno-sv. Jakub, matrika narozených a pokřtěných vol. VIII.: 721). Reproduced with permission of Moravský zemský archiv v Brně.

<sup>104</sup> Especially Cooper 2007; Pugliano 2009. See also Wear 1999.

<sup>105</sup> MZA, 16858: 721.

his early life. With the Counter-Reformation Bohemian lands offering few other opportunities for schooling, Kamel attended the gymnasium at the local Jesuit college in Brno. It seems that he completed the first five years of his education, but never finished his studies: a later entry in the Society's catalogues stated that "he studied up until Rhetorica", or the last sixth grade.<sup>106</sup>

In a document from 20 October 1682, in which the Brno reeve Johann Georg Metzger recorded Kamel's successful suit of libel against the soapmaker's apprentice Benedict Kettner, Kamel was still listed as "studiosus", or student.<sup>107</sup> Since Kamel joined the Society only weeks later and began his novitiate the following year, this evidence indicates that he started the fifth year of his studies in 1682.<sup>108</sup> This would suggest that he entered the gymnasium in 1677, aged 16, which would be uncommonly late; the usual age of enrolment was between 10 and 12. Perhaps Kamel had to intermit due to financial or medical issues or even repeat some of the years. The reason why Kamel skipped the final year is not entirely clear either. Most likely, the Society did not see Kamel as a future priest, which meant that there was no need for him to complete the gymnasium and continue to higher education. This is suggested by a later entry in the Society's catalogues, in which his faculties, judgement and prudence (*ingentium, iudicium, prudentia*) were all rated as only mediocre, whilst his talent for practical tasks was highlighted.<sup>109</sup> Rather than among the clergy, Kamel's future was apparently seen to lie in a more manual domain, namely pharmacy. Probably already during his gymnasium studies, Kamel was helping out in the college's apothecary workshop and proved himself competent enough to secure the invitation to enter the Society and receive training in medical arts.

In Jesuit canon law, Ignatius of Loyola designated caring for the sick as an important mission and required all men seeking membership to serve time in hospitals and other welfare institutions.<sup>110</sup> However, the *Constitutions of the Society of Jesus* (adopted in 1553) also explicitly prohibited the Jesuits from studying and practising medicine and from teaching medical subjects at their institutions.<sup>111</sup> This ambivalent attitude reflected the complex relationship between Christianity, healing and medicine, which deserves a brief further commentary. Since the early days of the Church, the connection between religious commitment and healing has been a prominent feature of Christianity: so much so it has commonly been characterised as 'a religion of healing'.<sup>112</sup> Attending to the ill, weak and socially marginalised resonated with the Christian understanding of piety, which

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<sup>106</sup> ARSI, Bohemia 22: 285v, "studuit usque ad Rhetoricam". The Jesuit gymnasium had six grades: *Parva (Ruditamenta)*, *Principia*, *Gramatica*, *Syntaxe*, *Poetica* and *Rhetorica*.

<sup>107</sup> Metzger 1682.

<sup>108</sup> Fischer 1978: 69.

<sup>109</sup> ARSI, Bohemia 22: 285v.

<sup>110</sup> *Constitutions* §[66]. For Ignatius and medicine, see Welie 2003.

<sup>111</sup> *Constitutions* §[452].

<sup>112</sup> For example, Sigerist 1943: 69; Porterfield 2005: 3; Verhey 2005: 123; Ferngren 2009.

emphasised charity and social welfare.<sup>113</sup> These tasks were also identified as a means of *imitatio Christi*, or enacting devotion to Jesus, and as one of the works of mercy needed for salvation.<sup>114</sup> These concerns were physically manifested by the establishment of infirmaries, hospices and pharmacies, which religious groups ran both for their own internal needs and as service to the wider community.<sup>115</sup>

Since the Christian doctrine posited a natural connection between spiritual and physical dimensions of health, therapy of the body typically took place in a combination of both realms. Diseases could be of natural or supernatural origin and curing the body made little sense – and could not be complete – unless the soul was healed as well.<sup>116</sup> Early modern physicians were mindful of these dimensions of healing and, for instance, were advised not to attend grave cases unless their patients had confessed first.<sup>117</sup> Christianity was regarded as another source of healing power, complementary to medical practice. Thus, remedies and regimens prescribed by physicians were commonly used in concert with different components of official thaumaturgy developed by the Church, from blessings and exorcisms to ointments and holy relics.<sup>118</sup> After all, healing was ultimately in the hands of God, who supplied even the healing powers of physicians' remedies.<sup>119</sup>

Due to their active role in healing and care for the sick, priests and nuns gained renown and proficiency in both *curatio divina* and *medica*.<sup>120</sup> Their involvement in medicine *sensu stricto*, however, provoked recurring controversies. The study and practice of medicine were considered undesirable distractions from the higher spiritual vocation, as well as entailing the risks of harming the patient.<sup>121</sup> More importantly, the provision of care often involved – and was even actively used to – generate monetary profit, which compromised the charitable nature of the duties. Whilst the rules varied over time and for different religious groups and categories, as early as 1139 the practice of medical arts for the sake of material gain was banned by the Church.<sup>122</sup> Without a special papal dispensation, the clergy could not officially engage in medicine beyond common charitable acts. Furthermore, whilst *curatio divina* clearly lay outside the sphere of competence of medical professionals and did not threaten their authority, physicians and pharmacists were less excited about the prospects of

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<sup>113</sup> Especially Numbers and Amundsen 1998; Risse 1999.

<sup>114</sup> Risse 1999: 73–74; Ferngren and Lomperis 2017: 142.

<sup>115</sup> For religious medical and welfare institutions, see especially Risse 1999.

<sup>116</sup> Amundsen 1998: 80–82; Ferngren and Lomperis 2017: 156.

<sup>117</sup> Galván 1859: 295; Park 1985: 107. In religious texts, the labours of a confessor were commonly likened to that of a physician (Ferngren and Lomperis 2017: 156–157).

<sup>118</sup> Park 1985: 85–117; Gentilcore 1998: 156–157; Lindemann 2010: 2. For competitions, collaborations and conflicts between medicine and religion, see Donato and Krayer 2009; Donato et al. 2013.

<sup>119</sup> Ferngren and Lomperis 2017: 204.

<sup>120</sup> Amundsen 1998; Jones 2011; 2018; Ferngren and Lomperis 2017: 131–138.

<sup>121</sup> Amundsen 1978; 1998: 85.

<sup>122</sup> Amundsen 1998: 84; Ferngren and Lomperis 2017: 151.

unwelcome – and usually unlicensed – competition in *curatio medica*.<sup>123</sup> Clerical apothecaries especially were a frequent source of animosity.<sup>124</sup> For this reason, in 1637 Urban VIII prohibited the pharmacies of regular clergy from selling substances to the general population.<sup>125</sup>

Although both the ban on *medicina clericalis* and Urban's decree were reissued numerous times, these regulations were commonly circumvented and failed to produce the desired impact.<sup>126</sup> The distinction between alms and payment was inherently blurred, and, especially in areas with poor infrastructure, medical professionals were not always available in sufficient numbers. Already in 1576, the Jesuits were granted a special privilege by Gregory XIII due to their extensive involvement in missionary work: provided that there were no secular European physicians available, even Jesuit priests were allowed to practice medicine.<sup>127</sup> In seeking the expertise required to run their hospitals and pharmacies, however, the Society relied frequently on its temporal coadjutors, a rank of lay brothers. These were members of a religious Order who had taken its vows but were not ordained and thus not required to take part in liturgical duties. Not headed for the priesthood, they could devote themselves to temporal activities, including manual or technical labour, so that professed priests could focus on spiritual matters. Lay brothers and sisters were recruited for a variety of skills: as cooks, gardeners, stock keepers and accountants, but also as pharmacists, physicians and surgeons.

Kamel entered the Society of Jesus as a lay brother on 12 November 1682, aged 21.<sup>128</sup> This began his two-year novitiate, during which he was apprenticed in pharmacy to two Jesuit apothecaries: first Wolfgang Naupp, who died in February 1683, and then his successor Joannes Kober.<sup>129</sup> Kamel's understanding of medicine was humoral and rooted in the Galenic tradition embraced by both the Jesuits and the Church more broadly, especially with the rise of the ideas of Paracelsus, who was a fierce critic of Catholicism.<sup>130</sup> It is important to highlight that the origins of the Galenic doctrine were rooted in cultural transfers that spanned the ancient Mediterranean, whilst its early modern forms were filtered to Europe through Arabic sources and had been influenced by Arabic additions.<sup>131</sup> In addition to works from this corpus, Jesuit libraries typically held a wide range of

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<sup>123</sup> Pomata 1999; 2007.

<sup>124</sup> Pomata 1999: 131; Černý 2004; T.D. Walker 2010: 83; Strocchia 2011.

<sup>125</sup> Asúa 2014: 105.

<sup>126</sup> O'Connell 1998: 119–120.

<sup>127</sup> O'Malley 1993: 171; O'Connell 1998: 120.

<sup>128</sup> Fischer 1978: 69.

<sup>129</sup> ARSI, Bohemia 90 II: 510r, 539v–540r, 541/21v; 104 I: 501.

<sup>130</sup> There is no intrinsic connection between Paracelsian and Protestant doctrines, and many Paracelsians were Catholic. However, Paracelsus himself was fiercely critical of the Catholic Church, closely associated with leading religious reformers of his day such as Martin Luther and Philip Melanchthon, as well as authoring a number of Reformed theological works (Webster 1979; Grell 1998).

<sup>131</sup> For example, Nutton 2008; De Vos 2010; 2013; 2019.

volumes on surgery, chemical medicine and even occult arts, including those authored by Paracelsus (Appendix 2).<sup>132</sup> We can therefore assume that Kamel received a rounded education in the medical arts. Having completed his training in 1684, Kamel followed Kober to the college in Jindřichův Hradec, where he worked as an “associate infirmarian and apothecary” and “socius exeuntium”, or companion to those going out.<sup>133</sup> In the Jesuit triennial catalogue for the following year, Kamel was registered as a temporal coadjutor of phlegmatic humoral complexion and strong vitality, who speaks “German, Moravian and mediocre Latin” and “knows pharmaceutic arts.”<sup>134</sup>

In 1686, Kamel was promoted and moved to Český Krumlov, where he now served as the chief apothecary.<sup>135</sup> That year on 25 November, the Bohemian Provincial Matthias Tanner received a petition from Rome to dispatch a contingent of missionaries to the Spanish overseas provinces.<sup>136</sup> In addition to four priests, the authorities requested two lay brother apothecaries. Due to their rigorous training, pharmacists from the German-speaking lands boasted an excellent reputation in early modern Europe. Therefore, they began to be recruited for overseas missions in large numbers after the Spanish opened their colonial possessions to missionaries from other Habsburg dominions in 1664.<sup>137</sup> In Tanner’s reply, dated 25 January 1687, the name of Kamel figured among the seven men chosen for the mission.<sup>138</sup> His new home was to be the East Indies.<sup>139</sup> It is unclear whether Kamel applied to be sent overseas himself or whether he was selected by superiors: his *epistola indipeta*, or request to partake in overseas missions, has never been found.

After receiving accompanying documents, drawn up by Tanner on 1 March 1687, Kamel and his contingent departed from Prague for the East Indies.<sup>140</sup> This was not a straightforward journey: the missionaries had to cross the Atlantic, New Spain and the Pacific to reach their destination. The first leg of the voyage took the missionaries across the Alps to Genoa, from where they set sail for

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<sup>132</sup> This is the view provided by the library catalogues of the Jesuit college in Olomouc, comparable in size and prominence to that in Brno, for which the records do not survive (MZA, G11, Sbírka rukopisů Františkova musea č. 591: 61r–62r). I am most grateful to Karel Černý for pointing me to this source.

<sup>133</sup> ARSI, Bohemia 90 II: 559r, “socius infirmarii, apothecarii et exeuntium”, 568d/r. Whenever leaving the residence, each Jesuit was required to do so in the company of another member of the Society.

<sup>134</sup> ARSI, Bohemia 22: 95r, “Germanicam et Moravicam mediocriter Latinam”, 285v, “scit artem Pharmacoceuticam.”

<sup>135</sup> ARSI, Bohemia 90 II: 599v.

<sup>136</sup> Tanner 1687a.

<sup>137</sup> Due to the low numbers of overseas missionaries, a decree issued by the Spanish Crown in 1664 permitted one quarter of the Jesuits stationed in its overseas missions to be *extrangeros*, or subjects of the Austrian Habsburgs. Ten years later, the proportion was increased to one third (Oliva 1664; Costa 1961: 437, 439).

<sup>138</sup> Tanner 1687b.

<sup>139</sup> ARSI, Bohemia 105: 40.

<sup>140</sup> Tanner 1687c.



Cádiz on 27 April.<sup>141</sup> With a brief stopover in Alicante, they reached their destination on 22 May. Under normal circumstances, the group would have continued to Seville to get their documents processed by the Casa de Contratación ('House of Trade'). However, the Bohemian missionaries arrived late and were so exhausted after the journey that they probably remained in Cádiz until their departure to New Spain. Although their names appeared on the list of the 41 Jesuits that the Crown approved for the mission on 7 May (Figure 1.3), they are missing from the detailed register compiled by the Casa's officials in Seville on 30 May.<sup>142</sup> The Bohemians did not have their papers drawn up until 20 June in Cádiz, in a document that provides the only surviving physical description of Kamel: "26 years old, medium height, brown hair, white".<sup>143</sup> Only eleven days later, on 1 July 1687, Kamel and his group left for New Spain on board the ship *Santísima Trinidad*.<sup>144</sup> To avoid the Caribbean hurricane season, which began around September, the vessel had to leave Spain by the beginning of July.

For the missionaries, the long transoceanic voyage presented an opportunity to read and study, instruct younger Jesuits and sailors, and prepare for their new life overseas. Liam Brockey has described the sea journey of the Jesuits to China as a "classroom", whilst Delphine Tempère has called for attention to vessels as special kinds of missionary space, different from but associated with proselytisation among non-Europeans.<sup>145</sup> As Wu Huiyi has pointed out, although these claims can be extended to Jesuit scientific practices, the role of travel in Jesuit knowledge production is yet to receive proper attention.<sup>146</sup> Prior to the departure, the leader of Kamel's mission, Antonio Varaona, received extensive instructions from his superiors on organising the spiritual and academic life on the ship. Indeed, Adam Gilg, one of Kamel's compatriots, described in his letter how the Jesuits engaged in confessions, religious celebrations, education and even in organising a play with the sailors.<sup>147</sup> We can assume that Kamel devoted much of his time to studying medicine and pharmacy. In addition to books, there were an experienced surgeon and a barber-surgeon on board.<sup>148</sup> Moreover, one member of Kamel's Bohemian group, Father Johann Werdier, had graduated in medicine in Bologna and worked as a physician prior to joining the Society.<sup>149</sup>

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<sup>141</sup> The details of this voyage were recorded in two letters written by Kamel's companion Adam Kall (Kall 1687; 1688). For Czech translations, see Zavadil 2016: 465–468, 489–503.

<sup>142</sup> AGI, Contratación 5540A, l. 3: 362r–363v; AGI, Contratación 5550, no. 12: 3r–4v, 7r–9v, 10r–10v. Kamel's and his companions' names are also missing from the list of missionaries who were lodging in the Seville college.

<sup>143</sup> AGI, Contratación 5550, no. 12: 10r, "Veinte y seis años, mediano de cuerpo, pelo castaño, blanco."

<sup>144</sup> Kall 1687b: 113r; AGI, Contratación 2900, no. 2: 37v–38r.

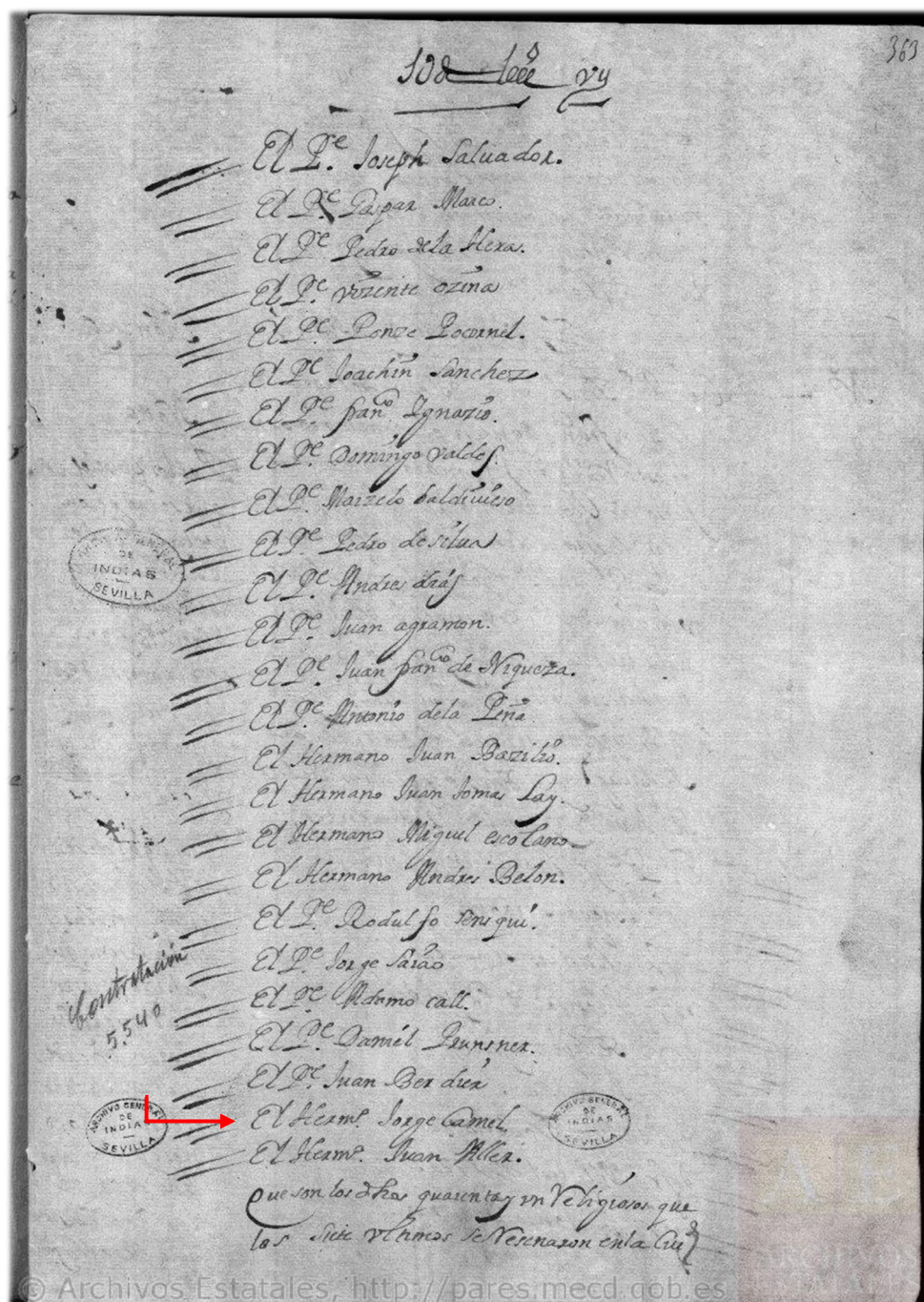
<sup>145</sup> Brockey 2009: 235; Tempère 2010.

<sup>146</sup> Wu 2017b.

<sup>147</sup> Gilg 1687; Morales 1687. For Czech translation of Gilg's letter, see Zavadil 2016: 477–489.

<sup>148</sup> AGI, Contratación 1244, no. 1, r. 4: 35v, 219v.

<sup>149</sup> Hausberger 1995: 330.



**Figure 1.3:** An excerpt from the list of 41 Jesuit missionaries approved by the Spanish Crown for overseas missions in 1687, which includes Kamel's name (AGI, Contratación 5540A, l. 3: 363r). Reproduced with permission of Archivo General de Indias, Seville.

After a stopover in the Puerto Rican port Aguada, *Santísima Trinidad* reached Veracruz on 17 September 1687. Upon landing, the group of Bohemian missionaries sent a long complaint to the their Provincial, which they opted to send outside the regular Jesuit networks, for obvious reasons. In it, they described persistent bullying from their Spanish peers, which included being refused clean clothes and underwear, served rotten food and water and treated with general contempt, as well as

having their belongings confiscated.<sup>150</sup> As they were informed, “five Spaniards can perform more valuable [work] than 500 foreigners.”<sup>151</sup> Kamel’s companion Adam Kall later wrote to Prague that the main reason behind these issues was the language barrier; once this obstacle had been surmounted, the Bohemian and Spanish missionaries became “one heart and one soul”.<sup>152</sup> From Veracruz the group continued on mules to México, which they reached on 5 October.<sup>153</sup> Since the Manila Galleon set sail for the Philippines in the spring, it was already too late to leave that year, and the Bohemian contingent thus remained in México over the winter. They used this time to study, prepare for their life in the Philippines and do some ‘sacral sightseeing’. According to Gilg, Kamel visited the nearby city of Puebla, where he met the famous ‘local saint’ Catarina de San Juan.<sup>154</sup>

It is uncertain whether Kamel left New Spain for the Philippines in 1688 or the following year. The Jesuit chronicler of the local Province, Pedro Murillo Velarde, dated Kamel’s arrival to 1688; however, the leader of Kamel’s mission, Varaona, informed his superiors that his contingent safely reached the Philippines only in June 1689.<sup>155</sup> That is also the first year in which Kamel’s name appeared in the catalogues of the Philippine Province.<sup>156</sup> The reason for this potential delay is unclear. Either way, Kamel boarded the Galleon in Acapulco sometime between March and April. Although not as perilous as the return journey from the Philippines, which could take more than five months on the open sea, this was one of the most arduous navigations in the early modern world. Fortunately, Kamel’s ship did not encounter any problems and reached Manila by the end of June 1688 or 1689.

## **I.2. Jesuits in Manila: Missionaries, healers and miraculous cures**

To provide broader context for Kamel’s projects, this section will provide an overview of the Jesuit missionary efforts in the Philippines, focusing on the college in Manila and on the Society’s activities in the field of healing. In the Philippines, the Jesuits were perhaps one of the less powerful religious Orders.<sup>157</sup> In 1595, when the archipelago had been partitioned by the Augustinians, Franciscans, Jesuits and Dominicans, the four religious Orders then present, the Society received some of the poorest and least populated parishes (Figure 1.4). The lion’s share went to the Augustinians and

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<sup>150</sup> Philippine missionaries 1687a; 1687b. For Czech translations, see Zavadil 2016: 471–477.

<sup>151</sup> Philippine missionaries 1687b: 124r, “...quinque Hispani operando plus valeant quam 500 exteri.”

<sup>152</sup> Kall 1688: 113v, “...verum nunc sumus cor unum et anima una...”

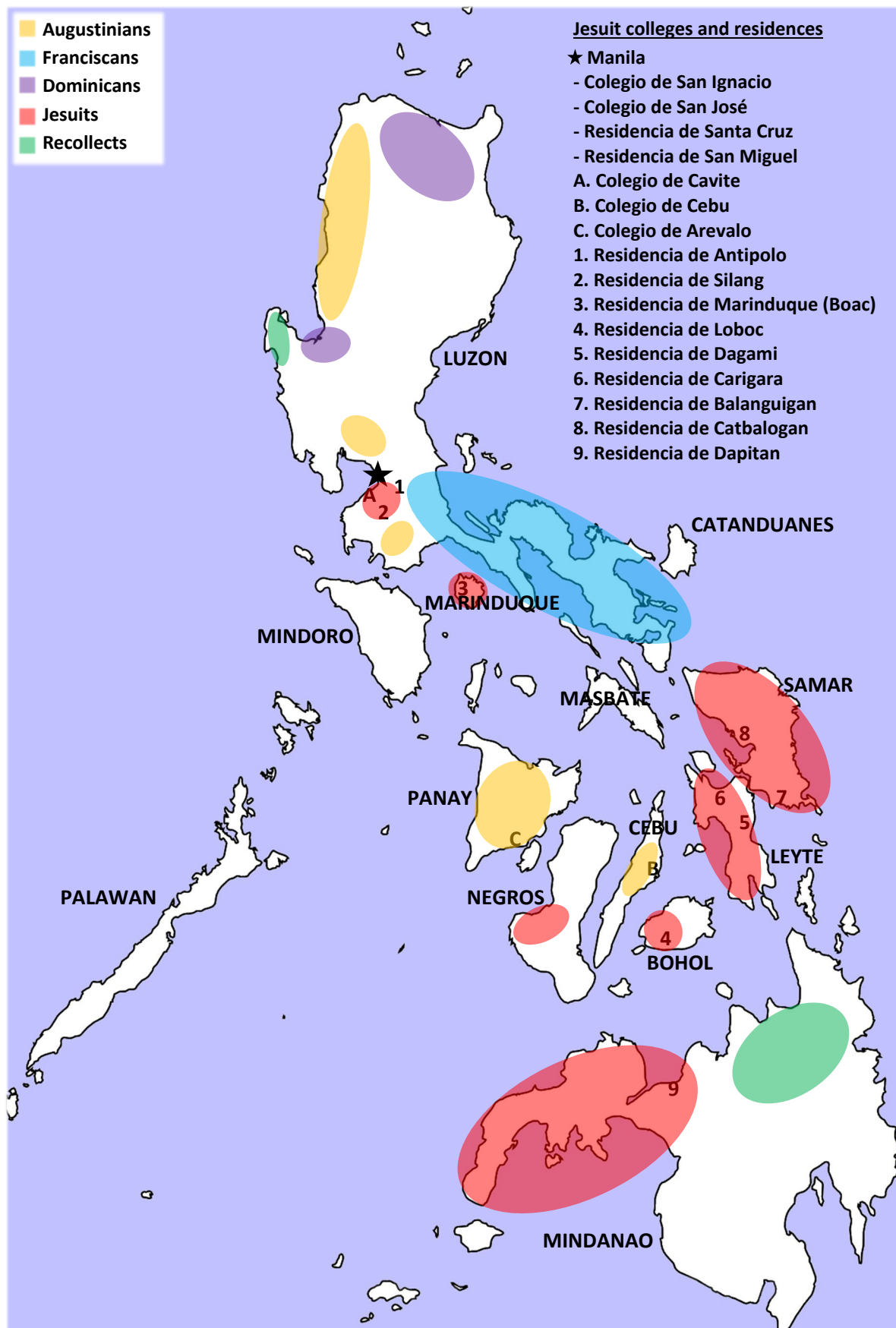
<sup>153</sup> Gilg 1687: 116r. For a discussion of the crossing of Mexico on the way to the Philippines as captured by Franciscan nuns in the early seventeenth century, see Owens 2015.

<sup>154</sup> Gilg 1687: 118r. For Catarina de San Juan, see Bailey 1997.

<sup>155</sup> Varaona 1689; Murillo 1749: 393v.

<sup>156</sup> ARSI, Philippinas 4: 86r.

<sup>157</sup> For history of the Church in the Philippines, see Marín y Morales 1901; Fernandez 1979. For the Society of Jesus, see especially Costa 1961. For its missionary methods, see Repetti 1936; Cushner 1959; Javellana 2000.



**Figure 1.4:** Map of Catholic missions in mid-seventeenth-century Philippines (adapted from Phelan 1959: 172–176). The Jesuit colleges and residences in operation during Kamel’s time in the Philippines have been highlighted. Each college and residence had priests who oversaw a number of affiliated parishes which did not have resident priests.



Franciscans, the first two organisations to arrive.<sup>158</sup> The Jesuits received large portions of the Visayas, whilst their presence in Luzon was largely limited to a few residences in Manila and its close environs. Alongside the Augustinian Recollects, who arrived in 1606, the Society was the only Order to establish outposts in the southernmost island of Mindanao. In 1668 and 1705, the Jesuits also gained permissions to found missions in the Marianas and the Carolinas, respectively, two nearby archipelagos administered from Manila.<sup>159</sup> The colony's capital was also the location of the Jesuit headquarters, the Colegio de San Ignacio, which was to become Kamel's new home (Figure 1.5).



**Figure 1.5:** Map of Manila in 1671 (Muñoz 1671). The Jesuit Colegio de San Ignacio, which housed Kamel's pharmacy, was located in the southernmost tip of the Spanish walled city (letter Y). Reproduced with permission of Archivo General de Indias, Seville.

<sup>158</sup> Phelan 1959: 32–36, 49–50. The Augustinians arrived in 1565, the Franciscans in 1578, the Jesuits in 1581 and the Dominicans in 1587.

<sup>159</sup> For Jesuits in the Marianas, see especially Coello de la Rosa 2016.

The Franciscan traveller Fray Bartolomé de Letona, who visited the city in 1662, had high praise for Manila:

The streets of the city are beautifully laid out, and level [...]. The main plaza is large, rectangular, and well-proportioned. Its eastern side is occupied by the cathedral; the southern, by the government building, which is a splendid palace, large, handsome, and very spacious. [...] The houses in the city, before the earthquakes of the years 1654 and 1658, numbered six hundred. [...] Most of them are of hewn stone with handsome iron balconies and rows of windows, and built in costly style.<sup>160</sup>

The Italian traveller Giovanni Francesco Gemelli Careri, who visited Manila in 1697, observed that the two subsequent earthquakes in 1665 and 1683 left further marks on the face of the city: “The streets are broad, but the frequent earthquakes have deformed their symmetry. I have seen a few palaces and houses with collapsed facades which have little hope of restoration: and that is also the reason why the citizens live in wooden houses.”<sup>161</sup> Gemelli Careri estimated that the Spanish walled city of *Intramuros* held “circa 3,000 souls, born from the union of many, who are so different in quality and colour.”<sup>162</sup> Eastwards of *Intramuros* was the Chinese district of *Parián*, the population of which had dwindled from some 15,000 to mere 2 or 3,000 following the Chinese uprising, massacre and expulsion in 1686.<sup>163</sup> The surrounding villages outside the city walls were inhabited by an estimated 30,000 indigenes, largely the Tagalogs.<sup>164</sup>

The Jesuit college was located in the southernmost tip of *Intramuros* (Figure 1.6). Gemelli Careri recorded his visit as follows:

The college of the Fathers of the Society is very large and adorned with long and high vaults, and spacious dormitories; but all above the ground floor is made of wood for fear of earthquakes. For the same reason, this all is

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<sup>160</sup> Cited in Costa 1961: 482.

<sup>161</sup> Gemelli Careri 1700: 18–19, “Le strade sono spaziose, sebbene la frequenza de’tremuoti ne abbia renduta difforme la simmetria; vedendo visi caduti più palagi, e case, con poca speranza di rifabbricarsi: e questa si è anche la cagione, per la quale i Cittadini vivono in case di legno.”

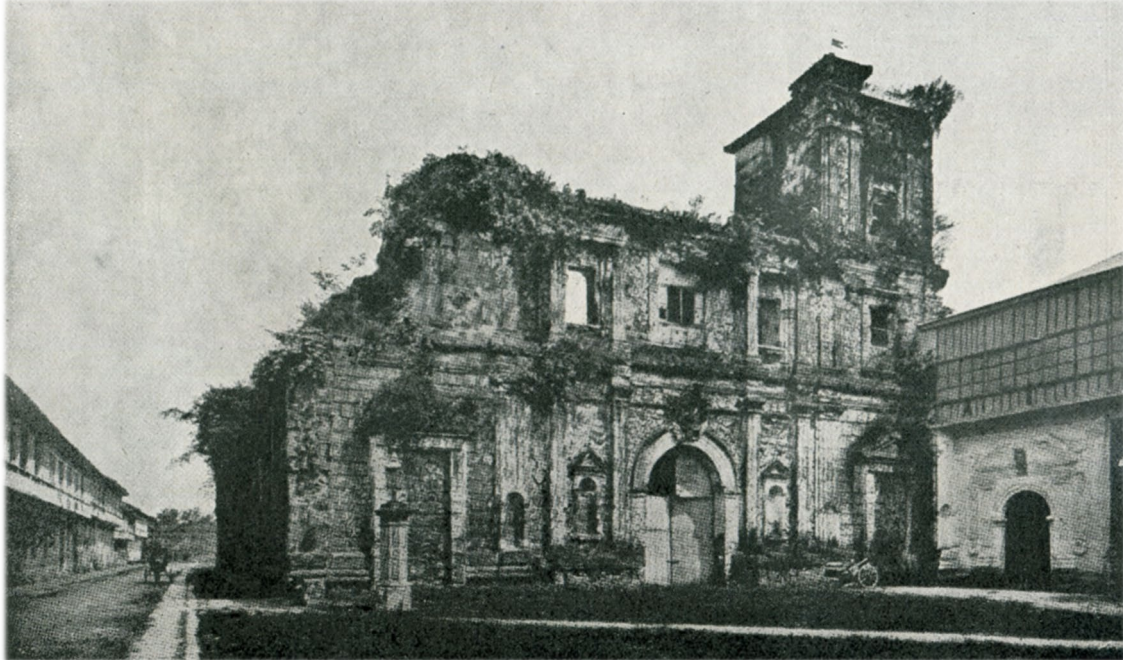
<sup>162</sup> *Ibid.*: 19, “...circa tre mila anime; però di persone nate tutte dall’unione di tanti, e sì differenti semi in qualità, e colore...” This number might be too low: John Leddy Phelan has estimated that the population of *Intramuros* reached 7,000 by the mid-seventeenth century (Phelan 1959: 12).

<sup>163</sup> Gemelli Careri 1700: 19–20; Phelan 1959: 12. For the Chinese in Manila, see Chia 2006.

<sup>164</sup> Newson 2009: 257.



supported by high pillars, so that the weight would not rest on the walls, which would not be able to withstand such shaking: which is the case for all houses in the Islands. In the heart lies a spectacular cloister and the church, which is one of the best in the city.<sup>165</sup>



**Figure 1.6:** The ruins of the Jesuit Colegio de San Ignacio and of the adjacent church of San Ignacio in the late nineteenth century (Repetti 1938: 52). The buildings were torn down shortly after the American invasion (1899–1902). Today, the site is occupied by the University of the City of Manila.

During Kamel's time, the college commonly housed around 40 Jesuits from the total of circa 120 present in the Philippines; the remaining 80 were scattered across the whole archipelago in the five colleges, eleven residences and 81 towns that Society controlled in the 1690s.<sup>166</sup> The Manila college also employed servants of diverse ethnic backgrounds, some of whom were probably slaves, who assisted with menial tasks; an inventory compiled in 1706 listed a total of 53 servants, all male (Figure 1.7).<sup>167</sup> According to Horacio de la Costa's reconstruction, the ground floor of Colegio de San Ignacio held a large assembly hall, offices, classrooms and the printing press; the first floor was dominated by the recreation room decorated with murals, maps and paintings, in addition to which there was also a library, refectory, domestic chapel, infirmary and rooms for closed retreat; and, finally, the second floor was dedicated to the living quarters (Figure 1.8).<sup>168</sup> The college was

<sup>165</sup> Gemelli Careri 1700: 26–27, "Il Colegio de'Padri della Compagnia è ben grande, & adorno di lunghissime, ed alte volte, e spaziosi dormentorii; però dal primo piano in su tutto è di legno, per temenza de'tremuoti. Per la stessa causa il tutto vien sostenuto da alte colonne; acciò il peso non poggia sopra le mura, che non potriano reggere a tante scosse: ciò che si pratica eziandio in tutte le case dell'Isole. Nel mezzo si vede un amoso Chiostro; e la Chiesa, ch'è delle migliori della Città."

<sup>166</sup> Costa 1961: 434–435, 438.

<sup>167</sup> Velasco 1706.

<sup>168</sup> Costa 1961: 558–559.

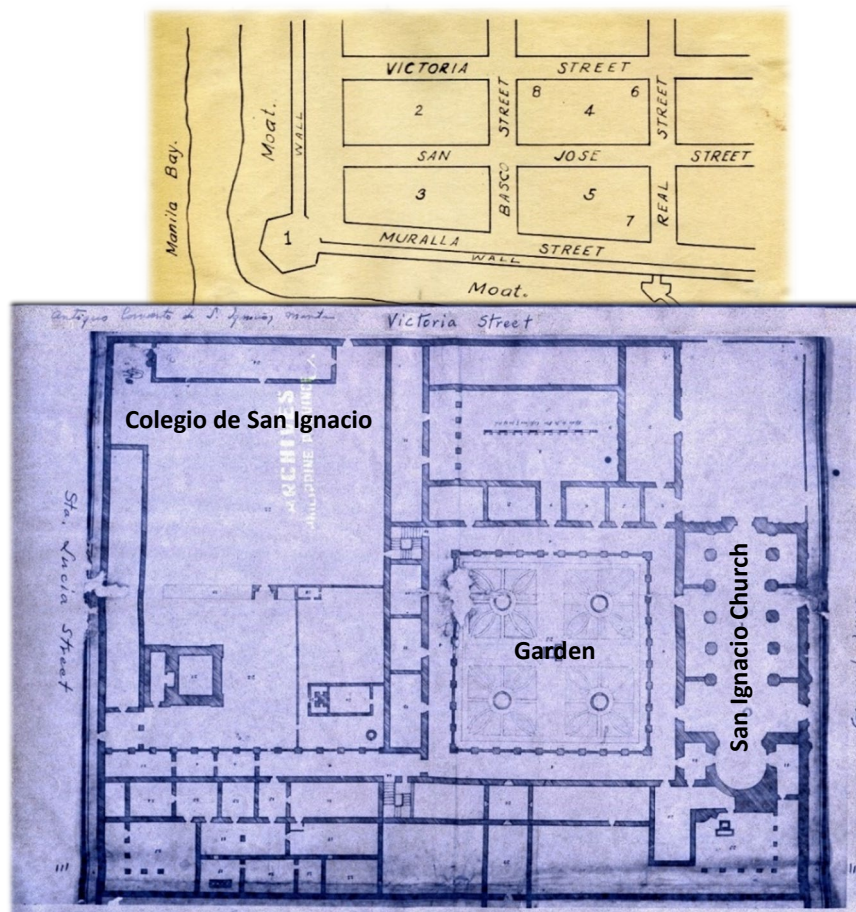
surrounded by the church to the east, a large orchard with wells to the west and Colegio de San José to the south, which housed a school and a university that awarded degrees in arts and theology.

<b>Church</b>	<b>7</b>	<b>Provisions</b>	<b>6</b>
- to assist with the masses	4	- to assist in the larder	2
- choristers	2	- to assist in the refectory	2
- to look after ornaments, robes etc.	1	- to prepare tea and chocolate	2
<b>Kitchen</b>	<b>8</b>	<b>Garments</b>	<b>5</b>
- cooks	3	- tailors	4
- servants' cook	1	- shoemaker	1
- to carry groceries from the market	1	- menial tasks	2
- to peel rice	2	<b>Laundry</b>	<b>2</b>
- to wash and store the dishes	1	- to wash the laundry in the river	
<b>Library, printing press</b>	<b>2</b>	<b>Infirmary</b>	<b>1</b>
- bookbinders, to repair books		- assistant to the infirmarian	
<b>Painter</b>	<b>3</b>	<b>Pharmacy</b>	<b>3</b>
- to grind colours	1	- to look after the garden	2
- apprentices	2	- apprentice	1
<b>Procuradoría</b> (the mission's finances)	<b>5</b>	<b>Porters</b>	<b>3</b>
- money keepers, debt collectors	3	<b>Assistants</b>	<b>3</b>
- <i>procurador's</i> assistants	2	- to assist the rector, old, ailing etc.	

**Figure 1.7:** An inventory of the 53 servants of the Colegio de San Ignacio in 1706 (Velasco 1706).

**Figure 1.8:** Floor plans of the Jesuit properties in *Intramuros*. Kamel's pharmacy was located on the ground floor of Colegio de San Ignacio (APP-SJ, III-3-94; APP-SJ, III-3-106).

Reproduced with permission of the Archives of the Philippine Province of the Society of Jesus.





Upon his arrival in Manila, Kamel added to the college's establishments the first Jesuit pharmacy in the Philippines, located on the ground floor – a deed attributed to him by the chronicler Murillo.<sup>169</sup> No Jesuit in the Philippines had been listed in the Society's catalogues as *apothecarius* or *boticarius* prior to Kamel, before whose arrival the college had at its disposal only a simple infirmary for internal needs rather than a proper dispensary.<sup>170</sup> In addition to work in the pharmacy, in which Kamel prepared drugs based on his knowledge of *materia medica*, he also “saved the college the salary paid to the physician, as he himself filled this position” by prescribing doses and regimens to patients.<sup>171</sup> Ironically, it was most probably Kamel's peer, Father Werdier, who had been designated to serve as the college physician; however, for unknown reasons, he remained in New Spain and did not continue to Manila.<sup>172</sup> Instead, it was Kamel who took charge of medical affairs. His activities were encouraged by his superiors, including “the college rector Father Magino Sola”, who, as Kamel wrote, “generously supports my humble workshop.”<sup>173</sup> By the mid-eighteenth century, this humble workshop had grown into a “pharmacy with plenty of remedies for the common good, [stored] in flasks, jars and fine earthenware from China and Japan with various decorations and paintings”.<sup>174</sup>

To his pharmacy, Kamel soon added a “garden, consisting entirely of rare and medicinal herbs”, and by 1706, he was also assigned three assistants to help him in the dispensary, “one apprentice in pharmacy and two to take care of the garden”.<sup>175</sup> For religious missionaries, the creation and maintenance of gardens was as much a physical process as a symbolic one.<sup>176</sup> Inspired by the metaphor of the Garden of Eden, gardens were places where wilderness was tamed, and nature transformed through labour into orderly space controlled by man. This was not only a utilitarian project to provide missionaries with useful plants, but also a representation of godly order and divine peace. It was no accident that Kamel's medicinal plot was part of “the garden encircled with rosebushes that have roses all year long” – flowers symbolic of martyrdom, purity and the splendour of Paradise to the Catholics.<sup>177</sup> As his notes reveal, Kamel used his garden to transplant and grow plants for his medical practice, as well as to conduct further observations and trials. He described

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<sup>169</sup> Murillo 1749: 393v.

<sup>170</sup> ARSI, Philippinas 4.

<sup>171</sup> Murillo 1749: 394r, “...ahorrò al Colegio el salario que se daba al Medico por suplir el Hermano este oficio...”

<sup>172</sup> Letter 1: 56v. For the correspondence consulted, see Appendix 1.

<sup>173</sup> *Ibid.*: 57v, “Collegii rectorem habemus Patrem Maginum Sola, qui liberaliter egenti officinae meae subvenit...”

<sup>174</sup> Murillo 1749: 198r, “En la Botica ay copia de medicamentos para beneficio comun, en cristales, orzuelas, y tibores de losa fina de la China, y del Japon con variedad de labores, y pinturas.”

<sup>175</sup> Velasco 1706: 250v, “En la Botica asisten tres con el Hermano Jorge Camel Boticario, el uno aprendiz de Botica, y los dos para cuidar de la Guerta que tiene el Hermano, toda de yervas medicinales, y exquisitas...”

<sup>176</sup> Prest 1981; Bravo 2005; Beck Sayre 2007.

<sup>177</sup> Murillo 1749: 198v, “El patio principal del Colegio es un quadrado igual de angulos rectos: en el ay un Jardin rodeado de rosales, que tienen rosas todo el año, y otras flores, y yerbas medicinales...”

receiving seeds of a medicinal plant from the Marianas, which “flourished into an annual plant, similar to senna”; encountering a young specimen of a strange herb, which upon transplantation developed into a species of wolf’s bane; and growing a species of mimosa in his garden “where I and my friends often recreate its movement.”<sup>178</sup> Just as for practitioners in Europe, Kamel’s workshop and garden were therefore sites of research and socialisation, in which they carried out observations and experiments, as well as meeting customers and both current and prospective informants.<sup>179</sup>

As suggested, the Society does not seem to have been extensively involved in medicine *sensu stricto* prior to Kamel’s arrival. However, this does not mean that the Jesuits did not engage in healing. Thanks to their competencies, priests were sought after as therapists by colonisers and indigenes alike. Missionaries conformed to local ideas of spiritually powerful men and also actively tried to profile themselves as such.<sup>180</sup> To enter the medical marketplace, they had to deploy objects that mediated between the spiritual and physical and that enabled supernatural intervention into local bodies. The success of these efforts was contingent upon their ability to claim authority over healing and over defining the nature of a cure. The rest of this section will explore the healing toolbox of Jesuit priests and explain why its contents were unavailable to Kamel, who relied on medical remedies. Through the lens of religious cures, I will offer insights into the interactions between spiritual, medical and commercial economies of the body.<sup>181</sup> Spiritually powerful objects and practices emerge here as products marketed by specialists and traded for material and social credit and, especially, for the soul. I suggest that by conceptualising the soul as a form of commodity, coveted by the missionaries, we gain a useful tool for investigating religious involvements in the medical marketplace.

The main sources documenting religious healing activities were written by missionaries themselves, typically as part of the Society’s official records, chronicles and communications. My analyses draw largely on the Philippine Province’s annual letters: reports regularly generated by Jesuit communities as part of their communication networks, which were carefully edited, distributed and sometimes even published, both for internal and external consumption.<sup>182</sup> The serially printed *Relations des Jésuites* (‘The Jesuit Relations’, 1632–1672) and *Lettres édifiantes et curieuses* (‘The Edifying and Curious Letters’, 1702–1776) garnered wide readership across the learned world.<sup>183</sup>

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<sup>178</sup> Kamel 1704f: 13.10, “Semen accepi, quod satum, in plantas excrevit annuas, Senae similes.”, 14.27, “In hortum vero transplantata herba, [...] ubi me et amicos, sua saepe recreat verecundia...”, 31.1. See also *ibid.*: 8.9, 31.4, 32.

<sup>179</sup> Prest 1981; Cunningham 1996; Pugliano 2018.

<sup>180</sup> For example, Delâge 1985: 179; Greer 2005: 137.

<sup>181</sup> Kassell 2005; Županov 2005a; 2005b; 2008; Alberts 2019.

<sup>182</sup> For Jesuit annual letters, see especially Friedrich 2008a; Nelles 2014; 2015.

<sup>183</sup> *Relations* focused on the French North America, whilst *Lettres édifiantes* had a broader scope dominated by news from Asian missions. For modern editions, see Greer 2000; Vissière and Vissière 2002; Desbarats 2006.

When reading through Jesuit missives from the Philippines, some of the most commonly discussed events are cases of dramatic healing acts, marked by intervention of supernatural powers. Despite the inherent bias, epitomised by the authors' aim to construct miraculous healing events that would testify to the powers of Christian faith, these accounts provide insights into the Jesuit practices and understandings of healing.<sup>184</sup>

Between 1692 and 1706 alone, which approximately overlaps with Kamel's presence in the archipelago, one can identify 29 cases of 'miraculous healings' in the Jesuit annual letters.<sup>185</sup> Due to the post-Tridentine unease with the ever-growing number of 'miraculous' healings,<sup>186</sup> the word "milagro", or miracle, appeared only four times and only in cases discreetly associated with a sanctioned saint, Francis Xavier. Regardless of that, all stories were carefully constructed as a miracle. Typically, the writer introduced individuals suffering from mortal or chronic ailments, who had been abandoned by physicians and healers since their arts proved insufficient. Despite having tried all sorts of remedies, the sufferers found no relief until a Jesuit priest arrived with his toolbox of holy objects, blessings and rituals, and the patient was cured through divine intervention. These narratives were modelled upon earlier Christian literary patterns, including *legendae* of healing and suffering, and found resonance with literary production in Catholic missions all over the world.<sup>187</sup> They served as religious propaganda and broadcast the superiority of Catholic faith both locally and globally, in the latter case especially through the Jesuit annual letters. These accounts were thus closely tied to proselytisation and displacement of non-Christian healers, as well as legitimating religious engagements in the colonies and providing assurance to missionaries by revealing divine presence. The exigencies of the missionary situation therefore required precisely what the Counter-Reformation Church was so suspicious about: the construction of miraculous cures and portents of divine favour.

The production of religious cures typically entailed investment of supernatural powers into objects through rites and associations with saints. For example, during a 1692 epidemic in Dagami on the island of Leyte, the indigenes solicited help from a Jesuit priest, who "sold them water of our father St Ignatius, blessed with a benediction used in Germany," which saved countless lives.<sup>188</sup> Some of these remedies attained wider renown and reached broader markets, such as "tierra de San Pablo",

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<sup>184</sup> Dunn 2018.

<sup>185</sup> ARSI, Philippinas 8: 27r–133r. The Jesuit chronicles of Pedro Murillo Velarde (1749) include an abundance of similar episodes.

<sup>186</sup> Grell and Cunningham 1993; Gentilcore 1998: 156–158; Grell et al. 1999; Ferngren and Lomperis 2017: 188–220.

<sup>187</sup> Griffiths and Cervantes 1999; Županov 2005a; 2005b; 2008.

<sup>188</sup> ARSI, Philippinas 8: 46v–47r, "...les vendijo el agua de nuestro Padre San Ignacio con la bendicion que en Alemania se usa..."

or 'St Paul's clay', which "was used even by the Moors" in Mindanao and Jolo.<sup>189</sup> Branding objects with the names of saints was a common strategy. For instance, in a process which I explore in detail in Chapter IV, the Jesuits appropriated the supernatural powers of a native plant used by the locals as a protective amulet, reinventing its seeds as 'the beans of St Ignatius'.

Such objects were sites where the economies of healing, medicine and spirituality were entangled. In this process, priests acted merely as mediators and representatives of celestial forces: healing powers were to come from the outside, as a divine gift, rather than from within the body, which would have raised the suspicion of the authorities.<sup>190</sup> Due to their authority to engage with supernatural forces, ordained clergy alone had the power to construct religious cures, whereas lay brothers, such as Kamel, were not trained to harness spiritual powers. Whilst the Jesuit annual letters frequently discussed cases of miraculous healings, they remained silent on the activities of Kamel and other pharmacists, other than reporting the dates of their arrival in a particular mission, or their death. Their cures were not miraculous enough, and the spiritual conquest required other heroes.

Both European colonisers and non-Europeans were recipients of miraculous cures, although the latter appear with greater frequency, which underscores the links with proselytisation. In the sources analysed, the body of the patient emerges as a site of cross-cultural interaction and medical and spiritual intervention. The ailing indigenous body specifically portrayed an epitome of sin and heathenism. It was here that the clash between Christian faith and demons played out. Religious cures and rituals possessed the power, conferred upon them by the clergy, to intervene in this struggle. Whilst the body was the space in which this conflict physically manifested and left its marks, what was ultimately at stake was the soul. The chronicles of the *Hospital de San Gabriel*, run by the Dominicans for Chinese patients, provide a good example.<sup>191</sup> Consisting largely of records of conversions, baptisms and last rites, the cure is defined here as conversion to eternal life, leading to salvation.

Missionaries therefore offered their care and miraculous cures, which promised health and salvation, in exchange for faith, and especially for the soul, the most desired and prized form of commodity available to them in the medical marketplace. The numbers of souls and converts were compiled by the clergy in extensive inventories and provided the yardstick against which the success of the mission was measured.<sup>192</sup> Through the materiality of the paper, therefore, non-European souls gained physical form and could be deployed by the Society in further transactions: developments

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<sup>189</sup> Murillo 1749: 181v–182r, "...la tierra de San Pablo, que aun entre los Moros la usan..."

<sup>190</sup> Gentilcore 1998: 156–157.

<sup>191</sup> UST, APSR – Serie B, r. 44, t. 3: 84–109.

<sup>192</sup> For example, Martín 1968: 119; Županov 2008.

which deserve further attention.<sup>193</sup> The religious cures deployed by the Jesuit priests alert us to the need to appreciate the broader range of objects and practices of healing available, including their cultural and spiritual connotations. These considerations promise insights into the interactions of non-material economies with those of medicine and commerce. Moreover, as Benjamin Breen has recently noted, taking charms and spirituality seriously may help us reconstruct non-élite and non-European voices in the history of early modern medicine.<sup>194</sup>

### **I.3. The Spanish Royal Hospital: Ethnic hierarchies and religious missionaries**

To introduce the second comparative case in the study of Kamel's medical engagements, I will now examine the objectives and the management of the Spanish Royal Hospital. The ensuing discussion will point to two features crucial for analyses of the cures and practices deployed in the Manila medical marketplace: firstly, the close ties between medical care and Spanish colonial projects; and secondly, the extensive involvement of religious Orders in medical care.

Alongside the archipelago's seclusion, major obstacles in establishing a viable colony in the Philippines included unfamiliar environments, diseases and diets, which permanently threatened the settlers' wellbeing. Already in 1594, the local authorities reported to the Crown that "due to the difference of the [Philippine] climate from that of our Spain, many people die."<sup>195</sup> Health – or the lack of it – remained a source of continuous anxiety throughout the seventeenth and eighteenth century. For instance, in 1667 the Augustinian *procurador* Isidro Rodríguez grieved that "very lengthy and terrible diseases afflict us and, commonly, the majority of the ill happen to die."<sup>196</sup> To protect the colonists' health and due to "the much greater expense to the king, our sovereign, in transporting one soldier here than in supporting two", the Spanish authorities in Manila erected the *Hospital Real de Españoles* ('Spanish Royal Hospital') already at the foundation of the city in 1571.<sup>197</sup> Royal hospitals akin to the one in Manila were founded in every major city throughout the Spanish and Portuguese overseas possessions.<sup>198</sup> Since their establishment was closely tied to military activity and to the

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<sup>193</sup> Sujit Sivasundaram has explored the material dimensions of the soul by drawing parallels between the practices of collecting souls and natural specimens in the nineteenth-century Pacific (Sivasundaram 2001).

<sup>194</sup> Breen 2019: 159.

<sup>195</sup> Ríos 1594: 2v, "Por ser la tierra muy dejatiba y diferente el tenple de el de nuestra España se muere mucha jente."

<sup>196</sup> Rodríguez 1667: 1r, "...padecen enfermedades muy largas, y penosas, y de ordinario sucede morirle la maior parte de los enfermos..."

<sup>197</sup> Ríos 1594: 1v, "...y le quessa mucho dinero al Rey, nuestro Señor, traer aqui un soldado mas que sustentar dos."

<sup>198</sup> For medical care in Spanish colonial worlds, see Guerra 1953; 1994; 1998; Rodríguez-Sala et al. 2004; Rodríguez-Sala et al. 2005; Rodríguez-Sala and Ramírez 2005; 2006; 2008; Rodríguez-Sala 2006; 2011; Rodríguez-

efforts to control local populations, Gabriela Ramos has suggested seeing Spanish medical institutions as tools of colonisation.<sup>199</sup> In a similar vein, Ines Županov has characterised the Portuguese Royal Hospital in Goa, designed to cater for the needs of indigenous populations, as “a project of total surveillance, control and submission, disguised as a project of total healing”.<sup>200</sup>

We can gain insights into the inner workings of the *Hospital Real* in Manila at the turn of the eighteenth century from a series of reports from Spanish royal officials. In 1690, shortly after his arrival, the Governor-General Fausto Cruzat y Góngora informed the Crown that “[i]n this city of Manila, there is a royal hospital for the treatment of all the sick who have their place in the services of Your Majesty.” This hospital employed “a physician, a pharmacist, a blood-letter, and his assistant” and included “a pharmacy from which remedies necessary for its patients are dispensed” and “sold to different individuals”.<sup>201</sup> According to an inspection conducted by Cruzat’s predecessor, *gobernador* Gabriel de Curuzealegui y Arriola, “the hospital holds four infirmaries with fifty to sixty patients.”<sup>202</sup> The newly appointed chaplain Joaquín Ramírez recorded in 1711 that “[e]very month, twelve servants come to work in the hospital, who [...] are distributed as follows: two for the medical room, two for the delivery room, two for the surgery, two for the porter’s lodge and the laundry room, and two for the kitchen; and the two who remain are to apply themselves to the rooms with the most ill.”<sup>203</sup>

Spanish royal hospitals were typically organised along ethnic lines, reflecting the Spanish colonial policies of segregation and hierarchisation that later developed into the well-known *casta* system. As Cruzat’s report and the name *Hospital Real de Españoles* suggest, the institution was officially open only to military and civil personnel in the services of the Spanish Crown, or technically only to those with the privileges of Spanish descent. Nevertheless, the ethnic categories in question were fundamentally blurred, and determined by a diversity of factors from descent, phenotype and language to domain of activity, religion and social networks.<sup>204</sup> Spanish colonial classes such as *criollo*, *castizo* and *mestizo*, which determined one’s legal rights and status, were historically and socially

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Sala et al. 2006; Pardo-Tomás 2010; 2013a; 2014a; 2014b; Alzate Echeverry 2012; Ramos 2013; Slater et al. 2014; Crawford 2019.

<sup>199</sup> Ramos 2013.

<sup>200</sup> Županov 2005b: 213.

<sup>201</sup> Cruzat 1690: 1r: “En esta Ziudad de Manila ay un hospital Real para la curazion de todos los enfermos que tienen plaza en servicio de Vuestra Magestad [...] Medico, Boticario, Sangrador, y a un Ayudante de Zirujano...”, 1v, “En el dicho hospital ay una Botica de donde se dan las medizinas nezesarias para los enfermos de el [...] en dicha Botica sean vendido siempre Medizinas a diferentes particulares...”

<sup>202</sup> Sánchez 1685: 2r, “...en las quatro emfermerias que dicho hospital tiene cinquenta y sesenta enfermos...”

<sup>203</sup> Ramírez 1711: 6v, “Vienen cada mes para servicio del Hospital, doze sirvientes, que [...] se reparten en esta forma, dos para la sala de la Mediçina, dos para la de la concepçion, dos para la çirujia, dos para la porteria, y roperia, y dos para la cossina; y los dos que sobran deviendose aplicar à las salas de mas enfermos...”

<sup>204</sup> Although inconsistent and fluid, the individual ethnic categories were most closely tied to descent and rooted in the medieval concept of *limpieza de sangre*, or the purity of blood – incidentally one of Galenic humours. See Seed 1982; Zuñiga 1999; Carrera 2003; López Beltrán 2007; Martínez-López 2008; Earle 2012: 6–11.

contingent and inherently contested categories, which do not correspond to modern racial expectations. There is also extensive evidence that throughout the colonial era even *mulatos*, *mestizos* and Philippine indigenes served – often unwillingly – as soldiers and servants of the Spanish Crown.<sup>205</sup> In case of injuries and illnesses, these personnel would possibly have found recourse in the *Hospital Real*. Regular access to its services, however, remained a Spanish privilege – at least officially.

In terms of funding and management, royal hospitals fell under the direct responsibility of the Crown, and their expenses were covered from the Royal Treasury. Moreover, the two most important positions, *mayordomo* (administrator) and *capellán* (chaplain), were appointed by royal officials and were themselves servants of the Crown. For the Philippine government and the Viceroyalty of New Spain, the funds required for the hospital's management, as well as the lack of personnel and qualified medical practitioners were a source of continuous headaches. In 1685, the *gobernador* Curuzealegui complained that due to “the lack of a physician, the sick are not treated without putting them at an obvious risk.” Moreover, since the indolent chaplain neglected his duties, the patients could not “die here as Christians assisted with holy sacraments”. Curuzealegui's inspection identified the hospital pharmacy as a major drain on funds because of “a very young assistant to the physician who lacks knowledge and experience”, “a great scarcity of containers for drugs [which thus] become quickly spoiled” and a lack of “good book-keeping”, due to which some remedies had mysteriously disappeared, while others had been unnecessarily bought.<sup>206</sup> Despite his efforts to amend the situation, the fourteen-page complaint written in 1711 by the *capellán* Ramírez portrayed the hospital as a crumbling ruin and a nest of vice run by incompetent people. According to Ramírez, the *mayordomo* commonly abused hospital slaves for his personal needs; the physician came in when he wanted and not when the patients required; his assistant was a former delinquent who boozed all day; the patients fornicated with the slaves and indulged in gambling; and the pharmacy lacked necessary supplies.<sup>207</sup>

Given these issues, the management of the hospital was regularly bestowed upon one of the religious Orders, usually the Franciscans.<sup>208</sup> Previous studies concerned with the early modern medicine in the Philippines, and the Spanish colonies more widely, have underscored the extensive

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<sup>205</sup> Mawson 2013; 2016a; 2016b.

<sup>206</sup> AGI, Filipinas 83, no. 16: 4r, “...pues aqui mueren como Christianos asistidos con los sanctos sacramentos...”, 6r, “La falta con que se halla el hospital de Medico [...] no es curar sino es poner los enfermos a evidente riesgo...”, 6v, “...esta asistiendo de Medico [...] muy mosso y a quien le falta la ciencia y la experiencia...”, 7v, “muchacha falta de caxones donde ponen las drogas [...] se corromperan en mas breve tiempo”, 15v, “...buena administracion...” The management of the hospital was an issue identified and addressed by other *gobernadores* too: for example, by Sebastián Hurtado de Corcuera in the late 1630s (Hurtado 1636).

<sup>207</sup> Ramírez 1711.

<sup>208</sup> Guerra 1994: 537–538.

involvement of religious Orders in the sphere of medical care.<sup>209</sup> This development can be ascribed to the close relationship between healing and missionary work. The Council of Trent and the ensuing Counter-Reformation reinforced the religious concern with charitable work, providing a new impetus for the creation of new institutions and Orders dedicated to the care of the poor and sick.<sup>210</sup> Both in Europe and overseas, healing and social welfare emerged as central fields of missionary activity, in which physical and material needs naturally overlapped with religious meaning. Given the spiritual dimensions of healing, both in Christianity and other cultures, it became a major stage in which the struggles between missionaries and non-Catholic spiritual authorities took place.<sup>211</sup> The clergy therefore often pioneered European documentations of local medical knowledge, as well as playing a prominent role in introducing European medical theories, substances and practices in new contexts.<sup>212</sup>

To reflect the central role of medicine in proselytisation in early modern New Spain, José Pardo-Tomás has even proposed to speak of “conversion medicine”.<sup>213</sup> Provision of care was a potent means of demonstrating the superior powers of Christianity and of gaining the attention and the trust of the locals, as well as an excellent opportunity to heal both their ailments and their souls. It was “to make the conversion of the natives effective [that] a hospital was erected for the natives,” as Županov quoted one of the Jesuit missionaries in sixteenth-century Goa. Later, the Jesuits began to dub the hospital “a fishery of souls”.<sup>214</sup> Given the clergy’s involvement in medical care, religious ceremonies remained central to hospital life. Whilst hospitals did not necessarily dispose of licensed medical practitioners, there was always a chaplain, whom the patients were to see first in order to confess before they were allocated a bed.<sup>215</sup> One of the primary objectives of hospitalisation was, after all, spiritual salvation, the ultimate cure for all ailments.<sup>216</sup> Hyperbolically dubbed ‘houses of the dead’ by the locals, one of the main missions of hospitals was to prepare patients for their final voyage.<sup>217</sup>

Furthermore, the extensive ingress of the clergy into the sphere of medical care was facilitated by the chronic lack of licensed medical practitioners in Spanish colonial worlds.<sup>218</sup> For this reason, and

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<sup>209</sup> Especially Guerra 1953; 1969; 1994; Pardo-Tomás 2013a; 2014a; 2014b.

<sup>210</sup> For medicine and the Counter-Reformation, see Grell and Cunningham 1993; O’Connell 1998; Grell et al. 1999.

<sup>211</sup> Cervantes 1994; Griffiths 1999; Griffiths and Cervantes 1999; Županov 2005b; 2005a; Pardo-Tomás 2013a; 2014b; 2014a. For studies which defy simplistic historicist approaches to conversion, see R.P. Hsia 1998; Griffiths and Cervantes 1999; Županov 2009a; Alberts 2013.

<sup>212</sup> Guerra 1969; Anagnostou 2005; Pardo-Tomás 2014b. Joseph-François Lafitau (1681–1746), a Jesuit missionary in New France, noted that new medicines and healing techniques, both from Europe and from different American tribes, had a special appeal for the indigenes of north America (Greer 2005: 143).

<sup>213</sup> Pardo-Tomás 2013a; 2014b; 2014a.

<sup>214</sup> Županov 2005a: 6, 8.

<sup>215</sup> Guerra 1953: 57.

<sup>216</sup> Risse 1999: 167–229.

<sup>217</sup> Županov 2008: 266; Ramos 2013: 197.

<sup>218</sup> Lanning 1985; López Terrada 2009: 10.



since these activities directly assisted the imperial agenda, the clergy's engagement in medical care was not discouraged by the Crown. In the Philippines, the situation was particularly dire, as the Jesuit chronicler Murillo recorded in the mid-eighteenth century. Colonists and indigenes alike "suffered not only from the diseases, but rather from the lack of physicians [...] and remedies."<sup>219</sup> This was because "[o]nly in Manila are there any doctors [...], in the rest of the Isles, in the Galleons, navy and garrisons, there are only some curanderos who would not be permitted [to practice] in the smallest village in Spain."<sup>220</sup> Even in Cebu, the second largest Spanish settlement, one had to "account for the possibility of not finding a blood-letter".<sup>221</sup> Given the scarcity of medical personnel in the Spanish royal service and the weakness of the local *Protomedicato*, practically all colonial medical institutions in the Philippines were managed by religious Orders throughout the Spanish era. The Franciscans, Dominicans and Brothers Hospitallers were especially active in this respect and established and ran hospitals to cater for the physical and spiritual needs of the local medley consisting of Spaniards, indigenes, the Chinese, slaves and migrants (Appendix 3). Even Orders not directly involved in managing any hospital, such as the Augustinians and the Jesuits, ran pharmacies which offered charitable services.

Whilst Catholic Orders emerge in colonial sources as a dominant force in the medical sphere, it is important to note that these materials, written predominantly by religious missionaries, are skewed towards an emphasis on their own activities. Upon a closer reading, however, these colonial documents hint at what must have been a more pluralist medical market. The Chinese community, for one, had their own practitioners of medicine. As the first Bishop of Manila, Domingo de Salazar, wrote in 1590, "[t]here are doctors and apothecaries in the [Chinese district of] Parián with placards in their own language posted in their shops announcing what they have to sell; there are also numerous eateries, where the Chinese and the indigenes come to eat; as I have been told, these are frequented even by the Spanish."<sup>222</sup> Salazar also mentioned "a hospital that the Dominicans set up, which provides care to the Chinese of the Parián" to assist their conversion and improve the missionaries' status among the Chinese in the wider region. According to Salazar, the hospital employed "a prominent Chinese, a physician and herbalist, who converted about a year ago [...]; he

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<sup>219</sup> Murillo 1749: 241r, "...padecian no solo por la enfermedad, sino por la falta de Medicos, de botica, de regalos, y de remedios..."

<sup>220</sup> *Ibid.*: 171r, "Solo en Manila se hallan algunos Medicos, [...] en el resto de las Islas, en los Galeones, Armadas, y Presidios, solo ay unos curanderos, que en ninguna Aldea en España los permitieran..." *Curandero* is a Spanish term denoting native healers and medical practitioners.

<sup>221</sup> *Ibid.*: 156v, "ir à Zebù [...] con la contingencia de no encontrar un sangrador."

<sup>222</sup> Salazar 1590: 19, "Ay en este Parián médicos y boticarios, con rétulos en sus lenguas puestos en las boticas, que declaran lo que en ellas se vende; ay también bodegones en mucha cantidad, donde acuden los sangleyes y naturales á comer, donde me dicen que también acuden [los E]spañoles."

cures the sick [...] and prescribes for them his purges and medicines.”<sup>223</sup> Here, Catholic conquest became entangled with Chinese medicine within the walls of a Spanish colonial institution. The centuries of exposure to Chinese medical practices left their mark on those of the Philippine indigenes as well: for instance, local communities commonly believed that air played a major role in diseases. To extract foul air, they “use[d] cupping glasses, but not made of glass, for there is no glass in this country, but of small shells or small animal horns.”<sup>224</sup> This was a technique most probably learned from the Chinese.

The activities of Philippine indigenous healers left rather few traces in Spanish colonial sources, and if they did, they were often subject to misrepresentation or demonisation by the clergy.<sup>225</sup> For example, the Franciscan missionary Juan Francisco de San Antonio listed twelve different “ministers of the Devil” in his chronicles of the Franciscan Philippine Province (1738).<sup>226</sup> Among those ‘ministers’ were malicious sorcerers feared among the locals, such as the *Mangagavay*, powerful wizards capable of “taking and giving health and life with their spells”, and the *Silagan*, whose “need is to remove and eat the entrails from all the persons dressed in white.”<sup>227</sup> Furthermore, San Antonio included practitioners who were sought by the indigenes for their healing and spiritual powers: for instance, the *Mangagayoma*, “the sorcerer who made use of the natural remedies, although these were often corrupted by pacts with the Devil”, and the *Catalonan*, known as the *Babaylan* in the Visayas, “the priest or the priestess of the sacrifices”, whose services were solicited to communicate with and placate the *anitos*, or the spirits.<sup>228</sup> Despite the missionaries’ efforts to supplant such roles in their quest for spiritual supremacy, the expertise of indigenous therapists was regularly sought by the locals throughout the Spanish colonial period (and traditional healers continue to operate to this day, especially in rural areas).<sup>229</sup> To help uproot these practices, the Archbishop of Manila, Felipe

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<sup>223</sup> *Ibid.*: 32, “...un ospital que an hecho los frailes de Santo Domingo, que tienen á cargo los sangleyes del Parián [...]. Convirtiöse abrá como un año un sangley principal, entre ellos médico y arbolario, [...]; éste cura los enfermos [...] y les ordena sus purgas y medeçinas.” For this hospital, see also UST, APSR – Serie B, r. 44, t. 3: 84–109; M.G. Serrano 1621; Fernández Navarette 1676: 323–324.

<sup>224</sup> Thévenot 1664: 6, “...ils ont l’usage des ventouses, non pas de celles de verre, car il n’y a point de verre en ce Pays-là, mais de petites coquilles ou de petites cornes de bestes fauves.” See also Mas 1843: vol. 3, 88; Mallat 1846: 51–52.

<sup>225</sup> For example, Chirino 1604: 55–56; Jesus 1681: 29–30; San Antonio 1738: 149–157. Also, cf. San Agustín 1720 and Delgado 1892: 297–302.

<sup>226</sup> San Antonio 1738: 156, “...Ministros del demonio...”

<sup>227</sup> *Ibid.*: 156, “El Mangagavay, eran los Hechizeros, que daban, y quitaban la salud, y la vida, con sus hechizos. [...] El Silagan tenia por Oficio el sacar los hígados, y comérselos, de todas las Personas, que via venidas de blanco.”

<sup>228</sup> *Ibid.*: 156, “El Catalonan [...] era el Sacerdote, o Sacerdotisa de los Sacrificios.”, 157, “El Mangagayoma era el Hechizero, que para el hechizar, se valia de naturales remedios; pero muchas veces viciados, con pactos con el demonio.” For *Catalonan*, see also: Mas 1843: vol. 1, 17–18; Bantug 1953: 4–6.

<sup>229</sup> Interviews conducted at a successful healing ritual in Bayninan (22 January 2017) with José Pagado, a *Mumbaki* (the local equivalent of *Catalonan*), and his patient Benji Candelario, as well as the patient’s father and grandfather. See also Fajardo and Pansacola 2013; Stuart Jr. 2014.

Pardo, even proposed in 1688 to institute a university degree in medicine, surgery and pharmacy designed specifically for the Philippine indigenes.<sup>230</sup> Despite arguing that this policy would eradicate idolatry, create a rank of educated local élites and alleviate the issue with the lack of medical practitioners, his suggestion was not embraced.

In addition to “sorcerers and witches”, one could also find “good physicians, who cure [diseases] with simple herbs”, as the soldier Miguel de Loarca wrote in his *Relacion de las Yslas Filipinas* (‘Account of the Philippine Islands’, 1582).<sup>231</sup> San Antonio turned out to be more reserved in his judgement, admitting that the locals generally “possess good knowledge of a multitude of herbs”, but quickly adding that there is “always suspicion of some diabolical art.”<sup>232</sup> In addition to pacts with the Devil, these diabolical designs could gain more tangible contours in the form of poison. The fear of poisoning – and the uncomfortable acknowledgement of the indigenes’ superior knowledge of local poisons and antidotes – are omnipresent in colonial sources. Whilst “most excellent herbalists, familiar with all the antidotes”, the locals could also kill with a single blow, for “[t]here are poisons so strong that when chewed, they kill with one breath; but this surely is the art of the Devil.”<sup>233</sup> Although this discomfort remains palpable throughout the Spanish colonial period, much of the local knowledge of medicinal herbs was silently appropriated and reinterpreted by the European colonisers, typically by religious missionaries. Some of the mechanisms involved will be discussed in greater detail below and especially in Chapter IV.

Previous studies of the early modern medical marketplace have underscored the fact that it was not an unstructured, competitive platform, open to all, as was originally envisaged by its authors. Rather, it was regulated by different institutional, ideological and social forces, albeit with varying success.<sup>234</sup> In Manila, the Church and religious Orders were the main colonial authorities seeking to monopolise the marketplace by monitoring the local medical pluralism and championing the sanctioned religious and medical doctrines of Catholicism and Galenism. Although the actual efficacy of these regulations will require further research, it seems that patients in the broader region of

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<sup>230</sup> Pardo 1688. This proposal also has to be understood in the context of Pardo’s efforts to reinforce the authority of the University of Santo Tomas, run by the Dominican Order, of which Pardo was also a member. Throughout the seventeenth century, the Dominican and the Jesuit universities in Manila were embroiled in ongoing disputes about conferring degrees (for example, AGI, Filipinas 28, no. 58; Zarzuela 1682; Durán 1683).

<sup>231</sup> Loarca 1582: 162, “Ay en esta tierra Brujos y eçiçeros aunque ay tambien buenos medicos qe curan con yeruas simples...”

<sup>232</sup> San Antonio 1738: 157, “...aunque [los Indios] se puedan atribuir a la multitud de Yervas, de que ellos tienen buen conocimiento; siempre dejan sospecha de algun Arte diabólico.”

<sup>233</sup> Jesus 1681: 30, “...muy grandes Herbolarios, sabiendo por excelencia las preservativas de los venenos...”; RAH 9/2667, no. 1: 3v, “Hay las de tan eficaz veneno que mascados matan con un soplo. Pero esto sino es arte del Diablo...” See also Morga 1609: 267–277.

<sup>234</sup> Especially Park 1985; Brockliss and Jones 1997; Gentilcore 1998; Jenner and Wallis 2007.

Manila had the opportunity to choose from a range of options. Whilst Catholic missionaries deployed miraculous cures and managed colonial hospitals, there were also Chinese and indigenous practitioners, who continued to be sought out by their respective communities and whose arts cross-pollinated with ideas about medicine and healing that were introduced by the Europeans.<sup>235</sup> In addition to religious remedies, the cures distributed by colonial agents could take the form of Galenic drugs, to which I turn now.

#### **1.4. Humble workshops and royal hospitals: Galenic drugs imported and invented**

The two following sections are concerned with patterns of drug consumption in the Spanish Royal Hospital on one hand, illustrative of the Crown's institutional policies, and in Kamel's pharmacy on the other, representative of the medical remedies deployed by missionaries. Whilst operations in the hospital's pharmacy reveal large-scale use of Old World medicines imported from New Spain, Kamel relied extensively on native *materia medica*. Despite these differences, I will show that both Kamel's and the Crown's approaches to drugs were underpinned by identical concerns with Galenic remedies and the humoral understanding of the human body. I argue that the disparate outcomes in terms of the medicines employed can be attributed to economic reasons, namely the funding available. The high costs associated with importing drugs were a major factor that pushed missionaries to browse their vicinity for locally available substitutes for Galenic remedies. The reasons behind this widespread preoccupation of European colonisers with Old World medicines will be considered in the subsequent section.

Insights into the kinds of drugs involved in the daily operations of the *Hospital Real* are provided by its 1718 audit; this indicates that the vast majority were Old World remedies associated with the Galenic humoral tradition.<sup>236</sup> From the 61 identified items that were listed in the pharmacy supplies, 58 belonged to the Old World Galenic medical corpus (Appendix 4). The remaining three substances were remedies of Paracelsian or American origin: issues which will be further discussed below. Local Philippine plants and other 'new' remedies native to east and southeast Asia were therefore entirely absent from the hospital's supplies. This situation is rather striking, especially since local substances new to the Europeans were otherwise widely consumed in Manila, even among the colonisers, as I will show shortly. Furthermore, traders brought into the city diverse medicinal substances from various ports across the Indo-Pacific, especially from China.<sup>237</sup> For instance, tea was

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<sup>235</sup> Most probably, one could also encounter massage therapists traditionally called the *Hilot*, but I could not find any such mentions in primary sources. For the *Hilot*, see for example Fajardo and Pansacola 2013.

<sup>236</sup> AGI, Filipinas 132, no. 23, bl. 9: 47v–49v.

<sup>237</sup> For example, AGI Filipinas 64, no. 1; 70, no. 1.

imported in large quantities and consumed by the Chinese, indigenes and Europeans alike; the Jesuit Colegio de San Ignacio even had a specialised room for making and drinking the beverage.<sup>238</sup> Moreover, the Franciscans who managed the royal hospital in the nearby Cavite regularly received royal subsidies “for drugs from China”.<sup>239</sup>

Although some of this import probably did find its way into the pharmacy of the *Hospital Real*, the evidence indicates that the institution was only interested in procuring Old World remedies. Cube pepper, rhubarb, zedoary and cinnamon, the only four plants native to southeast Asia recorded among the stocks, had all been known to Europe for centuries.<sup>240</sup> Cinnamon was native to the Philippines, but early efforts to develop a local trade had been abandoned by the end of the sixteenth century.<sup>241</sup> The Philippine variety was thought to be an inferior, inauthentic form of the spice, endemic to the southern island of Mindanao, where the Spanish struggled to establish themselves due to the strong local resistance.<sup>242</sup> So, somewhat ironically, the Spanish commonly purchased the spice at great expense from their Dutch arch-enemies.<sup>243</sup>

Rather than procuring medicines for the hospital locally, the Crown was annually importing hundreds of kilograms of Old World remedies from New Spain as part of the *socorro*. This view is confirmed by two rare surviving full inventories of drugs shipped on board the Manila Galleon, one dating from 1642 and the other from 1717. In 1642, the consignment included 82 different items that weighed almost 110 *arrobos*, or over 1,200 kilograms.<sup>244</sup> From the substances that it is possible to identify clearly, around 90% can be associated with remedies used in Spain for centuries (Appendix 5). The 1717 inventory provides a similar image. The overall weight of the consignment increased a little, to some 1,500 kilograms, but again over 90% of the drugs listed belonged to the Old World pharmacopoeia (Appendix 6).<sup>245</sup> However, the contents became considerably more diversified, with approximately 260 items now included. In both shipments, the substances present in the largest quantities were typical Galenic medicines, such as resins like colophony and mastic, *hieras* and other kinds of electuaries and, especially, various remedies prepared from roses.<sup>246</sup> This plant was thought

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<sup>238</sup> Velasco 1706, 250v.

<sup>239</sup> Maldonado 1742: 50, “...treientos pesos en la Caxa de su Magestad, que son [...] para drogas de china...”

<sup>240</sup> AGI, Filipinas 132, no. 23, bl. 9: 10r–10v, 48r–48v.

<sup>241</sup> De Vos 2006; Bassewitch Frenkel 2017: esp. 134–137.

<sup>242</sup> For early modern debates around the (in)authenticity of substances, see Spary 2005b.

<sup>243</sup> For example, in 1708 the *gobernador* Domingo Zabálburu de Echevarri issued a command to purchase cinnamon in Batavia (Zabálburu 1708). See also Schurz 1959: 48; Mallari 1974; De Vos 2006; Bassewitch Frenkel 2017.

<sup>244</sup> *Medicinas para Filipinas* 1642. I am most grateful to Steph Mawson for pointing me to this source. One *arroba* is the equivalent of approximately 11.5 kg (Villasana Haggard 1941: 72).

<sup>245</sup> AGI, Filipinas 132, no. 23, bl. 9: 23r–41r.

<sup>246</sup> *Hiera* was a kind of electuary with aloe as its basis (Norri 2016: 507).

to possess cooling and drying virtues and was discussed by numerous canonical authors including Galen, Dioscorides, Theophrastus and Avicenna. Moreover, roses had a deeply religious meaning in the Catholic tradition, symbolising martyrdom and evoking the splendour of Eden.<sup>247</sup> In total, at least 15 different remedies prepared from roses were included in the two consignments, which represented nearly 20% of their combined weight.

Sales Colín has shed light on how these consignments were organised.<sup>248</sup> In Manila, the hospital's *mayordomo* was tasked with compiling a list of goods required every year and submitting it to the *gobernador*, who would subsequently forward it to New Spain. There, royal officials would take care of procuring the provisions from contracted local apothecaries, adding the supplies to the following *socorro* brought by the Galleon.<sup>249</sup> These trans-Pacific ventures happened at no small expense to the Spanish Crown. In 1699, for example, Cruzat confirmed the receipt of goods for the *Hospital Real* valued at over 21,000 pesos.<sup>250</sup> To put this gargantuan enterprise into perspective, the salaries of the hospital's physician and *mayordomo* or of an *alcalde mayor* (a chief colonial administrator) were in the region of 300 pesos annually.<sup>251</sup>

The consignments included a wide assortment of goods, from blankets and surgical instruments to books and wine for celebrating masses in the hospital chapel. For example, in 1642, the Franciscans running the royal hospital in Cavite requested the following items: "a dozen blankets, a dozen cupping-glasses, two syringes, two pairs of scissors, two razor blades, six lancets, two scarifiers; some wool for mattresses; two books, one entitled *De Medicina*, by the author Barrios; the other by Dioscorides; four arrobas of Castilian wine; a barrel of raisins and almonds; and half an arroba of rosado sugar".<sup>252</sup> The 1697 *socorro* included among others "six surgical scissors".<sup>253</sup> Nonetheless, by far the most costly and prominent item on the list were the drugs for the hospital pharmacy. According to the 1718 audit, "the yearly expenses on medicines brought from the Kingdom of New

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<sup>247</sup> Touw 1982.

<sup>248</sup> Sales Colín 2005: 175.

<sup>249</sup> Sales Colín has shown that in 1635, two pharmacists from México, Cristóbal Flores and Urban Martínez, were awarded an *asiento* (a licensed monopoly) from the Viceroyalty over the provision of medicines for the Philippines. This *asiento* was renewed in 1645 and 1653 (Sales Colín 2005: 175).

<sup>250</sup> Cruzat 1699, 1r.

<sup>251</sup> Maldonado 1742: 25; Newson 2009: 26.

<sup>252</sup> Maldonado 1742: 59–60, "Memoria de lo que es necessario para este Hospital de Cavite: por aora una dozena de fresadas; una dozena de ventosas; dos jeringas; dos pares de tixeras de Sirupa (digo de Castilla); dos navajas; seis lanzetas; dos sajadores; alguna lana para colchones; dos libros, uno de Medicina, intitulado del Autor Barrios; y el otro de Dioscorides; quatro arrobas de vino de Castilla; un barril de passas, y almendras; media arroba de azucar rosado." The first book listed is probably *Verdadera medicina, cirugía y astrologia, en tres libros dividida* ('True Medicine, Surgery and Astrology, in Three Volumes', 1607), which the Galenist physician Juan de Barrios compiled based on his experience from New Spain. Rosado sugar included rose extract.

<sup>253</sup> AGI, Filipinas 17, r. 1, no. 15: 6v, "Seis tijeras de Sirujia."

Spain regularly rise to 10,320 pesos, more or less.”<sup>254</sup> The case of the *Hospital Real* thus presents an extraordinary example of the increasing early modern globalisation of European drugs. It suggests that if one were a resident of Manila around the year 1700 and visited the *Hospital Real* pharmacy, the remedies on offer would have been like those available from apothecaries in metropolitan Spain.

Kamel, by contrast, relied extensively on native medicinal plants in his treatments, which were procured locally. Glimpses into the remedies he employed are provided in his treatises on Philippine nature, into which he inserted episodes from his medical practice. These reveal that Kamel commanded a considerably wider clientele than the *Hospital Real*, including both colonists and indigenous people. In total, he named 24 different patients in his writings (Appendix 7). From the twelve whose identity could be determined, ten were Jesuits, which confirms that the main purpose of his pharmacy was to serve the internal needs of the Society. However, as Murillo recorded in his chronicles, Kamel’s humble workshop did not want for external customers:

For the knowledge of medicine that the Brother possessed, many persons of high authority sought his treatment and placed themselves entirely in his hands with happy outcomes. [...] The doors of his pharmacy were always wide open to the poor, towards whom the Brother exercised the most generous charity, not only offering them diverse medicines for free, but also administering these medicines himself and curing their ailments and maladies. With the indigenes and servants of the college his charity was particularly great, as shown by his frequent assistance and care in their maladies. [...] Nor did he limit his charity to those who were present in Manila or its environs, as he sent medicines and drugs even to the indigenes and the poor of the Visayan Islands.<sup>255</sup>

We can therefore assume that many of the anonymous patients from Kamel’s treatises were local inhabitants of Manila, including indigenous people who understandably left few traces in colonial

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<sup>254</sup> AGI, Filipinas 132, no. 23, bl. 5: 7r, “...las Medicinas trayendolas del Reyno de la Nueva España cuyo costa regularmente importa al año dies mill tres cientos y veinte pesos mas o menos...”

<sup>255</sup> Murillo 1749: 394r, “Por la inteligencia que el Hermano tenia de la medicina solicitaron muchos hombres de autoridad que los curase, y se pusieron enteramente en sus manos, con feliz suceso. [...] Siempre estaban abiertas y patentes las puertas de la Botica para los pobres, en quienes exercitava el Hermano liberalisima su caridad, pues no solo les daba de limosna varios medicamentos, sino que les aplicaba las medicinas, y curaba sus achaques, y enfermedades. Con los Indios y sirvientes del Colegio resplandeciò mucho su caridad, por la frequente asistencia, y cuydado que tenia en sus enfermedades. [...] No se estrechò su caridad à los presentes y à los que estaban en Manila ò en sus cercanias, hasta Bisayas embiaba medicinas y remedios para los Indios y pobres.”

sources.<sup>256</sup> Kamel even directly discussed one such case, but listed his indigenous patient merely as an “Indus”, without a name.<sup>257</sup>

Promptly after his arrival, Kamel established himself as a leading colonial medical authority. The limited numbers of competitors in Manila acted in his favour. As Kamel confessed to his compatriot Šimon Boruhradský in México, “there is no physician here but four friars who know little more than my pair of trousers.”<sup>258</sup> Already in 1690, Kamel was sought after by Juan de Ozaeta y Oro, a local *oidor* (judge) and one of the most prominent royal officials. In June that year, Ozaeta submitted a plea to Consejo de Indias (‘Council of the Indies’), in which he requested to be removed from the colony for medical reasons.<sup>259</sup> In support of his case, he included a statement from Kamel, which was the *only* medical testimony in Ozaeta’s file: the *oidor* deemed no further evidence necessary. Murillo’s chronicles indicate that Kamel’s reputation quickly began to spread, as “[t]he Republicanos began to come to him with great confidence, and even more so once they saw the Brother’s ability.”<sup>260</sup> In 1696, he was hailed by his superior and compatriot Paul Klein, who wrote home to Bohemia that Kamel enjoys “eminent praise for his happy outcomes of medical treatment”.<sup>261</sup> His rise in the Society’s hierarchy was reflected by the invitation to take his final vows and complete his Jesuit formation as a temporal coadjutor, which took place on 21 August 1696.<sup>262</sup> Under Kamel’s tenure, the humble workshop at Colegio de San Ignacio became one of the most reputable colonial medical establishments in Manila.

The writings of Kamel point to his reliance on local medicinal plants in his treatments (Appendix 7). To provide an example, I will discuss his use of *tanglat*, a native rush-like plant.<sup>263</sup> Kamel wrote that a syrup or decoction prepared from the plant “stimulates the evacuation of urine, menses, foetuses, gas, watery oedema and renal calculi”, adding that “the latter I have tried with P. de Sylva and A. Fabregas.” Furthermore, as Kamel informed, “water distilled from fresh bulbous heads [...] is a laxative, as [I have tried] with A. Dias, J. Zarzuela, A. Robles and P. Navarro, who were suffering from

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<sup>256</sup> Locals who had been converted or lived in the proximity of Spanish settlements commonly adopted Hispanicised names, which further complicates their identification in colonial sources.

<sup>257</sup> Kamel 1704f: 4.3.

<sup>258</sup> Letter 1: 55v, “...no ai aqui otro medico sino quatro frailes, que saben poc[o] más que mis [dos] calsones.”

<sup>259</sup> Ozaeta 1690.

<sup>260</sup> Murillo 1749: 393v, “Luego empezaron a acudir á ella con gran confianza los Republicanos, y mucho mas quando vieron la capacidad del Hermano...” *Republicanos* were those in charge of state affairs.

<sup>261</sup> Boye 1702: 35–36, “Frater vero Georgius Kamel insignem in collegio Manilano instruxit apothecam simulque medici vices supplet, egregia feliciū curationis successuum laude.”

<sup>262</sup> ARSI, Philippinas 2 II: 508r; 3: 21r. Only members who have proven themselves sufficiently were invited by the Society to take the final vows.

<sup>263</sup> Probably *Cymbopogon citratus*, locally called *tanglad* (Merrill 1903: 110).



considerable constipation.”<sup>264</sup> Although Kamel drew on native substances, a closer look at his accounts indicates that he saw local *materia medica* through the prism of Old World drugs and Galenic theory. He adopted *tanglat* into his practice because he had previously identified it as a kind of squinanth, a rush-like plant described by the ancients, incidentally recommended against obstructions of humours and other bodily products.<sup>265</sup> This suggests that Kamel combed local nature for plants cognate with those he had already known, which he could use as substitutes in the methods and treatments he had learned at home.

In browsing Philippine nature for local substitutes of unavailable drugs, Kamel was drawing on a long pharmaceutical tradition of *succedanea* (‘replacements’) or *quid pro quo* (‘this for that’).<sup>266</sup> This established practice and genre were modelled on Pseudo-Galen’s *De succedaneis* (‘On Alternative Medicines’, first Latin edition in 1498), which provided practical lists of substances that could replace ingredients that were rare, expensive or simply unavailable at the time of need.<sup>267</sup> Whilst in Europe, medical authorities regularly issued lists of accepted substitutes within the boundaries of which apothecaries were expected to operate, when in the Philippines, Kamel was at liberty to identify and experiment with his own *succedanea*. Early modern handbooks of *quid pro quo* advised that substitutes should agree in their virtues, nature and taste and smell.<sup>268</sup> Kamel’s associations were typically based on morphology, such as in the case of *tanglat*, sometimes also on morphology used in combination with sensory cues.<sup>269</sup> For example, he believed the herb *suganda* to have virtues similar to oregano because it “smelled of thyme and oregano”, whilst he used the champak tree as a substitute for cardamom because the two had a similar taste and aroma.<sup>270</sup> Therefore, Kamel’s investigations of local *materia medica* seemed not to be motivated by the hunger to discover new cures, so much as by the desire to find substitutes for those already known to him.

As indicated by the example of drugs for the *Hospital Real*, importing remedies was a costly business. Unlike the Crown, however, the Philippine Province of the Society of Jesus did not have a

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<sup>264</sup> Kamel 1704f: 28–29, “Syrupus succus, infusum, aut decoctum Tanglat [...] urinas, menses, partum, flatus, hydropicorum aquas, et renum pellit calculos, ultimum in P. de Sylva, et A. Fabregas expertus sum. [...] Aqua [...] ex recentibus bulbo-caepaceis capitibus destillata, modo laxativa: prout in A. Dias, J. Zarzuela, A. Robles et P. Navarro, insignioribus obstructionibus laborantibus operabatur.”

<sup>265</sup> For example, Becher 1662: 29–30.

<sup>266</sup> Touwaide 2012; Pugliano 2017.

<sup>267</sup> Valla 1498.

<sup>268</sup> For example, Rondelet 1587: 629–647.

<sup>269</sup> For substitutes based on morphology, see Kamel 1704f: 2.18, 5.8, 6.18, 12.20, 58.1, 60.10. For substitutes based on combinations of morphology and sensory information, see *ibid.*: 2.10, 8.1, 9.1, 9.13, 83.1. For the importance of sensory information in apothecary practice, see Pugliano 2012a: 151–226.

<sup>270</sup> Kamel 1704f: 9.1, “...Thymum cum Origano redolentis [...] et Origano substituitur.”, 83.1. *Suganda* is used by the Tagalog people to denote plants from the former genus *Coleus* (Merrill 1903: 106). Kamel’s *suganda* is probably *Plectranthus amboinicus* (formerly *Coleus amboinicus*), known for its oregano-like aroma and taste (Gutierrez 1982: 377–378; Small 1997: 488).

bottomless pot of money at its disposal. To fund their medical establishments, religious Orders relied on combinations of donations from the local populace and authorities, their own monastic coffers and on sponsorship from the Crown, the so-called *limosna de medicinas* ('alms for medicines').<sup>271</sup> The amount annually dispensed to the Philippine Jesuits was a meagre 150 pesos, about 1.5% of the sum that the Crown spent on drugs for the *Hospital Real*.<sup>272</sup> This funding was hardly sufficient to secure substantial and high-quality medical provisions, as the Jesuits constantly complained. For instance, in 1686 the *procurador* Luis de Morales lamented that "the medicines are of such bad quality that they are more likely to harm than help" the patients and hence "the pharmacists fear administering them not to put in risk the health of those who at such a cost to Your Majesty have been brought to these missions."<sup>273</sup> Given these circumstances, Kamel chose to "fully devote himself to the study of the many medicinal herbs that grow in these islands."<sup>274</sup> For identical reasons, missionaries both in the Philippines and Spanish America commonly compiled handbooks of home remedies to make up for the lack of supplies, which listed simple recipes that involved combinations of Old World and local *materia medica*, framed in humoral terms.<sup>275</sup> Since importation of medicines was an expensive, lengthy and uncertain business, local substances were used out of necessity rather than as an active choice, and primarily as substitutes for the rare, expensive or outright unavailable Old World drugs.

In addition to circumventing the costly and unreliable transport of Old World remedies, 'going local' and prospecting for useful medical and natural knowledge presented opportunities for financial profit. The engagements of the Society of Jesus in the global drug trade have received particular attention, especially with respect to its involvement in the extraction and distribution of cinchona, which even earned the medicine the moniker Jesuits' bark.<sup>276</sup> Despite these ventures, the number of 'new' remedies that became staple features in Jesuit pharmacies does not seem to have been that extensive. Documents from Jesuit missions in America underscore that where funding and institutional support were available, imported Old World remedies remained the preferred option. The Jesuit pharmacy in Córdoba, subsidised by the Crown as a regional distribution centre for both the general populace and other Jesuit stations, continued to rely on drugs imported from Europe

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<sup>271</sup> Guerra 1994.

<sup>272</sup> A. Serrano 1706.

<sup>273</sup> Morales 1686: 1259r, "...medizinas son de tal calidad, que antes danan que aprovechan..."; AGI, Filipinas 3, no. 153: 1r, "...los Boticarios dificultan darlas, [...] teniendo por mejor el enfermero, no recibirlas por no poner a riesgo la salud de los que a tanta costa de Vuestra Magestad se han conducido a aquellas misiones." See also A. Serrano 1706.

<sup>274</sup> Murillo 1749: 393v, "Se aplicò mucho al conocimiento de las muchas yerbas medicinales, que ay en estas Islas..."

<sup>275</sup> For Philippine cases, see for example Klein 1712; Mercado 1936, Madre de Dios 1984. For American cases, see for example Steinhöffer 1712, Montenegro 1945.

<sup>276</sup> Especially Boumediene 2016; Crawford 2016.

through the seventeenth and eighteenth century after the fashion of the *Hospital Real* in Manila.<sup>277</sup> In Chile, the acquisition of remedies even accounted for nearly two-thirds of the total missions' expenses, exceeding the sum disbursed on church ornaments.<sup>278</sup>

To conclude, the evidence discussed here indicates that the medical practices of both the Spanish Crown and Catholic missionaries were underpinned by the same faithfulness to Old World Galenic remedies. The differences between the drugs administered in their different medical establishments can be attributed largely to disparities in available funding. Before turning to a deeper analysis of the reasons underlying this conservative approach, I will briefly consider one additional economic element. As much as religious missionaries could financially benefit from prospecting for new useful knowledge, the Crown's efforts to export drugs from Europe overseas could also be associated with the vision of new commercial exploits. One of the motivations for the colonial expansion of European empires was the vision of accessing and opening new markets for their products, which included drugs. Finding new consumers for domestic exports was a central tenet of the mercantilist policy, embraced by Spain and many other European powers. The idea that the Crown and Spanish medical suppliers therefore hoped to expand their trade outlets by supplying overseas markets with domestic remedies deserves further investigation.

### **1.5. Spanish drugs for Spanish bodies**

The analysis of the pharmacies of both Kamel and the *Hospital Real* points to the strong preoccupation of colonial practitioners with Old World drugs and to their adherence to Galenic methods of treatment. This situation echoes developments in Spanish America. Rebecca Earle and Linda Newson have argued that early Spanish colonial interactions with the realities of new worlds involved scepticism towards foreign foods, remedies and other substances.<sup>279</sup> Newson has shown that apothecaries in early colonial Lima relied on a continued supply of drugs from Spain, and sought to raise Old World plants locally rather than extensively adopting native *materia medica*. Other colonial cities in Spanish America offer similar evidence. In the early 1700s, the Jesuit pharmacist of the College in Córdoba, Heinrich Peschke, wrote to the Superior General that "almost all medicines come from Europe, at great expense and risks."<sup>280</sup> Accordingly, the pharmacy's inventory drawn up upon the expulsion of the Jesuits in 1769 listed predominantly remedies of Old World origin.<sup>281</sup>

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<sup>277</sup> Garzón Maceda 1917; Asúa 2014: 109–111.

<sup>278</sup> Valdés Bunster 1985: 42–43. Cited in Prieto 2011: 40.

<sup>279</sup> Earle 2012; Newson 2017. See also Simpson 1937.

<sup>280</sup> Gicklhorn 1973: 34.

<sup>281</sup> Garzón Maceda 1917; Asúa 2014: 109–111.

On the one hand, these remedies of course possessed the advantage of having been certified by centuries of tradition, whereas unknown substances would induce hesitation and require trialling first. On the other, local substances were adopted, even if perhaps not in great numbers and commonly as substitutes for Old World drugs, as the evidence discussed suggests. In the following paragraphs, I will consider some explanations for the Spanish espousal of Old World remedies in light of Newson's and Earle's arguments. I will first critically examine Newson's claims, which do not hold for the case discussed here. Instead, I will draw on Earle's work and associate the conservative attitude to remedies with the Spanish preoccupation with the link between the climate and the body, posited by the Galenic theory.

Newson has attributed the Spanish adherence to Old World remedies and humoral medicine largely to the deep entrenchment of the Galenic doctrine, perpetuated by professional training and fervently backed by both state and Church organisations of the *Protomedicato* and Inquisition.<sup>282</sup> This observation led her to construct a dichotomy between Galenic 'orthodoxy' and 'new' natural philosophy, which championed experimental methods, and which was epitomised by chemical medicine and Paracelsianism. According to Newson, adherence to that orthodoxy, alongside "[s]tate regulation, the Inquisition and entrenched cultural traditions may partially explain [...] why experimental approaches appear to have developed [in Spain] less rapidly than might be expected."<sup>283</sup> There are two major issues with these claims. Firstly, despite adherence to the Galenic framework, pharmacists in Spanish colonial worlds used highly empirical approaches to nature, as I demonstrate in Chapter IV. Whilst Newson has conceded that "apothecaries in Peru saw no contradiction in the employment of experimental methods and humoral beliefs" and that "some apothecaries were employing empirical and experimental methods," her conclusion is in line with her main concern that "this did not signal the adoption of a new natural philosophy."<sup>284</sup> This teleological treatment seems to perpetuate the narratives associated with the Spanish *leyenda negra*.<sup>285</sup>

Secondly, as argued by Paula De Vos, involvement in chemical medicine was not necessarily at odds with the deeply entrenched Galenic doctrine or associated with Paracelsian theories.<sup>286</sup> Due to the long tradition of medical alchemy in Iberia, Spanish pharmacists had been familiar with alchemical techniques long before the ascent of Paracelsianism. Indeed, many remedies described by authors affiliated with the humoral tradition were in fact prepared using operations that could be

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<sup>282</sup> Newson 2017: 2.

<sup>283</sup> *Ibid.*: 222–223.

<sup>284</sup> *Ibid.*: 217.

<sup>285</sup> For a critique of teleological treatments of the so-called 'Scientific Revolution', see N. Jardine 1991b; Shapin 1996.

<sup>286</sup> De Vos 2007b; 2013.

considered alchemical. De Vos has pointed out that by the second half of the seventeenth century, chemical medicines were increasingly finding their way into Spanish pharmacies, both in Iberia and overseas. Many Spanish authors and practitioners pursued, in her words, “an amalgamation of traditional Galenic pharmacy and chemical pharmacy” or “chemico-Galenic compromise”.<sup>287</sup> The three drug inventories associated with the *Hospital Real* in Manila confirm this notion, as they mention several medicines prepared through distillation and sublimation. The 1642 consignment contained two kinds of turpentine (resin distillates) and tutty (sublimate of calamine), remedies traditionally associated with humoral medicine;<sup>288</sup> the 1717 register listed numerous kinds of distillates, such as *aqua ardiente*, prepared by distilling vinegar, and *espíritus de azúfre* (spirit of sulphur); and the 1718 audit even mentioned *elixir propietatis*, a model Paracelsian remedy.<sup>289</sup> Therefore, by the turn of the eighteenth century, chemical medicines regularly appeared in official shipments of the Catholic Crown, and were prepared and consumed at the periphery of the Spanish Empire. Similarly, Kamel also relied on alchemical methods and chemical medicines in his practice, as indicated by several references to spirits, elixirs and salts, as well as by the episode with “water distilled from fresh bulbous heads” of *tanglat*, discussed above.<sup>290</sup>

Furthermore, Newson’s arguments about the rigidity of Galenism and the influence of religious Orders, Inquisition and *Protomedicato* do not seem to hold entirely for the Philippines. On the one hand, the composition of the stock of the *Hospital Real* pharmacy was determined largely by the supply from New Spain, where medical practices were indeed regulated by the two official institutions. On the other, this does not explain why the hospital did not take advantage of Philippine or southeast Asian *materia medica* more extensively, especially since the local *Protomedicato* and Inquisition were weak. Most offences that the Tribunal assessed were solicitations of sexual favours in confession, while cases of witchcraft and sorcery had disappeared from its books by 1650.<sup>291</sup> Moreover, although trained in and devoted to the Galenic tradition endorsed by the Church, religious missionaries were not reluctant to use and consume local substances, as Kamel’s practices demonstrate. Rather than obstructing adoption and appropriation of native *materia medica*, Galenism in fact provided a compelling framework for engaging with new drugs and facilitated their appropriation, as I analyse in detail in Chapter IV.

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<sup>287</sup> De Vos 2019: 43.

<sup>288</sup> For example, Oviedo 1692: 403, 473.

<sup>289</sup> Alleyne 1733: 196.

<sup>290</sup> For example, Kamel 1704f: 6.11, 28.1, 29.1, 9.11, 83.1, 87.1. Kamel reported that even the Philippine indigenes knew the method of distillation and used primitive alembics to produce alcohol (*ibid.*: 44.1, 85.6). It seems likely that they had learned these practices from the Malayo-Muslims.

<sup>291</sup> Angeles 1980.

Newson's claim that the answer lies in the strong Spanish espousal of Galenism alone therefore does not provide a satisfactory explanation for the preoccupation with Old World remedies. However, I suggest that the reasons do indeed lie in the Galenic tradition: namely, in the link between climate and bodies that the Galenic humoral framework posited, an issue that Newson merely glosses over.<sup>292</sup> I argue that Old World drugs, supplied by the Crown in vast amounts, were considered better suited to protect and serve the needs of Spanish bodies than unfamiliar locally grown plants. In this respect, I draw on the work of Rebecca Earle, who has convincingly shown that to preserve their bodies and humoral complexions in the face of unfamiliar American climates, the Spanish extensively supplied their colonies with domestic foods.<sup>293</sup> Both climate and diet counted among the Galenic non-naturals, which affected the humoral balance of human bodies (Figure 1.1). Variations in the stars, airs and substances to which human bodies were exposed therefore offered a coherent explanation for the perceived differences in the bodies and characters between colonisers and colonised. Whilst the Castilians, native to dry and hot Iberia, were fierce and choleric, indigenous bodies in the Americas were full of phlegmatic humours, which made them prone to apathy and susceptible to conquest.<sup>294</sup> These ideas were used to validate Spanish superiority and rule over subjugated populations, as well as underpinning the formation of ethnic hierarchisations that developed into the *casta* system.<sup>295</sup>

Earle has demonstrated that both the colonists and the Crown perceived unfamiliar climates and unsuitable diets as major threats that put the superior Spanish constitution at risk of deterioration. The inferior indigenous body constantly reminded the Spanish of the deleterious impact of the local environment. Since the climate could not be changed and the consumption of local substances portended humoral decay, Earle has argued that the Spanish sought to preserve their vigour by retaining their diet and, to that end, imported their own foods from Europe. As both Earle and Gregorio Saldarriaga have underscored, the links between bodies and ethnic hierarchies meant that in Spanish America the distinction between European and local foods also developed into a marker of superior culture and civilisation.<sup>296</sup>

I suggest that Earle's and Saldarriaga's arguments can be extended to the consumption of drugs. Both Kamel's medical practice and Spanish colonial sources more widely show strong preoccupation with the deleterious impact of Philippine airs and stars. As the Augustinian friar Gaspar de San Agustín wrote in a famous letter of 1720, "[t]he temperament" of the Philippine indigenes "is cold and humid, because of the great influence of the moon. [...] This disposition and influence make

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<sup>292</sup> Newson 2017: 175.

<sup>293</sup> Earle 2012.

<sup>294</sup> *Ibid.*: 44–45.

<sup>295</sup> *Ibid.*: 6–11.

<sup>296</sup> Saldarriaga 2011: 109–128; Earle 2012: 54–83.

them fickle, malicious, untrustworthy, dull, and lazy; [...] they have little courage, on account of their cold nature, and are not disposed to work.”<sup>297</sup> The dangers of the local climate were also one of the main causes of the continual health struggles of Spanish colonists: it was “due to the difference of the [Philippine] climate from that of our Spain [that] many people die.”<sup>298</sup> These concerns found echoes in Kamel’s work. Having struggled to cure the ailments of the *oidor* Ozaeta, the Jesuit concluded “that the said Señor oidor should seek another dwelling, more appropriate to his constitution than the Philippine Islands.”<sup>299</sup> Moreover, Kamel used differences in the climate to explain variations in plant morphology, suggesting that Luzonian *contrayerva* had smaller root bulbs than its Mexican counterpart due to the local environment’s greater humidity.<sup>300</sup> Since the local climate had such deleterious effects, Kamel showed a particular concern about the suitability of native substances for European humoral constitutions when testing their virtues. For example, when discussing the seeds of the plant locally called *igasur*, Kamel revealed that they “almost always cause spasmodic convulsions in Spaniards, but not in the indigenes.”<sup>301</sup> Therefore, whilst European practitioners could adopt Philippine *materia medica* as substitutes for the expensive or unavailable Old World remedies, this step presented risks for the unaccustomed colonists’ bodies.

By importing large quantities of Old World medicines, the Crown therefore above all sought to supply its colonists with drugs suitable to their constitution, which would shelter their bodies from unfamiliar climates and substances. Since the access to the *Hospital Real* was officially restricted to the servants of the Crown, the supply of Spanish drugs was meant to protect Spanish bodies. These ventures indicate that the Castilian politics of ethnic segregation spilled over into medical care. Use of Old World drugs was a privilege of being Spanish, and consequently closely tied to, as well as reinforcing, Spanish identity. In Manila at the turn of the eighteenth century, therefore, the consumption of drugs was both a marker of ethnic identity and supremacy and a means of preserving the superior Spanish humoral complexion. The channel supplying these drugs kept the Philippines Spanish and tied the archipelago to the heart of the empire.

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<sup>297</sup> San Agustín 1720: sect. 7–8.

<sup>298</sup> Ríos 1594: 2v, “Por ser la tierra muy dejatiba y diferente el temple de el de nuestra España se muere mucha jente.”

<sup>299</sup> Kamel 1690: 1r, “...necessario de que el dicho Señor Oidor haya todas las diligencias para buscar otro temple à su constitution mas a proposito, que este de las islas Philipinas...”

<sup>300</sup> Kamel 1704f: 32–33. This is probably *Kaempferia galanga*, locally called *dosol* or *dusul*, which matches Kamel’s *doso* and *dusu* (Merrill 1903: 59, 60).

<sup>301</sup> Kamel 1699b: 91, “...motus spasmodico-convulsivos ferme semper in Hispanis, Indis non.” For *igasur*, see Chapter IV, esp. pp. 166–180.

## I.6. Asia meets America: Entangled remedies and trans-Pacific transplantations

Despite the Spanish preoccupation with Old World remedies and Galenism, both Kamel's medical accounts and the *Hospital Real* inventories also mentioned several drugs of American origin. The available evidence indicates that substances native to the other side of the Pacific were not uncommon in early modern Manila and became increasingly naturalised in the Philippines. Despite that, the introduction and adoption of American medicines in the Philippines and Asia more broadly have received scarce attention. Here, I will discuss some of the American remedies that featured in the pharmacies of Kamel and the *Hospital Real*, consider some of the mechanisms behind their introduction and reflect on the implications of this intercontinental encounter.

Alongside the dozens of Old World remedies, the inventories of the *Hospital Real* also mentioned eleven substances of American origin. The two consignments dispatched from New Spain contained sarsaparilla, tacamahaca and jalap; sarsaparilla, alongside guaiacum, also appeared in the 1718 audit of the *Hospital Real* pharmacy. In addition, the 1642 register included matlalitztic and cohuanenepili, whilst the 1717 shipment listed tequesquite, chili, mechoacán, balsam of Peru and cochineal. All of these were drugs native to regions controlled by the Spanish Empire. Although hailing from America, most of these substances commonly featured in Spanish pharmacies and pharmacopoeias by the end of the sixteenth century. Seven out of these medicines were discussed by Nicolás Monardes in his *Historia medicinal* of 1577: namely, cochineal, guaiacum, mechoacán, tacamahaca, balsam of Peru, chili and sarsaparilla.<sup>302</sup> Cochineal, guaiacum, mechoacán and tacamahaca were even listed in *Catálogo de las cosas que los boticarios an de tener en sus boticas* ('Catalogue of goods that pharmacists are to have in their pharmacies'), compiled by Andrés Zamudio de Alfaro, *protomédico general* of Castile (1592–1599).<sup>303</sup> Guaiacum and sarsaparilla, the latter of which was included in all three inventories, represent exceptional cases in the context of early modern *materia medica*. Rather than affecting the overall humoral balance, they were considered to act specifically against a particular disease, *morbus gallicum*, itself thought to be a 'new' illness brought from the New World.<sup>304</sup>

The remaining four of the eleven substances listed – matlalitztic, cohuanenepili, tequesquite and jalap – were all in use among Spanish colonisers in New Spain by 1700.<sup>305</sup> Tequesquite was understood as an American form of, and used as a substitute for, salitre, a staple ingredient in Old

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<sup>302</sup> Monardes 1574: 1v, 3v, 9r, 12v, 18v, 24v, 28v.

<sup>303</sup> Davis and López Terrada 2010: 594, 595, 604. Zamudio's inventory listed 'confitón alchermes', the major ingredient of which was cochineal, and which also featured in the 1717 consignment.

<sup>304</sup> H.J. Cook 2011.

<sup>305</sup> For cohuanenepili, see Mendieta 2011: 522; Pardo-Tomás 2013b: 44. For matlalitztic, see Mendieta 2011: 522. For tequesquite, see Sahagún 1829–1830, vol. 10, chap. 26; vol. 11, chap. 7, par. 3; Molina 1571: 105v.



World *materia medica*.<sup>306</sup> Cohuanenepili was a local antidote, granted by divine Providence to counter the dangers presented by the plethora of poisonous plants and animals in new worlds. Matlalitztic and jalap, along with mechoacán, had long been employed by American indigenous populations as purgatives, a virtue which found echoes in the Galenic system and also in religious healing.<sup>307</sup> Pardo-Tomás has suggested that since both the Galenic system and American indigenous traditions shared the concept of purgative drugs, this facilitated the movement of substances with purgative virtues across these frameworks.<sup>308</sup> Although purgatives were extensively represented among the American drugs adopted by the Spanish early on during their expansion, it is important to remember that commensurable practices did not necessarily guarantee a shared understanding.

The inventories discussed reveal that a select few drugs of American origin found their way into official Crown consignments during the seventeenth and early eighteenth century. Some of these remedies, such as purgatives and tequesquite, perhaps possessed Galenic overtones. Moreover, the examples of guaiacum, sarsaparilla and cohuanenepili indicate that local substances were also commonly considered to be specific to local diseases. This idea was associated with Galenic understandings of the climate, as well as with the belief that Providence was thought to have distributed medicinal plants in nature in such a way as to make them readily available for man to combat local afflictions.<sup>309</sup> Further research into how American substances were actually used and prescribed would probably yield clearer explanations of their adoption into the Spanish shipments; yet this information was unavailable in the sources consulted.

Around two dozen plants of American origin were also recorded by Kamel in his descriptions of Philippine flora, including crops such as maize, potato and cassava; fruits and nuts such as pineapple, cashew and peanut; and medicinals such as mechoacán, achiote and cocoa.<sup>310</sup> This reveals that, by the late seventeenth century, numerous American plants had been introduced to the Philippines and were regularly being consumed by local populations. It was for this reason, or “to compare the plants of that [Mexican] kingdom with the local ones” that Kamel repeatedly sought to acquire the famous encyclopaedia of the flora and fauna of New Spain, compiled in the late sixteenth century by Francisco Hernández.<sup>311</sup> Kamel adopted several American plants into his medical practice

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<sup>306</sup> Salitre was a term encompassing saltpetre and other mineral salts.

<sup>307</sup> *Purgatio* possessed strong symbolic meanings in Christian healing, since purging was seen as a force liberating from diseases, charms and sins alike (Gentilcore 1993: 141).

<sup>308</sup> Pardo-Tomás 2014a: 760.

<sup>309</sup> Earle 2012: 218.

<sup>310</sup> Kamel 1704f: 13.6, 21.6, 30.1, 30.2, 33.3, 39.17, 39.18, 39.23, 39.24, 54, 60, 62.7, 61.15, 69, 77.4, 79bis, 82.10, 83.12, 87.1, 88.9, 92.6.

<sup>311</sup> Letter 24: 151r, “Thesaurum Novae Hispaniae F. Hernandez cum notis Recchii, Columnae, Ximenii etc., ni fallor, per sexennium annis singulis petieram, verum nunquam Mexici invenibilis erat, cupiebam eum habere, ut illius Regni plantas cum huyatibus conferrem.” See also Letter 1: 57v.

too, as suggested by his discussion of the seeds of the achiote tree, which included their virtues alongside recipes and dosage.<sup>312</sup> Tacahamaca and other American resins had even become such staple commodities that Kamel identified local plants to serve as cheaper and more accessible substitutes.<sup>313</sup>

The majority of these were processed remedies rather than entire plants, which came in the form of commodities with knowledge already ‘built’ into them.<sup>314</sup> However, Kamel’s writings suggest that many American plants had been introduced – either accidentally or deliberately – and were cultivated or even growing wild in the Philippines. These plants became quickly vernacularised and entangled with local medical traditions. For instance, Kamel recorded that potato leaves found a new local use in treating stingray wounds, whilst the Mexican acacia, cuahmochitl, came to be called *guamochil* in Luzon and became incorporated into a native remedy against scabies, prepared also from the Philippine plants *tangal* and *ananapla*.<sup>315</sup> Many American plants, alongside knowledge about them, did not end their journey in the Philippines: for example, cuahmochitl spread through Asia, gaining folk names such as Manila tamarind and Madras thorn, and finding new culinary and medical uses in China, India and Arabia.<sup>316</sup> As the Manila Galleon provided the first stable bridge across the Pacific, so the Philippines became the place where Asia met America.

Despite the adoption of American plants into the medical practices and knowledge systems in the early modern Philippines and Asia more broadly, the mechanisms behind their movements and the impacts of their introduction remain largely unknown. Previous examinations of trans-Pacific exchanges have focused almost exclusively on American silver and Chinese cloth, two commodities that dominated the Manila Galleon trade.<sup>317</sup> The movement of plants has only been addressed by a handful of studies, concerned predominantly with the Crown’s efforts to locate the spice triumvirate of cinnamon, nutmeg and clove in the Philippines and transplant them into the Spanish possessions in America. Paula De Vos and Omri Bassewitch Frenkel have explored in detail the motivations and mechanisms involved in these activities, as well as the reasons behind their lack of success.<sup>318</sup> Bassewitch Frenkel has also highlighted that the fixation on the Crown’s policies has obliterated the agencies of enterprising individuals stationed overseas, instrumental to these processes. By the same token, the emphasis on spices has overshadowed other, more successful Spanish projects of

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<sup>312</sup> Kamel 1704f: 77.4.

<sup>313</sup> *Ibid.*: 60.10.

<sup>314</sup> Schiebinger and Swan 2005.

<sup>315</sup> Kamel 1704f: 39.17, 43–44, 83.12, 85.4. Cuahmochitl is probably *Pithecellobium dulce* (Gutierrez 1980: 86–87; Parrota 1991); *tangal* is probably *Ceriops tagal* (Merrill 1903: 135); *ananapla* is probably *Albizia procera* (Merrill 1903: 17).

<sup>316</sup> Parrota 1991.

<sup>317</sup> Schurz 1959; Flynn and Giráldez 1994; 1996a; 1996b; Bjork 1998; Giráldez and Flynn 2002.

<sup>318</sup> De Vos 2005; 2006; Bassewitch Frenkel 2017.

transplantation, such as those of ginger and tamarind. The selection of ginger and tamarind underscores the previously discussed Crown's preoccupation with Old World substances that possessed the advantage of established markets.

Just as enquiries into movements from Asia to America have almost exclusively dealt with spices, so research into those in the opposite direction has largely been confined to tobacco and potatoes. Previous studies have been concerned predominantly with the reception of these plants in China, whilst considerations of the Philippine context have focused on the eighteenth century and the Bourbon Reforms that launched more systematic attempts at local crop agriculture.<sup>319</sup> This research has largely overlooked earlier developments and, due to its preoccupation with economic and demographic impacts, also ignored that plants such as tobacco were initially introduced as medicinal substances, whose consumption was associated with specific medical and ritual practices. Kamel's work indicates that the introduction of American plants in the Philippines took place early on during the Spanish colonisation and involved more than just tobacco or potatoes. The recent study from Paulina Machuca has hinted at the magnitude of this event and, in resonance with Bassewitch Frenkel's work, highlighted that enterprising individuals rather than institutions mediated the transplantations.<sup>320</sup> The Philippines hosted large immigrant populations from America, who were probably involved in importing domestic plants and the associated knowledge. Despite these pioneering efforts, the true scale of early modern trans-Pacific plant transfers remains unclear, and little is known about how the plants involved were cultivated, consumed and received in new contexts.

### **I.7. Kamel's networks: Collecting and confessing, missionaries mobile and immobile**

This final section will consider how Kamel acquired the knowledge and specimens required for his investigations of Philippine and American plants. Due to his responsibilities, Kamel was largely confined to the area around Manila. His writings reveal that he conducted regular forays both to the environs of the city, and to more distant settlements around the Laguna and Taal lakes. He mentioned herborising on a trip to Silang through Villa de San Pedro, some 30 miles from Manila, and also visiting the province of Batangas, about twice as far.<sup>321</sup> Kamel even indicated that he had travelled as far as Borongan in the island of Samar in 1693, a return journey of more than 1,000 miles, although this seems to have been an isolated incident.<sup>322</sup> Despite the restrictions on his movements, Kamel

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<sup>319</sup> Goodrich 1938; Díaz-Trechuelo 1966; De Jesus 1980; L. James 1982; Adshead 1988: 284; Benedict 2011.

<sup>320</sup> Machuca 2014.

<sup>321</sup> Kamel 1704f: 83.11.

<sup>322</sup> *Ibid.*: 35.7.

commonly discussed plants native to all over the Philippines in his treatises. In order to gather knowledge and specimens of such plants, he would have had to build a network of local informants.

In this respect, Kamel relied primarily on mobile Jesuit missionaries scattered across the archipelago. Residences outside Manila had to be regularly supplied with resources, and this provided opportunities for communication. Many of these itinerant missionaries are acknowledged by Kamel in his treatises, and they represent about half of the informants mentioned by name (Appendix 8). For example, from José Encalada, Kamel received a drawing and description of *tugus*: a plant said to be native to the islands of Samar and Leyte, more than 500 miles from Manila, where Encalada was stationed in the late 1690s (Figure 1.9).<sup>323</sup> Kamel's records reveal that he had treated Encalada prior to this episode, which suggests that Kamel tasked acquaintances with supplying useful natural knowledge and specimens. In addition to local plants, Encalada, a native of Yucatán, also provided Kamel with information about American nature.<sup>324</sup>



**Figure 1.9:** “An image of amomum verum, sent from Father José Encalada” (BL, Sloane MS 4080: 91r). Reproduced with permission of the British Library Board.

Besides mobile missionaries, Kamel also drew on manuscripts written by other Jesuits based on their experience in the field. He referred most frequently to Francisco Ignacio Alcina's *Historia de las Islas e Indios de Bisayas* ('History of the Visayan Islands and People', completed in 1668).<sup>325</sup> Some of Kamel's descriptions, such as that of a palm called *anahaw*, were clearly directly copied from Alcina, in this case without due acknowledgement.<sup>326</sup> Oral transmission was also an important means of

<sup>323</sup> ARSI, Philippinas 4: 97r; Kamel 1699a: 3. *Tugus* is used by the Tagalog people for plants from the genus *Amomum* (Merrill 1903: 115). For *tugus*, see Chapter IV, especially pp. 156–165.

<sup>324</sup> Kamel 1704f: 60.10.

<sup>325</sup> Alcina 1997; 2002. See Kamel 1704f: 18.5, 41.1, 51.2, 58.4, 69.6, 90.36; 1704g: 1591, 1594; 1706b: 2201.34; 1706c: 2268.16; 1708: 242.35.

<sup>326</sup> Cf. Kamel 1704f: 46.12; Alcina 2002: 381. For example, Kamel happened to use in his comparisons the identical set of local plants as Alcina. *Anahaw* is probably *Saribus rotundifolius* (Merrill 1903: 16–17).

gaining information. Missionaries too old for fieldwork typically returned to Manila and were frequent visitors to Kamel's pharmacy and infirmary. One of Kamel's most industrious contributors was the chronically ill Francisco Antonio de la Zarza, jokingly renamed 'Franciscus Lazarza' in one of the Jesuit catalogues.<sup>327</sup> Relying on the Jesuit missionary machine and the inherently collaborative nature of the Order, Kamel's pharmacy thus appears as a regional node in which knowledge from all over the archipelago was gathered, tested and repackaged for further uses by the Society.

Much of the information, filtered through the reports of missionaries, originally came from indigenous people. The Jesuits were particularly adept at cross-cultural exchange and, unlike most Spaniards in the Philippines, were in close and extended contact with indigenous populations.<sup>328</sup> Although Kamel remained largely silent on these aspects of local encounters, we can find some clues as to the acquisition of local knowledge in other Jesuit sources. Alcina, for instance, mentioned having maintained friendly relations with indigenous herbalists in order to gain insights into the virtues of Visayan plants.<sup>329</sup> Cristobal Enriquez, a Jesuit stationed in Leyte during the mid-seventeenth century, simply "generously paid" indigenous healers for their knowledge.<sup>330</sup> These payments did not necessarily have to come in the form of money: Kamel's compatriot Augustin Strobach (1646–1684) wrote that in the Marianas a few leaves of tobacco could procure any information from the locals, as the Jesuits took advantage of the sweeping addiction.<sup>331</sup>

Furthermore, some religious practices employed by the missionaries provided opportunities to obtain indigenous medical knowledge. Andrés Prieto has defined the rite of confession as "a contact zone [between] informant and researcher, with both parties evaluating, weighing, categorizing, and selecting the cultural and personal information given by the penitent."<sup>332</sup> Confession was closely associated with healing and commonly employed by priests as a first recourse in case of disease.<sup>333</sup> The dialogue placed the priest in a position to query the penitent about any actions associated with the illness and thus obtain information about local practices of healing. For this reason, missionary manuals even explicitly advised Jesuits to ask whether the penitent had consulted indigenous healers and if so, to enquire into the course of treatment and the substances used.<sup>334</sup> The information acquired was only subject to the seal of confession to the extent that it concerned penitents' sins;

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<sup>327</sup> ARSI, Philippinas 4: 100r.

<sup>328</sup> Watson Andaya and Andaya 2015: 159–164.

<sup>329</sup> Alcina 1997: 98.

<sup>330</sup> Fernandez 1979: 402.

<sup>331</sup> Zavadil 2016: 338.

<sup>332</sup> Prieto 2011: 56.

<sup>333</sup> For example, ARSI, Philippinas 8: 86r, 103v.

<sup>334</sup> For example, Luis Valdivia's *Confesionario breve* ('A Brief Confessionary', written in 1606, published in 1684). Discussed in Prieto 2011: 53–61.

therefore, a priest need not necessarily exercise discretion with respect to knowledge of medicinal substances and their virtues revealed during confession. Thus, in the missionary context, confession emerges as potentially one of the most significant tools for extracting information on non-European medical traditions.

In addition to Jesuit missionaries, there were several Spanish colonial and military personnel among the informants on whom Kamel relied. The episodes from his medical practice discussed earlier indicate that Kamel was treating prominent royal officials and, therefore, was probably well embedded within, and well regarded by, the local establishment. For example, when the official Juan de Morales was sent on a diplomatic mission to the Kingdom of Borneo in 1695, he brought back eight pounds of the rare and expensive camphor oil, and donated some to Kamel.<sup>335</sup> The Jesuit also questioned Morales concerning the camphor tree, and included his answers when describing the plant. Few other individuals in Manila were probably graced with such privileges. About one-third of the informants mentioned by Kamel could not be identified. These may have included residents of Manila, servants of the college, itinerant traders and even indigenous people, who commonly adopted Hispanicised names.<sup>336</sup> Drawing both on his Jesuit peers and on broader circles of acquaintances that he had built, Kamel managed to procure knowledge and specimens of Philippine nature from all over the archipelago even from his humble workshop in Manila.

## **I.8. Conclusion**

This chapter has used Kamel's medical training and practices to glimpse the relationship between the Church, state and medicine in colonial Manila. To disentangle these connections and contextualise Kamel and his activities, I have examined his medical pursuits alongside the projects of healing coordinated by religious Orders and the Spanish Crown, with a particular focus on the kinds of remedies that were deployed in the local medical marketplace. These engagements are illustrative of how three different economies of cure operated in late seventeenth-century Manila. The nature of these cures was largely determined by the understanding of the patient's body. It was to preserve and reinforce the superior Spanish humoral complexion that the Crown supplied Manila with tons of Old World remedies, deemed more appropriate for Spanish bodies. In close association with the Spanish policies of ethnic segregation, the consumption of specific foods and remedies was a social privilege that underpinned notions of ethnic identity and supremacy. In light of the evidence discussed and,

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<sup>335</sup> Kamel 1704f: 69.8.

<sup>336</sup> The indigenous informants of Kamel, alongside his use and appropriation of indigenous knowledge, are discussed in detail in Chapter IV.

especially, the fuzzy boundary between food and drugs posited by Galenism, it might be more productive to treat histories of foods and drugs together as histories of consumption.

Whilst for the colonists, the local body was above all a symbol of the deleterious impact of the Philippine climate and substances, for missionaries it was a site of conflict between Christian and demonic forces. To intervene into this space, the clergy constructed and deployed religious remedies in a process that sheds light on interactions between spiritual and medical economies of healing. Religious objects, rites and the promises of spiritual health were all products crafted and marketed by specialists, sought after by customers in specific contexts, as well as exchanged against social and material credit and, above all, the soul. While pursuing the salvation of humankind, the Society of Jesus registered, enumerated and displayed the souls in its possession, an indicator that measured the success of the mission. Future studies concerned with histories of medicine should take more seriously religious cures and their associated cultural and spiritual connotations, which promise further insights into the operations of non-material economies of healing and of the body.

The engagements of Kamel demonstrate what attention to plants and their virtues can tell us about different kinds of medicinal practice. His treatises reveal that Galenism and its tenets not only underpinned the Spanish adherence to Old World remedies, but also provided a compelling framework for engaging with nature in new worlds. It was predominantly through the optic of the Galenic model that Kamel saw and interpreted Philippine medicinal plants, an argument which I further develop in Chapter IV. He looked to Philippine nature first and foremost to identify substances that he could use as substitutes of Old World drugs, for the import of which the Society lacked the required funding. To acquire knowledge and specimens of such substances, Kamel both conducted his own forays and constructed local networks of informants that relied predominantly on his Jesuit peers. This chapter has therefore foregrounded Kamel within the local context, situating his medical practices within the broader medical marketplace in Manila and showing how he acquired, understood and administered Philippine plants. However, crucial to the success of both Kamel's and the Society's wider projects was to communicate this knowledge further. The main means of communication in the early modern era was correspondence, to which I now turn.





## Chapter II

### Traders and Gentlemen: The Natural Historical Enterprise of James Petiver

From his pharmacy in Manila, Georg Joseph Kamel participated in a worldwide network of correspondence, which spanned the borders of the Spanish, Portuguese, Dutch and English empires and extended from New Spain to England (Figure A). This and the following closely associated chapter are concerned with this network and the practices involved in the early modern mobilisation of knowledge. Focusing especially on the activities of Kamel and his main correspondent James Petiver, I explore the different functions that early modern networks of correspondence could perform in terms of accruing knowledge, capital and social credit. Rather than treating Kamel and Petiver as nodes of communication, I focus on the link between them. I argue that this shift from static centres to dynamic exchanges presents additional tools for decentring networks of knowledge. By interpreting the actions of one actor through relationships with others, moreover, we can trace in greater detail the agencies involved in knowledge exchange. Such attention to movement reveals not only what it took for knowledge to travel between Manila and London, but also the fragile nature of the underlying connections. The exchanges of Kamel and Petiver show that wars, conflicts and misunderstandings, alongside the caprices of both the environments and the mediators involved, all acted as limiting factors on the distance that networks could bridge. By focusing on the mobility of knowledge (or the lack thereof) rather than on its accumulations in centres, I seek to point towards new geographies of knowledge.

Historians have traditionally understood early modern scholarly networks as governed by reciprocal gift exchange.<sup>337</sup> Learned gentlemen have been portrayed as sharing knowledge in polite expectation of a returned favour in the form of honorific gifts and, by contrast, scorning any financial recompense. This erudite code of conduct, characterised above all by a gentlemanly indifference to money, has been identified as one of the distinguishing features of the Republic of Letters, as well as being associated with the establishment of scientific credit and norms of openness.<sup>338</sup> However, recent studies have questioned the suitability of gift exchange as a model for describing early modern cultures of curiosity. Rather than being restricted to erudite scholars and gentlemen, participation in the Republic of Letters extended to artisans, merchants and other agents across the social spectrum, whose activities were marked by financial concerns. By the late seventeenth century, mercantile attitudes had infiltrated the learned world. Natural specimens have been defined by scholars as a form of capital mediating the increasingly commercial exchanges, and denial of financial value has

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<sup>337</sup> For gift exchange, see Mauss 1923; Zemon Davis 2000; Heal 2014.

<sup>338</sup> Daston 1991a; Goodman 1994; Shapin 1994; Goldgar 1995; E.H. Cook 1996; Bots and Waquet 1997.

emerged as a strategy specific only to certain contexts.<sup>339</sup> Although collectors remained acutely aware of the differences between gentlemanly etiquette and monetary profit-making, many (if not most) traversed the boundary between the learned and the commercial modes of exchange. Dániel Margócsy especially has demonstrated how entrepreneurial rivalries, secrecy and marketing strategies transformed the gift-based Republic of Letters into a competitive marketplace.<sup>340</sup>

By tracing the networks of Kamel and Petiver, this and the next chapter will explore how the pair operated in this marketplace. Rather than seeing networks of knowledge exchange as immaterial entities or geographically distributed systems, I portray them as systems of human interactions or as markets, in which Kamel and Petiver invested different kinds of assets to maximise their gains. I will investigate how the pair used their networks, letters and specimens as instruments to accumulate status and capital, and broker between different positions on the scale between learned and commercial. Thus, I will engage with two main questions. Firstly, I will discuss how social credit and value were generated in knowledge transactions, highlighting the essential role that movement played in these processes. In keeping with Arjun Appadurai's statement that "economic exchange creates value," I focus on how capital was multiplied through the act of exchanging rather than accumulated in centres.<sup>341</sup> Addressing Appadurai's plea to examine how value was inscribed, created and negotiated, I argue that it was through mobilisation within knowledge networks that objects acquired their status as matters of science, curiosity or trade.

Secondly, I will explore how Kamel and Petiver established the terms of exchange and negotiated the unstable boundaries between gifts and commodities. The recent work of Emma Spary and Valentina Pugliano especially has revealed the role of pharmacists as intermediaries between erudite and broader social spheres, as well as placing pharmaceutical practices at the interface between science and trade.<sup>342</sup> Apothecaries by profession, Kamel and Petiver could use their networks to tap into both erudite and commercial worlds, between which the two practitioners constantly moved. Through the lens of their negotiations between these systems, I will consider the advantages and disadvantages of adopting different positions on the scale between learned and commercial. This is therefore a case study of how learned and commercial involvements worked in tandem in the bid to amass credit and capital, but also differed in terms of their aims, languages and outcomes. Within this scope, I also explore how social status operated in networks of knowledge communication. The processes of exchange were structured by human relationships, which, in turn, were extensively

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<sup>339</sup> Spary 2000; 2005a; 2008; Smith and Findlen 2002; Müller-Wille 2003; te Heesen 2005; H.J. Cook 2007; Kinukawa 2013; Margócsy 2013; 2014; Skuncke 2014.

<sup>340</sup> Margócsy 2013; 2014.

<sup>341</sup> Appadurai 1986: 3.

<sup>342</sup> Spary 2005a; Pugliano 2012a; 2018.

shaped by social status. Therefore, I demonstrate how status determined numerous crucial aspects of the transactions, from the directions in which knowledge and patronage flowed, to the value attributed to specimens and the forms of address and gifts selected.

To begin with the question of negotiations between learned and commercial, I propose an alternative conceptualisation of the relationship between collectors and things-in-motion. The items dispatched have been commonly characterised as material currency in transactions, exchanged against other material items, including gifts or money. Rather than just as material currency, I interpret the letters and specimens mobilised also as extensions of 'self' into the network: as claims about knowledge or about one's own persona and status, through which their senders sought to maximise their gains from the exchange. With every act of communication, collectors sought to encode into the objects dispatched symbolic information about their own identity, standing and location and about other factors that they deemed relevant in attaining their goals. I will demonstrate that upon deployment, this symbolic information – such as distance, language, code of conduct or social status – travelled within networks alongside material objects. I argue that through these symbolic meanings, or by framing letters and specimens in specific ways, the actors strove to regulate the terms of exchange, including their position on the scale between learned and commercial. For example, the transactions of Kamel and Petiver reveal that the decision to present oneself as a gentleman was actively made in the interest of maximising gains and that erudite codes of exchange could well be discarded if an alternative strategy promised better outcomes.

In treating letters and specimens as extensions of self into the network, I draw on the work of Steven Shapin, who has defined the process of constructing texts as a literary technology serving to supplement claims about knowledge.<sup>343</sup> Shapin reminds us that these claims were not immutable, but were negotiated in complex social situations, in which their meanings were co-constructed by the recipients. As Pierre Bourdieu has emphasised, the meanings of an exchange reside in the moment of transaction, and all parties involved participate in their construction.<sup>344</sup> The meaning thus resided in the object's interpretations, not in the objects themselves. The recent volume edited by Daniela Bleichmar and Peter Mancall has shown that one object could move between numerous different identities depending on its immediate social context.<sup>345</sup> Although, as suggested, the sender sought to provide a narrative that would convey the intended meaning, the object's assessment was in the eye of the beholder, and the message could easily be transformed in transit or even lost in translation. Therefore, not all letters and specimens were equally efficacious, and even similar strategies could

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<sup>343</sup> Shapin 1984.

<sup>344</sup> Bourdieu 1977.

<sup>345</sup> Bleichmar and Mancall 2011.

yield different outcomes. Only if performed and interpreted correctly could they accrue credit, gain favours or define the terms of exchange as desired.

To explore the second main question of how early modern collectors managed their networks and deployed specimens to generate credit, I draw on the notions of capital as defined by Bourdieu.<sup>346</sup> In addition to material capital, he has distinguished the following three non-material forms. Firstly, social capital represents the aggregate of resources linked to involvement in a network of relationships of mutual acquaintance. Its amount depends on the size of the network that one can mobilise, and its possession yields access to other kinds of capital, including material capital. Secondly, cultural capital is the aggregate of social assets of a person – such as education, taste or knowledge and skills – that promote social mobility. Lastly, symbolic capital is the aggregate of resources available to an individual derived from their status or recognition. I argue that these concepts can be extended to the early modern culture of curiosity to gain a better understanding of the relationship between movement of knowledge and generation of social credit. Whilst exchange of objects could bring material gains in the form of gifts or money, I draw attention to the opportunities that mobilisation of specimens presented in terms of generation and reproduction of social, cultural and symbolic capital. As claims that carried information about the identity, status or location of their senders, the things-in-motion were also representative of the social, cultural and symbolic capital possessed by the actors engaged in the exchange. I will demonstrate how the act of mobilisation afforded early modern collectors the opportunity to reproduce, translate or disseminate these forms of capital and thus generate assets that could be subsequently converted into social credit or reinvested into further projects.

Therefore, I propose that the process of movement through knowledge networks was central to the production of capital, credit and value. In one of the founding texts of collection studies, Krzysztof Pomian has argued that objects acquire new meanings – or scientific value – only once removed from wider circulation and placed into a static collection; or, in other words, once they shed their economic value.<sup>347</sup> By contrast, focusing on the practices of the Parisian merchant grocer Pierre Pomet (1658–1699), Emma Spary has suggested viewing early modern collections as spaces in a state of constant flux, in which specimens were perpetually moving between different systems of exchange.<sup>348</sup> Whilst Pomian's thesis may find its application in the milieu of polite gentlemen, who shunned financial remuneration, Kamel's and Petiver's collecting enterprises fit well with Spary's portrayal. Objects in their possession were in constant movement between learned and commercial

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<sup>346</sup> Bourdieu 1986. See also Bourdieu 1973. For a case study that draws on Bourdieu's work to discuss gift exchange and knowledge transactions, see A. Second 1994.

<sup>347</sup> Pomian 1994.

<sup>348</sup> Spary 2005a.

worlds: between the status of a drug and that of a curiosity, between the pair's collections and networks of correspondence or print. By exploring how items travelled between different hierarchies of status and knowledge, I will demonstrate that their value as curiosities, commodities or objects of science was constructed during this act of movement. This process could take place through different means: objects could be transmitted through networks of correspondence or disseminated through print. The focus of these chapters on movement therefore brings together social credit with mobility and spatiality, as well as integrating different modes of knowledge production, including correspondence, collecting and print.

To illustrate these claims, I will first focus on Petiver's pursuits before moving to Kamel in the following chapter. Petiver's location at the interface of the apothecary trade, the Royal Society and the worldwide commerce in drugs and curiosities makes him ideally suited for exploring the overlapping worlds of science and commerce, of learned societies and trading companies. His projects indicate that learned and commercial worlds were united by their dependence on the mastery of distance and their interest in useful knowledge. I argue that it was indeed Petiver's access to distant worlds and to their products that opened a door to patronage by prominent gentlemen for this artisan, as well as to the erudite sphere and the Royal Society. Petiver's activities thus provide modest insights into the rise and interlacing of erudite and commercial cultures in the post-Civil War England. Shapin's work on the early Royal Society has portrayed the legitimacy of knowledge and exchange of information as something underpinned by trust, which – in the English context – was conferred first and foremost by the social standing of the gentleman.<sup>349</sup> By contrast, focusing on the Low Countries, Harold Cook and Dániel Margócsy have drawn attention to how knowledge production and exchange were shaped by mercantile concepts of credit, market and interest.<sup>350</sup> As suggested by Anna Winterbottom's recent work, "[e]ven in England, however, noble and bourgeois modes of exchange overlapped."<sup>351</sup> By illustrating how erudite and commercial codes were negotiated between by Petiver, this and the following chapter offer a contribution to this debate.

The scale of Petiver's natural historical projects was impressive: he built one of the largest correspondence networks of his time, amassed a monumental collection of natural specimens from all corners of the world, and kept himself in the periodicals business for over a decade at a time when similar enterprises were typically short-lived.<sup>352</sup> His wide-ranging pursuits have recently begun to draw broader attention from researchers. Most studies have focused on transactions between Petiver and

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<sup>349</sup> Shapin 1994. See also Golinski 1998.

<sup>350</sup> H.J. Cook 2007; Margócsy 2014. See also Smith and Findlen 2002.

<sup>351</sup> Winterbottom 2016: 17.

<sup>352</sup> For scientific periodical publishing in England around 1700, see Kronick 1976; Moxham 2015; 2016.

specific collectors.<sup>353</sup> Furthermore, James Delbourgo, K. A. James and Charlie Jarvis have considered his use of lists and prints as paper tools in running his enterprise; Anna Marie Roos has used his diaries to illustrate his collecting practices; and Katrina Maydom has focused on his medical practice.<sup>354</sup>

Drawing on Bourdieu's notions of capital, I seek to bring together Petiver's activities as a pharmacist, correspondent, collector and publisher and thus provide a more integrated view of his enterprise. I will illustrate how Petiver combined different tools and assets in managing his vast natural historical enterprise, focusing especially on the role of print. I will demonstrate how he took advantage of the mobility of the medium of print to produce capital that enabled him to enhance his own status, recruit and remunerate his collaborators and maintain a vast network of collaborators. Moreover, I argue that Petiver's publications enabled him to shape his collection into a meaningful whole, as well as define the rarity of individual objects and thus also build their status as curiosities. Petiver's use of print as a tool for reproducing capital, establishing value and constructing meaning thus echoes the recent work of Benjamin Schmidt, who has explored the activities of Dutch printers in marketing knowledge of distant lands at the turn of the eighteenth century.<sup>355</sup>

To illustrate Petiver's strategies, I will subsequently turn to his transactions with Samuel Browne and Edward Bulkley, two surgeons stationed in Madras, who also mediated Petiver's correspondence with Kamel. Although largely governed by the code of reciprocal gift exchange, their communications became increasingly infiltrated by mercantile concerns with the commodification of useful plants. Their transactions can be broadly associated with the vision of colonial botany championed in the volume edited by Londa Schiebinger and Claudia Swan, who have highlighted the hunger of European colonisers for profitable knowledge to be deployed through colonial networks in pursuit of financial gain.<sup>356</sup> These Petiver's practices will provide contrast for those of Kamel, discussed in the following chapter.

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<sup>353</sup> For exchanges between Petiver and his American correspondents, see Stearns 1952; for his relationship with Hans Sloane, see Delbourgo 2012a; 2012b; 2017; for Petiver and collecting slave traders, see Murphy 2013; for his communications with the Barcelona pharmacist, Joan Salvador i Riera, see Ibáñez et al. 2006; Camarasa and Ibáñez 2007; for Petiver and James Cuninghame, see Santos-Guerra et al. 2011; Jarvis and Oswald 2015; for Petiver's transactions with the Low Countries, see Kinukawa 2013; Margócsy 2014; for Petiver's dealings with the outpost in Madras, see Fleetwood 2014; Winterbottom 2015; 2016: 112–139.

<sup>354</sup> K.A. James 2004; Delbourgo 2012a; 2012b; Roos 2016; Jarvis 2018; Maydom 2018.

<sup>355</sup> Schmidt 2013; 2015.

<sup>356</sup> Schiebinger and Swan 2005.

## II.1. James Petiver, “[a] Man of Greater Correspondence in Africa, India, & America then any one”<sup>357</sup>

James Petiver was born circa 1665 into the family of a Warwickshire haberdasher.<sup>358</sup> Having lost his father in childhood, he was sent to a grammar school at Rugby at the expense of his grandfather. Subsequently, he entered an eight-year apprenticeship under Charles Feltham, apothecary to St Bartholomew’s Hospital in London, and became a freeman of the Society of Apothecaries in 1685.<sup>359</sup> That year, he also opened a shop at the Sign of the White Cross on Aldersgate Street, which became a popular stopover for visiting travellers and other natural history enthusiasts in the following decades (Figure 2.1).<sup>360</sup> Despite Petiver’s humble origins and lack of higher education, his ambitions and diligence earned him a successful professional career, active membership in the Royal Society and a vast collection of natural specimens. His rise was closely associated with Hans Sloane (1660–1753), with whom he shared both a professional bond and a passion for natural history.<sup>361</sup> This powerful ally introduced Petiver to his social circles and encouraged the pharmacist – both as a friend and patron – in his natural historical activities. By the early 1690s, Petiver was in frequent correspondence with the country’s leading naturalists and began expanding his network abroad. By 1697, his herbarium had grown to some 5,000 to 6,000 specimens, by his own reckoning. Sloane also backed his protégé for two prestigious positions: in 1695 Petiver was elected a Fellow of the Royal Society and in 1700 he acquired the lucrative office of apothecary to the Charterhouse. It was Sloane, too, who purchased Petiver’s collections after his death in 1718 for £4,000: an immense sum of money, which reflected the volume and value of what Petiver had managed to accumulate.<sup>362</sup>

For Petiver, collecting natural objects was integral to both his apothecary trade and his claim for membership in the learned community. Emma Spary has claimed that specimens in the pharmacist’s cabinet doubled as commercial stock and a collection displaying the owner’s status.<sup>363</sup> Claudia Swan and Valentina Pugliano have argued that pharmacists saw collecting as a form of social legitimization, which enabled them to participate in the Republic of Letters. Moreover, since possession of *naturalia* was seen to correspond to knowledge of these objects, collecting provided opportunities to build the status of expert practitioners.<sup>364</sup> In seventeenth-century England, collecting was also explicitly associated with the new Baconian programme of investigating nature embraced by the Royal

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<sup>357</sup> Letter 99.

<sup>358</sup> For Petiver’s biography, see Stearns 1952; Dandy 1958: 175–182; Allen 2009.

<sup>359</sup> For London apothecaries, see Burnby 1983; H.J. Cook 1986; Porter and Porter 1989; Wallis 2002; Simmons 2019.

<sup>360</sup> For communities of natural knowledge in early modern London, see Bennett and Higgitt 2019.

<sup>361</sup> For Hans Sloane, see especially MacGregor 1994; A. Walker et al. 2012; Delbourgo 2017.

<sup>362</sup> Hearne 1902: 255.

<sup>363</sup> Spary 2005a.

<sup>364</sup> Swan 2005, 2007; Pugliano 2012a, 2018.





**Figure 2.1:** The location of Petiver's apothecary shop at the Sign of the White Cross on Aldersgate Street (adapted from Morgan 1682).



Society, which emphasised practice, active observation and systematic collection of data.<sup>365</sup> Only large-scale cooperative accumulation and comparison of *res naturae* could contribute to the ultimate objective of producing a complete inventory of all species and their medicinal, commercial and industrial uses. Seeking to realise Bacon's visions of new science, the Royal Society embraced travel as a crucial component of its learned agenda.<sup>366</sup> In its quest for information from all over the world, it sought alliance with English trading companies.<sup>367</sup> As Alice Marples has argued, these efforts were also part of the wider agenda of the Secretary and later President of the Society, Hans Sloane, to consolidate and expand its networks and re-establish it as a necessary node in knowledge production.<sup>368</sup>

The methods employed by Petiver in gathering overseas specimens for his vast collection – to be used both in his medical practice and his learned projects – relied largely on the naval routes of British commerce, pioneered by the East India Company, the Royal African Company, the South Sea Company and others.<sup>369</sup> Previous studies of his networks have documented how Petiver took advantage of trade routes to build an infrastructure that enabled long-distance communication of knowledge, and used the people who moved within these networks as his collectors, couriers or both.<sup>370</sup> Petiver's talents in making use of these networks and mobilising the people who travelled within them exceeded those of any of his contemporaries. He managed to build and run what John Ray described as “the greatest correspondence both in East & West Indies” from his apothecary shop, strategically located in central London, not far from the East India Company Headquarters at Bishopsgate.<sup>371</sup> In constructing his web of informants, Petiver drew on both his own and his friends' social capital. His own involvement in the drug trade embedded him deeply within networks of commerce and his apothecary practice alone demanded the construction of a wide clientele. Moreover, his active involvement in the Royal Society and several smaller societies and coffee clubs presented abundant opportunities for networking. To expand the network even further and assure acquisition of even more specimens, Petiver also passionately spurred on his friends – both local and

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<sup>365</sup> Bacon 1914: 35; Smith and Findlen 2002: 3. Whilst the late seventeenth and the early eighteenth century were previously seen as a period of decline for the Royal Society, recent scholarship has supplanted these narratives and emphasised the Society's broad-ranging activities (Miller 1989; da Costa 2002a; 2002b; 2009; Marples 2019; Moxham 2019).

<sup>366</sup> Michael Hunter has noted that since the projects of the Royal Society remained rather disorderly, this universal project had collapsed by the early eighteenth century, and the Baconian programme remained an ideal (Hunter 1989). For the importance of travel to the Royal Society's agenda, see especially Gascoigne 2009.

<sup>367</sup> Especially Winterbottom 2016; 2019. The Royal Society and the East India Company also interacted with other London corporations, among others the Society of Apothecaries (Bennett and Higgit 2019).

<sup>368</sup> Marples 2016; 2019.

<sup>369</sup> For the East India Company and its early colonial activities, see Chaudhuri 1978; Ogborn 2007; Damodaran et al. 2015; Raj 2016; Winterbottom 2016.

<sup>370</sup> Especially Stearns 1952; Murphy 2013; Kroupa 2015.

<sup>371</sup> Letter 96: 279.

mobile – to use their own resources to recruit new collaborators. For instance, his correspondence with James Sutherland, keeper of the Edinburgh Physic Garden, reveals how Petiver strove to convince young medics to enrol as ship's surgeons in the overseas trade and simultaneously recruit them into his own 'service'.<sup>372</sup>

Medical practitioners composed the vast majority of Petiver's contributors: from the 67 names that Petiver identified in his publications as being among his greatest benefactors, there were 19 surgeons, 14 physicians (and the widow of one of these) and 2 pharmacists (Appendix 9).<sup>373</sup> Petiver was looking especially for collaborators who were skilled in the knowledge of nature and whose education and curiosity could be associated, at least loosely, with those of an erudite gentleman. In addition to medical practitioners, Petiver listed 4 clergymen, 3 garden superintendents, 2 merchants, a ship captain, an army officer, an envoy, as well as Hans Sloane, Edmund Halley, Mary Somerset, the Duchess of Beaufort, and the naturalists John Ray and William Sherard. The identities of the remaining 14 names, including 2 women, were less closely specified. These appear to be predominantly laypeople with an interest in natural history, which suggests that the most important requirement for enrolment in Petiver's networks was ultimately access to curious natural specimens – and the willingness to share them. To confer some status on the names and knowledge of these collectors, Petiver commonly titled them curious gentlemen and gentlewomen.

These and many more individuals furnished Petiver with their own shipments, mediated worldwide movements of information and objects, and constructed new relationships. Therefore, they often operated simultaneously as collectors and brokers in Petiver's network. Although this list is far from exhaustive, and is probably skewed towards contributors of higher prominence, more than half of the collectors acknowledged by Petiver were individuals of relatively humble status: surgeons, pharmacists, women and laypeople rather than erudite gentlemen. Petiver therefore built a network largely of practitioners and enthusiasts, whose social status conformed to his own and who – like Petiver himself – sought to stake a claim to participate in the commonwealth of learning. This highlights that the networks within which Petiver was embedded were not a level playing field. Instead, they were sloped with respect to how patronage and knowledge travelled both to and from Petiver: whilst patronage flowed from Sloane and other gentlemen to Petiver, and from Petiver to other agents across the broader social spectrum, knowledge largely moved the other way around.

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<sup>372</sup> BL, Sloane MS 4063.

<sup>373</sup> Petiver 1699a: 43–47; 1700: 79–80; 1703b: 94–96; 1704b.

## II.2. Between money and gifts, learning and commerce

The strategies that Petiver employed in brokering the relationships reflected the diversity of his collaborators across the social spectrum. In building and running his network, he relied predominantly on reciprocal gift exchange. Even if his transactions outwardly conformed to the gentlemanly code that embraced indifference to money, I will demonstrate that Petiver became increasingly open to direct financial investment into his network and argue that his transactions were pervaded and often even guided by mercantile concerns. Here, I will provide an overview of Petiver's negotiations between erudite and commercial modes of exchange. To entice agents into correspondence, Petiver used some of the conventions of early modern erudite correspondence: he commonly invoked mutual acquaintances, presented gifts to invoke a feeling of polite obligation to return the favour, as well as promising that "in retaliation I will make you what returns you shall desire of" or even "Recommend [...] for a Member of our Royall Society."<sup>374</sup> The prospects of a mutually beneficial exchange were guaranteed by Petiver's own status of a well-established pharmacist in London and a member of the Royal Society.

In return for his patronage, Petiver expected to receive specimens, images and descriptions of *naturalia* or, more broadly, any information that could be deployed as curiosities or useful knowledge. To control the efforts of his collectors at a distance, Petiver mobilised a variety of devices. He directed their choice with lists of *desiderata* and supplied them with "plain, full & easie directions" on how to collect and preserve specimens that "any child of 6 years old is capable of doing."<sup>375</sup> Furthermore, Petiver hoped that they would find "a pattern to imitate" in the learned texts, images and even specimen samples, which he provided both as a reward and as motivation into further work.<sup>376</sup> Eventually, to facilitate the dissemination of his instructions among his contributors and standardise their methods, Petiver compiled this information and printed it in several renditions, the best known under the title *Brief Directions for the Easie Making, and Preserving Collections of all Natural Curiosities* (Figure 2.2).<sup>377</sup> As argued by Elizabeth Yale and Valentina Pugliano, such use of scribal technologies was closely associated with pharmaceutical practice, in which the daily operations typically involved the production and use of large volumes of paperwork and handwritten documents.<sup>378</sup> I will further discuss this argument in the following chapter.

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<sup>374</sup> Spary 2000: 49–98; Meredith 2009. For the passages quoted, see Letters 165: 134r; 168: 32r.

<sup>375</sup> Letter 45. See also Letters 34: 100r–100v; 35: 115r; 38: 9r–9v; 52: 101r–102r; 58; 59; 80; 162: 128r. For practices of collecting and preservation, see for example Edberg 2010; Margócsy 2014; Findlen and Toledano 2018; Hünig 2018.

<sup>376</sup> Letter 176: 275v. See also Letters 35: 115r; 38: 9r–9v; 48: 206v; 51: 98v; 71: 244v.

<sup>377</sup> For a discussion of these directions, see Jarvis 2018.

<sup>378</sup> Yale 2008; 2011; Pugliano 2012b.

v. 1  
**Brief Directions for the Easie Making, and Preserving Collections  
of all NATURAL Curiosities.**  
**For JAMES PETIVER Fellow of the Royall Society LONDON.**

All small Animals, as Beasts, Birds, Fishes, Serpents, Lizards, and other Fleishy Bodies capable of Corruption, are certainly preserved in Rack, Rum, Bandy, or any other Spirits; but where these are not easily to be had, a strong Pickle, or Brine of Sea Water may serve; to every Gallon of which, put 3 or 4 Handfulls of Common or Bay Salt, with a Spoonful or two of Allom powderd, if you have any, and so send them in any Pot, Bottle, Jar, &c. close stop'd, Cork'd and Resin'd. N.B. You may often find in the Stomachs of Sharks, and other great Fish, which you catch at Sea, divers strange Animals not easily to be met with elsewhere; which pray look for, and preserve as above.

As to Fowls, those that are large, if we cannot have their Cales whole, their Head, Leggs, or Wings will be acceptable, but smaller Birds are easily sent entire, by putting them in Spirits as above, or if you bring them dry, you must take out their Entrails; which is best done by cutting them unde their Wing, and then stuff them with Ockam or Tow, mixt with Pitch or Tar; and being thorouhly dried in the Sun, wrap them up close, to keep them from Moisture, but in long Voyages, you must Bake them gently, once in a Month or two, to kill the Vermin which often breed in them.

All large pulpy moist Fruit, that are apt to decay or rot, as Apples, Cherries, Cowcumbers, Oranges, and such like, must be sent in Spirits or Pickle, as Mangoes, &c. and to each Fruit, its desired you will pin or tie a sprig of its Leaves, and Flowers.

All Seed and dry Fruit, as Nutts, Pods, Heads, Husks, &c. these need no other Care, but to be sent whole, and if you add a Leaf or two with its Flower, it will be the more instructive, as also a piece of the Wood, Bark, Root, or Gum of any Tree or Herb that is remarkable for its Beauty, Smell, Use, or Vertue.

In Collecting PLANTS, Pray observe to get that part of either Tree, or Herb, as hath its Flower, Seed, or Fruit on it; but if neither, then gather it as it is, and if the Leaves which grow near the Root of any Herb, differ from those above, be pleased to get both to Compleat the Specimen; these must be put into a Book, or Quire of Brown Paper stitch'd (which you must take with you) as soon as gathered; You must now and then shift these into fresh Books, to prevent either rotting themselves or Paper. N.B. All Gulph-Weeds, Sea-Mosses, Coralls, Corallines, Sea Feathers, Spunges, &c. may be put altogether into any old Box, or Barrel, with the Shrimps, Prawns, Crabs, Crawfish, &c. which you will often find amongst the Sea weeds, or on the Shoar with the Shells, which you may place in layers; as we do a Barrel of Colchester Oysters. All SHELLS may be thus sent as you find them, with or without their Snails in them, and wherever you meet with different sizes of the same sort; pray gather the fairest of all Magnitudes; the Sea Shells will be very acceptable, yet the Land, and Fresh-water ones, are the most rare and desirable. In Relation to INSECTS, as Beetles, Spiders, Grasshopper, Bees, Wasps, Flies, &c. these may be Drown'd altogether, as soon as caught in a little wide Mouth'd Glass, or Vial, half full of Spirits, which you may carry in your Pocket: But all Butterflies and Moths, as have mealy Wings, whose Colours may be rub'd off, with the Fingers, these must be put into any small Printed Book, as soon as caught, after the same manner you do y<sup>e</sup> Plants.

All Metals, Minerals, Ores, Chrystals, Spars, Coloured Earths, Clays, &c. to be taken as you find them, as also such formed Stones, as have any resemblance to Shells, Corals, Bones, or other parts of Animals, these must be got as intire as you can, the like to be Observ'd in Marble'd Flints, Slates, or other Stones, that have the Impression of Plants, Fishes, Insects, or other Bodies on them: These are to be Found in Quarries, Mines, Stone or Gravel Pitts, Caves, Cliffs, and Rocks, on the Sea shoar, or wherever the Earth is laid open. NOTE If to any ANIMAL, PLANT MINERAL &c. you can learn its Name, Nature, Vertue or Use, it will be still the more Acceptable.

N.B. As amongst Forreign Plants, the most common Grass, Rush, Moss, Fern, Thistle, Thorn, or vilest Weed you can find, will meet with Acceptance, as well as a scarcer Plant; So in all other things, gather whatever you meet with, but if very common, or well known, the fewer of that Sort, will be acceptable to

y<sup>r</sup> most Humble Servant

Aldersgate street  
LONDON.

JAMES PETIVER.

**Books &c Printed for y<sup>e</sup> AUTHOR.**

Musei PETIVERIANI Centuria. X. FIG. . . . .	2. 5.
Labells for Medicinall Plants. . . . .	1. 6.
Labells for English Wild Plants. . . . .	1. 6.
FIGURES to M <sup>r</sup> FRAY, English Plants. with References to his History & Synopsis, N <sup>o</sup> 600 in 50 Folio Copper Plates. . . . .	2. 3. 0.
An ENGLISH Catalogue Engraved . . . . .	1. 6.
A Latine Catalogue Engraved . . . . .	1. 6.

**GAZOPHYLACIUM NATURE & ARTIS.**

Containing above 1200 Figures, in 100 Folio Copper Plates, with their Names &c. . . . .	2. 3. 0.
The Catalogue & Descriptions Separate. . . . .	0. 5. 0.
Aquatilium Animalium AMBOINE Icones & Nomina, Containing near 400 Figures in 20 Folio Copper Plates. . . . .	10. 0.
The Printed Catalogue Separate. . . . .	6.
Directions for Collecting Natural Rarities. . . . .	6.

Such as Buy 5 of each, to have a 6<sup>th</sup> Gratis. PETIVER.

**Figure 2.2:** Petiver's Brief Directions for the Easie Making, and Preserving Collections of all Natural Curiosities (published in Empson 1767, vol. 1: n.p.).

Most commonly, Petiver repaid his contributors for their favours and consignments with a diverse assortment of gifts and services, from drugs and books to medical advice and assistance to a relative. For example, in 1697 Petiver shared “an infallible secret” against gonorrhoea called a “Black healing powder” with Reverend Hugh Jones, his correspondent in Maryland, and included a syringe in the consignment.<sup>379</sup> The following year, Petiver “engaged a friend who has taken no small pains to accommodate the matter” that Samuel Browne’s sister was struggling with.<sup>380</sup> Throughout the 1700s, Browne’s colleague Edward Bulkley commonly received consignments of seeds to grow in his garden in Madras, as well as publications on diverse topics, including an “account and direction about the use of Papins digester”.<sup>381</sup> Although these communications were governed by reciprocal gift exchange, Margócsy has suggested viewing every gift as bearing a perceived monetary value, which had a major influence on the nature and the course of transactions.<sup>382</sup> I will discuss how these implicit price tags shaped Petiver’s relationship with Browne and Bulkley in the final section of this chapter.

As his later correspondence suggests, Petiver became increasingly open to direct investment of money into his network. Especially from the early 1700s on, he began to invite correspondents to employ servants to make collections at his own expense. For instance, he wrote to Bulkley that “I should be glad every year to allow 40 shilling to one of your Indian servants for a Month either at Arabia, Persia, Batavia, Malacca, the Spice Islands, Borneo or Zeylon to fill me as many Quires with the Specimens [...] as also what charge you are at for Paper, Spiritts etc. which I will pay.”<sup>383</sup> To a certain Mr Rickets, “Gardiner” in Antigua, Petiver even proposed direct remuneration in money for the specimens provided, promising:

5 Shillings for every Quire of Paper filled with the Fair dried Specimens of any plant [...], for every wide mouthed Quart Bottle filled with small Birds [...] as also all Snakes, Froggs, Lizards or Guanoes [...] & all Insects whatsoever as Bees, Wasps, Beetles, Cricketts, Grasshoppers, Fire Flies, Mosquitoes, Ants, Spiders, Scorpions, Centipeds, Worms, &c. [...] The same sum for every Oyster Barrel of Land, River, or Sea Shells as also Crabs, Prawns, Shrimps, sea Urchins, Starre Buttons &c. packt up with whatever Sea Weeds Sponges, Corallines & Mosses the Shoare affords [...]. The like sum of 5 Shillings for each Hundred of Butterflies, Moths, & such like Insects.<sup>384</sup>

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<sup>379</sup> Stearns 1952: 301.

<sup>380</sup> Letter 70: 222v.

<sup>381</sup> For the passage quoted, see Letter 166. See also Letters 81; 115: 110v; 124: 133v; 133: 169r; 134; 137: 186r.

<sup>382</sup> Margócsy 2013.

<sup>383</sup> Letter 155: 32v–33r. See also Letters 32: 16r; 34: 100r–100v; 157: 65v; 162: 128r.

<sup>384</sup> Letter 151: 40v–41r.

Without a deeper analysis of Petiver's wider networks, which falls outside the scope of this thesis, we can only speculate over the reasons behind the increasingly commercial nature of the exchanges. The appointment as apothecary to the Charterhouse in 1700, which brought Petiver a wealthier clientele and a higher income, probably played a role. Moreover, the increasing reliance on money in conducting knowledge transactions may have been inspired by the practices of Petiver's correspondents themselves, who commonly employed servants or slaves to make collections on their behalf. This trend also appears more commonly with Petiver's long-standing correspondents. It seems that the code of reciprocal gift exchange was invoked especially early on in the communications, perhaps as Petiver strove to present himself and his enterprise as part of the commonwealth of learning. However, once mutual trust had been established, financial matters could be discussed more openly.

In any case, the open use of money seemed to be most closely associated with social status, as previous studies concerned with commodification of nature would suggest.<sup>385</sup> Rickets, who was offered an explicit payment from Petiver, was a mere "Gardiner", whilst Petiver's other proposal of money concerned "Indian servants" rather than his correspondent Bulkley, who would have acted as a mediator rather than the recipient of the financial transaction. Furthermore, Petiver never advertised his financial propositions publicly: his offers to employ servants at his own expense and pay his collectors remained confined to private communications. Thus, Petiver remained protected by the secrecy of correspondence and the mutual trust between him and his acquaintances. These examples illustrate how, in running his network, Petiver oscillated between erudite and commercial modes of exchange.

### **II.3. Printing specimens, printing capital**

As discussed, the knowledge and objects communicated within Petiver's networks served as material currency that could be exchanged for gifts or money. In this section, I will argue that the specimens involved also held the potential for generating more symbolic assets. I will demonstrate how through the subsequent mobilisation of specimens via the medium of print, Petiver managed to reproduce both his own and his collectors' capital – material, social, symbolic and cultural – which could be converted to social credit or reinvested into further projects. To that end, Petiver relied on a series of periodicals: *Musei Petiveriani centuriae* ('Gatherings from Petiver's Cabinet', 1695–1703) and *Gazophylacium naturae et artis* ('The Treasure House of Nature and Art', 1702–1709). Conceived as an inventory promoting the collaborative effort to catalogue the natural world, these publications

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<sup>385</sup> For example, Spary 2005a; Kinukawa 2013; Margócsy 2014.



contained lists of *naturalia*, each with a brief description, original location and later, in *Gazophylacium*, also an illustration (Figure 2.3). Most importantly, every specimen appeared also with its supplier's identity: each collector was thus repaid with acknowledgements, visibility in print and membership in a community of naturalists centred around Petiver and his collection.

# **GAZOPHYLACII NATURÆ & ARTIS, Tab. 9.**

**Fig. 1.** *T*estudinulus Philippensis luteus, nigro maculatus. *The Luzone Turtle-Lady, I thus call it to distinguish it from Fig. 3. in the next Table.*

**2. 3.** *Aurelia & Erucago Ejsdem. These are after the Designs the Reverend Father George Joseph Camel lately sent me from Manilia.*

**4.** *Buccinulum dentatum Mediterraneum, striis fasciatis maculatum. an Buccinum dentatum parvum, leviter striatum variegatum ventriosum List. H. C. l. 4. Sect. 11. Tab. 823. Fig. 42?*

**5.** *Papilio Angolensis ex phibis alboque mixtus. Brought from Angola by Mr. John Kirckwood Surgeon.*

**6.** *Alga tubulosa albida navibus adhærens. This I found plentifully growing to a Ships side in the River Thames.*

**7.** *Concha Veneris minor, maculata & oculata, nobis. C. V. parva, latiuscula, paululum gibbosa, ventre maculoso dorso, fusco & albis innumeris & paucis nigris puncturis depicto List. H. C. l. 4. S. 9. Tab. 696. Fig. 43.*

**8.** *Cato Simius volans Cameli. The Flying Cat-Monkey. See its Description in the Philosophical Transactions No. 277. p. 1065. 1. This strange Animal is found in the Philippine Isles, and its usual Abode there is on Trees.*

**9.** *Balanus compressus albus, sex fissuris sulcatus. nobis. Act. Phil. No. 255. p. 10. This odd Shell Mr. James Cunningham brought me among the rest from the Isle of Ascension.*

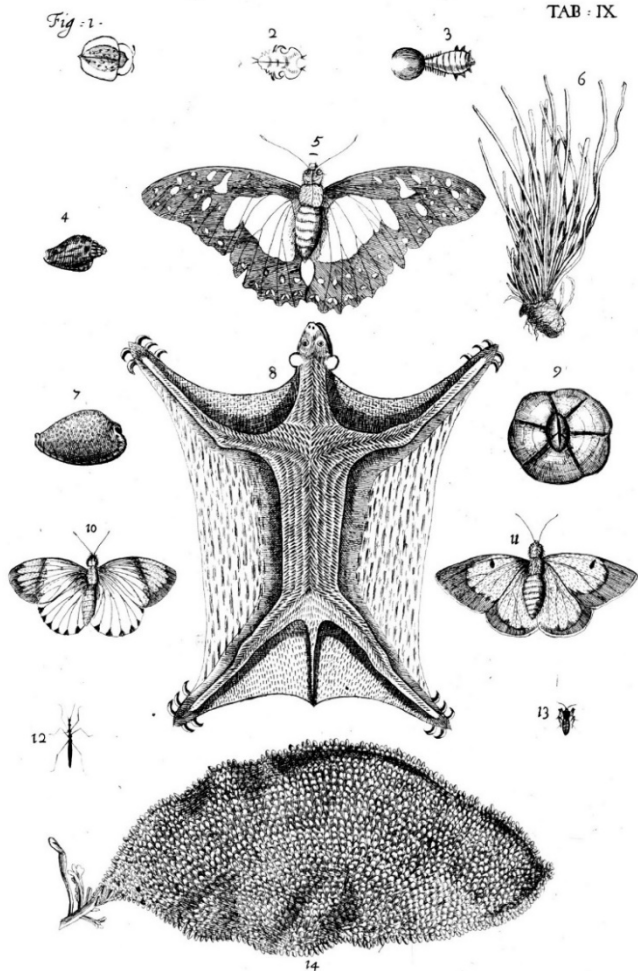
**10.** *Papilio albus Angolensis apicibus miniaceis. Mr. John Kirckwood first brought me this from Angola, it hath since been caught at Wida, by Mr. Watt and Mr. Skeen Surgeons.*

**11.** *Papilio Capensis flavescens versicolor, apicibus nigrescentibus. This singular Fly Mr. John Starrenburgh sent me from the Cape of Good Hope, the ground of its Wings are yellow, varying with a Philomus Blush, if they hold it at a certain Position between you and the Light.*

**12.** *Tipula Londinensis angustissima. This I have observed on some Ponds about London: It's much slenderer and less than the common Water-Spider.*

**13.** *Tipula Hamstediensis brevior, ex croceo variegata. I have as yet met with this only in some Ditches about Bell-fize at Hamstead.*

**14.** *Alga verrucosa Capensis. My Curious Friend Mr. Starrenburgh sent me this with several other elegant Sea-Productions, which shall be figured in my next Decade.*



To Dr. HANS SLOAN, Fellow of the College of Physicians, Secretary of the Royal Society &c. This Plate is humbly Dedicated by JAMES PETIVER F.R.S.

Figure 2.3: The ninth table of Petiver's *Gazophylacium naturae et artis* (Petiver, 1702).

As James and Delbourgo have argued, Petiver used his lists and prints as tools of “social advertisement”.<sup>386</sup> His publications therefore functioned as a device for reproducing and showcasing both his own and his collaborators’ material, cultural, social and symbolic capital: or their access to and possession of valuable specimens; their expertise in natural knowledge and contribution to learning; and their participation in a worldwide network of naturalists, including England’s learned authorities and Fellows of the Royal Society. Petiver’s collection, correspondence networks and

<sup>386</sup> K.A. James 2004: 326; Delbourgo 2012a; 2012b.

printing endeavours were therefore closely co-dependent spaces, the links between which become apparent through following the movements of specimens. Alice Marples has recently made similar observations about Hans Sloane and the way he used *The Philosophical Transactions* in conjunction with both his own and the Royal Society's collections and correspondence in order to accrue the credit of his own, of his correspondents and of the Society.<sup>387</sup>

The greater portion of the capital at stake would fall to Petiver, located at the centre. Nonetheless, participation within his enterprise conferred a share of social credit also on his collectors. As Margaret Meredith has argued, "one's correspondents were testimony of how one was judged by others [and] a customary means of establishing status in a community of practitioners."<sup>388</sup> Andrew Pettegree has characterised print – and the fact of being in print – as a marker of standing in early modern Europe.<sup>389</sup> The prospect of being acknowledged as the discoverer of a new species, seeing one's own name in print and boasting membership in a learned enterprise thus offered strong incentives in terms of status. It was by contributing to Petiver's learned enterprise that "Madam Williams" and "Mr Thomas Walker" became a "Gentlewoman" and a "Generous Gentleman".<sup>390</sup> Titles associated with even greater symbolic capital were at play too, as in the case of

**A D V E R T I S E M E N T.**

**W**Hereas for the Encouragement of this Undertaking, several Worthy Persons have Voluntarily been pleased to deposite each a *Guinea* towards the Charge of these Plates, and others have promised to do the like or more as soon as this *First Decade* is published: This is therefore to satisfy such Curious Persons, that there are more *Tables* already done, and that the *Second Decade* will contain many things New and very Rare, which shall be published with all convenient Speed.

And for the Encouragement of such other Persons as shall advance 10 *Shil.* or a greater Summ, they shall immediately receive one half in what I have already published at the following Prizes, and the others as they come out.

	<i>To Subscribers.</i>	<i>To others.</i>
My 8 Centuries	0 2 6	0 3 6
Labells to <i>English</i> Plants above 400	0 2 0	0 3 0
Labells to <i>Officinal</i> Plants about 400	0 2 0	0 3 0
<i>Gazophylac.</i> Nat. & Artis Dec. 1.	0 4 0	0 5 0
The same mostly painted.	1 1 6	1 5 0
The <i>Catalogue</i> separate.	0 0 6	0 1 0

Designing the Continuation of these Tables, as by several Friends I am earnestly desired, if therefore any Curious Persons, that are Lovers either of Art or Nature, will be pleased to communicate to me the things themselves, or their Designs of whatever is Curious under any Head mentioned in the Title Page of my *GAZOPHYLACIUM NATURÆ & ARTIS*, I will take care to insert them in my succeeding *DECADES* with a just Acknowledgment of them and the things they send, they please to direct them

For their *Humble Servant*  
**JAMES PETIVER**  
in *Aldersgate-Street* London.

**Figure 2.4:** Petiver's advertisement published alongside the first decade of *Gazophylacium naturae et artis* (Petiver 1702).

<sup>387</sup> Marples 2019.

<sup>388</sup> Meredith 2009: 160.

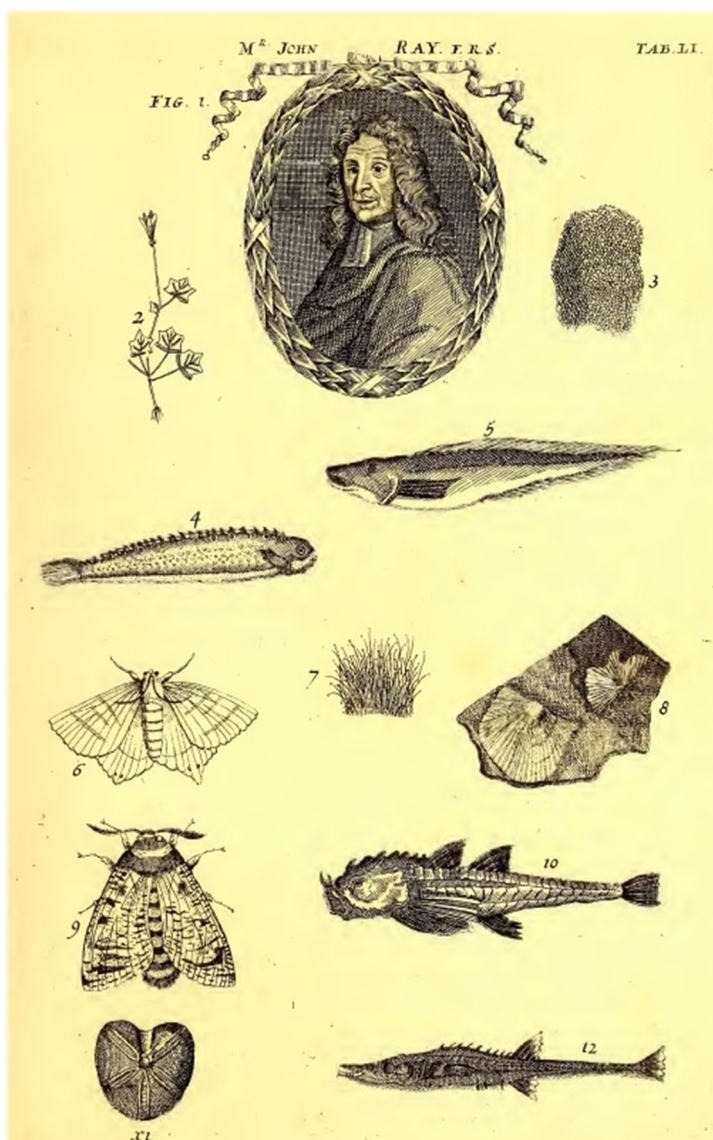
<sup>389</sup> Pettegree 2010.

<sup>390</sup> Petiver 1703b: 96.



the surgeon James Cuninghame (c.1665–1709) whose collaboration with Petiver contributed to his election as a Fellow of the Royal Society.<sup>391</sup>

Petiver was aware that the capital at stake and the intellectual ambition of his collectors offered efficient instruments of recruitment and remuneration. Therefore, he made sure that available rewards were well advertised to new collectors. With *Gazophylacium*, which literally translates as ‘treasure house’, this capital was put on display already in the periodical’s title. In the introductory “Advertisement” to his first decade of *Gazophylacium*, Petiver declared that should he receive any specimens, he “will take care to insert them in my succeeding Decades with a just Acknowledgment” (Figure 2.4).<sup>392</sup> He hoped that by doing so, “the Generous Example of these Curious Persons, will excite and encourage others, who Travel to or Reside in Foreign Parts, to do the like for me.”<sup>393</sup> In many ways, therefore, Petiver was a collector of collectors: for him, individuals of status or those travelling to distant lands were themselves a curiosity, to be collected and displayed to provoke wonder and esteem among his peers. In one of the *Gazophylacium* tables, the idea of collecting acquaintances even ceased to be metaphorical when Petiver displayed a portrait of the recently deceased John Ray, surrounded by natural specimens (Figure 2.5).<sup>394</sup>



**Figure 2.5:** The fifty-first table of Petiver’s *Gazophylacium naturae et artis*, which included a portrait of the recently deceased John Ray surrounded by natural specimens (Empson 1767, vol. 1: n.p.).

<sup>391</sup> Stearns 1952: 268.

<sup>392</sup> Petiver 1702.

<sup>393</sup> Petiver 1699a: 47.

<sup>394</sup> Petiver 1709: table LI.

In addition to producing symbolic value, Petiver probably hoped that his publications would become a source of economic capital too. His decision to move from bland lists of specimens in his *Musei* to the richly illustrated *Gazophylacium* hints at an enterprising move to take advantage of the contemporary visual culture of curiosity and target a wider and a more genteel audience. As the title *Musei* suggests, Petiver's prints were essentially mobile or pocket cabinets of curiosities, which anyone could purchase and gaze at for the right price. The contents and organisation of his tables echoed the assortments of wondrous objects that one might find in early modern cabinets: a flying cat-monkey from the Philippines appeared side by side with an iridescent butterfly from Angola, an "odd shell" from the Ascension Island and an alga "plentifully growing [...] in the River Thames" (Figure 2.3). As argued by Schmidt, this was a visual commercial strategy adopted by authors and printers in order to entice and engage the broadest possible public, rather than an attempt to produce accurate knowledge or faithfully reproduce the world.<sup>395</sup> However, where Schmidt observed "a cheerfully disordered world that would ultimately require ordering", I suggest seeing a reflection of Petiver's networks and collections, in which objects were in constant movement between the open and the cabinet, between display and practice, and between specimen and paper.<sup>396</sup>

Petiver published his periodicals at his own expense. In this way, he retained control over the works and any eventual profits but had to provide initial capital at the risk of incurring financial loss in case the prints did not sell.<sup>397</sup> To raise the funds required, Petiver relied on subscriptions and active recruitment of patrons. In *Gazophylacium*, he did not omit to invite his readers to contribute to his enterprise after the fashion of "several Worthy Persons [who] have Voluntarily been pleased to deposite each a Guinea towards the Charge of these Plates."<sup>398</sup> Petiver made sure that the advantages of joining the ranks of his sponsors were well advertised, promising "many things New and very Rare" in the following issues and a discount to whoever subscribes.<sup>399</sup> Just as his collectors, the most prominent financial benefactors were rewarded with visibility: each of Petiver's tables was "humbly Dedicated" to a current or a potential sponsor, who had contributed – or were thus encouraged to do so (Figure 2.3). With Petiver listing his providers of specimens and funds side by side, the economies of commerce and collecting became intertwined in his periodicals. Rewarding both his collectors and

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<sup>395</sup> Schmidt 2015: esp. chap. 4.

<sup>396</sup> *Ibid.*: 23.

<sup>397</sup> For book production in early modern Europe, see Gaskell 1972; Chartier 1994; Johns 1998. For an early eighteenth-century English case, see Overstreet 2015. For scientific periodical publishing in England around 1700, see Kronick 1976; Moxham 2015; 2016.

<sup>398</sup> Petiver 1702.

<sup>399</sup> *Ibid.*

financial contributors with various forms of capital and visibility was an integral part of the wider economy of collecting as Petiver understood it.

Despite his best efforts, Petiver repeatedly lamented to his correspondents that publication expenses were high, and subscriptions did not come along easily. To Bulkley, Petiver wrote that, due to the price of copperplates, the costs of publishing one decade of his *Gazophylacium* had risen to ten pounds; it was only “after a great Charge & few Contributors as yet towards the Expenses I have at last finisht.”<sup>400</sup> Therefore, it seems that Petiver’s printing enterprise was driven by the generation of symbolic value rather than economic capital. The material and scientific dimensions of his publications also helped Petiver defray some of the costs. As I argue in the following chapter, he used his prints as capital in gift exchange; to control his collectors at a distance by providing patterns to imitate and lists of *desiderata*; and as a referencing tool to organise both his exchanges and his own collection.

By means of his publications, Petiver relied on the mobility afforded by print to exploit different forms of capital and establish the value of his specimens as curiosities. Upon receiving suitable objects for his collection, Petiver used print to disseminate them to wider audiences, thus putting on display the specimens, the names of his contributors and – of course – himself. Krzysztof Pomian has suggested that objects acquired scientific value only once they had been removed from circulation, or once they had shed their economic value.<sup>401</sup> By contrast, the specimens collected by Petiver did not lose their scientific worth despite his use of print to mobilise and market them among a wider curious public. He commonly published more elaborate accounts of the same specimens in *The Philosophical Transactions*, using this platform to refer back to – and thus also advertise – his pocket cabinets. By the same token, learned authorities such as John Ray frequently sought to oblige Petiver to allow them to consult his vast collection when compiling their erudite works.<sup>402</sup> Petiver’s objects thus constantly oscillated between stasis and circulation: between his practice and his networks, between his collection and print, and between learned and commercial. Whilst Pomian’s statements may find their application in the milieu of polite gentlemen, who sought to present themselves as superior to commercial culture, Petiver’s repertoire favoured dissemination, consumerism and public curiosity over erudite indifference and anti-commercialism.

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<sup>400</sup> Letters 150: 46v; 170: 10r. See also Letter 125: 135r.

<sup>401</sup> Pomian 1994.

<sup>402</sup> Letters 117; 118.

## II.4. The gains and losses of turning commercial

The use of print by Petiver to generate capital and fuel his enterprise or, more broadly, his blending of different strategies, learned and commercial, clearly had its advantages. Despite his modest background, he assembled one of the largest arrays of collectors and collections of specimens of his time, which earned him the favour of patrons such as Sloane and Ray. However, the same John Ray who lauded Petiver as “the best skilled in oriental & indeed in all exotick plants of any man I know” also considered him “inferiour [...] both for parts and learning”, refused to draw on *Musei* in *Historia plantarum* (vol. 3, 1704) “for fear of mistakes” and condemned the images in *Gazophylacium* as “not so elegant and polite”.<sup>403</sup> For his more genteel colleagues, the commercial and consumerist attitudes that infiltrated Petiver’s naturalist activities were hardly compatible with the status of an erudite man. These kinds of statements were perhaps also used to reinforce the boundary between practitioners and polite élites, who sought to reinstate their claim of authority over natural knowledge.

As argued, Petiver sought social legitimation by building an image of a well-connected promoter of natural history, whose collection included countless specimens and collectors from all over the world. However, as Delbourgo has argued, for someone of Petiver’s standing, such a public advertisement of associates and donors was “a tactic of deplorable vulgarity” in the eyes of his learned peers.<sup>404</sup> Similarly, the ideal of anti-commercialism was in a serious conflict with Petiver’s reliance on the strategy of ‘humble dedication’, with his advertisements and even with special deals to “Buy 5 of each [prints], to have a 6th Gratis” (Figure 2.2). Petiver’s colloquial tone and insatiable hunger for anything that could be marketed as a curiosity were an easy target in the learned community. For instance, the Amsterdam pharmacist Albertus Seba dismissed his London colleague as “a junkman [whose] publications were founded upon trash.”<sup>405</sup> The satirist William King used Petiver’s projects – more specifically his account of Chinese ear pickers – to mock Sloane, who “hath not so much as neglected an ear-picker or a rusty razor; for he values any thing that comes from The Indies or China.” Seeking to chastise the state of affairs in the Royal Society, King wondered “of what use are the China ear-pickers, in the way of knowledge?”<sup>406</sup> Despite such disdain, Petiver did not lose his undying enthusiasm and continued to hoard specimens from all corners of the world. It was this diligence that endeared Petiver to Sloane in the first place and helped him maintain his patron’s favour even in the face of criticism from the learned public.

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<sup>403</sup> Letters 96: 279; 113; 132: 351r.

<sup>404</sup> Delbourgo 2012a: 18.

<sup>405</sup> Stearns 1952: 285.

<sup>406</sup> Cited in Delbourgo 2012a: 18.

Both Petiver and Sloane were collectors of collectors, who amassed vast quantities of specimens. Both sought to build their public image as men advancing the studies of nature and, in these efforts, used and displayed their connections freely. Neither hesitated to invest money in their enterprise or to try to make profit from their privileged access to natural knowledge: whilst Petiver's printing endeavours have been discussed, Sloane used the funds from his plantations and practice to purchase collections, as well as seeking to market his recipe for milk chocolate. However, the difference in their respective social status meant that while Sloane became and remains one of the most prominent English savants, Petiver was mocked for his attempts to climb the social ladder and other projects which clearly did not conform to the idea of a learned gentleman. To acquire a higher status and later become part of the British Museum, Petiver's collection of specimens provided by humble practitioners first needed to be purchased by Sloane, who reorganised Petiver's 'trash' into systematised knowledge and conferred on it his own status of a learned gentleman.

## **II.5. Surgeons and smugglers, or taking advantage of the East India Company's networks**

To illustrate Petiver's strategies in running his network with specific examples, I now turn to his transactions with Samuel Browne and Edward Bulkley, two East India Company surgeons stationed in Madras. In addition to corresponding with Petiver on their own behalf, these two men played a key role in mediating the connection between Petiver and Kamel. Therefore, the communications between London and Madras are crucial for our understanding of Petiver's communications with Kamel and, moreover, will offer a useful comparative case for the following chapter. The activities of Browne and Bulkley have recently been explored by Anna Winterbottom.<sup>407</sup> Seeking to situate their pursuits in the local context of the Madras outpost, Winterbottom has highlighted the hybrid nature of the knowledge that the pair produced and argued that "their collections were not dictated primarily by the demands of the metropolitan collector [Petiver], but by their immediate networks of trade and politics."<sup>408</sup> To complement this analysis, I will discuss how knowledge travelled between London and Madras, and what underpinned its movements. I will first focus on the infrastructure of the link before turning to the terms and contents of the exchange.

The origins of the correspondence between Petiver and Browne fit neatly into the picture outlined above. They were introduced in 1689 through their mutual acquaintance, the clergyman and collector Richard Sambach.<sup>409</sup> After Petiver provided a gift in the form of a book on English botany,

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<sup>407</sup> Winterbottom 2015; 2016: 112–139.

<sup>408</sup> Winterbottom 2016: 124.

<sup>409</sup> *Ibid.*: 112–113.

the pair engaged in a long and fruitful correspondence which relied upon other, more mobile agents traveling between England and Bengal in the services of the East India Company, and which lasted until Browne's death in 1698.<sup>410</sup> The informal alliance struck between the Company and the Royal Society might suggest that using the Company's vessels and agents to mobilise shipments was relatively straightforward for Petiver, especially since the connection between London and Madras was regularly served by the Company's ships. However, operating these networks and the people moving within them was a complex business. In what follows, I will point to some of the problems that achieving these tasks demanded, and that caused disruptions in communication.

To move consignments around, Petiver relied largely on ship's surgeons and captains, who enjoyed authority and freedom of movement, and who were commonly rewarded for their services both with acknowledgements in his publications and in more material ways.<sup>411</sup> However, as Petiver repeatedly complained, finding reliable couriers was difficult. The Company had its own internal procedures when it came to transporting goods: upon arrival in the warehouse, its ships were searched and any cargo that was not accounted for was liable to taxation or even confiscation. Petiver's shipments were not untouched by these measures, and one such unfortunate episode even contributed to the bitter end of his correspondence with Browne. In 1698, Petiver angrily accused Browne of withholding materials intended for another correspondent and not delivering what he had promised. Feeling that he had been wrongfully accused, Browne decided to break off the connection and referred Petiver to his colleague Bulkley instead.<sup>412</sup> Despite's Browne sorrow over losing "the friendship of the only person in England whose Correspondence I coveted & on whome I could firmly confide," Petiver's breach of the correspondence code of conduct was too severe for the surgeon to continue.<sup>413</sup> The regretful Petiver found out too late that it was "the Company [that] has deprived me of [...] the Collection you designed me" and tried to regain Browne's favour with a series of remorseful letters and gifts.<sup>414</sup> Nevertheless, before these could reach Madras, Browne had already died. Soon after this incident, Petiver received advice on how to circumvent the Company's unwelcome checks from Bulkley, himself an East India Company employee. The surgeon suggested to either inform "the person that takes care of them [the shipments] to open the bundle & let them lye in his chest or cabbins when the ship is searched" or to try and intercept the ship before it reached the warehouse.<sup>415</sup> Since

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<sup>410</sup> The surviving letters between Petiver and Madras mention numerous names of couriers, typically ship's surgeons. See especially BL, Sloane MS 3321.

<sup>411</sup> Especially Stearns 1952; Murphy 2013.

<sup>412</sup> Letters 56: 290r–209v; 61.

<sup>413</sup> Letter 56: 290v.

<sup>414</sup> Letter 70: 220v. See also Letter 71: esp. 244r.

<sup>415</sup> Letter 102: 85r.

subsequent consignments do not seem to have been confiscated, Petiver and his couriers possibly adopted this method with success.

As Winterbottom has highlighted, the actions of the Company's employees – many of whom were involved as collectors and middlemen in Petiver's transactions – were shaped by their own interests and opportunities to reap rewards. In seeking to earn their favour, Petiver had to compete against other enterprising sponsors, both home and overseas. For instance, in the early 1700s, Bulkley acquired the patronage of Charles Dubois, the Company's Treasurer, who was sent some collections from Madras and asked to direct several consignments to Petiver. The pharmacist was clearly displeased when another patron appeared on the scene, repeatedly lamenting that Dubois showed little willingness to share the promised specimens. When trying to convince Bulkley that he was worthier of these consignments than his rival, Petiver appealed to his printing ventures. He claimed that, unlike Dubois, he had been sharing Bulkley's work with the learned world and therefore had done more justice to his correspondent's name.<sup>416</sup> Despite these efforts, Petiver's arguments failed to convince Bulkley, who increasingly submitted his later shipments to Dubois rather than Petiver. The surgeon's disappointment with the lack of Petiver's returns, which I will discuss below, was probably a factor in his decision. In Petiver's communications with Browne and Bulkley, official shipping rules, codes of correspondence and competition for patronage thus emerge as some of the factors that shaped movements of knowledge and put a cap on its mobility.

## **II.6. "I hope you will make a mercantil commodity of it": Trading plants between Madras and London<sup>417</sup>**

The final section of this chapter will examine how the terms and the contents of Petiver's communications with Browne and Bulkley were shaped by the language and personae mobilised within the network by means of letters and specimens. Through the lens of these things-in-motion, I will explore how – and to what ends – the agents negotiated between learned and commercial concerns and modes of exchange. Whilst their transactions were governed largely by reciprocal gift exchange, I demonstrate that there was no place for gentlemanly indifference towards money.

When Petiver begged his correspondents for specimens, he usually claimed not to discriminate between useful or curious on the one hand and worthless and ordinary on the other. In his introductory letter to Bulkley, Petiver asserted that "I should be very glad to see whatever Tree, Bush or Herb your parts afford, not omitting the most common Rush, Grass, Moss, Fern or Braken,

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<sup>416</sup> Especially Letters 138; 150: 46v.

<sup>417</sup> Letter 173.

Thorn, Thistle or vilest wood you can find.”<sup>418</sup> Whilst reflective of his hunger for specimens, this unselective approach is not entirely true of Petiver’s enterprise. The most frequent word in the *Gazophylacium* was “curious” rather than “the most common”. Moreover, it was above all a concern with useful knowledge that linked the Royal Society, the East India Company and medical practice, the three main entities that were brought together within Petiver’s networks. These considerations were reflected in the communications between Petiver and his correspondents.

When recruiting collaborators, at least those from the ranks of trading companies, Petiver commonly relied on the explicit language of discovery and utility, and pointed to the opportunities to serve the nation, the learned world or the humankind in general. For instance, Petiver advised one of his surgeon collectors to provide “such Plants, Roots, Grasses, Minerals etc. as relate to dy[e]ing or any Medicinal Use”.<sup>419</sup> Similarly, in his introductory letter to Bulkley, Petiver encouraged the surgeon to become his informant and thus engage “in assisting the publick, with what your parts afford”.<sup>420</sup> Browne, too, was repeatedly incited to serve English interests, among others by prospecting for valuable spices to “prevent the total monopolising of them to one nation.” Petiver explained that “knew you well the Trees from whence we have our Cinnamon, Cloves and Nuttmegg (which are spices wholly ingressed by the Dutch), we might find them neare your own factories, and so consequently need not be behold on to them for so staple commodities.”<sup>421</sup> These practical considerations, hinting at usefulness, profit and patriotism, went down well with Browne and Bulkley: two surgeons in the services of an English trading company. Petiver also sought to take advantage of professional solidarity and common interests, presenting himself to both Browne and Bulkley above all as a fellow medical practitioner: he included samples of and information on various medicinal plants, and enquired about local *materia medica*.<sup>422</sup> Within the context provided, Petiver’s choice of language and persona was therefore an active strategy in the bid to establish the link securely and focus on concerns shared with prospective correspondents.

Petiver framed the prospective relationship as learned communications governed by reciprocal gift exchange: he enclosed gifts in expectation of returned favour, swore that he would “gratefully acknowledge” any assistance in his prints and promised to act in “whatever I can be serviseable to you”.<sup>423</sup> For their assistance, Browne and Bulkley desired items that were typically tied to their medical practice, their naturalist or enterprising projects and other practical concerns. Bulkley,

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<sup>418</sup> Letter 48: 260v. See also Petiver’s advertisement in the *Musei* (Petiver 1699a: 47).

<sup>419</sup> Letter 176: 276r. Cited in Murphy 2013: 666.

<sup>420</sup> Letter 48: 260r.

<sup>421</sup> Letter 52: 100r–100v.

<sup>422</sup> Letters 38: 9r; 48: 260r; 51.

<sup>423</sup> Letter 48: 261r.



for instance, asked Petiver for “some garden and medicinall seeds which you thinke most likely to growe with us,” “Mr Rayes 3d volume of Plants” or “the waye of refining camphir and sugars, we have brown sugars here very cheap, I want to refine them & make them into loafe” as “allsoe the best & easiest method of making vinegar”.<sup>424</sup> The information communicated between Petiver and the surgeons usually revolved around the same concerns with useful knowledge. The contents of their letters reveal that from more than 50 plants discussed in the 69 letters consulted, nearly three quarters possessed medicinal virtues and the majority of the rest were otherwise useful (dyes, odoriferous resins) or curious (‘the everlasting apple of Guinea’). For about half of the medicinal plants, the surgeons explicitly disclosed their experiences from their medical practice. For example, Bulkley raised his doubts over the renowned root of ipecacuanha, recommended Petiver to use the lamb of Tartary in external rather than internal bleeding and even enclosed a recipe for an emetic balsam from Borneo.<sup>425</sup> The three also exchanged samples that they could test themselves, with Bulkley promising to Petiver that “I shall send you some [nux vomica] to make experiments with.”<sup>426</sup>

Rather than just passively submitting knowledge and samples to the metropolis, the surgeons sought their own fortune and tried to take advantage of Petiver in pursuit of their own projects. The terms of exchange were negotiable and Bulkley especially saw the link with Petiver as an opportunity to use the pharmacist as his middleman in introducing new drugs in the medical market in London. As Patrick Wallis has shown, the volume of drugs from both East and West Indies imported to England exploded over the course of the seventeenth century.<sup>427</sup> The vision of commercial profit increasingly permeated Bulkley’s letters, as the surgeon sought to better his financial situation, which he often complained about. For instance, in 1704 he recommended to Petiver “the gumm or glewe of the Punsá Coy or fruit of the Panitsjaka maram. [...] if the ingenious will find out any use for it, I will prepare more of it, the natives here [...] heat the fruit against the fire & rub paynes & swellings of the feet with it with good effect.” Having provided an account of its uses and virtues, Bulkley added that “I should be glad if from what you receive you may make some profitable discovery, that may someway compensate the charge & trouble I am yearly at.”<sup>428</sup> Petiver was not the only connection whose help

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<sup>424</sup> Letter 102: 85r; 115: 110v.

<sup>425</sup> Letters 81: 28r, 28v; 82. The root of the south American plant ipecacuanha (*Carapichea ipecacuanha*) was used as a powerful emetic. Lamb of Tartary was a legendary Asian plant believed to grow live sheep as its fruit. This myth was probably inspired by the cotton plant (*Gossypium* spp.) or by woolly rhizomes of certain species of ferns, for example *Cibotium barometz* (Lee 1887).

<sup>426</sup> Letter 81: 28r.

<sup>427</sup> For the early modern English drug trade, see especially Wallis 2002; 2011. This does not mean that there were no tensions between foreign and domestic cures. Andrew Wear has shown that a diversity of factors – nationalistic, religious, medical and economic – motivated opposition to foreign drugs in England (Wear 1999; 2000). For early modern debates around the value of the local and the foreign, see also Cooper 2007.

<sup>428</sup> Letter 124: 133r–133v. This is probably the Malabar ebony, *Diospyros malabarica* (*Hortus Malabaricus* 1682, vol. 3, p. 45; tab. 41; Cooke 1876: 42).

Bulkley sought to market new drugs in England. In one of his letters, he mentioned to have previously dispatched 100 lb of “Bungally alias Casmuner” and another 100 lb of “Radix Traumaticus Indicus” to his associates in London – hardly quantities that one would send for personal use or experimentation.<sup>429</sup>

To Bulkley’s frustration, Petiver struggled in meeting these expectations. The surgeon was frequently disappointed by Petiver’s “Gyant like promises but Dwarfish performances” which “are mostly in the land of Promise,” and repeatedly threatened to terminate the link, since “an unprofitable Correspondence, is a very indifferent matter to me & thinke it time to leave it of.”<sup>430</sup> In particular, Bulkley was dismayed by Petiver’s inability to make better use of the drugs that he had recommended. After more than a decade of providing his suggestions, Bulkley “wonder[ed] that out of the large acquirements from these parts, you have not so far reduced any thing into use, as to make a constant demand of the same & render it a mercantile commodity & consequently, give some addition to the booke of rates & cause a newe title in the Druggists shop.”<sup>431</sup> When Petiver failed to address this complaint in his reply, the surgeon reiterated his discontent: “I have not heard of any demand of late for Casmuner, which I wonder at, nor any thing else that has been sent you, so that all remittances are only a matter of speculation & turn to no profitable account.”<sup>432</sup> It seems that Bulkley was hoping for more than just learned speculations and visibility in Petiver’s publications.

The medical records of Petiver reveal that he did test some of Bulkley’s recommendations in his practice but failed to introduce them more widely and find a stable market for them. For example, in 1704 Petiver prescribed the aforementioned casmuner to three of his patients.<sup>433</sup> However, upon a cursory inspection of Petiver’s medical records, I have failed to find any mentions of other drugs recommended by Bulkley or Browne.<sup>434</sup> In Petiver’s prescriptions more generally, substances from East Indies were chiefly confined to those that had already been known to the ancients (especially spices, but also rhubarb, zedoary, curcuma and galangal). References to Asian drugs new to the Europeans are much rarer, and largely restricted to China root and occasional mentions of tea and ‘gutta gamba’, or gamboge.<sup>435</sup> This contrasts rather sharply with Petiver’s extensive reliance on new

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<sup>429</sup> Letter 79: 18v. It was not possible to trace down the identity of either of the plants; both Petiver and Bulkley thought casmuner to be similar to zedoary (Letter 81: 29v). See also Winterbottom 2019: 331.

<sup>430</sup> Letters 104; 124: 133r.

<sup>431</sup> Letter 164.

<sup>432</sup> Letter 173.

<sup>433</sup> BL, Sloane MS 3225: 36r, 39v.

<sup>434</sup> Although Petiver’s complete medical records do not survive, the sources consulted (1689–1710) cover much of the period of the correspondence with Bulkley (1697–1714).

<sup>435</sup> For ‘gutta gamba’, see BL, Sloane MSs 3223: 46v, 56v; 3324: 35r, 49r; 3225: 9r, 75r. For tea, see BL, Sloane MS 3225: 61v, 62r, 63v, 66v. For China root, see BL, Sloane MSs 2364: 23r, 35r, 39r, 39v, 40r, 54r–55r, 59r; 3223: 37r, 55v. For China root in early modern England, see Winterbottom 2014; Maydom 2018.

drugs from the Americas, which feature in great numbers and varieties.<sup>436</sup> Whilst American substances were widely consumed in London at the turn of the eighteenth century, as Katrina Maydom has shown, Petiver's practice seems to indicate that new drugs from the East Indies were harder to market or popularise in England.<sup>437</sup> The costs and logistics associated with their shipping may perhaps have played a role. Christopher Parsons has argued that due to smoother transportation, New France was favoured over China as source of ginseng in eighteenth-century France.<sup>438</sup> However, Timothy Walker has cautioned that prices of remedies were not necessarily determined by the complexity of travel, as drugs from India were cheaper on average than those imported from Brazil in eighteenth-century Portugal.<sup>439</sup> The imbalance between new American and Asian remedies discussed here would deserve further attention.

When Bulkley complained about the lack of returns, he initially framed his protests in terms of reciprocity, but his grievances became increasingly infiltrated by the language of money. In 1702, Bulkley grumbled to Petiver that for his "100 ounces of Gruff Pearle" he "did desire and expect some small return in a few particular medecines, but nothing sent or promised."<sup>440</sup> Having observed little improvement, two years later Bulkley decided to turn to metrics that enumerated his disappointment in a more tangible way. The surgeon lamented that "it has cost me not less than ten pounds a year beside my own trouble in sending what you usually receive", later reiterating his dismay that "it is a greater charge & trouble to make collections than you suppose, there are very few that understand it & they will have extraordinary pay to goe 40 or 50 miles & be a moneth absent from their families & business."<sup>441</sup> Petiver's efforts to amend the situation were found insufficient by Bulkley, who repeatedly threatened to terminate the link, and over time turned his allegiance closer to Dubois, as discussed. In 1709, the increasingly desperate Petiver allowed money to enter the transactions directly, offering to cover Bulkley's costs for employing collectors. It is unclear whether Bulkley took up this offer, but in 1713 the surgeon regretfully informed Petiver that "my old Mallabar that collected for me & Mr Brown for many years [...] is since dead" and that "I am indeavoring to find out another fit person."<sup>442</sup> Bulkley's own faltering health thwarted these plans, and a year later, Petiver lost his correspondent for good.

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<sup>436</sup> BL, Sloane MSs 3219–3226.

<sup>437</sup> Maydom 2018.

<sup>438</sup> Parsons 2016: 59–60.

<sup>439</sup> T.D. Walker 2013: 415.

<sup>440</sup> Letter 104.

<sup>441</sup> Letters 102: 84v; 124: 133v.

<sup>442</sup> Letter 166.

Although the transactions between Petiver and Bulkley relied predominantly on reciprocal gift exchange, the language of money increasingly infiltrated their negotiations. Especially for an artisan or practitioner, engaging in correspondence was a costly business that was based merely on trust, so the social and material benefits had to be high. Bulkley's letters clearly indicate that the specimens and drugs dispatched possessed a potential rather than a clearly defined value in terms of money. This does not mean, however, that the correspondents were not keeping tabs. Margócsy has argued that even if early modern collectors did not specify the price of specimens, or the returns expected, they inherently perceived curiosities and other objects to possess an intrinsic financial value.<sup>443</sup> The materials and services exchanged thus carried implicit price tags. These could gain material form through paper, for instance as labels in shops and entries in auctioning catalogues, but also in letters. Whilst correspondents were normally keeping tabs in private, Bulkley shows that the sums of money invested could become explicit in case of perceived imbalance, at the expense of losing gentlemanly status. To voice his discontent, he resorted to disclose the amount he had invested into procuring the materials exchanged – expenses which Petiver later offered to cover. For two practitioners, nothing could express their concerns better than the language of money.

One aspect of the transactions that carried a more explicit price tag was the cost of transportation. Just as any other monetary concerns, these collateral expenses had no place in gentlemanly correspondence. Nonetheless, there was one instance in which these charges were explicitly brought up by Petiver: in 1706, when he used the metrics of money to complain that one of the letters, sent through Ireland, cost him nearly 2 shillings upon delivery.<sup>444</sup> It is unclear why Bulkley opted to use this route or how much the missives would cost normally. With a hint of irony, Bulkley apologised to Petiver for “put[ting] you to so great charge as 1s [shilling] 8d [pence] when, God Knowes all our negotiation is not worth so much.”<sup>445</sup> This isolated incident underscores that letters, such as other things-in-motion, possessed an intrinsic value, as well as highlighting that what was being paid for were the costs of carriage and delivery rather than the shipment contents *per se*. Improvements in the early modern infrastructure and technologies of transportation, from the postal system to inland and naval routes, made it faster, easier and cheaper to communicate on a greater scale than ever before.<sup>446</sup> Despite that, the money required for such operations remained an issue for artisans like Petiver, who explicitly denounced the heavy cost with which a careless correspondent would burden his wallet. It is important to note here that Petiver was writing to a fellow practitioner,

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<sup>443</sup> Margócsy 2013.

<sup>444</sup> Letter 144.

<sup>445</sup> Letter 148.

<sup>446</sup> For the postal system in early modern England, see Coase 1939; Schobesberger et al. 2016.

rather than a gentleman, and perhaps also trying to apprise the cavilling Bulkley that his own actions were not without issues either.

To conclude, when trying to enlist Browne and Bulkley to his services, Petiver presented himself in an erudite manner and framed the communications as governed by reciprocal gift exchange. However, given the language, identities and concerns selected, this mode of exchange increasingly broke down as commercial considerations with commodification and profit crept in. Bulkley's example in particular indicates that whether or not to preserve gentlemanly conventions was an active decision by the correspondents in the interest of maximising the gains from the transactions. Money found its way into the exchange also as an argument in case of strifes and perceived unfairness. Again, Bulkley especially demonstrates that correspondents were constantly balancing the books in their heads, and could voice their discontent in case of inequality or malpractice. After all, keeping accounts was commonplace for medical practitioners and employees of a trading company. Within the scope of the link between London and Madras, the professional practice of the trio therefore blended with their learned projects and their correspondence with commerce.

## **II.7. Conclusion**

Using the lens of Petiver's activities, this chapter has explored some of the concerns that motivated early modern exchange of natural knowledge and specimens: from social legitimation and accretion of social credit to commodification and accumulation of various forms of capital. The enterprises of Petiver and Bulkley especially demonstrate that participation in natural historical projects was a costly and complex enterprise. Therefore, the social and financial benefits to offset these investments had to be high. I have argued that key to building and maintaining his vast network of correspondents was the use of print, which enabled Petiver to mobilise his collection of specimens and collectors, and thus generate capital to fuel his projects. His public display of connections reveals that Petiver built a network that relied predominantly on humble practitioners and laypersons who – like himself – sought social legitimation through collecting and claimed membership of the commonwealth of learning. The examples of Browne and Bulkley demonstrate that, when recruiting and remunerating his collaborators, Petiver sought to frame the exchange in such a way as to maximise his prospective gains, encoding symbolic meanings into the objects mobilised through the choice of language or identity.

Petiver's understanding of collecting was one in which commercial and learned scales of value overlapped: his natural historical projects were intricately intertwined with his medical practice, his natural specimens moved between the status of curiosity and drug, his publications infused the

culture of curiosity with a consumerist tone, and his correspondence shows how erudite codes could become infiltrated by the language of money and commodification. Petiver's activities illustrate how the cultures of learning and commerce in post-Civil War England became entangled and co-dependent. Just as Petiver's apothecary trade fuelled his natural historical research, so too his involvement in the scholarly community raised his status as a practitioner and enabled access to new knowledge and products. The two worlds found common ground in the mastery of distance and useful knowledge, skills at which Petiver excelled. His abilities found relevance in both spheres and permitted him to traverse them. Despite mockery from more genteel colleagues, who sought to uphold a more gentlemanly profile, Petiver's projects brought him a successful professional career, high-profile patrons, an immense collection of specimens and Fellowship in the Royal Society.

## Chapter III

### The Networks of Georg Joseph Kamel: Knowledge in Transit Between Manila and London

In this chapter, my focus moves from James Petiver to Georg Joseph Kamel and to the vast gulf that a London apothecary and a Bohemian Jesuit stationed in Manila had to surmount in order to communicate knowledge. I will compare how the two practitioners built and managed their respective networks, negotiated between different modes of exchange, and used their projects to accrue knowledge, capital and social credit. In contrast to Petiver, whose enterprise blended different strategies across the spectrum of learned and commercial, Kamel kept his erudite, professional and money-making networks strictly separate. On the one hand, Kamel used his Jesuit connections to engage in commerce and generate financial profit. His assignment as the pharmacist of the Jesuit college in Manila enabled him to emerge as a successful trader in curious *naturalia* and as a broker of rare goods between Asia and America. On the other hand, Kamel's communications with Petiver provide an exemplary case of erudite correspondence. In contrast to his correspondence with Bulkley, Petiver never allowed concerns with useful knowledge and commodification to infiltrate his relationship with Kamel, which remained governed by gentlemanly codes of conduct. Although both Kamel and Petiver conducted commerce within their own networks, in the link between London and Manila the two became a learned Father and an erudite gentleman, respectively.

I will open with Kamel's commercial exploits and Jesuit connections before moving to the link between London and Manila. By treating the letters and specimens mobilised as claims about social standing and extensions of self into the network, I will explain how a Jesuit stationed in a Spanish colony became an English informant and how two artisans set up a polite, learned correspondence. Through the lens of Kamel's and Petiver's negotiations between different modes of exchange, I will explore how resources generated in the trade of drugs and curiosities could feed into erudite self-fashioning. I will also consider how these systems of exchange operated in the highly politicised context of communications between the Philippines and England. Previous research has highlighted that early modern knowledge transactions were bound by political and economic interests, due to the secrecy of knowledge and the competition between states.<sup>447</sup> As I demonstrate, however, useful knowledge and specimens could travel even across the frontiers of rival empires. Altogether, Kamel's correspondence with Petiver presents a study in the globalisation of the Republic of Letters. Their communications demonstrate how agents from different cultures and with different goals managed to build functional relationships, which facilitated the movement of knowledge on a worldwide scale.

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<sup>447</sup> For example, Raj 2005; Schiebinger 2005; H.J. Cook 2007; Winterbottom 2009.

Furthermore, this chapter will consider the role of distance and geography in the production of knowledge and capital and in establishing the status of objects as curiosities. Kamel's location in Manila was an important feature of all his projects. The access that Kamel had to Philippine fauna and flora, largely unknown to early modern European scholarship, represented his main source of capital within Petiver's enterprise. I will demonstrate that distance itself was mobilised within networks of correspondence and print alongside material items. More specifically, I will show how individual agents sought to encode geographical information into objects that were deployed in a bid to generate symbolic value and broker hierarchies of knowledge. In this respect, I seek to expand on the recent work of Benjamin Schmidt, who has explored the role of geography and international engagements in the formation of conceptions of exoticism and globalism.<sup>448</sup> Whilst Schmidt's considerations revolve largely around printing workshops, images and objects, I focus on the agency of individual actors.

The mission in Manila provided Kamel with privileged access to both regional and trans-Pacific networks of trade in rare and valuable goods. Manila was perhaps the only early modern port that brought together Spanish America, Imperial China and Mughal India alongside a diversity of bustling harbours across Indo-Pacific worlds.<sup>449</sup> Kamel took advantage of his location to broker curious and luxurious objects between these spaces and thus generate material capital to fuel both his apothecary practice and his learned projects. Most of these networks of commerce pre-dated the European arrival into the region, and were operated by merchants born in Asia. The ability to tap into this existing system was essential both to Kamel's money-making ventures and for connecting Manila with London. In order to exchange shipments and circumvent European trading bans, Kamel and Petiver's middlemen in Madras, Samuel Browne and Edward Bulkley, sought the assistance of predominantly local, non-European traders. Rather than through European colonial and commercial networks, movements of information and objects were therefore mediated here by merchants of Asian origin, who acted as knowledge brokers between rival European powers.

In addition to Browne and Bulkley, these links connected Kamel with Willem ten Rhijne, a Dutch physician stationed in Batavia (present-day Jakarta). The communications among these four medical practitioners reveal a busy exchange of medical knowledge, recipes and drug samples, which remained largely regionally confined and involved little or no participation from Europe. These movements point to the complex trajectories of knowledge and substances before they ever reached Europe. By focusing on the regional networks within which Kamel was embedded, I seek to highlight the diversity of local agencies that have been glossed over by the studies built around European

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<sup>448</sup> Schmidt 2013; 2015.

<sup>449</sup> For conceptualisation of Indo-Pacific worlds, see Kroupa et al. 2018.



centres and markets. Thus, I use Kamel and his activities to underscore the importance of cross-cultural mobility of people and information in the creation and deployment of knowledge. Despite the focus on movement, I will also consider some of the elements that obstructed communications of knowledge, including wars and political disputes, rivalries between patrons, and geographical and environmental factors.

Lastly, the networks of Kamel provide insights into the practices of natural history and medicine in early modern colonial settings. The works of scholars such as Emma Spary, Dániel Margócsy, Elizabeth Yale and Valentina Pugliano have drawn attention to the importance of learned publications and of scribal tools in organising, classifying and communicating knowledge.<sup>450</sup> In the words of James Secord, these paper instruments can be considered “documents of practice” and used to bridge “specific passages of technical work and their wider settings”.<sup>451</sup> Through the lens of Kamel’s projects, I will draw on the scribal technologies used to bring together different means of knowledge production, including correspondence, collecting and print, and demonstrate how paper tools were used to transcend the distance between the open and the collection, between the specimen and the reader and between Manila and London.

### **III.1. Kamel within Jesuit networks: *Pecunia non olet ad maiorem Dei gloriam***

The evidence for documenting Kamel’s activities within Jesuit networks is not extensive and remains limited almost entirely to his communications with New Spain. Despite what seems to have been a frequent exchange of letters and objects, only two missives from this link survive, each addressed to a Jesuit lay brother from Bohemia: one to Šimon Boruhradský, an *oeconomus* and engineer based in México, who rose into such prominence with the local authorities for his skills that he was entrusted with the construction of the local Viceroy Palace and flood control systems;<sup>452</sup> and the other to Johannes Steinhöffer, a lay brother pharmacist such as Kamel, whose twenty years of work throughout New Spain culminated in the publication of *Florilegio medicinal* (‘Medical Anthology’, 1712).<sup>453</sup> From these letters, Kamel emerges as a trader in valuable medicinal and other goods, who used his Jesuit connections above all to engage in commercial pursuits and thus generate material capital for his medical practice, learned projects and the local Jesuit mission more broadly. I will demonstrate that these activities were enabled, on the one hand, by Kamel’s location in Manila, a

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<sup>450</sup> Spary 2000; Margócsy 2010; Yale 2011; Pugliano 2012b.

<sup>451</sup> J.A. Secord 2004: 667.

<sup>452</sup> Also known under his Hispanicised alias Simón de Castro. An *oeconomus* was essentially the housekeeper or the manager of a Jesuit college.

<sup>453</sup> Better known under his Hispanicised alias Juan de Esteyneffer.

major trading hub, which provided the Jesuit with access to networks of trade spanning the Indo-Pacific. On the other hand, as a lay brother pharmacist, Kamel possessed relative freedom to engage in commerce in medical and curious goods, as well as the expertise in natural and medical knowledge to navigate their markets.

Kamel met Boruhradský in 1687 during his stay in México on the way to the Philippines, and the two remained in touch thereafter. Boruhradský repeatedly applied to join Kamel and the rest of the Bohemian contingent in the Philippines, and his request was finally granted in 1697, but he died while crossing the Pacific. The sole surviving letter from their correspondence, penned by Kamel, is dated June 1691. It is written in a combination of Latin, Spanish and German, a not unusual measure taken against the watchful eyes of the Jesuit censorship.<sup>454</sup> The section in German – the language native both to Kamel and Boruhradský, but one which Hispanophone censors would struggle to understand – contains sensitive news about the Philippine Province. Kamel discreetly discussed disputes inside the Manila college and shared gossip about Antonino Tuccio, whom the local authorities had appointed *procurador* in Mexico only to “get him out of Manila and out of their sight.”<sup>455</sup> The section in German also reveals Kamel’s attempts to send “rare simples” to Prague, for which he was hoping to rely on the help of Tuccio.<sup>456</sup> In the end, the newly appointed *procurador* did not assume his role and remained in Manila, thwarting Kamel’s plans. It seems that for a consignment of such high value, Kamel was hesitating to use standard communication channels, since his package would be unlikely to reach the addressees intact, as well as probably being subject to taxation. Although Kamel repeatedly strove to draw on Jesuit networks to relay objects from the Philippines to his homeland, there is no evidence to suggest he ever succeeded, even with powerful allies like Boruhradský stationed halfway. Perhaps ironically for a member of the Society, it seems that none of Kamel’s surviving works or specimens reached Europe through Jesuit corporate channels.<sup>457</sup> This outcome can probably be attributed to Kamel’s lowly status within the Order on the one hand, and to the complicated nature of the journey across the two oceans on the other.

Despite this lack of success, his Jesuit connections enabled Kamel to engage in speculation and trade and thus accrue considerable material capital. Kamel’s letter to Boruhradský openly discussed their involvement in a private commercial enterprise, revealing that Boruhradský had begged his compatriot to purchase some “Damasco” or Chinese damask for him. Alongside porcelain, Chinese silk and cotton were the main commodities exchanged for silver brought from the Americas,

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<sup>454</sup> For Jesuit censorship, see for example Hellyer 1996; Feingold 2002b.

<sup>455</sup> Letter 1: 57r, “...damit sie ihn von Manila, undt auß den Augen [...] werffen.”

<sup>456</sup> *Ibid.*, “...raren simplicibus...”

<sup>457</sup> In Chapter IV, I discuss the possibility that some of Kamel’s materials found their way into France through French Jesuits stationed in China, but this would have happened long after Kamel’s death.

and thus fuelled the Manila Galleon commerce.<sup>458</sup> In New Spain, luxurious Chinese fabrics were in great demand and commanded high prices, driving Spanish goods off the American markets and ruining countless merchants in Iberia. As soon as the Manila trade was established in the late sixteenth century, the Spanish Crown therefore repeatedly strove to regulate the exchange to stop the drain on American silver on the one hand and the flood of Chinese textiles across the Pacific on the other. Such measures were in line with the Crown's mercantilist policies. However, as Dennis Flynn and Arturo Giráldez have shown, the authorities both in the Philippines and New Spain "cooperated in systematic deception of the home country" and the Pacific trade remained robust despite the Crown's interventions.<sup>459</sup> As late as in 1703, the authorities in México opened a new market for Asian goods, named 'Parián' after the Chinese ghetto of Manila.<sup>460</sup>

The involvement of the clergy, both secular and regular, in the Galleon trade was a subject of continuous debate.<sup>461</sup> On the one hand, trading for personal profit was explicitly prohibited by ecclesiastical law.<sup>462</sup> On the other, the regulations conceded the possibility of engaging in commerce for sustenance and necessities.<sup>463</sup> Lacking the estates and infrastructure of the American colonies, the Philippine archipelago offered few opportunities to generate money to support the missions, which men of the cloth used as an argument in support of their right to participate in the Pacific trade. It seems that the Jesuits were especially active in this respect. During their feud with the archbishop of Manila, Felipe Pardo, in the 1680s, the commercial involvements of the Order were specifically targeted and publicly derided by their enemies. For instance, one poster encouraged anyone wishing to "buy crocks, pots, and dishes" to apply to join the Jesuits.<sup>464</sup> Since mercantile activities remained shady and controversial, the clergy often opted to rely on intermediaries. The true scale of their involvement in the trade thus remains unclear.

In contrast to his priestly brethren, the status of a lay brother pharmacist enabled Kamel to engage in commercial activities with greater liberty. Jesuit pharmacists were deeply embedded within

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<sup>458</sup> For the Manila Galleon and the economic dimensions of the trade, see Schurz 1959; Flynn and Giráldez 1994; 1996a; 1996b; García-Abásolo 1996; Bjork 1998; Giráldez and Flynn 2002.

<sup>459</sup> Flynn and Giráldez 1996b: 59.

<sup>460</sup> Zaide 1979: 490.

<sup>461</sup> Especially Cushner 1967.

<sup>462</sup> This was with the exception of goods that the clergy had made or grown themselves, but this exemption could not be routinely applied to commerce in textiles.

<sup>463</sup> *The Constitutions of the Society of Jesus* provide a good example for this ambiguous approach: they prescribed that "[w]e must carefully avoid even the appearance of engaging in commerce or of seeking profit," but at the same time "permit[ted] any commercial activity that is necessary or useful for the apostolate" (*Constitutions*, §[215]). The Jesuit missions in Japan, for example, were funded predominantly through silk trade. To the displeasure of the directorate in Rome, there was no better alternative and so this situation lasted as long as the Japanese mission (Cushner 1967).

<sup>464</sup> Costa 1961: 494.

networks of commerce, and their daily practice entailed material and financial transactions. This is probably one of the reasons why Boruhradský approached Kamel rather than any of the other Bohemian missionaries stationed in the Philippines. Although satisfying Boruhradský's plea was no routine task, especially since Chinese damask had little to do with the apothecary practice and its trade was subject to strict Crown regulations, Kamel did not hesitate to assist his friend. However, despite swearing that he had "taken all possible measures", Kamel admitted that "currently I do not find myself with the money to pay for it, nor do I know of a method to procure it."<sup>465</sup>

To make up for his lack of success, Kamel enclosed as a gift a few snake-stones, a prized variety of bezoars used against snake bites and other poisons. Boruhradský did not engage in pharmacy or medicine, so these stones were not being sent to facilitate practice, but rather represented valuable capital to be used in further transactions. Kamel had good reasons for this choice of gift: as a Jesuit pharmacist in Manila, he was ideally placed to tap into the lucrative market in bezoars, the renowned alexipharmic typically found in the digestive tract of ruminants and other animals.<sup>466</sup> Jesuits in Asia, especially those stationed in Portuguese possessions, were extensively involved in the bezoar trade. The great demand for these all-powerful stones in both Europe and Asia even led the Society to start producing an artificial, cheaper version of bezoars, known as *pedras de Goa*, or Goa stones. The recipe, devised in Goa in the mid-seventeenth century by the lay brother pharmacist Gaspar António, was a closely guarded trade secret, and the stones remained a popular commodity long into the eighteenth century.<sup>467</sup> In addition to the Jesuits, other religious Orders such as the Franciscans took part in the bezoar trade too.<sup>468</sup> Through these engagements, the clergy generated the funds so vital for running their missions and other projects.

Kamel clearly had a good notion of the Asian bezoar market, which was dominated by the Portuguese, as his notes suggest. He informed his readers that "one ounce is sold for six pesos in Macao; three and a half pesos in Goa; seven or eight pesos in Mylapore. [...] Fragments [are sold] for two pesos per ounce."<sup>469</sup> As we learn from his writings, Kamel also corresponded with a certain "Georgius Ongaetti, a pharmacist in Goa", who – judging by his Italian name and his location – was likely a Jesuit as well.<sup>470</sup> Kamel readily took advantage of his direct access to the main bezoar trading

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<sup>465</sup> Letter 1: 56v, "...he hecho todas las diligencias posibles, pero como en presente no me hallè con plata, para pagarlo, ni traza para poderlo effectuar..."

<sup>466</sup> For bezoars, see Santos Alves 2003; Duffin 2010; 2013; Do Sameiro Barroso 2013.

<sup>467</sup> The recipes are reproduced in Amaro 1988. For medical secrets, see especially Leong and Rankin 2011.

<sup>468</sup> Santos Alves 2003: 121.

<sup>469</sup> Kamel 1706c: 2202.35, "Horum [lapides] 3i Macai venditur sex imperialibus, Goae tribus imperialibus et dimidio. Meliapori 7 et 8 imperialibus [...]. Fragmentorum vero uncia duobus imperialibus."

<sup>470</sup> Kamel 1704f: 32, "...cum Georgio Ongaetti Pharmacopaeio Goano..." In addition to German pharmacists, those trained in Italy enjoyed a particularly high reputation and were widely sought after by the administrators of Jesuit missions. See for example López 1690: 133v.

hubs: in his treatise on quadrupeds, he boasted of having “bought 144 pieces weighing 61 ounces in total for the price of 14 reales per ounce; all of them intact, 12 of them larger than or as large as a chicken’s egg.”<sup>471</sup> In addition, Kamel later “purchased 33 pieces [weighing] 23 ounces, [for the price of] two pesos per ounce.”<sup>472</sup> These two investments therefore cost Kamel some 150 pesos: the value of the entire yearly subsidy for medicines provided by the Crown to the Philippine Jesuit Province or half the annual wages of the physician and the *mayordomo* in the Manila royal hospital.<sup>473</sup>

With no more than 40 Jesuits in the Manila college and circa 100 in the whole Philippine Province at any time, it seems unlikely that Kamel would purchase nearly 200 bezoars solely for the internal needs of the Society. From a commercial standpoint, however, bezoars were an exceptionally good choice. They were popular both among the Europeans and throughout Asia, both due to their medicinal virtues and as items of status and display. In Europe, bezoars were regarded as on a par with precious gems: their value exceeded their weight in gold many times, and they were often stored in golden containers or incorporated into items of personal jewellery.<sup>474</sup> In Chinese and Japanese traditional medicine, bezoars are used to this day and still number among the most expensive items on the market. Therefore, the bezoars that Kamel purchased presented a source of both material and symbolic capital: they could be sold locally or used as currency further afield in regional or even trans-Pacific transactions, as well as bringing prestige to those who owned or knew how to procure them.

The correspondence between Kamel and Steinhöffer demonstrates that bezoars were merely one of many valuable commodities that the former brokered from Manila. It was most likely Boruhradský who introduced Steinhöffer to Kamel. As the manager of the college in México, Boruhradský was well-informed about incoming missionaries, and treated his compatriots with great affection.<sup>475</sup> The two Bohemians, both trained in pharmacy in Brno, probably seemed a natural match. Although Kamel hinted at a frequent exchange with Steinhöffer in his letters to Petiver, only one document survives from this exchange: a list of items sent by Kamel to Steinhöffer in May 1697, rubber-stamped by Spanish officials (Figure 3.1).<sup>476</sup> The consignment included rare goods from all over Asia: “a horn of abada” or rhinoceros, “ten ounces of an oriental bezoar stone from Persia”, “four ounces of crab’s stone from Hainan”, “a box of China root”, “three pounds of chia Mandarin” and “four ounces of ambergris from Japan”. In addition to these items with application in medicine, Kamel

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<sup>471</sup> Kamel 1706c: 2201.35, “Emeram no. 144 pendentis omnes simul sexaginta et unam unciam, unciam 14 Regalibus argenteis Hispanis, erant autem omnes integri, et ex his 12 ovo gallinaceo aut pares, aut maiores.” One peso was worth eight reales.

<sup>472</sup> *Ibid.*: 2202.35, “...emeram uncias 23, unciam duobus imperialibus, erant autem no. 33.”

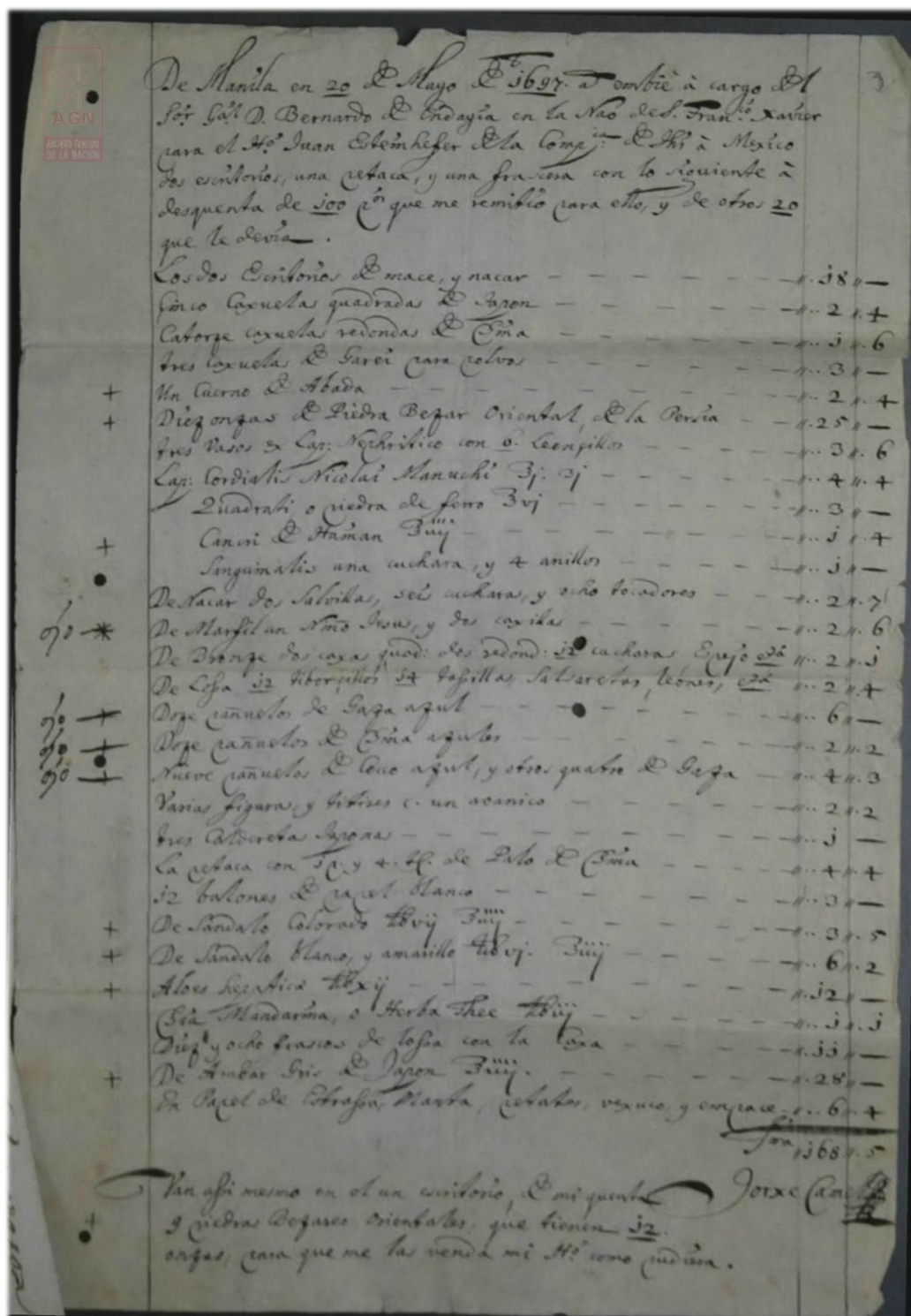
<sup>473</sup> A. Serrano 1706; Maldonado 1742: 25.

<sup>474</sup> Duffin 2013.

<sup>475</sup> Letter 1: 56v.

<sup>476</sup> Letters 4; 24: 151r.

sent Steinhöffer luxury and consumer goods, including “an ivory figure of Infant Jesus”, “two trays, six spoons and eight chests inlaid with nacre” and “twelve rolls of white paper”.<sup>477</sup> Each of the items on



De Manila en 20 de Mayo de 1697. a cargo de  
 Sr. D. Bernardo de Endaya en la Nao del Sr. D. Xavier  
 para el Sr. Juan Steinhöffer de la Compañía de Ibi a Mexico  
 dos cristóles, una petaca, y una granera con lo siguiente a  
 desquenta de 100 que me remitió para esto, y de otros 20  
 que le debía.

Los dos Cristóles de mace, y nacar	1. 38 0
Seis Cuchetas cuadradas de Japon	1. 2 1 4
Catorce Cuchetas redondas de China	1. 3 1 6
Tres Cuchetas de Sarcil para colver	1. 3 1
Un Cuerno de Abada	1. 2 1 4
Diez onzas de Piedra Bezar Oriental de la Persia	1. 25 0
Tres Vasos de Lapis Lazuli con 6. Leongilos	1. 3 1 6
Lapis Lazuli Nicolai Manuchi 3j. 2j	1. 4 1 4
Quadrado o piedra de fono 3vj	1. 3 1
Cancril de Hainan 3vij	1. 5 1 4
Lingüistis una cuchara, y 4 anillos	1. 3 1
Destacar dos Salvillas, seis cucharas, y ocho tocadores	1. 2 1 7
De Marfil un Niño Jesus, y dos corita	1. 2 1 6
De Bronce dos cajas cuadradas redondas 12 cucharas 1/2 1/2 1/2	1. 2 1 5
De Lapa 12 libretillos de papillas, labarotas, lebreros, etc.	1. 2 1 4
Doce panuclos de Saca azul	1. 6 1
Doce panuclos de China azules	1. 2 1 2
Nueve panuclos de Lapa azul, y otros quatro de Saca	1. 4 1 3
Varias figuras, y libretos con un ocanico	1. 2 1 2
Tres labarotas de Japon	1. 3 1
La petaca con 5. y 4. de Palo de China	1. 4 1 4
12 balones de papel blanco	1. 3 1
De Sando de colorado 1/2 1/2 1/2 3vij	1. 3 1 5
De Sando blanco, y amarillo 1/2 1/2 1/2 3vij	1. 6 1 2
Alas de Sando 1/2 1/2 1/2 3vij	1. 3 1 2
Chia Mandarina, o Herba Thee 1/2 1/2 1/2 3vij	1. 3 1 3
Diez y ocho frascos de Lapa con la Lapa	1. 33 1
De Ambar Gris de Japon 3vij	1. 28 1
De Papel de Sando, Marta, labarotas, vexuico, y engrasa	1. 6 1 4

En 1697. 5

Van así mismo en el un cristólo, de mi quinta  
 3 piedras Bezaras Orientales, que tienen 12  
 onzas, para que me las venda mi Sr. como indica.

Jorge Camacho

**Figure 3.1:** A priced list of items sent by Kamel to Steinhöffer in 1697 (Letter 4: 3r).  
 Reproduced with permission of Archivo General de la Nación, México.

<sup>477</sup> Letter 4: 3r, “...un Cuerno de Abada; [...] Diez onzas de Piedra Bezar Oriental, de la Persia [...]; [Lapis] Cancril de Hainan ξiii; [...] De Nacar dos Salvillas, seis cucharas, y ocho tocadores; [...] De Marfil un Niño Jesus; [...] La petaca [...] de Palo de China; [...] 12 balones de papel blanco; [...] Chia Mandarina, o Herba Thee libras iii; [...] De Ambar Gris de Japon ξiii...” Crab’s eyes are calcareous gastroliths formed in crayfish, used as ingredients in medicine.

the list had a clearly defined monetary value, with the overall price rising to 168 pesos and 5 reales. As the record states, Kamel purchased these items with the 100 pesos that Steinhöffer had sent him, plus another 20 which Kamel owed him. The remaining 28 pesos and 5 reales probably constituted a debt that Steinhöffer could repay with a return consignment with valuable goods from the Americas. Finally, Kamel also threw in “three oriental bezoar stones, weighing twelve ounces, on my tab, which my Brother [Steinhöffer] can sell for me as he wishes.”<sup>478</sup>

Kamel’s shipment to Steinhöffer therefore hints at a series of financial transactions, in which the pair exchanged sums of money to be used to acquire desired or valuable items, all of which carried an explicit price tag. The merchandise involved could be used by the recipient as capital in further projects: either directly as ingredients in the apothecary trade, as objects of status, or as currency in barter and monetary transactions. Evidence from the American context suggests that Jesuit pharmacists commonly exchanged medical products and knowledge with their colleagues from other colleges, thus building a network that connected Jesuit apothecaries across the continent. For example, Luis Martín has documented that José Rojo, who served as the pharmacist at the Colegio de San Pablo in Lima between 1757 and 1767, maintained professional contacts with his peers in Quito, Santiago, Cuzco and México.<sup>479</sup> The exchange between Kamel and Steinhöffer indicates that these Jesuit trading channels extended even further across the Pacific, as the two pharmacists strove to unlock the potential of the trans-Pacific trade. It seems likely that Kamel’s network of brokers in New Spain was wider than just Boruhradský and Steinhöffer. In the postscript of his letter to the former, Kamel extended his greetings to two pharmacists, whom he addressed as “Señores” rather than “Hermanos”, indicating that they were not fellow Jesuits.<sup>480</sup> Kamel possibly met these ‘Señores’ during his journey through New Spain, and perhaps relied on their help, alongside that of Boruhradský and Steinhöffer, when trading in medicinal substances and other goods across the Pacific.

Furthermore, the list of articles sent to Steinhöffer points to Kamel’s ability to mobilise Indo-Pacific networks to acquire rare and valuable objects. In accessing regional markets and obtaining the items they could offer, Kamel probably also drew on the networks of the Society of Jesus. As discussed, he had a correspondent in Goa, a fellow pharmacist who was also most likely a Jesuit. Moreover, there is indirect evidence that Kamel was in touch with his brethren in China. The Vatican Library holds a volume consisting of *Jesuitica* brought to Europe in the early eighteenth century from China, which was later bound in Europe by an unknown collector, and includes eleven folios bearing seventeen

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<sup>478</sup> *Ibid.*, “Van assi mesmo en el un escritorio de mi quenta 3 piedras Bezares orientales, que tienen 12 onzas, para que me las venda mi Hermano como pudiera.”

<sup>479</sup> Martín 1968: 111–116.

<sup>480</sup> Letter 1: 57v.

original drawings in Kamel's hand.<sup>481</sup> This collection indicates that Kamel's materials found their way to China, possibly through Jesuit channels. Manila had close commercial ties with the trading hubs in the Pearl River delta, especially with Macau, which housed a large Jesuit college that served as the main base for the Chinese mission. Manila itself was also occasionally used as a layover for smaller consignments of Jesuit missionaries destined for China.<sup>482</sup> It seems unlikely that Kamel would miss the opportunity to take advantage of these connections to obtain objects and information from the Middle Empire. However, whilst the Vatican volume suggests that Kamel was indeed involved in knowledge transactions with his brethren in China, there are as yet no letters or clear indications in primary sources that would provide firm evidence.

In any case, his location in Manila and his expertise in natural and medical knowledge enabled Kamel to emerge as a successful trader in medicinal and other valuable commodities. Situated at the intersection of commercial links that spanned the Indo-Pacific, Kamel gained access to rare objects from China, Japan, India and Persia, as well as to trans-Pacific markets. Key to capitalising on these opportunities was Kamel's ability to tap into the existing regional trade networks in Manila, as well as to draw on Jesuit connections both in New Spain and in Asian ports, including – but probably not limited to – Goa. Although Kamel struggled to take advantage of the Jesuit networks to ship consignments home to Europe, his Jesuit contacts helped him, among other things, to broker luxurious Asian goods across the Pacific and acquire items from the Americas. Altogether, these commercial engagements enabled Kamel to generate considerable capital, which was probably used to subsidise the local Jesuit missionary effort on the one hand and which he could invest both into his humble workshop and into his own projects on the other.

### **III.2. Learned Fathers and erudite gentlemen, or how to set up a learned correspondence**

Kamel's conduct in the correspondence link with London is in stark contrast to the commercial ventures just discussed. From his transactions with Petiver, rather than an enterprising pharmacist and a trader in valuable goods, Kamel emerges as a learned scholar disinterested in financial transactions. In this section, I will consider some of the reasons behind this transformation. The origins of Kamel's correspondence with London fit neatly with the account of Petiver's strategies presented in the previous chapter. The key figure connecting Kamel and Petiver was Samuel Browne, an East India Company surgeon permanently stationed in Madras. Just as with his other correspondents, Petiver continually spurred Browne on to recruit new collaborators and expand the reach of the

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<sup>481</sup> BAV, Barberini oriental 151. I thank Oana Baboi for pointing me to this source.

<sup>482</sup> ARSI Philippinas 2 II; 3.



network. One of the suggested target groups were “divers Learned Fathers [from] Spanish and Portuguese settlements”, “from whence we have had nothing as yet.”<sup>483</sup> These initiatives ultimately brought Petiver into correspondence with Kamel, with Browne acting as a conduit between the two. Since the Madras surgeon died in 1698, the link between London and Manila was threatened before any firmer foundations had become established. Fortunately, Browne’s colleague Edward Bulkley assumed the vacant place in the network.

Although the earliest letters do not survive, a later epistle from Kamel to John Ray sheds light on how the link between London and Manila was set up: “[A few years ago], I received a letter from Mr Samuel Browne and a catalogue sent by Mr James Petiver: in it, since Mr Samuel Browne learned in Mylapore from merchants of Manila that I had been assembling illustrations of the plants of Luzon, he inquired whether I would share them with him.”<sup>484</sup> These words point to the importance of commercial links and hearsay in establishing new scholarly connections, as well as pointing again to Petiver’s strategy of enclosing a gift to provoke a polite obligation to reply and thus lure correspondents into exchange. The catalogue concerned was most likely Petiver’s *Musei*: the pharmacist repeatedly demanded of his associates that his prints be “dispersed abroad” and shared with “any Person which is Curious in these Things & will while you are there make collections for me.”<sup>485</sup> Petiver thus used his periodicals effectively as business cards, to introduce himself and his enterprise to new acquaintances.

Just as in the case of his correspondence with Browne and Bulkley, by enclosing a gift Petiver sought to frame the prospective relationship as governed by reciprocal gift exchange. Kamel grasped the meaning of this invitation, and probably the nature of Petiver’s enterprise too, from the catalogue included in the shipment. However, the Jesuit could hardly understand any of the letters addressed to him from London. Petiver, lacking adequate proficiency in any other languages, including Latin, had written in his mother tongue. Kamel complained in his reply that only “with difficulty” had he found “anyone to translate your most recent letters for me” and that he “did not understand the previous ones at all, except for some words similar to the German idiom.”<sup>486</sup> He chose to answer in Latin, the *lingua franca* of European scholarship, in which he was well-versed from his Jesuit education. Since

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<sup>483</sup> Letters 165: 130v; 170: 10r.

<sup>484</sup> Letter 11: 292r, “Recepi [annis elapsis] epistolam a domino Samuel Brawone et una catalogum a domino Jacobo Petiverio expeditum: in illa, cum a Manilensibus Meliapor negotiantibus dominus Samuel Brawone nescivisset me coegisse plantarum Luzonis iconas, petiit, ut ei illas communicarem.” Mylapore, or São Tomé de Meliapor, was a Portuguese port adjacent to Madras. For the commercial and socio-political relations between Madras and Mylapore, see Winius 1994; Halikowski Smith 2016.

<sup>485</sup> Letter 170: 10r; Murphy 2013: 638.

<sup>486</sup> Letter 19: 132v, “...Latine scribere [...], quoniam qui mihi tuas posteriores interpretaretur aegre inveni, priores vero necdum intelligo, nisi aliqua verba idiomati Germano affinia.”

access to Latin education was closely associated with the literate male élite, its use was a marker of polite culture and, therefore, helped to underline the nature of the exchange as a scholarly one and the status of Kamel as a ‘learned Father’.<sup>487</sup> The Jesuits were especially widely known for their scholarly production and curious communications, which were regularly translated and published in *The Philosophical Transactions*.<sup>488</sup>

Given his affiliation with the Society of Jesus, his mastery of Latin, his location in Manila and his expertise in natural and medical knowledge, Kamel was a perfect match for Petiver’s notion of the “divers Learned Fathers [from] Spanish and Portuguese settlements” that he was seeking. Indeed, when publishing or acknowledging Kamel’s work, Petiver commonly presented the Jesuit as “Reverend Father Camelli”, rather than a fellow pharmacist (Figure 3.2). Although Kamel was never ordained, and remained a lay brother throughout his life, he never felt the need to correct his correspondent, especially since the attribution conferred higher credit and facilitated his participation in the commonwealth of learning. Kamel’s membership in the *societas eruditorum* and his association with the English were facilitated by the status of a learned Father on the one hand and by the outwardly cosmopolitan character of the Society of Jesus on the other. This affiliation effectively effaced Kamel’s nationality and enabled him to be regarded as a true man of the world. Together with the use of Latin, which conveyed a similarly cosmopolitan and neutral image, the lack of a perceived nationality universalised Kamel’s identity and aided in creating a bridge across political and cultural differences. The uncertainty around Kamel’s origins has persisted through the eighteenth century down to the

*Here follows some ANIMALS, &c. Observed in the  
Philippine Isles, by that Reverend and Learned Father  
GEORGE JOSEPH CAMEL, from whom I  
lately received them.*

I **C** *Alo-Simius volans Cameli. GAZOPHYL. noſt NATU- S. B. 6 1*  
RAE Tab. 9. Fig. 8. *GAZ NAT,*  
Calago & Cagvang Byſaiani. Gigua Pampangi & Tagali. *Tab. 9. Fig 8*  
This ſtrange and wonderful *Creature* is about the bigneſs of a  
Cat, its body like an *Ape*, but ſlenderer; from *Head to Tail* are  
3 ſpans, between the *Arms* extended 2, and the *Thighs* 1 and a  
half. It’s 3 ſpans from the fore to the hinder *Toes*, and as ma-  
ny between the 2 fore *Legs*, but between the hinder ones it’s but  
2 ſpans. Its *Belly* an hand breadth, and the *Skin* from it a ſpan.

**Figure 3.2:** The title page of a treatise on animals penned “by that Reverend and Learned Father George Joseph Camel”, published in *The Philosophical Transactions* (Kamel 1702c: 1065).

<sup>487</sup> For the status of Latin and vernacular languages in scholarly correspondence, see for example Egmond 2018: 85–87.

<sup>488</sup> For Jesuit works published in the early *Philosophical Transactions*, see Reilly 1958.

present day: the Swedish naturalist Carl Linnaeus (1707–1778) considered Kamel an Englishman, while James Delbourgo and Anna Winterbottom have labelled him as Spanish in their recent books.<sup>489</sup> With his identity constructed as a learned Father, Kamel managed to become a member of the *societas eruditorum* and an informant to the Royal Society from his humble workshop in the distant Manila. In this capacity, Kamel also conferred status back on Petiver, in whose eyes the recruitment of a learned Father meant that he was punching well above his social standing.

In his replies to Kamel, Petiver visibly struggled with his command of Latin. However, he showed good awareness of the register appropriate for correspondence with a learned Father, and larded his letters with elaborate civilities, possibly copied over from dictionaries and phrase books. For example, Petiver typically addressed Kamel “Most Reverend Sir” and closed his letters in the following manner: “To conclude, I beg you again and again to recognise me as worthy of your trust, when I say that I am and will be, most dignified Sir, with all observance your most devout and humble servant.”<sup>490</sup> Just as the initial inclusion of a gift, the use of these virtuous phrases branded the letters with the seal of the *societas eruditorum*.<sup>491</sup> When compared with Petiver’s introductory epistle to Bulkley, the respective status of Latin and the pair’s vernacular English becomes apparent: Petiver addressed the surgeon simply as a “Worthy Sir” and concluded by being “Your most affectionate tho unknown ffriend”.<sup>492</sup> This decision to adoption a language of virtue thus sharply contrasts with Petiver’s reliance on language of discovery and utility in the exchanges with Browne and Bulkley discussed in the previous chapter. Language itself was deployed as a tool in networks of knowledge exchange, and its interpretations by correspondents shaped the terms of exchange. Through the use of language of virtue and the emphasis on his Fellowship in the Royal Society rather than his apothecary profession, Petiver presented himself as a man of erudition.

### III.3. The lure of distant lands, or why geography matters

As observed by Wu Huiyi, “natural history is doubtless one of the domains of science and knowledge, in which *new* is most closely synonymous with *distant*.”<sup>493</sup> This statement is particularly fitting in Kamel’s case, since it was precisely his access to new knowledge from distant lands which

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<sup>489</sup> Linnaeus 1737a: 92; Winterbottom 2016: 133; Delbourgo 2017: 224.

<sup>490</sup> Letter 22: 140r–140v, “Reverende admodum domine”, “Ad extremum rogo te iterum iterumque omnem fidem mihi adhibere digneris, cum dico, quod sum eroque futurus, reverendissime domine, tibi summa observantia addictissimus servus humillimus.”

<sup>491</sup> For the use of honorific language in gift exchange, see for example Spary 2000: 64.

<sup>492</sup> Letter 48: 261r.

<sup>493</sup> Wu 2015: 183, “L’histoire naturelle est sans doute un des domaines des sciences et des savoirs dans lequel le *nouveau* est le plus synonyme de *lointain*.” The emphasis is in the original.

enabled him to become a scholar, an informant of the Royal Society and a contributor to learned publications. Despite the issues that long-distance communication and transport presented, distance was one of the defining features of the relationship between Kamel and Petiver. Through the lens of their exchanges, I will consider how the pair used geography to generate value and negotiate hierarchies of knowledge.

In late seventeenth-century England, the Philippines represented a curious distant land, the natural riches of which were largely unknown. This lack of knowledge inspired tales of bounty, rooted in the fabled richness of the surrounding Spice Islands and of the Kingdoms of China and Japan, as well as in the vision of Spanish possessions as abounding in gold and rare metals. The Spanish outpost was a prominent regional trading hub, in which silver from the Americas was exchanged for luxurious Asian goods, especially for silk and porcelain. However, English ships – alongside those of Spain's other European rivals – were officially denied access to this port, which allowed free trade only to merchants of Asian origin.<sup>494</sup> As William Dampier speculated in *A New Voyage Round the World* (1697), "[t]his seems to arise from a [Spanish] jealousy or fear of discovering the riches of these islands, for most if not all the Philippine Islands are rich in gold."<sup>495</sup> This idea of the Philippines as bountiful lands was underpinned by the export from Manila. According to Seraphim Quiason, in the late seventeenth century the goods brought from Manila to ports in India commonly included "chests of silver and uncoined gold" and "exquisitely crafted filigree vessels and gold plates from Chinese artisans".<sup>496</sup>

In the English colonial discourse, the Philippines thus emerged as an idealised Edenic location. In 1650, Edward Williams expressed his hope that rare spices will soon "perfume Virginia with as aromattick redolency as the Philippine Gardens", as the English colony "will open a most compendious passage to the discovery of those more opulent Kingdomes of China, [...] the Phillipines, Summatra, and all those beauteous and opulent Provinces of the East Indies."<sup>497</sup> For Petiver and his audience, Kamel provided unique access to these curious lands. With little other information on Philippine nature available, Kamel's accounts could boast exclusive access, otherwise unavailable even to the learned audience of the Royal Society. In the minds of his readers, Kamel became the Philippines and the Philippines became Kamel. This fusion of identities, together with the distance and the perceived inaccessibility of the archipelago, was the main source of Kamel's value within Petiver's networks.

The rarity of Kamel's specimens is reflected in the frequency with which they appeared in Petiver's periodicals, or among published selections of the most curious objects that the pharmacist

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<sup>494</sup> Quiason 1966: 41.

<sup>495</sup> Dampier 1697: chap. XI.

<sup>496</sup> Quiason 1966: 78.

<sup>497</sup> Williams 1650: 8, 45. I thank Katrina Maydom for pointing me to this source.

had received. The first ten decades of *Gazophylacium* contain over 250 items sent by Kamel, representing around 20% of all specimens depicted; this is a considerably higher proportion than for any of Petiver's other collectors. When promoting his publications, Petiver used Kamel as one of the main crowd-pullers. In the advertisement for the fifth decade of *Gazophylacium*, Kamel's specimens represented one third of all the "Curious things" highlighted to tempt readers to subscribe; moreover, from the first five 'Curious things' listed, three had come from Kamel.<sup>498</sup> In the same issue, Kamel also featured among Petiver's chief benefactors (Figure 3.3):

[t]he Reverend and Learned Father Kamel [...] hath again very lately been pleased to favour me with many Additions, new Observations and Delineations [...]. Several of these I have already Figured in my Gazophylacick Tables, and shall continue them, if this Curious Age will give encouragement; which is humbly hoped, since there are in them many Discoveries in all Parts of Nature, which hitherto was never known to Europe.

In this way, Petiver reiterated his plea for sponsorship by highlighting the novelty and the exclusive nature of Kamel's designs that he was bringing to the English public. In Kamel's case, Petiver's plea to send "the most common" object was not even an overstatement, since any specimen from the Philippines would be exceptionally rare.

Both Kamel and Petiver therefore deployed distance to their own advantage within the hierarchies of knowledge, via either correspondence or print. In this way, the pair could use geography

5. The Reverend and Learned Father Kamel alias Camel, besides his two Curious Treatises of the Philippine Herbs and Trees, formerly sent (which are now Printed in the 3d Volume of that late accurate Botanist, Mr John Ray, his Excellent History of Plants) hath again very lately been pleased to favour me with many Additions, new Observations and Delineations, both to his Herbs and Trees, as also a 3d Book de Plantis Philippensibus, part of which I have already inserted in the Phil. Transact. No 293. Where you will find such of them and the Herbs of which he sent me the Designs, ( the Trees you shall see elsewhere ) Several of these I have already Figured in my Gazophylacick Tables, and shall continue them, if this Curious Age will give encouragement, which is humbly hoped, since there are in them many Discoveries in all parts of Nature, which hitherto was never known to Europe. The same hath also sent me a Treatise of Shells, new discoveries in Insects, with many other Curiosities.

**Figure 3.3:** Petiver's acknowledgement of Kamel's contributions at the end of the fourth decade of *Gazophylacium naturae et artis* (Petiver 1704b: n.p.).

<sup>498</sup> Petiver 1704b.

to construct the status of things-in-motion as objects of value. The act of mobilisation within Petiver's networks and publishing enterprise effectively turned Kamel, alongside his objects and knowledge, into a curiosity and the Philippines into a commodity. Rather than as geographical distance or mileage, distance has to be understood here in terms of transport connections, travel time and cultural difference. The example of how the Philippines were constructed in the English colonial discourse illustrates that the distance of a place is always historically constructed.<sup>499</sup> Whilst the Philippines were not physically inaccessible such as, for instance, the Arctic region, in the minds of English readers the islands may as well have been equally out of reach. Kamel's curious communications and the way in which Petiver presented them – from flying cat-monkeys to gigantesque helmeted birds, from strange plants to centaur-like monsters – only reinforced the idealised image of faraway curious lands.

As argued, Kamel's main source of value within Petiver's networks lay in his location in Manila. To mine this capital, the pair had to collapse the distance separating them and bridge Manila with London. This task required mastering the knowledge of the capricious ship routes and schedules across the world's seas. As discussed, Manila was deeply embedded within regional networks of trade which pre-dated European arrival. The islands of southeast Asia traditionally had strong commercial relations with the eastern coast of India, where Madras – and Browne and Bulkley – were located.<sup>500</sup> These routes were dominated by local merchants of Asian origin. Their services and allegiances were for hire, and many of them found employment or patronage from European states and trading companies. Previous research has shown how crucial their activities and abilities were for the success and often the bare survival of European early colonial outposts.<sup>501</sup>

Thanks to their neutral status, Asian merchants could circumvent European trading embargoes, and their ships were commonly allowed free trade in most ports controlled by the Europeans. It was with the help of these traders that the English East India Company managed to gain access to the lucrative Manila market, which was otherwise inaccessible to Spain's European rivals. As Thomas Bowrey recorded in his late seventeenth-century report of the Bay of Bengal:

[G]reat Stores are transported and Vended into most places in India, Persia, Arabia, China, and the South Seas, more expecially to Moneela, one of the Molucca Isles belonging to the Kinge of Spaine, but are Sent thither in the

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<sup>499</sup> For historical and literary construction of space, see Lefebvre 1991; Caquard and Cartwright 2014.

<sup>500</sup> Chaudhuri 1978: 198; Subrahmanyam 1988.

<sup>501</sup> For example, Chaudhuri 1978: esp. 191–213; Subrahmanyam 1988; Winus 1994; 2001; Bertrand 2011; Watson Andaya and Andaya 2015; Winterbottom 2016.

name and Under the Colours of The Portugals borne and bred in India, noe others beinge admitted a free trade thither, and Especially the English.<sup>502</sup>

The work of Quiaison has documented in detail the surreptitious trade that developed between the English and the Philippines, as well as the strategies that the Spanish and the English employed to circumvent official trade policies. To enter the Manila market, the English commonly relied on the assistance of the Indo-Portuguese, Armenians and other merchants of Asian origin, or dispatched their ships under foreign names or command.<sup>503</sup> The authorities and colonists in Manila welcomed the illicit traffic in the face of royal decrees, especially since it “gave them an opportunity of enriching themselves and of adding to the comforts and luxuries of living.”<sup>504</sup> On the English side, this trade’s main hubs were Madras and the adjacent Portuguese port of Mylapore, where Browne first learned about Kamel.

The sole surviving letter between Kamel and Browne, sent to Madras in January 1699 and written in Spanish, demonstrates that their communications relied on these Asian and Portuguese merchants. In the letter, Kamel mentioned a consignment sent through the Portuguese in Macao and also a courier called “Gody Ignatio, the Armenian”.<sup>505</sup> The word ‘Gody’ comes probably from corruption of the honorific title *khoja*, which in the Armenian context designated a prominent, independent merchant in charge of a trading house.<sup>506</sup> Quiaison’s records list captains “Ignatius Marcus” and “Coja Ignatius Noquedah” (who may well be one and the same person), who each undertook two trade ventures to Manila in the 1700s in the services of the East India Company, always on the same vessel, *St John de Canterbury*. Quiaison also mentions an Armenian merchant named “John de Mark Noquedah”, who could have been related or identical to the two traders listed above. This trader undertook two journeys between Madras and Manila in the last years of the 1690s – thus at the time when Kamel dispatched his letter.<sup>507</sup> In this way, merchants of Asian origin acted as knowledge brokers between rival European powers, including the English and the Spanish. Just as in the case of Kamel’s commercial ventures, the access of the Europeans to useful, curious or valuable knowledge and objects depended upon their ability to tap into existing regional networks of trade and gain the favour of the merchants and seamen who travelled within them.

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<sup>502</sup> Bowrey 1905: 5.

<sup>503</sup> For the role of the Indo-Portuguese in the south and southeast Asian trade, see especially Winus 1994; 2001. For that of the Armenians, see for example Quiaison 1966; Sarkissian 1987; Baladouni and Makepeace 1998; Bhattacharya 2008.

<sup>504</sup> Haring 1918: 115.

<sup>505</sup> Letter 13: 295r–295v. The original Spanish version is followed by a translation in Hans Sloane’s hand.

<sup>506</sup> Baladouni and Makepeace 1998: xxxiv.

<sup>507</sup> Quiaison 1966: 44, 68.

In addition to knowledge of trade routes and negotiations of safe passage with traders, it is important to consider the role of the seasonality of winds and currents, which governed shipping schedules and determined patterns of settlements and stopovers. The exchange between Kamel and the Madras surgeons closely followed the East Asian monsoon. The ships travelling between East Asia and India commonly relied on monsoon winds blowing southwest in the winter and in the opposite direction in the summer. In line with these currents, Kamel typically dispatched his letters to London at the turn of October and November, whilst the three surviving epistles he received from Madras were all dated in early summer. As Bulkley informed Petiver, ships to Manila did indeed “goe [...] commonly in the beginning of July”.<sup>508</sup> The exchange between London and Madras also followed the seasonal patterns of the Indian Ocean monsoon currents. Petiver usually shipped his consignments in the winter, most often in January. This was when East India Company ships commonly left for India, catching the winds that took them northeast around the Horn of Africa, to arrive in the Indian peninsula by the summer. Browne and Bulkley, by contrast, usually sent their shipments in the winter, when the winds were blowing in the opposite direction. These schedules dictated that packages from or to Kamel typically had to spend several months of layover in Madras. Even under ideal circumstances, it took at least fifteen months to deliver a package from one end of the link to the other.<sup>509</sup> The actors involved remained painfully aware of this fact. As Kamel grieved in his 1702 letter to Petiver, “[s]ince the last [letter] dated to December 1699 in London, [...] I have not received another one; I am not even surprised that the remaining ones probably have not reached me yet, partly due to the distance, partly due to political issues.”<sup>510</sup> Environmental and topographical features, therefore, must be taken account of in early modern communications of knowledge.

#### **III.4. The politics and politeness of learned correspondence**

In this section, I will discuss the nature of the knowledge and objects submitted by Kamel to Petiver in order to reveal how the pair understood the terms of their correspondence and preserved its learned character. I will use the kinds of specimens that Kamel sent to London to illustrate the tensions between learned and commercial, or curious and useful, as well as underscore the erudite nature of the letters and specimens exchanged. Despite this adherence to gentlemanly codes of conduct, I will point to the subtle underlying concerns with commodification that can be traced in the

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<sup>508</sup> Letter 115: 110r

<sup>509</sup> See Appendix 1.

<sup>510</sup> Letter 23: 135r, “Ab ultimis Decembri anni 1699 Londino datis, [...] non obtinui alius, nec mirum, partim etenim ob locorum distantiam, partim ob regnorum disturbia, [...] reliquas ad me necdum pervenisse probabile.”



transactions. Lastly, the commotions between Kamel and Petiver also provide modest insights into the relationship between texts, images, specimens in the production and communication of knowledge.

As indicated, the correspondence between Kamel and Petiver strictly followed the polite code of reciprocal gift exchange: in return for his descriptions, images and specimens of Philippine nature, Kamel received from Petiver a wide assortment of gifts, largely learned books. Repeatedly, the pair openly hinted at the code of reciprocity, such as when Kamel thanked Petiver for his consignment and “the clear signs of your affection to me”. Kamel replied that

as a token of *reciprocal* gratitude, I am now sending you a booklet containing twenty Luzonian butterflies [...], as also nine pearls; an insect resembling a walking leaf; a little on the locust Mantis and on the Peruvian locust Yantayanta; four specimens of extraordinary flies; four specimens of ‘grass turtles’ with their metamorphoses; two moths; caterpillars of the butterflies no. 5, 6 and 15 and the descriptions of the remaining [twenty butterflies].<sup>511</sup>

Early on in the correspondence, Kamel raised the possibility of finances entering the exchange, mentioning that “I would most gladly cover the price” for the learned books that he was ordering from Petiver.<sup>512</sup> However, unlike in his communications with Bulkley, Petiver apparently decided to preserve the gentlemanly code that embraced indifference to money: there are no indications of fees or financial transactions in the letters or in Petiver’s lists. Unlike most of his major correspondents, including Browne and Bulkley, Petiver never included Kamel’s name in his medical records, where he listed all his patients and prescriptions; or, more generally, all his pharmaceutical and financial transactions. Whereas Petiver understood the exchanges with the East India Company surgeons as part of his professional practice, which explains the prevalent concerns with commodification, the correspondence with Kamel bore a special status that sets it apart from Petiver’s commercial enterprise. Similarly, unlike in his conversations with Browne, Bulkley and others, Petiver never enquired with Kamel after a specific specimen, never mind a profitable one. In fact, when seeking to obtain useful Philippine specimens of interest, he relied on his middlemen in Madras. To Browne, for

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<sup>511</sup> Letter 19: 132v, “Signa certa propensi tui erga me animi, qua propter in reciprocam gratitudinis tesseram pro nunc libellum mitto, continentem 20 Luzonis insectas papiliones [...], perlas item novem, insectum folium ambulans putatum, pauca de locusta Mante, et locusta Peruviana Yantayanta, muscarum non ordinariarum specimina 4, testudinum herbacearum specimina 4, una cum transformationibus, binas phalaenas, papilionis 5, 6, et 15 soboles erucas, et transformationes, et reliquorum descriptions.” The emphasis is mine. ‘Grass turtles’ are a group of insects that includes largely small beetles.

<sup>512</sup> Letter 21: 134v “...praetium lubentissime rependam.”

instance, he wrote “[y]ou tell me the Contrayerva he [Kamel] speaks of grows with you, I should be glad to have samples of it.”<sup>513</sup>

The tensions over useful knowledge and profit, underpinned by learned codes of exchange, were reflected in the kinds of specimens that Kamel would readily share with Petiver. Whilst eager to gratify his correspondent with curious items that had no apparent medical or other use, such as insects and shells, Kamel seemed more reserved when it came to plants, especially useful ones. In his letters, Kamel mentioned sending several boxes of insects and shells, very few of which sadly survive to this day.<sup>514</sup> Many of the insect specimens represented different stages of metamorphosis, by means of which Kamel openly sought to contribute to the learned debate about spontaneous generation.<sup>515</sup> Alongside the specimens, Kamel often included their images, which he regarded as a backup in case the fragile gifts did not survive the journey undamaged: “I have also added a few natural [i.e. specimens of] butterflies as also their images, so that the ones drawn in pencil or brush [i.e. in colour] survive in case those [natural] ones were to perish during the long journey.”<sup>516</sup> In this case, therefore, specimens were clearly considered superior to descriptions and images. However, Kamel was less keen to oblige when solicited by Petiver to “provide dried specimens of the branches of the plants that you had sent us described and depicted on paper, for this way a more certain judgment could be made, in comparing them with the many dried plants that our friends have supplied from the Indies.”<sup>517</sup> He appeared baffled by Petiver’s request, confessing that “I consider it pointless work, since from my corresponding annotations to *Hortus Malabaricus*, which I had sent you in the previous years, it is sufficiently clear which plants correspond to *Hortus Malabaricus* and which ones do not.” Despite that, Kamel promised that “I will endeavour to send the dried plants.”<sup>518</sup>

The issues at stake, which underpinned Petiver’s enquiry and Kamel’s reaction, may have been those of trust and access to knowledge. Given the existence of an authoritative source on Asian flora that he had referred to throughout his work, Kamel deemed supplying specimens superfluous. Having observed live plants in their natural environments, the descriptions and illustrations available in

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<sup>513</sup> Letters 65: 200v.

<sup>514</sup> The catalogues of Hans Sloane’s collections, in which the specimens of Petiver ended up after his death, list nearly 100 insect and more than 50 shell specimens that can be clearly associated with Kamel. From this collection, only 22 insect and 6 shell specimens survive in the Natural History Museum collections to this day.

<sup>515</sup> For spontaneous generation, see for example Findlen 1993; Jorink 2007; Ogilvie 2012.

<sup>516</sup> Letter 23: 135r, “Papiliones quoque aliquot naturales et hos ipsos pictos, ut si illi in tam longinquo itinere perirent, hi perennent, indi quamvis penicillo seu pluma depicti.”

<sup>517</sup> Letter 20: 68r–69v, “Dominus Petiver a te efflagitat, ut ramulos stirpium descriptarum et depictarum in schedis ad nos transmissis exsiccatos transmittere digneris, ita enim certius iudicium de eis fieri posse, conferendo cum plantis, quas ab Indiis exsiccatas amici plurimas transmiserunt.”

<sup>518</sup> Letter 24: 151v, “Plantas siccas [...] mittere conabor, prouti et alias, quae sese noviter in posterum obtulerint, supervacaneum quamvis laborem existimem, cum ex meis in Horto Malabarico adnotatis concordantiis tibi annis elapsis missis abunde videre liceat, quae plantae sint eadem et quae a Horto Malabarico distinctae.”

*Hortus Malabaricus* ('Garden of Malabar', 12 vols., 1678–1693) may have appeared accurate enough to Kamel; however, for Petiver such analogies did not necessarily constitute adequate representations of the plants and knowledge thereof. Instead, Petiver's currency of choice were specimens: palpable samples of distant lands, which the recipients could directly interpret and compare in the form closest to their natural state. Whilst it was customary for scholars to use images as proxies for specimens and thus fill in lacunae in their collections, this approach had its limitations.<sup>519</sup> Even if drawn *ad vivum*, draughtsmen possessed artistic license and their images represented a reflection of the reality as perceived by them; his involvement in publishing must have made Petiver deeply aware of this fact.<sup>520</sup> As Petiver and Ray asserted, it was only through comparison of "many dried plants that our friends have supplied from the Indies" that one could make "a more certain judgment".<sup>521</sup> To Kamel, however, this statement may have seemed to call into question his own expertise and judgment, especially since he had already provided "corresponding annotations" to his best knowledge.

Practically all plant specimens that survive in Kamel's collection come in the form of samples of leaves, and commonly lack any other plant parts, especially flowers and fruits. As such, these specimens would not be of extensive use in identification or further investigations to botanists in Europe. This was not an uncommon occurrence, however, since specimens from distant lands did not necessarily arrive in forms tailored to the needs of scholars in Europe.<sup>522</sup> As discussed in Chapter I, given the constraints on his movement, Kamel acquired many specimens with the help of more mobile Jesuit fellows, as well as probably obtaining plant samples from local traders and informants. Rather than in specimens that naturalists in Europe could use to classify the natural world, such individuals were used to dealing in useful plant parts, often the leaves. Moreover, the definition of a specimen that could be used effectively in classification differed between Europe and the Philippines. Among the Ifugao people of northern Luzon, for example, both experts in plant knowledge, such as shamans, and ordinary folk have long used leaves as one of the main features in determining the identity of plants.<sup>523</sup> In the tropics in particular, fruits and flowers are often ephemeral features and, in the case of trees, may be hard to collect altogether. For Kamel, leaves therefore possessed the advantage of wider local circulation and easier access, as well as being relatively simple to preserve and transport.

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<sup>519</sup> Egmond 2018; Felfe 2018.

<sup>520</sup> Nickelsen 2006; 2018; Kusakawa 2011; 2012; 2014.

<sup>521</sup> Letter 20: 68v, "Dominus Petiver a te efflagitat, ut ramulos stirpium descriptarum et depictarum in schedis ad nos transmissis exsiccatos transmittere digneris, ita enim certius iudicium de eis fieri posse, conferendo cum plantis, quas ab Indiis exsiccatas amici plurimas transmiserunt."

<sup>522</sup> For example, Winterbottom 2014; Parsons 2016: 44, 47–48, 59–60; Brixius 2018.

<sup>523</sup> Interviews conducted with a diversity of local inhabitants in the area around Banaue and Bayninan (20–23 January 2017). For the Ifugao and plants, see Conklin 1980; Madulid 2010.

We cannot of course discount the possibility that Kamel also sent to London other plant parts, such as roots and seeds, which no longer survive. Such consignments, however, are not explicitly mentioned in the correspondence. Moreover, among Sloane's 'Vegetable Substances', the part of the collection where such plant parts would end up, there are only nine specimens from Kamel, largely samples of wood.<sup>524</sup> Altogether, there is no discernible focus on useful plants in Kamel's collections: only circa 20% of the surviving specimens can be associated with plants that Kamel described as useful; around 75% of these useful plants were medicinals. Therefore, just as in the case of Kamel's shells and insects, the plants submitted to London were curiosities rather than commodities, objects to be used as fuel in learned investigations rather than promising any lucrative discoveries. The communications between Kamel and Petiver thus demonstrate that both members of the pair sought to preserve the erudite terms of their exchange. Concerns with money, commodification or useful knowledge seem to never directly infiltrate their letters or have an impact on the specimens exchanged.

Despite this fact, the learned treatises that Kamel was submitting to London included descriptions and images of useful plants and information about experiments with Philippine *materia medica* from his medical practice. Previous studies of the mobility of knowledge have highlighted that although commercial links provided the infrastructure that could move people, knowledge and materials around, there was no idyllic, free flow of information across the early modern world, not even for learned individuals.<sup>525</sup> States and trading companies commonly cautioned scholars not to reveal too much in their works. For example, when Georg Everhard Rumphius (1627–1702) compiled his descriptions of Indonesian flora in *Herbarium amboinense* ('Ambonese Herbal', 1741), its publication was suppressed by the Dutch East India Company for several decades.<sup>526</sup> The Dutch were known to be particularly fierce in protecting their commercial interests, infamously punishing those who had shared any knowledge or specimens of nutmeg by cutting off their ears and noses.<sup>527</sup> Similarly, Harold Cook has discussed the case of Hendrik Claudius, sent in 1682 to the Cape of Good Hope where he worked for the Company as a plant illustrator. After sharing his map and figures with a group of passing Jesuits who later published them in Europe, Claudius was accused of treason and removed.<sup>528</sup>

By contrast, Kamel was freely submitting treatises concerned with medicinal plants to political and confessional rivals. As opposed to the Dutch, who had already monopolised a lucrative commerce

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<sup>524</sup> For Sloane's 'Vegetable Substances', see especially Pickering 2016. See also Vickery 1994; Marples and Pickering 2016.

<sup>525</sup> Raj 2005; Schiebinger 2005; H.J. Cook 2007; Winterbottom 2009.

<sup>526</sup> For Rumphius, see for example Leuker 2010; Yoo 2018.

<sup>527</sup> Button 1755: 193–194.

<sup>528</sup> H.J. Cook 2007: 323–324.

in spices to protect, Kamel was discussing plants that were being tested and that possessed the potential for setting up a trade, from which his pharmacy and the Society of Jesus more broadly could benefit. As I discuss in Chapter IV, this was the case for *igasur*, or the St Ignatius bean, a Philippine medicinal plant native to territories controlled by the Jesuits, which began to reach European markets in the late seventeenth century. Kamel authored a treatise describing the plant and its virtues, which was published by Petiver in London and which contributed to its popularisation as a drug in eighteenth-century Europe. Although these commercial considerations never seemed to directly enter the correspondence between Petiver and Kamel, which strictly followed the erudite gentlemanly code, we can trace subtle underlying concerns with commodification in their exchanges.

### III.5. Desire for books and botanical matters

In exchange for providing Petiver with knowledge and specimens of Philippine nature, Kamel was presented with the opportunity to expand his social, cultural and material capital. Most importantly, the link with Petiver provided Kamel with a smoother connection to Europe and facilitated the acquisition of publications and other objects that he could use in both his profession and his projects.<sup>529</sup> The items circulated provide insights into the practices of natural history in Manila around the year 1700, highlighting the importance of prints and scribal tools in managing exchanges and collections of specimens.

In the early modern Indies, books were scarce and costly commodities, since “they were transported with great difficulty due to complicated regulations” and high taxes.<sup>530</sup> Although printed works were available in regional metropolises, the prices tended to be steep and the range limited. Therefore, in seeking access to publications, colonial agents frequently sought the patronage of their colleagues in Europe. After all, as argued, a few specimens or a batch of drugs could multiply many times in value upon submission to Europe, and thus cover the costs involved. Given the peripheral location of the Philippines within the realms of the Spanish Empire, Kamel probably found it especially hard to acquire European scholarly literature and must have welcomed the prospects of a patron in Europe. Correspondence with London opened for Kamel the so-called “via de Olanda”, or ‘Dutch way’ around the Cape of Good Hope. This was the preferred means of communication with Europe in the early modern Philippines, “for being safer and faster than the one through New Spain”.<sup>531</sup>

<sup>529</sup> For books and gift exchange, see Zemon Davis 1983b; Heal 2014: esp. chap. 2.

<sup>530</sup> Letter 14: 131r, “Cari hic sunt libri, quoniam magna cum molestia ob licentiae difficultatem huc transferuntur.”

<sup>531</sup> A. Serrano 1680: 1r, “...via de Olanda [...] cuio camino le tiene por acertado, y mas breve que el de la Nueva España.” An estimated one in five Galleons were lost during their journey, mostly between the Philippines and the Marianas (McCarthy 1995: 153).

The book *desiderata* that Kamel submitted to Petiver point to his desire for botanical and medical publications, authored by both Galenists and Paracelsians (Figure 3.4). Among the items requested were, for example, Thomas Burnet's *Thesaurus medicinae practicae* ('Treasury of Practical Medicine', 1673), a veritable compendium of medicine; *Praxeos de morbis internis* ('Practices in Internal Diseases', 1690) from the Paracelsian physician Théodore de Mayerne, who spent most of his career in London; Steven Blankaart's (1650–1704) treatises on anatomy and surgery; and *Phytographia* (1691–1692), an extensive account of rare plants from all over the world compiled by Petiver's colleague Leonard Plukenet.<sup>532</sup> This list hints at the methodical approach of Kamel in acquiring books. He demanded from Petiver a combination of treatises from English and minor German authors, as well as works on chemical medicine; or publications that Kamel would probably struggle to obtain in the Spanish Empire, but that Petiver could procure with ease. Most of the books that Kamel solicited were published after he had already left for the Philippines. Therefore, it seems that he remained well-acquainted with the most recent works despite the distance, even with those by English and Protestant authors. His work suggests that Kamel probably managed to assemble a sizeable library, as he referred to some hundred authors in his publications; of course, however, many of these may have been secondary citations or those taken from books that he did not own himself.<sup>533</sup> Among the most frequently consulted items were erudite works in natural and medical knowledge: classics of the genre from Renaissance naturalists, such as Carolus Clusius and Pier Andrea Mattioli; ancient authorities including Dioscorides, Pliny the Elder and Galen; and publications on American nature penned by fellow Jesuits such as Juan Eusebio Nieremberg and José de Acosta. These titles would appear among the standard features of most Jesuit libraries in the Spanish colonial world.<sup>534</sup>

The publication that Kamel coveted the most, however, was Ray's monumental *Historia plantarum*, about which he repeatedly enquired with both of his London correspondents. Although Kamel was sent a copy, the Armenian courier Ignatio did not hand over the consignment, telling Kamel despite the protests that the books "were for himself".<sup>535</sup> Such incidents were not uncommon: given the value of the books and other things-in-motion, the bearers were often tempted to pilfer parts of the shipments. It is unclear whether Kamel ever got his hands on the desired book: although a copy of the third volume of Ray's *Historia* survives in the archives of the University of Santo Tomas, in which the majority of the Jesuit library and papers ended up after the abolition of the Order, there are no

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<sup>532</sup> Letter 21: 134v; BL, Sloane MS 3323: 51v.

<sup>533</sup> Individual Jesuit missionaries stationed in the Spanish colonies often assembled massive private libraries and engaged in purchasing and selling books despite the vow of poverty (for example, Martín 1968: 83).

<sup>534</sup> For example, Martín 1968: chap. 4; Vera de Flachs and Page 2010.

<sup>535</sup> Letter 13: 296v.

Pharmacopoeia Batava.  
 Pharmacopoeia Collegii Regii Londin.  
 Plukenetij stirpium illustrium, & minus  
 — cognitarum Icones c. 800 fig. aeneis in fo.  
 Martin' Listeri M. D. historia Conchyliorum.  
 Theodon' de Mayerne Eq. Aur. Praxeos in morbis  
 internis, praecipue gravioribz, et chronicis  
 Syntagma in 8. d. 1690.  
 Michaelis Ettmulleri opera d. 1690.  
 Blancardi Anatom. reform. c. 51 fig. aeneis.  
 Ejusdem Praxeos Med. d. 1689.  
 Ejusdem Lexicon Medicu in 8. d. 1690  
 Macary' promptuariam morb. med. in 12.  
 Jac. Waelschmiedt Praxis Med. in 12. d. 1691.  
 Junken Praxis med. in 8. d. 1690.  
 Osi viviera fuera de los otros mas modernos, res-  
 sean en latin, que Ingles no entienden  
 bien los Alemanes  
 Praxis Barbetiana c. n. Deekers in 12.

Figure 3.4: Kamel's list of book desiderata (BL, Sloane MS 3323: 51v).  
 Reproduced with permission of the British Library Board.

indications that this copy ever belonged to Kamel or the Society of Jesus.<sup>536</sup> Despite such hiccups, the connection with London provided Kamel with regular access to books and treatises. Probably for these reasons, he was not prevented by his superiors from exchanging knowledge with the English, an enterprise that may have been regarded as politically sensitive by local authorities. The erudite nature of the communications provided Kamel with protection, and it is most likely that he also had allies among the local Jesuit and Spanish directorate. Both Kamel's treatises and clientele show that the Jesuit was well embedded within local networks of power, as he provided medical services to and exchanged natural specimens with local men of status. Kamel could probably also rely on the help of his compatriot and close associate Paul Klein (1652–1717), who was among the most prominent members of the Jesuit Philippine Province, and who showed an extensive interest in medicine.<sup>537</sup> It seems that the two regularly collaborated and exchanged knowledge. In 1712, Klein even published a compilation of Philippine *materia medica* titled *Remedios faciles* ('Simple Remedies'), in the production of which Kamel was probably involved, and to which he referred in his own writings.<sup>538</sup>

In addition to books requested by Kamel, Petiver provided publications of his own choice in the bid to establish a common referencing system and align the methods of his correspondent with his own. Previous research has highlighted the role of books as indispensable tools for ordering specimens and collections. Margócsy has illustrated how early modern correspondents were prompted to "refer to folio and number" in specific publications when discussing natural specimens.<sup>539</sup> Petiver sought to implement this method in 1702, in sending Kamel "the History of Shellfish from Mr Martin Lister", adding that "I have marked the pages according to my book and added numbers of tables; whenever you may wish to discuss shellfish with me, I would like you to refer precisely to these."<sup>540</sup> Furthermore, Petiver took particular care that Kamel received the copies of all the works that he had printed on the Jesuit's behalf. These provided proof that Petiver had kept his word, an incentive for further collaboration, as well as assets that could be used locally to accrue credit. One can only imagine the amount of symbolic capital that appearing in learned publications in Europe must have garnered in Manila and what this meant for Kamel's local status as both a scholar and a practitioner. Petiver's prints also functioned as devices to instruct collectors and point them to

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<sup>536</sup> UST, Miguel de Benavides Library.

<sup>537</sup> Often Hispanicised as Pablo Clain.

<sup>538</sup> Kamel's discussion of *gamagamatissan* includes a reference to Klein, who recommended it as a remedy for asthma (Kamel 1704f: 5.12). Indeed, the herb appears in that capacity in *Remedios faciles* (Klein 1712: 12). Even though Klein's work was not published until six years after Kamel's death, it was probably available in manuscript form already during Kamel's life. For *gamagamatissan*, see p. 167.

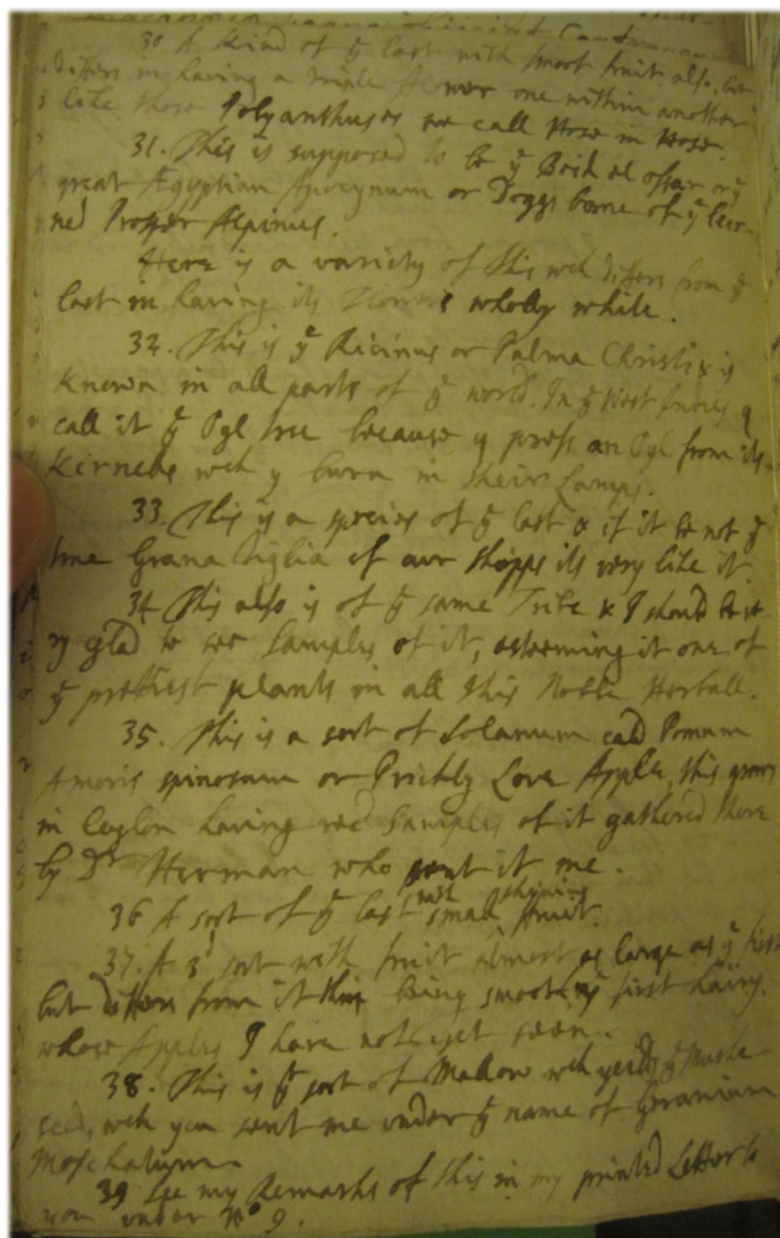
<sup>539</sup> Margócsy 2010. See also Spary 2000; Wu 2015.

<sup>540</sup> Letter 22: 140r, "...Domini Martini Listeri Historiae Conchiliorum, paginas adnotavi secundum meum librum addito insuper tabularum numero, ad quas vellem ut semper referre velis quoties visum fuerit mecum de conchis agere."



desirable items *en masse*. For instance, Kamel informed Petiver that he had asked his compatriot Steinhöffer in New Spain “to procure descriptions and specimens or images of plants, a fuller knowledge of which has been solicited in the list appended to the fifth gathering of your *Musei*.”<sup>541</sup>

Previous studies have documented how scribal tools such as lists of specimens and *desiderata* were increasingly adopted by early modern collectors in their bid to navigate a world increasingly flooded with new objects.<sup>542</sup> Both Kamel and especially Petiver extensively relied on scribal tools to manage their respective projects. A series of volumes in the British Library includes nothing but lists scribbled in Petiver’s hand, as the pharmacist sought to keep track of what he had sent to or received from his correspondents, as well items desired by himself and them.<sup>543</sup> Scribal tools commonly spilled over directly into letters: Kamel’s inventory of goods for Steinhöffer with added prices has already been discussed, whilst Petiver frequently included numbered inventories of *desiderata* in his letters, to which he expected his correspondents to refer in their replies (Figures 3.1, 3.5).<sup>544</sup> Such methods were commonplace for both Kamel and Petiver, since the daily operation of a pharmacy typically



**Figure 3.5:** One of Petiver’s numbered lists in a letter to Browne (Letter 58: 172v).  
Reproduced with permission of the British Library Board.

<sup>541</sup> Letter 24: 151r, “Ioanni Steinhöffer scripsi annis elapsis rogando, ut vel ipsas plantas, vel icones et descriptiones, quarum ellenchus Musaei tui Centuriae quintae annexus plenioram notitiam desiderat, procuraret.”

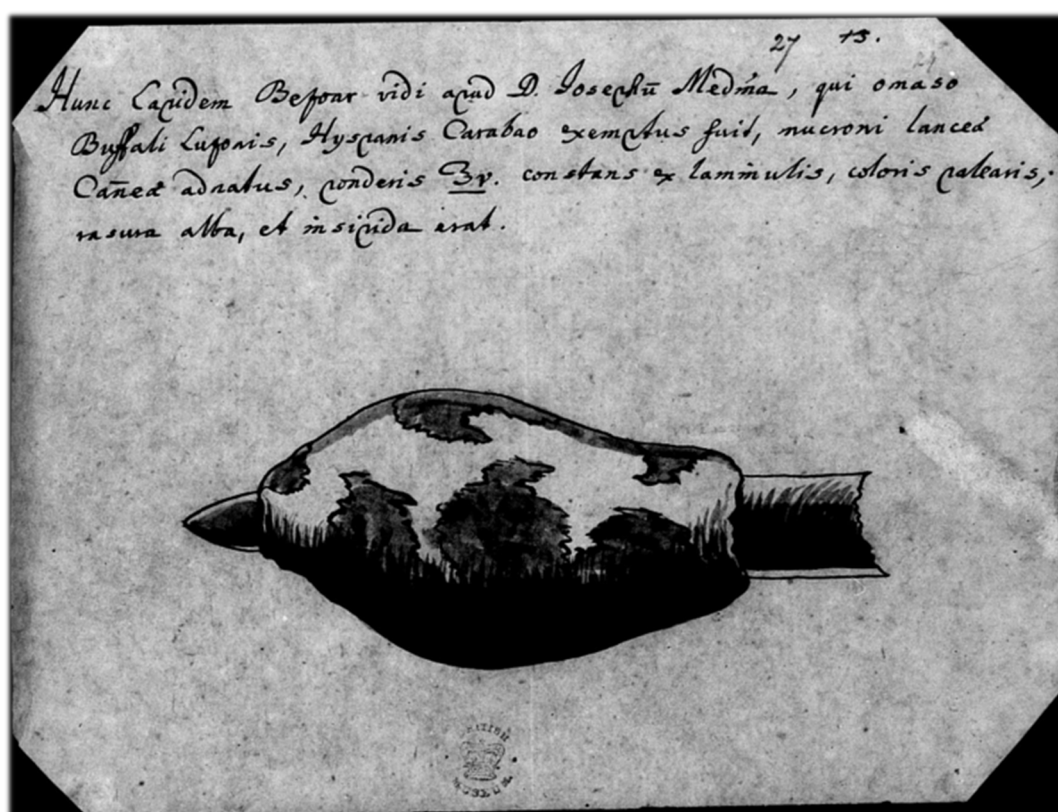
<sup>542</sup> For example, te Heesen 2005; Yale 2011; Müller-Wille and Charmantier 2012; Pugliano 2012b and the rest of the *Isis Focus* issue on ‘Listmania’ (eds. Delbourgo and Müller-Wille 2012).

<sup>543</sup> Especially BL, Sloane MS 3331.

<sup>544</sup> For example, Letters 52: 101r–101v; 58; 59.

involved the production and use of large volumes of paperwork and handwritten documents. As it grew in importance in natural history, this scribal practice was already firmly embedded in – and, as suggested by Pugliano, perhaps also arose out of – apothecary trade.<sup>545</sup>

Lastly, Petiver also provided Kamel with specimens to expand the Jesuit's own collections. In 1702, for instance, Petiver found that "[i]t was fitting to add five volumes on *Plantae Unaneercoondicae*, and the intention is to send some of their dried specimens with the next consignment. [...] I sent you five or six American butterflies together with two or three of ours."<sup>546</sup> Drawing on such gifts from Petiver, as well as on local collectors and regional networks of trade, Kamel managed to build a sizeable collection of diverse natural objects. As argued in the previous chapter, collecting *naturalia* was integral to both apothecary trade and scholarly projects. For Kamel, his collection was therefore both a research tool and a source of material and immaterial capital. It contained numerous specimens of plants and *materia medica*, which Kamel cross-referenced with available publications, such as *Hortus Malabaricus* as discussed.<sup>547</sup> He also possessed an assortment



**Figure 3.6:** Kamel's image of an unusual bezoar stone owned by a fellow collector José Medina (BL, Sloane MS 4083C: 27). Reproduced with permission of the British Library Board.

<sup>545</sup> Pugliano 2012b.

<sup>546</sup> Letter 22: 140r, "Lubuit adiicere plantae unaneercoondicae quinque; adhuc libros, et animus est per proximas mittere quaedam exemplaria earundem siccarum. [...] Misi 5 vel 6 papilliones Americanas una cum duobus vel tribus nostratibus." In Ray's *Historia*, plants with the denomination 'Unaneercoondicae' usually come from India (Ray 1704: *Herbae*: 427, *Arbores*: 112). The name itself could be a Latinised version of a vernacular term.

<sup>547</sup> Letters 21: 134r; 23: 135r; 25: 155r.

of shells: in 1704, he begged Petiver to “send me a list of what [shells] you have received, so that from the specimens which I am keeping for myself, I can supply what may be missing.”<sup>548</sup> Shells were one of the most popular kinds of collectable curiosities and could be used as currency in transactions.<sup>549</sup> Finally, there were of course rare treasures to display, including a unicorn horn from a fellow Jesuit, Antonio Borja, snake-stones from the military officer Manuel Argüelles, a black coral brought from Nasugbu, as well as *glossopetrae* and a specimen of sea pen (Appendix 8). Kamel also mentioned several competing local collectors, admiring for example the bezoar stone owned by a certain José Medina (Figure 3.6).<sup>550</sup> Altogether, the exchanges between Petiver and Kamel underline that the early modern practice of natural history rested upon collections of specimens, learned publications and scribal tools used in tandem, both in Europe and overseas, in London and Manila.

### III.6. Kamel’s appendix to Ray: Pirates, the Dutch connection and the scramble for manuscripts

In exchange for knowledge and objects from the Philippines, Petiver was supplying Kamel with desired items, as well as editing and publishing the treatises that were arriving in London. However, that does not mean that Kamel was merely submitting consignments to London passively, in the expectation of a reward. Instead, it seems that he sought to use Petiver as a mediator in expanding his own networks in London and approaching John Ray. Although the earliest letters between Kamel and Ray do not survive, it was most likely at Kamel’s initiative that the two began corresponding. As the Jesuit wrote to Ray in January 1699, he was familiar with Ray’s masterpiece *Historia plantarum* which he “saw at a friend’s several years ago” and which he considered “a work supremely brilliant, for which all posterity will give you deserved credit.”<sup>551</sup> When Kamel received Petiver’s consignment from London, where he knew the *Historia* had been published, it seems he got the idea of approaching its author in search of intellectual exchange and a copy of the book. Perhaps he had heard, maybe from Browne, that Petiver knew and worked with Ray, or perhaps it was a shot in the dark. Either way, when Kamel’s first shipment arrived in London in 1698, Petiver wrote to Ray that “there is a Letter from Padre George Camelli, a Jesuit at Manilla addressed to you,” and asked Browne to inform Kamel “that Mr Ray has his Letter & Papers and hath promised me to answere them.”<sup>552</sup>

When Kamel found out that Ray was preparing the third volume of the *Historia*, he decided to compile all his descriptions and illustrations of Philippine flora into a “supplement to your Historia,

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<sup>548</sup> Letter 24: 151r–151v, “...quare (si placet) mihi sillogen acceptorum mittere poteris, ut ab exemplari, quod mihi reservo, quae forte defuerint, transsumere curem.”

<sup>549</sup> For example, Margócsy 2010.

<sup>550</sup> BL, Sloane MS 4083C: 27.

<sup>551</sup> Letter 11: 292r.

<sup>552</sup> Letters 54: 148r; 70: 221v.

compiled from a miscellany of Luzonian plants”, and proposed to Ray to include it in the publication.<sup>553</sup> Ray welcomed Kamel’s contribution: he was “greatly obliged and indebted to you for this most magnificent and welcome gift,” and confessed to Sloane that Kamel’s supplement “would be a very great advantage and ornament to my work.”<sup>554</sup> The supplement duly appeared as an appendix to the *Historia*, published in 1704. This episode underscores that the Jesuit was not just a passive element in Petiver’s network, but actively shaped it and strove to use it to his own advantage. Driven by scholarly ambitions, it seems, Kamel mobilised his intermediaries and ventured to approach a leading naturalist of the period, whom he convinced to include his own work in a major botanical publication – a feat remarkable for a Jesuit lay brother stationed in Manila.

The convoluted journey that Kamel’s supplement had to undertake from Manila to the printing presses in London epitomises some of the hardships faced by overseas collectors, including the hazards of transoceanic transport and the tensions between different patrons. Having compiled his notes, Kamel shipped the resulting volume to London in January 1698.<sup>555</sup> Unfortunately, as he later recounted to Ray, the ship carrying the consignment “was assailed by pirates and the evidence of ten years of my work, I fear, was lost in a single day.”<sup>556</sup> Undaunted by this tragedy, Kamel asked Ray for patience and resumed his work. Already in January 1699, he sent Browne the recreated first section of the supplement concerned with *plantae humiles* (‘low-growing plants’). In the meantime, however, Browne had died, and the shipment got stuck in Madras. After both Kamel and Petiver solicited help from Bulkley, the lost shipment was eventually found and forwarded to London by Browne’s widow.<sup>557</sup> It did not reach Ray until spring 1701, more than two years after it had been dispatched.

It seems possible that the unlucky episode with the pirates brought Kamel into communication with a new correspondent. In July 1698, he received a letter from Willem ten Rhijne, a physician with more than twenty years of colonial practice, who resided in Dutch Batavia.<sup>558</sup> Ten Rhijne opened his epistle by recounting how he “mourned from the depths of his soul when he discovered that [Kamel’s] accurate images for John Ray’s *Historia plantarum* [...] had fallen into inappropriate hands.” He subsequently described how “that treasure was sent to Jacob Brandt in Batavia” where “this paper orphan wandered through the streets without the knowledge of its

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<sup>553</sup> Letter 11: 292v.

<sup>554</sup> Letters 20: 68v; 86.

<sup>555</sup> Letters 11: 292v; 19: 132r.

<sup>556</sup> Letter 11: 292v, “...navis intercepta est a pyratis et specimen laborum meorum per decennium congestorum, ut timeo, hauseri[t] una dies.”

<sup>557</sup> Letters 18: 377; 21: 134r; 92: 23v.

<sup>558</sup> For ten Rhijne, see Iwao 1961; H.J. Cook 2007: 339–377; Besten 2010; Verwaal 2010.

author,” before it luckily found its way to ten Rhijne.<sup>559</sup> The details of this narrative, the timing of the letter and the fact that the ship carrying Kamel’s work was assaulted somewhere in the southern South China Sea, heavily patrolled by Dutch ships, all seem to conform to the details of Kamel’s pirate story in a striking way.<sup>560</sup> Ten Rhijne, an experienced botanist who had contributed to *Hortus Malabaricus*, immediately recognised the value of Kamel’s labours and declared that “for almost thirty years, I have been tirelessly searching along these shores for a man well-versed in botanical matters.” He concluded his letter with the hope that Kamel would “consent to an epistolary exchange, concerned especially with botanical mysteries.”<sup>561</sup>

The two letters that survive from this exchange, both written by ten Rhijne, share many concerns and motives with the correspondence between Kamel and Petiver. When introducing himself, ten Rhijne brought up his acquaintance with the renowned botanist Paul Hermann (1646–1695) to certify his own status and reputation; as argued by Margaret Meredith, mining the social capital tied to one’s own acquaintances was a common strategy when building networks.<sup>562</sup> To entice Kamel into correspondence and present its terms as governed by reciprocal gift exchange, ten Rhijne relied both on the language of virtue and on inciting the feeling of a polite obligation to reply. In “anticipation of a firm mutual friendship”, he enclosed his own medical treatises but also a booklet of Catholic liturgical sermons, perhaps in a bid to whitewash his own Protestant faith.<sup>563</sup> Whilst religion was one of the areas over which the etiquette of scholarly exchange was sorely tested, and confessional issues were generally avoided by early modern correspondents, this example demonstrates that religion could also be used to advantage if approached with caution. Similarly, ten Rhijne sought to present himself as a veritable man of the world, without a nationality or allegiance, and thus to downplay his associations with the Dutch, who were greatly feared in Manila. He mentioned that in addition to the Dutch, he had abided “with the French and other nations”, as well as “with the Japanese”.<sup>564</sup> Whilst Kamel’s trans-Pacific exchanges show that national links could be used to advantage, ten Rhijne demonstrates that correspondents could also seek to efface their national allegiances. The ideal of the Republic of Letters, which envisioned scholars from all over the world united in a cosmopolitan commonwealth of learning, probably facilitated this task.

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<sup>559</sup> Letter 8: 128r, “Dolebam ex animo, reverende domine, quum intelligerem accuratas in Johannis Raii de Plantis Historiam icones tuas [...] in indignorum incidisse manus. [...] Missum erat donarium illud domino Jacobo Brand Batavum, [...]. Errabat itaque vicatim chartaceus iste pupillus extra factoris visum.”

<sup>560</sup> Letter 13: 294r.

<sup>561</sup> Letter 8: 128r, “Triginta jam fere sunt anni, quibus his in oris perpetim quaesivi [...] in virum in re herbaria bene versatum,” 129v, “...in epistolari commercio, imprimis circa botanologiae mysteria, consentias.”

<sup>562</sup> Meredith 2009.

<sup>563</sup> Letter 8: 128v, “...veluti mutuae integrae amicitiae praeambulones.”

<sup>564</sup> *Ibid.*, “...apud Hollandos, Gallos aliasque nationes degens [...] apud Japones haerens...”

Although the Dutch and the Spanish were bitter rivals, who enforced mutual trade embargoes, a bustling surreptitious commerce developed between Manila and Batavia. Ruurdje Laarhoven and Elizabeth Wittermans have documented how the Spanish and the Dutch employed strategies similar to those used by the East India Company when circumventing trade bans, relying on the help of independent merchants.<sup>565</sup> Wares moved between Manila and Batavia even through official channels, since the Spanish government was often forced to purchase specific merchandise that the colony was lacking from their bitter rivals, especially ironworks.<sup>566</sup> Even military goods were openly traded between the two enemies.<sup>567</sup> One of the consignments between Kamel and ten Rhijne was transmitted by a merchant called d'Abreu, a name particularly prevalent among those of Portuguese and Sephardic Jewish descent.<sup>568</sup> Just as with the consignment containing Ray's *Historia*, however, d'Abreu failed to deliver the package intact, and several items promised by ten Rhijne were missing. Instead, the Dutchman suggested using the safer option of official administrative channels, to which he had access; as he explained, "on behalf of our highest council, I am used to replying to the letters that the Manila governor Fausto de Cruzat y Góngora sends to our general prefect."<sup>569</sup> Through diplomatic channels or local mediators, knowledge thus travelled even between the metropolises of two archenemies.

In addition to exchange of knowledge, finding a patron in Batavia presented Kamel with a direct point of access to the *via de Olanda*, perhaps the smoothest available connection to Europe. In his second letter, dated August 1699, ten Rhijne openly offered his help in Kamel's "effort to forward these botanical manuscripts of yours to Europe for publication".<sup>570</sup> The exchanges between Kamel and his English correspondents indicate that he took up ten Rhijne's offer. In his letter from October 1700, Kamel informed Ray that he was no longer in the position to send him papers on Philippine flora, since he had submitted all of them to ten Rhijne instead.<sup>571</sup> Ray did not hide his disappointment upon discovering that Kamel had decided to gratify another patron, and complained to Petiver that "Father Camelli hath not dealt ingenuously in delivering his icons & descriptions of Trees to another, which he gave a kind of promise of."<sup>572</sup> In shipping them to ten Rhijne, however, Kamel only extended his streak

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<sup>565</sup> Laarhoven and Wittermans 1985.

<sup>566</sup> For example, the *gobernador* Fausto Cruzat y Góngora and his successor Domingo Zabálburu de Echevarri regularly purchased anchors and other ironworks in Batavia (Cruzat 1693a, 1693b; Zabálburu 1702, 1703, 1708).

<sup>567</sup> Quiaon 1966: 149.

<sup>568</sup> Letter 8: 128r.

<sup>569</sup> *Ibid.*: 128v, "...quando gubernator de Manilhas dominus Faustus a Cruzat et Gongora ad nostrum praefectum generalem suas mandaverit literas, quibus ego semper nomine supremi senatus nostri respondere assuetus sum."

<sup>570</sup> Letter 14: 131v, "...botanica illa manuscripta tua in Europam mandari coneris, ut typis edantur."

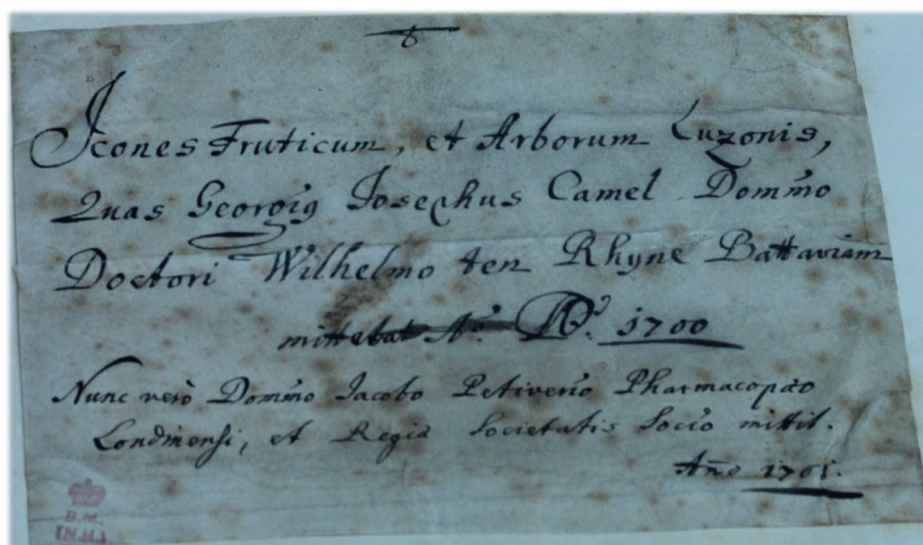
<sup>571</sup> Letter 18: 377.

<sup>572</sup> Letter 113.



of bad luck: the Dutch physician was never able to relay them to Europe, as he died in June 1700, probably before Kamel's package even reached Batavia. Fortunately, Kamel succeeded in recovering the stray consignment, which contained the section on *fruticibus et arboribus* ('shrubs and trees'), and forwarded it to London just in time to be appended to Ray's *Historia* (Figure 3.7).<sup>573</sup>

As soon as the news of ten Rhijne's sorry end reached London, Petiver lost no time in striving to acquire whatever materials the Dutchman had left behind. As Bulkley wrote to London, "[w]hen any ship goes hence for Batavia I shall endeavour enquiry after what Gulielmus Ten Rhyne has left & try if procurable."<sup>574</sup> Dismay over the appearance of a rival patron swiftly turned into an opportunity to acquire whatever could be pilfered from his earthly possessions once he had departed. Although the Englishmen did not seem to succeed in their efforts, this incident demonstrates that not even in death did early modern naturalists find peace. Although the code of the early modern Republic of Letters was that of gentlemen and the language that of friendship, exchange of knowledge was equally fuelled by competition and by the language of rivalry. With patronage and whole careers at stake, the relationships between individual agents were built upon fragile foundations, and the parties involved were constantly striving to gain the upper hand to make the most of the link in their own interest.



**Figure 3.7:** The title page to Kamel's section of the supplement on trees and shrubs, which reads: "Images of shrubs and trees, which Georg Joseph Kamel sent to Willem ten Rhijne to Batavia in the year 1700. Now he is truly sending [them] to James Petiver, London pharmacist and Fellow of the Royal Society. 1701." (NHM, Bauer Unit, Shelf H7: 10). Reproduced with permission of the Library and Archives of the Natural History Museum, London.

### III.7. Snakewood and snake bile: Circulating recipes across the frontiers of empires

For Kamel, correspondence with ten Rhijne was particularly valuable, due to the cultural capital – or medical expertise – that the physician could offer. An experienced colleague was often the

<sup>573</sup> Letter 20: 68v. See NHM, Bauer Unit, Shelf H7.

<sup>574</sup> Letter 107.

best source of information, a concern echoed also in Kamel's correspondence with Browne and Bulkley. This section will consider exchanges between Kamel and his medical colleagues stationed overseas. Within these links, Kamel assumed the mantle of a medical practitioner, or of the pharmacist of the Jesuit college in Manila, rather than that of a learned Father. I will point to the interest in useful and especially medical knowledge that underpinned these transactions, which remained largely regionally restricted and involved little or no participation from European centres. In addition to shedding light on medical practices in colonial settings, these exchanges thus point to the complex trajectories that drugs underwent before ever reaching European networks and markets.

When preparing the initial shipment for Kamel, ten Rhijne sought to take advantage of his own extensive experience in medicine and of the professional bond that joined the two men. He decided to include dissertations on Hippocrates and arthritis, as well as his treatise on Asian leprosy. From 1677 until his death, ten Rhijne served as an advisor to the head of the local leprosarium in Batavia, and rose to become an expert on this common but hard-to-treat disease.<sup>575</sup> Kamel was greatly appreciative of the medical advice that his colleague shared, as we learn from ten Rhijne's second letter: "It greatly pleases me that the remedy from snake bile against Asian leprosy corresponds to your wishes."<sup>576</sup> Snake bile – the recipe's main component – can hardly be considered a common European ingredient, but was used regularly in both Chinese and Japanese traditional medicine. The most likely source of ten Rhijne's recipe was therefore the Dutch trading post in Dejima, where the physician was stationed between 1674 and 1676.<sup>577</sup> As argued, medical traditions could readily become entangled in colonial contexts. Since ten Rhijne had used the recipe with good results, Kamel was open to its adoption into his own medical practice despite its perhaps unusual nature.

In exchange for his medical consultation, ten Rhijne desired a different kind of intelligence: "a true and thorough description of your dwelling, that is of the whole Luzon, including the inhabitants' religion and habits, the location of the place, and the state of religious, political and other affairs."<sup>578</sup> Although this request would probably be regarded as especially delicate politically, it seems that Kamel obliged his correspondent: ten Rhijne replied that he "thought useful the information about the ingenious and knowledgeable inhabitants of Luzon," but the detail and the character of the information that Kamel shared remain unclear.<sup>579</sup> The main currency of the transactions between

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<sup>575</sup> Iwao 1961: 177.

<sup>576</sup> Letter 14: 131v, "Quod illud serpentini fellis contra Asiaticum lepram pharmacum tuo responderit voto, perplacet."

<sup>577</sup> Iwao 1961.

<sup>578</sup> Letter 8: 129r, "Peto a reverentia vestra veram et locupletem descriptionem mansionis tuae, totius nempe Luconiae, cum incolarum religione, moribus, situm loci et quo in statu sint religionis, politices etc. res."

<sup>579</sup> Letter 14: 131v, "...incolarum idoneorum et juxta tractus genium expertorum informatio mihi utilis censetur."



Kamel and ten Rhijne was therefore useful knowledge. The Dutchman even allowed money to infiltrate the transactions. Kamel must have enquired about the book market in the much better supplied Batavia, since ten Rhijne's second epistle included a priced list of publications that he could choose from, should he submit the required fee.<sup>580</sup> Even if ten Rhijne was to act merely as a mediator rather than the recipient of the money, his attitude here lies in stark contrast to that of Petiver.

Kamel's correspondence with Browne and Bulkley was driven by similar concerns. Whilst Petiver never enquired after a particular drug and received mostly leaves of plants of no specified use, Browne was sent from Manila "some snakewood Manungal and the febrifuge and emetic bark of Mananangtang, which you asked me to send you."<sup>581</sup> In return, Kamel apparently received samples of Indian medicinal plants. This is suggested by the only surviving letter from Bulkley to Kamel, which states that "my friend Ignatius White also accepted my other [letter] with the book and the roots."<sup>582</sup> The three practitioners also shared their respective experiences of the substances exchanged. For example, when discussing the plant "Panitsjaka maram", native to India, Bulkley noted that "Father Camell says that the fruit is pleasant & profitable in fevers."<sup>583</sup> The small number of letters surviving from the correspondence between Manila and Madras, however, complicates any extensive analyses of how the terms of exchange were established and negotiated.

The communications between Kamel and his medical colleagues reveal that they were all interested in experimenting on the efficacy of local medicinal plants and freely exchanged specimens and the results of their tests. This echoes the previously raised argument that useful knowledge travelled even across the borders of rival empires. Rather than questions of national interest or national trade, which would merit secrecy or regulation, these were predominantly regional exchanges between fellow medical practitioners, which involved plants that possessed undeveloped medical and commercial potential. Within these commotions, Kamel seemed to be operating as the pharmacist of the Jesuit college in Manila rather than as a learned Father. Instead of submitting learned treatises and curious specimens to patrons in Europe, here Kamel was trading drugs and information that he could adopt in his practice and that his Order could use in its projects. Although Kamel was open to exchanging medicines, experiments and recipes with his colleagues in Madras, Petiver never entered these communications. These were two different enterprises which Kamel kept

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<sup>580</sup> *Ibid.*: 130r–130v.

<sup>581</sup> Letter 13: 295r, "...me pide vuestra Merced que embiasse algo de ligno colubrinio Manungal, y cortice febrifugo emetico Mananangtang. Lo uno, y otro embio con esta, con el Sennor Jacomo Balestra." Kamel wrote treatises on both of those medicinal plants, which he forwarded through Browne to London. Manungal is probably *Samadera indica* and mananangtang most likely *Dysoxylum gaudichaudianum* (Merrill 1903: 83, 84).

<sup>582</sup> Letter 17: "...mitto per amicum Ignatium White qui alteram accepit cum libro et radicibus."

<sup>583</sup> Letter 124: 133r. For panitsjaka maram, see p. 93.

strictly separate: one was a polite correspondence of two gentlemen, the other was an exchange of useful knowledge among fellow medical practitioners.

As I have argued, Kamel and Petiver never allowed concerns with useful knowledge and commodification to enter their correspondence directly and thus taint their learned conversations. However, the substances that the Jesuit shared with Browne and Bulkley were subject to further experimentation in Madras and even recommended to Petiver as potential merchandise. As discussed in the previous chapter, Bulkley especially was eager to use his correspondence with Petiver to generate financial profit and repeatedly suggested Kamel's plants for commodification. In addition to the aforementioned "Panitsjaka maram", he pointed Petiver to "the Balimbago Josephi Cameli [which] is a good emeto cathart, I think as good as Ipecacuanha & the dose the same." Bulkley openly expressed the "hope you will make a mercantil commodity of it, that it may have a room in every druggists shop, I have tried it often with good success."<sup>584</sup> These examples underscore the differences in the terms of exchange that operated in Bulkley's and in Kamel's respective exchanges with Petiver. Although Kamel avoided raising directly the topic of commodification, the network with London that he joined was built upon and underpinned by concerns with usefulness, profit and prospecting for new remedies. Despite Bulkley's efforts, however, none of Kamel's plants seem ever to have appeared in the medical notebooks that Petiver kept, which suggests that he never experimented with them in his medical practice.

The transactions discussed in this section point to the polycentric and multidirectional nature of early modern networks of knowledge exchange. These movements shaped the knowledge communicated in important ways, and often preceded and conditioned mobility on a global scale – issues which will be further explored in the following chapter. Kamel's regional communications demonstrate how knowledge and objects moved back and forth between different individuals and reveal the richness and diversity of the agencies neglected by studies built around European centres, markets and institutions. I will conclude with an example of a situation in which the directionality of agency between Europe and colonial worlds became effectively reversed. In 1699, Bulkley received a specimen of an "odoriferous root" from Petiver for further investigations. Upon reception, he "devided it & sent it to Batavia & divers other places" to acquire additional information.<sup>585</sup> Therefore, to identify an unknown odoriferous root and learn of its virtues, Petiver sent it to an English colonial outpost in India, from which its samples were circulated more widely. The knowledge required to solve the mystery was located in colonial settlements, not in European centres of calculation.

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<sup>584</sup> Letter 173.

<sup>585</sup> Letter 79: 18r.

### III.8. Correspondence at war and the termination of the link

In 1701, the War of the Spanish Succession pitched Spain and England against each other. Soon after, Ray shared his fears with Petiver “that the wars will interrupt Your Epistolary commerce” with Kamel.<sup>586</sup> He was not incorrect. The final section of this chapter will consider some of the obstacles faced by the correspondents during the conflict and discuss how the link between Manila and London came to its end. As discussed, the movement of consignments between Manila and Madras relied upon surreptitious trade, mediated mostly by merchants of Asian origin. Although Quiason has argued that, especially in its early stages the conflict caused little harm to this commerce, Kamel’s correspondence provides a different view.<sup>587</sup> The worsening political situation could be felt even before the news of the war reached the colonies. In October 1702, Kamel revealed his regret that “due to political issues and, perhaps as we have heard here, due to the coming war”, he had not received any shipments in nearly two years. Despite admitting that he was “not even surprised”, he reminded Petiver that “whenever an occasion arose, I did not fail to serve you.”<sup>588</sup> The joy was almost palpable when Kamel finally received the desired shipment two years later, even if it seemed to be missing several of the promised items.<sup>589</sup> Kamel grieved over these issues in his reply dated October 1704, but the letter did not find its way into Petiver’s hands until June 1707.<sup>590</sup> Clearly troubled by the sight of the crippled correspondence, Petiver reassured his correspondent that “I have not failed a year of returning you something” and, as a proof, enclosed “a List of all I have since sent you”, since “nothing can be more acceptable to me than the continuation of the Curious Communications.”<sup>591</sup>

Given the breakdown in communications, Petiver evidently berated his middleman Bulkley, whom he perhaps suspected from withholding shipments. The surgeon defended himself, claiming that “since the warr with Spainne we can not send ships to Maneila” and assured Petiver that “I am sure I never miss any opportunity.”<sup>592</sup> However, the only occasions to communicate were presented by the sporadic trading ventures of the neutral Armenians, whose number declined.<sup>593</sup> In January 1706, for instance, Bulkley announced to Petiver that there was “no ship this year nor last from Maneila”.<sup>594</sup> Later that year, Kamel and Bulkley managed to exchange consignments. However, in

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<sup>586</sup> Letter 122.

<sup>587</sup> Quiason 1966: 139–164.

<sup>588</sup> Letter 23: 135r, “Ab ultimis Decembri anni 1699 Londino datis, mihi gratissimis, a dominatione tua non obtinui alius, nec mirum, partim etenim ob locorum distantiam, partim ob regnorum disturbia, et forte ut hic ob audimus apparatus bellicos, reliquas ad me necdum pervenisse probabile. Ego interim, ubi occasio se obtulerat, non neglexi tibi serviendi nec negligam in posterum tibi scribendi.”

<sup>589</sup> Letter 24: 151r.

<sup>590</sup> Letter 31: 45r.

<sup>591</sup> *Ibid.*

<sup>592</sup> Letters 137: 186r; 145: 213r.

<sup>593</sup> Letters 137: 185r; 143: 211r; 148.

<sup>594</sup> Letter 137: 186r.

December 1707 Bulkley admitted to Petiver that “our correspondence with Maneila is almost spoiled,” since “not one [Armenian] the last year returned.”<sup>595</sup> Two months later, Bulkley added that from Kamel, “I have not heard this 2 years.”<sup>596</sup> Nor could he have done so: Kamel died in Manila from diarrhoeal disease in May 1706, aged 45.<sup>597</sup>

Petiver did not learn of Kamel’s death until March 1710, when Bulkley forwarded him a brief note from Father Vicente Serrano of the Manila college. In it, Serrano revealed the sad news that “your three letters [...] have found your friend and our most cherished brother Georg Joseph Kamel already dead.”<sup>598</sup> On behalf of his deceased brother and the Jesuits of Manila, Serrano expressed his “heartfelt thanks” for the numerous gifts which had arrived with the letters, and which “in the name of the deceased, it befits us to greatly esteem.”<sup>599</sup> Bulkley deeply mourned the loss of “the incomparable G. C.”, informing Petiver that “the year before he dyed, I was informed by severall that he was very weake & infirm & not like to continue long, which I much impute to his hard studyes & great labour in his designs.”<sup>600</sup> Petiver, in his reply to Bulkley, “would not slip this Opportunity of heartily condoleing with you the loss of our late most Curious & Learned Friend Father Kamel [...]. I cannot easily express how much the Publick & particularly my selfe are concerned at this great Mans Death.”<sup>601</sup> However, this grief was rapidly followed by more practical concerns of whether anyone in Manila could fill Kamel’s empty shoes. As Petiver put it, “what most alleviates our loss of soe great & good ffreind is in the hopes you give me of suddenly having some other Persons as well qualifed to succeed him.”<sup>602</sup> Serrano’s letter seemed particularly promising in this respect, and even hinted at interest in continuing the communications: the Jesuits were “hopeful that it will not take long before another Brother apothecary from among our [fellows] arrives to the Philippine Isles, who would – like the deceased Georg – have knowledge of the plants of these regions.”<sup>603</sup>

Encouraged by this news, Petiver wrote two letters to Serrano, in March 1710 and January 1711. He opened with a long eulogy of Kamel, revealing that “[t]he Learned World have been very much obliged [...] for his Kind Communications of the many Observations” that “enlightned our

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<sup>595</sup> Letter 148.

<sup>596</sup> Letter 149.

<sup>597</sup> Murillo 1749: 394r.

<sup>598</sup> Letter 29. This letter survives in Bulkley’s copy: Letter 154: 239r, “Tres tuae epistolae [...] amicum tuum et charissimum Georgium Josephum Camelum fratrem nostrum mortuum iam invenerunt.”

<sup>599</sup> Letter 154: 239r, “...grates tibi ex animo [...] nomine defuncti, ut par est, nos magni estimare.”

<sup>600</sup> *Ibid.*: 241r.

<sup>601</sup> Letter 159: 80v–81r.

<sup>602</sup> Letter 34: 100r.

<sup>603</sup> Letter 154: 239r, “In spe sumus non defluxurum multum temporis, quin alter ex nobis frater pharmacopola ad has Philippinarum Insulas perveniat, qui paulatim defunctum Georgium imitando harum regionum plantas calleat.”

European Quarter of the World”.<sup>604</sup> Having highlighted the recognition that participation in his enterprise can bring, Petiver enquired about further collaboration and whatever there was left from Kamel’s manuscripts. He turned to his proven method of inciting a polite obligation to reply, enclosing numerous gifts and promising to furnish “what ever else you shall desire” from Europe.<sup>605</sup> Despite these efforts, Petiver never received a reply from Manila. In January 1712, he was informed by Bulkley that “Padre Serrano is removed to some other place,” which promised “little likelihood of any further Correspondence with that place”.<sup>606</sup> After receiving this news, Petiver made no further attempts. This did not mean that Manila or the Philippines were now out of bounds for him. With the war approaching its end, Bulkley reported that “any particular thing much wanted from that place [...] is easily procureable,” since “we continue a yearly trade to that place.”<sup>607</sup> However Bulkley’s death soon after, in August 1714, effectively terminated the connection to the Philippines. As Petiver confessed to his friend William Sherard, the loss of two of his best correspondents left his enterprise in tatters.<sup>608</sup> Moreover, his undying enthusiasm and industry were curtailed by health issues of his own and in 1718, Petiver joined his friends in the “immortall & more happy state”.<sup>609</sup>

### III.9. Conclusion

Through the lens of Kamel’s activities, this chapter has explored how natural and medical knowledge could be produced and mobilised in the face of distance, of cultural and political differences, and of personal and national conflicts. Although the agencies teased out from Kamel’s networks would be considered marginal in previous studies built around European markets and institutions, I have used them to provide insights into the construction and operation of long-distance global links that traversed continental, political and cultural boundaries. Attention to these processes reveals the rich and cosmopolitan Indo-Pacific worlds, interlaced with commercial connections, which mediated movements of knowledge and objects back and forth across geographical and social spaces and between Asia and America. By tracing these links, this chapter has highlighted the diversity of local agencies involved in the production and communication of early modern knowledge and pointed to its complex trajectories that often spanned the borders of rival states. However, due to the focus of previous studies on European agencies and institutions, little is known about the mechanisms that fuelled these flows. This chapter underlines that a closer consideration of these processes promises a

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<sup>604</sup> Letter 34: 99v.

<sup>605</sup> Letter 35: 115v.

<sup>606</sup> Letter 161.

<sup>607</sup> Letter 164.

<sup>608</sup> Letter 175: 229r.

<sup>609</sup> Letter 34: 100r.

more comprehensive understanding of how knowledge travelled and how locally produced information attained global mobility.

This and the previous chapter have also explored how commerce interacted and intercepted with the making of early modern knowledge. I have traced the trade networks that, despite their limitations, provided the infrastructure without which knowledge and objects could not travel on a worldwide scale; pointed to the merchants, surgeons and other agents who travelled within these systems and brokered relationships across geographical and cultural contexts; examined how money could play into and fuel exchanges of knowledge and erudite self-fashioning; and investigated how early modern agents traversed between or blended different strategies across the spectrum of learned and commercial in pursuit of social and financial gains. I have mapped how the learned projects of Kamel and Petiver became intricately intertwined with their medical practice and their commercial engagements, although – as discussed – each of them navigated these worlds and their frontiers in different ways and with different outcomes. It is only by looking at the actual practices on a case-by-case basis that we can appreciate how early modern naturalists understood the fuzzy boundaries between learned and commercial.

## Chapter IV

### Appropriating Local Knowledge: Philippine *Materia Medica* Found in Translation

In the previous chapter, I considered how the engagements of Kamel with John Ray and James Petiver enabled him to deliver his treatises on Philippine nature to Europe, where these first comprehensive reports of local flora and fauna appeared in print. Most of Kamel's descriptions of Philippine plants were published as an appendix to Ray's *Historia plantarum*, and sixteen additional essays came out in *The Philosophical Transactions*. As discussed, Petiver also drew heavily on materials supplied by Kamel in his own projects, especially *Gazophylacium*. The surviving materials indicate that Kamel sent at least 2,000 descriptions of plants to London, nearly 80% of which appeared in print. He also submitted over 600 descriptions of animals, two-thirds of which appeared in print, as well as penning shorter accounts on fungi, monsters and geology. To illustrate his reports, Kamel produced some 1,000 images, although only about 20% were ever printed: nearly all in Petiver's *Gazophylacium*.

This chapter focuses on this massive body of materials and on Kamel's identity as scholar and naturalist. Having covered local contexts of the production of knowledge, as well as the mechanisms involved in the transmission of knowledge over distance, I will now examine the contents and reception of Kamel's treatises. Focusing on the practices involved, I explore how Kamel used various kinds of evidence in constructing knowledge about Philippine nature, in translating it from local to European contexts and in building his authority as an author in natural history. It is now commonly accepted that the manner in which knowledge was derived, as well as the social contexts in which it was produced, are crucial to its validity.<sup>610</sup> As Steven Shapin has put it, in the history of science "credibility should not be referred to as a 'fundamental' or 'central' topic – from a pertinent point of view it is the *only* topic."<sup>611</sup> Paying close attention to writing style and presentation, I will examine Kamel's sources and his use of information gleaned from learned publications and indigenous informants, as well as from personal observations and experiments. I seek to elucidate how Kamel appropriated local nature into frameworks understandable to his European audiences, and thus established compatible and credible meanings that could be shared across contexts and distance.

As argued by Nicholas Jardine, to situate any kind of communication into its context and to glimpse the objectives of the author, it is crucial to consider conventions of genre and processes of composition.<sup>612</sup> Therefore, I begin by trying to situate Kamel's work within Jesuit traditions of literary production, showing that, despite some debts, it does not fit into established missionary genres. I

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<sup>610</sup> Especially Shapin and Schaffer 1985; Shapin 1994.

<sup>611</sup> Shapin 1995b: 257–258. The emphasis is in the original.

<sup>612</sup> N. Jardine 1991a. See also J.A. Secord 2004.

argue that, instead of writing for his local brethren, we should understand Kamel as addressing learned audiences in Europe. This is best exemplified by his system of plant classification. Rather than by concerns with utility or by the practical exigencies of the missionary situation, Kamel's arrangement was informed by philosophical notions, which gave the work the stamp of the *societas eruditorum*. Classification – and naming more generally – constituted the first stages of appropriation, as well as playing a central role in the formation of shared meanings. As Emma Spary and Staffan Müller-Wille have highlighted, through naming and assimilation into classificatory schemes, European naturalists turned foreign plants into understandable entities and established a degree of control, essential for mediating transactions across contexts.<sup>613</sup>

Historians now generally agree that early modern colonial encounters and the search for new remedies were closely connected to the emergence of modern science and medicine.<sup>614</sup> However, the local and especially non-European agencies involved in such processes remain difficult to access. Previous studies have demonstrated that knowledge appropriation, as well as production of credible science, typically involved European efforts to efface local agencies and trajectories.<sup>615</sup> In Daniela Bleichmar's words, once they had been "stripped of their local connotations, natural substances resurfaced as global goods."<sup>616</sup> The writings of Kamel present examples of such processes, as he aimed at appropriating local plants into frameworks understandable to his European audiences and thus at mediating their mobilisation on a global scale. Although his treatises represent endpoints of cross-cultural encounters, in which local meanings had largely been obliterated, I argue that close attention to the naturalist practices involved in knowledge production and communication can reveal glimpses of local agencies and trajectories. In recovering these processes, I draw on the recent work of authors such as Neil Safier, Iris Montero Sobrevilla and Pablo Gómez, who have shown how European sources can be used to tease out non-European agencies and categories.<sup>617</sup> Safier has been particularly vocal about the importance of bringing handwritten historical materials into conversation with other kinds of sources, including contemporary ethnographic evidence.<sup>618</sup> Here, I will demonstrate that an examination of Kamel's classification system paired with the use of ethnographic evidence reveals categories of knowledge inspired by Philippine indigenous traditions, as well as providing insights into entanglements between European science and local exigencies.<sup>619</sup> Furthermore, I suggest that a

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<sup>613</sup> Müller-Wille 2005; Spary 2005b.

<sup>614</sup> Grove 1995; Bayly 1996; Raj 2006; Schaffer et al. 2009; Safier 2010; Sivasundaram 2010a.

<sup>615</sup> For example, Schiebinger 2004; Schiebinger and Swan 2005.

<sup>616</sup> Bleichmar 2005: 99.

<sup>617</sup> Gómez 2017; Safier 2017; Montero Sobrevilla 2018.

<sup>618</sup> Safier 2010; 2017. For the use of ethnographic evidence in histories of cross-cultural encounters, see also Denning 1980; 1996; Thomas 1991; Bravo 1999; Cruikshank 2014.

<sup>619</sup> For entanglements, see Bauer and Norton 2017.



consideration of the role of names and languages as instruments of negotiation, transaction and appropriation affords additional tools of analysis. I argue that by following names around, we gain insights into processes of cross-cultural interaction, colonisation and commodification, and into initial trajectories of exchange.

To explore how Kamel built associations between the flora of the Philippines and that of the Old World, and thus appropriated local *materia medica* into European knowledge frameworks, I will focus on his treatises on two Philippine medicinal plants, *tugus* and *igasur*.<sup>620</sup> In order to embed these remedies within European traditions, Kamel recognised them as drugs previously described by canonical authorities associated with the Galenic tradition: Dioscorides (c.40–90) and Serapion the Younger (c. twelfth century). The challenges involved in employing classical knowledge in the context of the European encounter with nature of new worlds, as well as in reconciling ancient wisdom with new realities, have been explored for the American case by Anthony Grafton, Anthony Pagden and others.<sup>621</sup> Drawing on their work, I seek to examine these processes under different geographical and social circumstances: through the eyes of a Jesuit lay brother pharmacist stationed in the Philippines. Reflecting Grafton’s statement that “the classical texts and concepts have been, for the West, above all a set of tools”, I argue that ancient knowledge and canonical authors of the Old World represented essential instruments of appropriation for Kamel, and a universal language which conveyed relatively stable meanings across an increasingly fragmented Europe.<sup>622</sup>

By identifying local plants with those described by Old World authors, Kamel downplayed their novelty and introduced them to his European audience in familiar terms. This approach echoes the efforts of the Jesuits stationed in the Americas in documenting local *materia medica*, examined by Andrés Prieto and Miguel de Asúa.<sup>623</sup> The latter has argued that the Jesuits were engaged in the process of “Galenisation of native herbal lore”, that is its “codification in terms of Galenic theory”.<sup>624</sup> Using a similar method, Kamel endowed Philippine plants with clear theoretical foundations comprehensible to European experts and customers, and thus paved the way for their deployment on both local and global scales and markets. Previous studies have drawn attention to the longevity of Galenism in Europe; in Mary Lindemann’s words, the doctrine “endured because it was pliant and because its adherents were clever in weaving seemingly contradictory ideas and discoveries into its

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<sup>620</sup> Kamel’s *igasur* is a misspelling of the Visayan *igasud*. In the rest of this chapter, I use Kamel’s orthography.

<sup>621</sup> Pagden 1986; Grafton 1992. See also Ryan 1981.

<sup>622</sup> Grafton 1992: 256.

<sup>623</sup> Prieto 2011: 36–89; Asúa 2014: 96–163. Monica Green has explored the process of “Galenisation” of Arabic gynaecology (Green 1985: 73). See also Estes 1995; Wear 1999.

<sup>624</sup> Asúa 2014: 134, 136.

fabric.”<sup>625</sup> Kamel’s work provides insights into the use of Galenism in overseas contexts and reveals how this framework could incorporate new findings, adapt to new environments and respond to the challenges of cross-cultural exchanges. More broadly, Kamel’s writings are therefore illustrative of how European theoretical frameworks were negotiated with local traditions of knowledge and with colonial practices of knowledge production.

Kamel’s use of Galenism as an optic to understand and appropriate local plants contrasts with Linda Newson’s work on pharmacists in early colonial Peru, discussed in Chapter I.<sup>626</sup> Newson has argued that the Spanish adherence to Galenism obstructed the adoption of American plants and also reliance on experimental approaches, thus delaying the espousal of ‘new’ philosophy associated with the development of modern scientific methods. Such views, however, are in discord with the practices of Kamel and other Jesuits, who extensively relied on empirical practices in their investigations of the flora of new worlds. The contributors to the recent special issue, edited by Elaine Leong and Alisha Rankin, have drawn attention to the differences in the nature and purposes of testing drugs in various early modern contexts.<sup>627</sup> Here, I will explore how Kamel understood and used experimental trials in his work. He drew on empirical evidence largely to bolster his associations between Philippine plants and Galenic theory, as well as taking advantage of the unrivalled character of his direct access to Philippine nature when addressing readers, invoking his personal experience and observations as guarantees for his words. The first-hand knowledge of his material lent Kamel, a lowly Jesuit pharmacist, the authority to engage in learned discourse with prominent scholars and dispute the claims of writers of much greater stature. Again, the use of experience in Kamel’s writings finds parallels in the activities of the Jesuits in Spanish America, whose “exaltation of experience as a criterion of epistemological warrant” has recently been documented by Asúa.<sup>628</sup>

When striving to embed local knowledge within European traditions, Kamel therefore drew on erudite and empirical evidence in tandem: it was a combination of his familiarity with learned literature and of his direct experience with local plants that enabled him to gain membership in the *societas eruditorum* and that aided his efforts to ‘Galenise’ Philippine *materia medica*. I argue that this conjunction of adherence to canonical authorities with empirical orientation can be understood within the context of Kamel’s affiliation with the Society of Jesus. On the one hand, Jesuit education was embedded in erudite texts endorsed by the Church, and involved training in classical philology and learning. On the other hand, as argued by Stephen Harris, John O’Malley and others, experience

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<sup>625</sup> Lindemann 2010: 87.

<sup>626</sup> Newson 2017.

<sup>627</sup> Leong and Rankin 2017.

<sup>628</sup> Asúa 2014: 310.

attained a special status within the Society as a tool for learning about the self, the faith and the world.<sup>629</sup> Based on the evidence presented, I will make preliminary comments on the existence of a Jesuit empirical culture, rooted in the spiritual context of usefulness to the greater glory of God. Thus, I seek to contribute to the debates about the early modern rise of experimental methods.<sup>630</sup>

Finally, I will examine the reception and legacy of Kamel's work in Europe. The attention that Kamel's treatises garnered in the scholarly sphere was reflected in the decision of Carl Linnaeus (1707–1778) to name the genus *Camellia* in Kamel's honour. However, despite providing Europe with the first comprehensive accounts of Philippine nature, Kamel and his extensive findings soon fell into oblivion. Today he is a forgotten figure, both in his native and adoptive homelands. I suggest that since Kamel intended his descriptions to work in tandem with illustrations, this neglect can be attributed to the fact that Kamel's images were never published due to the immense financial investment required. With no point of visual reference – so necessary for accurate identification and comparison – other botanists could hardly find an extensive use for Kamel's bare textual descriptions. This outcome thus resonates with the work of scholars such as Sachiko Kusukawa, Claudia Swan and Daniela Bleichmar, who have pointed to the central role of visual culture in the early modern practices of natural history, as well as highlighting the importance of images as key techniques in the production and communication of natural knowledge.<sup>631</sup>

#### **IV.1. Publishing *ad maiorem Dei gloriam***

For a Jesuit, and especially a lay brother, Kamel's publication record and mode of writing are highly atypical. Harris has estimated that between 1600 and 1773, the Society of Jesus produced nearly 6,000 original scientific works, which would make it one of the most prolific organisations in the history of science.<sup>632</sup> In terms of authorship, however, there was a great disproportionality: more than 50% of this vast corpus can be associated with just 200 authors, or some 12% of the total number of contributors. Moreover, drawing on a sample of 200 works, Harris has concluded that over 95% of the writings were penned by ordained priests and printed predominantly in Europe. Publication was therefore the exception, not the norm, for most Jesuits – and Kamel's prospects of ever publishing must have seemed bleak, especially as a lay brother in Manila. Rather than his Order, it was correspondence with London that presented Kamel with an unexpected opportunity to defy these

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<sup>629</sup> Harris 1989: 48; O'Malley 1993: 251, 369–371; Goddard 1995; Dorsey 1998; Gray 1999.

<sup>630</sup> For example, Shapin and Schaffer 1985; Shapin 1996; Dear 2001; Smith 2004; Barrera-Osorio 2006; Daston and Lunbeck 2011.

<sup>631</sup> Kusukawa 1997; 2009; 2011; 2012; 2014; Swan 2002; Bleichmar 2009; 2011; 2012; Schmidt 2015.

<sup>632</sup> Harris 1989: 40; 2000: 225, 238.

unfavourable odds. The Royal Society may have seemed an improbable ally, and one could hardly imagine a less conventional platform for a Jesuit author than *The Philosophical Transactions*. In the first 50 years of the journal's history, Kamel alone was responsible for nearly 40% of all Jesuit input and in his 'active period' (1699–1711) for more than 80%.<sup>633</sup> Apart from the Jesuit correspondence with Isaac Newton, Kamel was also the only Jesuit to communicate directly with the Royal Society. This unlikely alliance enabled Kamel to pursue his scholarly ambitions, which he could otherwise hardly hope to fulfil given his low status within the Society and his location in Manila.

In terms of composition, Kamel's work does not readily conform to the conventions of established missionary genres, despite showing signs of influence from the traditions of Jesuit pharmacopoeias and natural histories. These two styles were born out of the exigencies of the missionary situation, and their purpose was above all utilitarian: to record practical information and provide guidance for members of the Society in new environments. Here, I will briefly compare these outputs with the work of Kamel. I argue that his scope and especially method of organisation, which extended well beyond concerns with utility, indicate that Kamel was seeking to address erudite audiences in Europe rather than writing for his fellows. To begin with missionary pharmacopoeias, these works were commonly authored by lay brother pharmacists like Kamel, who represented the majority among the few dozen unordained Jesuits who published.<sup>634</sup> These were handbooks of simple remedies for everyday needs that even Jesuits with little or no medical training could put into practice. Written with the explicit aim of supplementing the lack of medical care and medicinal supplies, especially outside colonial hubs, this genre became a mainstay of missionary literary output. Jesuit pharmacopoeias typically followed the practical arrangement of *a capite ad calcem* ('from head to heels'), commonplace to the apothecary trade, which organised recipes according to the part of the human body on which they had their effect.<sup>635</sup>

The 'higher' genre of Jesuit natural histories, by contrast, was typically the domain of ordained priests.<sup>636</sup> Based on their missionary experience, these writers sought to provide a complete inventory of all the plants, animals and nations of the lands in which they resided. Modelling their works on the tradition of natural, moral and civil histories, they subscribed to the definition of "nature as everything in the world worthy of memory", in the words of Pliny the Elder (61–113 AD).<sup>637</sup> Although these authors engaged with philosophical and theological issues, and often sought to provide a framework

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<sup>633</sup> Reilly 1958.

<sup>634</sup> For Jesuit pharmacopoeias, see Anagnostou 2005; Asúa 2014: 96–163. For different genres of early modern pharmacopoeias, see De Vos 2019.

<sup>635</sup> For example, De Vos 2019: 33.

<sup>636</sup> For Jesuit natural histories, see Asúa 2008; 2014: 25–95; Prieto 2011: 143–220.

<sup>637</sup> Findlen 1994: 3.

and justification for the Society's missionary effort, Jesuit natural histories tended to focus on matters of practical importance: from geography and local customs to the dangers of the wilderness and the different ways of obtaining food, medicines and shelter. The organisation of these works reflected these utilitarian aims: plants, for instance, were typically classified into groups such as edible, poisonous and medicinal, according to their use. Their descriptions then focused on the practicalities of their preparation and cultivation, and incorporated elements from books about home remedies, cooking and horticulture.

In contrast to these genres, Kamel's writings were considerably more ambitious in terms of their focus and scope. Nominally a lay brother pharmacist, Kamel did write most extensively about medicinal plants, and included recipes and other information from his medical practice that one would typically find in missionary pharmacopoeias, such as dosage, case histories and regimens. Rather than confining himself to *materia medica*, however, Kamel clearly sought to produce a complex description of local nature, including all sorts of plants and animals, and even monsters and hot springs. This approach was more closely in line with the 'higher' genre of natural histories. Nevertheless, whilst such works were concerned typically with useful knowledge, for Kamel every single plant, rock or animal was "worthy of memory" and detailed description. Although the breadth of his projects was exceptional in the missionary context, his method of ordering nature stands in even stronger contrast to the conventions of Jesuit missionary genres. To arrange plants, Kamel devised his own original scheme, informed by morphology and philosophical principles rather than by utility and the practical concerns of the missionary situation. To a Jesuit in the field, who was seeking to cure an ailment or find edible fruits, Kamel's system would have been of little use. However, Kamel's ambitions extended far beyond the Philippine missions into the European erudite sphere. The adoption of a philosophical method enabled the Jesuit to become a member of the worldwide scholarly community, and to publish alongside leading learned authorities of his time. It is to this scheme that I now turn.

#### **IV.2. Kamel's classification system: Local inspirations and global ambitions**

Throughout the early modern period, naturalists sought to devise a method of plant classification that would reveal the hidden divine order of the natural kingdom.<sup>638</sup> These efforts were inspired by the Aristotelian concept of essential characters, and the rediscovery of the works of Theophrastus (c.371–c.287 BC), who applied his mentor's philosophical principles to the study of plants.<sup>639</sup> Opposed to practical arrangements based on accidental aspects, such as use or habitat,

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<sup>638</sup> For example, Morton 1981.

<sup>639</sup> For Theophrastus, see especially Stearn 1976; J.E. Raven 2000.

erudite naturalists looked for characters that would reflect the essence of the plant and its position within the natural order. A prominent late seventeenth-century example of this vision was the work of John Ray, who summarised his approach as follows:

We reject those methods, which order plants according to the places where they grow, the time at which they flower or their virtues and uses, since all of these rules separate cognate species and unite alien ones. But we accept and employ the rule which takes the characteristic marks of genera to be the similarity and congruence of essential characters, that is of flower, calyx, seed and its receptacle.<sup>640</sup>

Although probably the most elaborate system at the time, it did not develop in a vacuum, and Ray acknowledged his debts of gratitude to his botanical predecessors: the foundation of his scheme in the morphology of flower and seed-bearing organs followed the lead of Andrea Cesalpino (1519–1603); his systematic approach to plant morphology, including much of his technical vocabulary, was inspired by Joachim Jung (1587–1657); and in compiling previously described species, he drew heavily on Caspar Bauhin's exhaustive *Pinax theatri botanici* ('Illustrated Exposition of Plants', 1623).<sup>641</sup>

In classifying Philippine flora, Kamel was clearly inspired by the method of Ray, whose *Historia* he considered "a supremely brilliant work".<sup>642</sup> In addition to its complexity, Ray's system was embedded within a clear theological vision and these religious overtones may have appealed to Kamel. Just as Ray, the Jesuit took the morphology of flower and seed-bearing organs as the main criterion of arrangement, as well as directly borrowing many of Ray's classes. Their systems of trees, for instance, are practically identical. Despite Kamel's reliance on philosophical principles, the classification system increasingly broke down towards the end, and included several categories based on utility, which one would find rather in missionary natural histories: for example, "some poisonous plants" and "woods useful to craftsmen".<sup>643</sup> Furthermore, Kamel's classification lacked any apparent hierarchical organisation. This was probably because the Jesuit expected Ray simply to insert the plants into his own pre-existing groups. However, Ray took a different view, and included Kamel's descriptions as a

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<sup>640</sup> Ray 1686: 51, "Methodos autem illas quae plantas secundum locos natales, aut florendi tempus, vires & usus disponunt, rejicimus, quoniam omnes illae cognatas species separant, alienas consociant; eam autem quae a similitudine & convenientia partium praecipuarum, floris scilicet, & calycis, seminis ejusque conceptaculi notas characteristicas generum sumit, amplectimur & usurpamus."

<sup>641</sup> For Ray's botanical work, see Stevenson 1947; C.E. Raven 1950; Oswald and Preston 2011. For Cesalpino, see Vines 1913: 8–43; Bremekamp 1952; Morton 1981.

<sup>642</sup> Letter 11: 292r, "...historiam tuam plantarum, opus me hercle omnium consummatissimum..."

<sup>643</sup> Kamel 1704f: 70, "Ligna fabricis & supellectili parandae inservientia", 87, "De quibusdam arboribus venenatis".

discrete appendix, so that “the reader would not find them less worthy of recognition than they are; I would not defraud you of any part of the praise which rightly belongs to the author of such an excellent work.”<sup>644</sup> Since Kamel’s system was such a close reflection of Ray’s method, Ray could preserve the Jesuit’s original scheme without any interventions. However, there was one exception which distinguished Kamel from Ray and other botanists: his category of climbing plants.

Early modern attempts to systematise the plant kingdom commonly started with a division between herbs and trees. Although the philosophical limitations of this bipartite method were widely discussed, and botanists sought to provide more natural foundations for the two categories, the division was retained by the vast majority of authors, including Ray. These two deeply entrenched categories appeared in the work of Kamel too, for he divided flora into *plantae humiles* (‘low-growing plants’) and *arbores et frutices* (‘trees and shrubs’). However, he resolved to include one additional group: *plantae scandentes* (‘climbing plants’). The term *scandentes* commonly featured as a characteristic and sometimes even a lower category of classification in European systems of plants. Nevertheless, Kamel’s decision to promote climbing plants into one of the main divisions, and thus create a tripartite scheme, seems to have no parallel in early modern European natural history. Kamel never explained his decision to abandon the traditional dichotomy and, therefore, we can only speculate about his reasons.

With inspiration from Europe unlikely, I suggest looking for answers in the local circumstances. In the Philippines, Kamel was confronted with an abundance of plants that did not comfortably fit into either of the two Old World categories, such as lianas and epiphytes – a challenge that sedentary European scholars did not commonly face. It was most probably to accommodate these misfits that Kamel devised a whole new category. Furthermore, the introduction of the third division devoted to climbing plants may have been informed by local categories of knowledge. Philippine folk taxonomies commonly include vines or climbing plants as one of the main classes, typically alongside herbs and woody plants. For example, the Tagalog people, with whom Kamel interacted most extensively, traditionally distinguish four main groups of plants, identical to those used by Kamel: trees, shrubs, herbs and vines (note that Kamel grouped trees and shrubs into a single category). The Ifugao people of the northern Luzon use precisely the same tripartite system adopted by Kamel.<sup>645</sup> There are of course several problems with turning to contemporary ethnographic evidence in historical work: in this case, most notably, a time lag of nearly three hundred years. Therefore, we have to make the assumption that local beliefs and systems of knowledge have changed little over that period.

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<sup>644</sup> Letter 20: 68v, “...pauciores minorisque pretii, quam revera sunt, lectori viderentur, adeoque parte aliqua laudis, quae tam eximii operis auctori debetur, Te defrauderem...”

<sup>645</sup> Personal communication with the locals in Manila and Ifugao. See also Brown 1977: 325; Conklin 1980: 10.

Moreover, we have to remain aware that the plant groups discussed are polysemic, and that the categories of ordering nature used by the indigenous peoples of the Philippines and by European missionaries or ethnographers may not be readily commensurable. Nonetheless, despite these caveats, contemporary ethnographic evidence provides valuable context for the understanding of the classification system of Kamel and raises a serious possibility that he was drawing on local categories of knowledge.

To integrate climbing plants into his system smoothly, Kamel had to redefine his criteria of classification and divide plants according to habit of growth: he referred to *plantae humiles* rather than the traditional *herbae*. Notably, this approach was an extension of the method of Theophrastus, who, despite using different main categories, also invoked the manner of growth as a natural and philosophical criterion for dividing plants.<sup>646</sup> Since this approach was based on the progressive gradation of forms from low-growing through climbing to tall-growing plants, it also drew validity from the Aristotelian *scala naturae*, adopted by Christian thinkers in their descriptions of the order of nature, which Kamel knew well from his education.<sup>647</sup> Although perhaps not a principal reason for adopting a third division, it is hard to miss that a tripartite system also reflected the divine harmony of the Holy Trinity.

In lower divisions of climbing plants, Kamel returned to Ray's method based on the morphology of flowers and seeds. Ray himself did not seem to disapprove of Kamel's introduction of a new, third category. In 1702, he lauded Kamel's work in a letter to Petiver: "His history of scandent plants are very well worth the publishing. The learned world must not want them." However, Ray immediately added that "[t]hey must, I think, be printed by themselves."<sup>648</sup> This is indeed what happened. Whilst Ray appended Kamel's descriptions of *plantae humiles* and *arbores et frutices* to his third volume of *Historia* (1704) in their original arrangement, the section on climbing plants was left out of the work and published separately by Petiver in *The Philosophical Transactions* that same year. Ray did not provide any explanation for the decision not to include Kamel's climbing plants. The tripartite scheme was probably hard to reconcile with Ray's own system and perhaps too radical an innovation that simply did not conform to European scholarly conventions of the period.

Despite the unfortunate fate of his climbing plants, Kamel managed to publish his work in a major botanical publication of his time, even as a Jesuit lay brother stationed in Manila. His bold attempt to develop an original plant classification scheme, informed by philosophical principles and

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<sup>646</sup> Theophrastus 1999: 23–27.

<sup>647</sup> Lovejoy 1936.

<sup>648</sup> Letter 110.



latest developments in the field, points to his ambitions to establish himself as a member of the *societas eruditorum*. In the eyes of other scholars, Kamel's classification served as a mark of a learned naturalist. For example, Willem ten Rhijne expressed his admiration of Kamel's "order [of plants], which is appropriate, since you assigned each of them into its own group, as in flowerbeds."<sup>649</sup> Kamel's system was as much a product of global ambitions as it was of global borrowings: here, the work of a Bohemian Jesuit stationed in the Philippines was shaped by that of a sedentary English naturalist. This example highlights the proliferation of early modern global links and their power to shape scientific practices across distinct contexts. Kamel's category of climbing plants then demonstrates how these global influences readily interacted and became entangled with local contingencies. However, even if well suited for systematising Philippine nature, that foreign, hybrid group found little appreciation among sedentary European naturalists, and became lost in translation between Manila and London.

#### **IV.3. What's in a name? Bohemian blueberries and the Philippine Babel**

Venturing for the first time into the archives of the Society of Jesus, I was struck by the omnipresence of lists of all kinds. From catalogues of students and missionaries to inventories of books, goods and commercial transactions, the archives abound with diverse registers that the well-oiled Jesuit bureaucratic machine produced in its daily operations. The process of listing was connatural to the Society of Jesus and structured the patterns of Jesuit written production, from administrative documents to learned treatises.<sup>650</sup> The work of Kamel was no exception and his descriptions of Philippine nature came in the form of extensive, numbered lists (Figure 4.1). The emergence of this scribal tool as a device for navigating early modern information landscapes has already been discussed in Chapter III. Its use quickly found its way into missionary practices and genres of writing, from pharmacopoeias and natural histories to lexica and astronomical observations.<sup>651</sup> In Kamel's quest to provide a complete inventory of Philippine plants, listing was the main principle of organisation, as well as the starting point of research. In this section, I will focus on Kamel's methods of describing Philippine plants and, especially, on the role of names and diverse languages – from classical to vernacular – as tools of negotiation, transaction and appropriation. I argue that by focusing on names and their trajectories, we gain important insights into the processes of cross-cultural interaction, colonisation and commodification.

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<sup>649</sup> Letter 8: 128r, "...quarum placet ordo; quippe plantas in suas quasque partiris series, quasi in pulvillos apparatus..."

<sup>650</sup> For Jesuit scribal production and standardisation of writing practices, see Friedrich 2008b; Nelles 2014; 2015. For listing as a principal of organisation in Jesuit scientific works, see Asúa 2008; 2014.

<sup>651</sup> O'Malley et al. 2000; 2006; Prieto 2011; Asúa 2014.

## De LIMONIBUS Luzonis.

9. *Salvasova*. Arbor Orgyia alta, folia trina ac trina, quorum mediū longiusculum, lateralia subrotunda. *Limocellus* parvus est, magnitudinis *jabæ*. Usus foliorum, corticis & fructus est pro balneis vulneratorum ab animalibus venenatis. Radicem suis induunt Indi antidotis.

10. *Suasua*, seu *Bisbu*. Est *Limon* pumilus, trifolius seu *minimus alter*, gaudet maritimis. Folia aliquot contusa, & ulceribus ac bubonibus imposita, eos 24 horarum spatio maturant & suppurant. Gaudet maritimis ut prior.

11. *Cabugao*. *Limon* sphaerico-compressus, corticis carnosioris, unde saccharo conditur. Succus pauci, acido-dulcis.

12. *Tibuli*. *Limon sylvestris*, ferè orbicularis, magnitudinis parvi *Aurantii Caxel*, subverrucosus, succi acerrimi.

13. *Puros* seu *Bolongot*, Hisp. *Limon encrespado*. Est *Limon* pyriformis, verrucoso-tuberosus, viridis, mediocris, suaveolens.

14. *Dayap*, vel *Curum*, Hispanis *Limon de Zenta*, est *Limon* ordinarius, parvus, *Calaber*.

15. *Dayapsina*, est *Limon ordinarius alter*.

16. *Tambolibir*. *Limon* rotundus.

17. *Biasung*. *Limon sylvestris*, longiusculus, magis quam cæteri, & specificè aduersatur venenis & scorbuto.

18. *Hiris*, *Limon* mediocris, cortice delicatulo, cujus succus acerrimus est, & *Aqua Regia* adinstar in *Chalybe*, quæcunque eo exarata exedit, spatio noctis unius. In hoc sæpius lapides ut *Margaritæ* pellucidi inveniri solent.

19. *Tabu*, *Limon sylvestris*, succi aciduli, odoris lentiscini, femine piloso & subplano, medullæ dulcis, interstitiis verò gummosa & viscosa mucilagine repletis. Folia trifolia, obtusa, obscurè virentia, leviuscula, alterna. Arbor ipsa alta & magna est.

20. *Limon de Vargas*, præter folia ordinaria, subcrispa, plura mittit ex uno corculo trilobata, seu trifolia.

21. *Limon Nasogbuannus*. Arbor est magna, folia qualia *Aurantii Japonici*. Pomum *Limonio Regio* habitus, sed succi *sylvestris*, nescio quid insulsi, & minus grati resipientis.

22. *Suasua*, *Limon sylvestris alter*. Folia gerit alterna, sesquiuncialia, corculo carentia, mucronis loco bifida, ad quorum sedes semper bini prodeunt aculei.

23. *Limocellus trifolius*, Hispanis *Limon de Batavia*, Sinis *Kiudibong*. Folia atro-virentia, vix uncialia. Raro orgyiam altitudine attingit: Flores candidi, odoriferi, tripetali, senis crotatis staminibus, & una exporrecta lingula in triquetre capitellum desinente umbilicati: Fructus sunt baccæ *Ceraso* compares, rubræ, dulces, gummosa mucagine scatentes, & binis aut tribus viridibus seminibus fartæ. Saccharo conditæ pro bellariis deservientes.

Figure 4.1: Kamel's enumeration of the different kinds of Luzonian lemons in his supplement to Ray's *Historia plantarum* (Kamel 1704f: 57).

In his appendix to Ray's *Historia*, Kamel recorded all sorts of plants, from mosses and ferns to fruit-bearing trees and fragrant flowers, focusing particularly on useful and valuable species. In Kamel's portrayal, the Philippines almost emerge as a bountiful, Edenic place, abounding in ebony and redwood, blessed with numerous kinds of rare spices like nutmeg and cinnamon, and overflowing with varieties of crops like rice and bananas. Every entry opens with the plant's name, followed by the information required for identification, from the size and morphological description to sensory information. Kamel's style and vocabulary are both strikingly similar to those of Ray, whose *Historia* Kamel apparently used as a template. Depending on his knowledge, he continued with additional details, such as habitat, flowering times and uses, which he either knew from his own experience or observed among indigenous populations. It becomes clear that many of Kamel's descriptions were the

result of careful, direct observation of plants in their natural habitat and of diligent collection of further data from a variety of informants.

The duties that Kamel was assigned in Manila, however, restricted his movement around the archipelago and therefore also the kinds of species that he could portray in detail or from personal observation. There are numerous cases where Kamel apparently described the plant in question from specimen. For example, he characterised the group of edible seaweed locally called *goso* to be “soft and tender, of white or yellowish colour”, whereas the living specimens tend to be cartilaginous and heavily pigmented.<sup>652</sup> In this instance, Kamel probably drew on a specimen in bleached condition. In terms of the quality of descriptions, there is also a perceivable disparity between herbs and trees. This may have been partly caused by time constraints, as Kamel was struggling to finish the section on trees in time for it to be inserted into Ray’s *Historia*.<sup>653</sup> However, since his reports often concerned only useful parts of trees, it seems that Kamel may have described much of this material from specimens, circulated as commodities. For instance, in case of a resiniferous tree from the nearby Paynan, Kamel could only provide extensive commentary on the resin, admitting that he “could not gain any knowledge of the flower and the fruit,” even though the Jesuits even had a mission in that area.<sup>654</sup> Just as for scholars in Europe, Kamel and his reach were limited by distance, logistics and methods of preservation.<sup>655</sup>

To facilitate communication and provide a common frame of reference, Kamel frequently relied on comparisons with other plants in his descriptions. These included European flora, which he expected his readers to know. For example, in a bout of homesick nostalgia, he compared the colour of the *longboy* fruits to that of “Moravian plums” and described one berry bush as cognate with “Bohemian blueberries” – although it is unclear whether most of his European audiences would find these analogies helpful.<sup>656</sup> More frequently, however, Kamel used comparisons with other Philippine and even American species that struck him as similar. As indicated in Chapter I, many species native to America, such as maize, tobacco and pineapple, had become so common in the Philippines by the late seventeenth century that they could comfortably be used as analogies.<sup>657</sup> Kamel was so familiar with American plants that he even used some Spanish and Nahuatl names as archetypes for describing local flora, essentially coming up with regional varieties such as Antipolo *cacaloxuchitl* or Chinese

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<sup>652</sup> Kamel 1704f: 42.12, “...Goso mollis est, & tenera, coloris candidi, aut flavescentis.”; Liao 2013.

<sup>653</sup> Letter 20: 68v.

<sup>654</sup> Kamel 1704f: 86.8, “De flore & fructu nihil valui scire.”

<sup>655</sup> Findlen and Toledano 2018.

<sup>656</sup> Kamel 1704f: 63.4, “...fructu est suppari Prunis Brunensibus...”, 71.10, “...species est [...] Myrtilli Boëmicæ...” See also *ibid.*: 53.14.

<sup>657</sup> *Ibid.*: 8.31, 36.12, 46.1, 46.2.

sapodilla.<sup>658</sup> Since analogies to Philippine and American plants could not provide any frame of reference for European audiences, Kamel probably intended his descriptions to work in tandem with his images, expecting his readers to regularly cross-refer between the text and the drawings. Thus, Kamel used textual comparisons as supplements to visual tools.<sup>659</sup> He commonly provided a single image to represent different stages of the life cycle and morphological variations, so that his depictions showed the plant in a perfect, complete state. As argued by Kusakawa, this approach reflected the Aristotelian quest for universal knowledge and theories, which found particular resonance in the Jesuit context.<sup>660</sup> Kamel's illustrations thus stood in for absent objects, displayed transient features of specimens and thus enabled the study of Philippine nature at a distance.<sup>661</sup> I will return to Kamel's images in the final section of this chapter.

The combined use of comparisons and illustrations would facilitate the creation of a shared image. To appropriate Philippine plants and translate them from local into European traditions, however, Kamel had to provide them with comprehensible names, ideally in the Latin *lingua franca* of European scholarship. Naming was a powerful tool which asserted control over the unknown, and, especially for a Christian missionary, must have evoked the metaphor of Adam naming the beasts in the Garden of Eden. In the first instance, Kamel strove to identify local plants with those already known in Europe. For example, the plant known in Luzon as *bamantigui* was introduced as *balsamina altera* of Pier Andrea Mattioli (1501–1577), *balsamina faemina* of Rembert Dodoens (1517–1585) and *balsamina amygdaloidea* of Conrad Gessner (1516–1565).<sup>662</sup> Although references to specific folios and numbers were omitted on this occasion, Kamel's method underlines the point raised in Chapter III that references to encyclopaedic publications were a common method of communication, especially given the instability of terminology before the establishment of the Linnaean system.<sup>663</sup> If a clear European counterpart was available, Kamel usually deemed it unnecessary to provide morphological descriptions, and listed only uses and information specific to the Philippines (Figure 4.2). As I will explore in the following section, the exception to this rule was identifications with plants described by classical authorities. In such cases, information on morphology was often incomplete or obscure, and detailed descriptions were thus required to bolster Kamel's conclusions.

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<sup>658</sup> *Ibid.*: 12.6, 39.23–24, 54.1–5, 75.4, 79.3–5.

<sup>659</sup> Swan 2002; Kusakawa 2009.

<sup>660</sup> Kusakawa 1997; 2011: 191.

<sup>661</sup> Especially Bleichmar 2012; Kusakawa 2012.

<sup>662</sup> Kamel 1704f: 9.12.

<sup>663</sup> Margócsy 2010.

12. *Malucanam Acoſtæ*, Indi *Agonoy* vocant, Hiſpani *Terba de Molucco*, ſi placet *Eupatorium aquaticum* voca. Deſcriptionem vide apud *Acoſtam*, aut etiam *Hiſtoriam Lugdunenſem*, ubi pro flore *Chamaemeli* lege *Chryſanthemi* radiati. *Folia* contuſa ſub cinere cocta, ac impoſita tumefacta emolliunt, & ad ſuppurationem diſponunt, aperta mundificant, incarnant, laſa denique quæcunque fuerint ad perfectam deducunt cicatricem, quapropter in vulneribus, ut præſtantiffima vulneraria cæteris omnibus antefertur. Alii utuntur ſucco, alii Oleum Balfamicum, alii Unguentum ex ea componunt. Succus, decoctum, aqua, aut Syrupus in urinæ retentione, renum calculo, hydrope, menſtruis retentis, difficultate partus, dyſenteria, colica & ſcorbuto, & præcipuè ex radicibus mira, & magna præſtant. Balneum, aut fotus ex *Agonoy*, *Parietaria*, & *cæpa* in retentione urinæ, colica, pedum œdematoſo tumore, & teſtium efficacia ſunt, & utilia. Apicibus Indi leguminis modo decoctis veſcuntur, ſed aliam ſpeciem eſſe ferunt rubram, quæ ſi in cibum venerit, vomitu, ventris torminibus, & alvi fluxu interimit. *Radicibus* recentioribus cum ana *Curcumæ*, & oleo recenti *Nucis Indicæ Cocci* ſimul contuſis, & expreſſis, alvum emolliunt, & repurgant.

**Figure 4.2:** Kamel’s entry on *Malucana* lacks any morphological descriptions: the list of names is immediately followed by the section on “vires”, or virtues (Kamel 1704f: 8). For its description, Kamel simply referred readers to the works of Cristóbal Acosta (1515–1594) and Jacques Daléchamps (1513–1588).

Where no direct identification with European plants was possible, Kamel sought to provide a name of his own. Here, he relied largely on combinations of ancient Graeco-Roman terminology and simple geographical, environmental or morphological determinants, such as *Luzonis*, *montanus* or *rotundus* (‘Luzonian’, ‘montane’, ‘round’). For example, Kamel identified local grapevines and spicate herbs as Luzonian varieties of Theophrastus’s *vitis idaea* and Dioscorides’s *stachys*.<sup>664</sup> With Jesuit education rooted in erudite texts with a particular emphasis on canonical sources, Kamel was closely familiar with this terminology. Since foreign terms and neologisms required explanation, which made them unsuitable for communication, it was by recourse to the language of Antiquity that Kamel was able to describe novelty. Ancient terminology provided a universal language in an increasingly fragmented Europe and offered some degree of stability and continuity amid the early modern flood of names and objects. In Kamel’s work, canonical authors and their plants feature essentially as dictionary entries: stripped of their contextual meaning and stabilised through centuries of tradition, they were fixed enough to mediate across different contexts. This argument resonates with the work on Linnaean nomenclature of Müller-Wille, who has argued that “it is only the name of a species, that rigid, designatory relation established in exchange, that can remain unchanged throughout all possible transactions.”<sup>665</sup> Although in some cases Kamel failed to find any analogies, and provided only indigenous names, his associations with Old World terminology were essential for transplanting Philippine flora to Europe. This is reflected in Petiver’s acknowledgement that “by adding your names to them [plants] it gives me a great light into the true knowledge of them.”<sup>666</sup>

<sup>664</sup> Kamel 1704f: 5.7, 71.

<sup>665</sup> Müller-Wille 2003: 163.

<sup>666</sup> Letter 32: 15v.

In addition to his own names, Kamel provided a list of synonyms for every plant described, or “the names [they] have in different languages, so that his work would be of more general utility.”<sup>667</sup> This was a common process, which provided a further element of stability, as well as a useful tool for tracing and referencing identical plants across transactions and publications.<sup>668</sup> The names recorded by Kamel are reflective of the diverse, cosmopolitan world of the early modern Philippines, as well as of the networks in which he was embedded. One constant inclusion were names in Philippine indigenous tongues.<sup>669</sup> This is hardly surprising, since most of the plants had no names in European languages. It was for this reason that Jesuit natural histories were often conceived as complements to, and extensions of, dictionaries of local languages.<sup>670</sup> By listing vernacular names, Kamel pointed both to his direct experience with the plant and his ability to tap into local knowledge, thus increasing his own authority. In contrast to the American tongues of Nahuatl and Quechua, there was no *lingua franca* in the Philippines, a dispersed archipelago that still today is home to an estimated 135 different languages.<sup>671</sup> Therefore, no central language could serve as an organising principle. Instead, Kamel included a plethora of vernacular names, used in different areas of the archipelago.

The selection of the vernacular name often points to the geographical origins of the plant or the informant, and this practice thus enables a rough reconstruction of Kamel’s local networks. Their reach seems to coincide closely with the map of Jesuit missions. By far the most common indigenous tongue used in Kamel’s writings was Tagalog, the language spoken in the Manila region. Although no individuals are directly acknowledged, we can thus assume that Kamel acquired many of the names he listed in person from his own local sources. This approach is hinted at by the fact that Kamel occasionally left gaps in his texts for vernacular names to be obtained later from his local informants (Figure 4.3). In case the name conveyed any useful information, Kamel also provided its translation: for example, the names of the tree known as *ygbubuhat*, *manyhaya* and *pamugat* were translated as “resurrecting the dead”, “liberating from incantation” and “curing diseases”, reflective of the tree’s potent virtues and significant local status.<sup>672</sup>

In addition to Philippine names, Spanish and Chinese terms feature most frequently, as one would expect. Occasionally, gaps were left for Chinese names, which again indicates that Kamel

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<sup>667</sup> Murillo 1749: 393v, “...puso los nombres, que tienen en diversas lenguas, paraque de este modo fuese mas general el beneficio.”

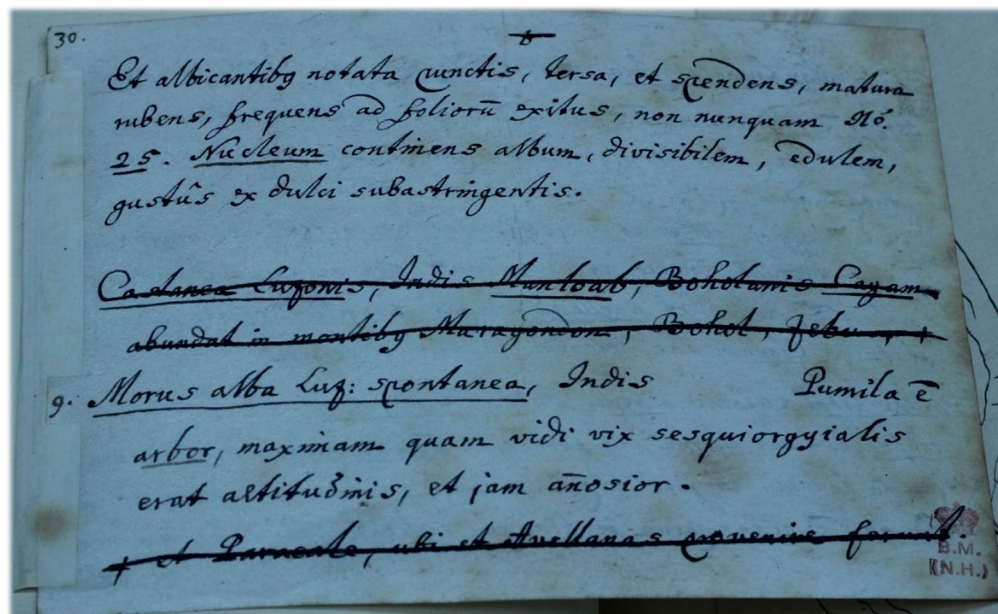
<sup>668</sup> Nutton 2008: 213; De Vos 2019: 32–33.

<sup>669</sup> For indigenous plant names and botany, see Bil 2018.

<sup>670</sup> Asúa 2014: 54–55. For the importance of vernacular languages in the Jesuit missionary and scholarly work, see also Dorsey 1998; Asúa 2008; Prieto 2011: 13–35.

<sup>671</sup> *Ang Linguistic Atlas ng Pilipinas* 2016.

<sup>672</sup> Kamel 1704f: 89.15, “...resuscitans mortuum. [...] liberans ab incantatione. [...] curans recidivas.”



8. *Cupressus alera*, nī fallor advena. Ramusculis luxuriat arcuatis. Floret Junio, flosculi tetrapetali ad imum propullulantes ramusculorum, cœruleo-cinerei, binis sessilibus gravidi apicibus.

9. *Morus alba* *Luzonis* spontanea, Indis Pumila est arbor, maximam quam vidi vix sesquiorgyalis erat altitudinis, & jam annosior.

Figure 4.3: Kamel's entry on *Morus alba* has a gap left out for its indigenous name to be added later (NHM, Bauer Unit, shelf H7: 21). Such instances were commonly copied over into the printed form (Kamel 1704f: 3). Reproduced with permission of the Library and Archives of the Natural History Museum, London.

acquired these *ex post* from Chinese informants.<sup>673</sup> Given the close links between Manila and Acapulco and the strong presence of migrants from Spanish America, the vernacular tongues of New Spain were also often listed by Kamel. When looking for additional synonyms, Kamel relied on fellow members of the Society: the most commonly included European languages – Italian, German and Flemish – mirror the composition of the Habsburg Empire, whose domains supplied many Jesuit missionaries to the Spanish overseas missions. The remaining two European languages featured were English, reflecting Kamel's exchanges with London, and Portuguese, which served as *lingua franca* in southeast Asia, and which testifies to the importance of commercial links with Macao, Goa and beyond. Finally, terms vernacular to India are not unusual (and often overlap with those in Portuguese), which points to the lively trade networks connecting both regions and the origins of those who moved within them.

This Babel-like assembly can provide insights into cross-cultural trajectories of adoption. For instance, the plant *calipayang* appeared first in its Visayan form, followed by the Spanish and Tagalog names *hojas de San Francisco* and *dahon ni San Francisco*, which both mean 'Saint Francis leaves'.<sup>674</sup> This indicates that the Jesuits learned about the plant from their Visayan missions and subsequently introduced it in other parts of the Philippines. Furthermore, Kamel noted that the plant locally called

<sup>673</sup> For example, NHM, Bauer Unit, shelf H7: 226.

<sup>674</sup> *Ibid.*: 201. See also Klein 1712: 268.

*zhampacka* was known in Goa as *zhampem*, both of which terms are rooted in the Sanskrit सम्पाक ('campaka').<sup>675</sup> Kamel's accounts indicate that by the late seventeenth century, at least two kinds of this plant native to India were growing abundantly in the Philippines, and had been adopted into local medical traditions. The kinds of names and descriptions employed also hint at the contexts in which plants were understood and exchanged. For example, *pao da cobra* was listed only in Portuguese and included merely a brief description, which suggests that this wood was brought to Manila as a commodity by Portuguese-speaking merchants.<sup>676</sup> Kamel's descriptions of fruit-bearing trees offer a similar view.<sup>677</sup> Here, most of Kamel's descriptions concerned only edible or otherwise useful fruits, whilst morphologies of other plant parts were largely missing. Notably, it is here that Portuguese names appear most frequently. This again indicates that these fruits were brought to Manila as trade goods, and that their commerce was dominated by Portuguese-speaking traders.

Overall, Kamel recorded more than a hundred plant names in Portuguese, Indian and other non-Philippine Asian tongues (for example, from China, Japan and Indochina). This represents around 25% of all plant names listed. By contrast, there are only nine non-Philippine Asian names for animals, around 5% of the total. The German language offers a completely opposite picture, representing 10% of animal names, but less than 1% of plant names. Similarly, the proportion of Spanish names for animals (36%) is double that for plants (18%). This suggests that, whereas plants were widely circulated as commodities, and readily acquired new names and meanings as they travelled across contexts, animals were more confined to their immediate locality, due to logistical restrictions and the low frequency of introductions.<sup>678</sup> From the nine non-Philippine Asian names for animals, seven were in Chinese, reflective of the presence of a large community of native Chinese in Manila. By following names around, we can therefore gain rudimentary glimpses into trajectories of knowledge. The use of names as a means to map cross-cultural encounters promises insights into early stages of the processes of local knowledge adoption and commodification. This method can reveal links and disruptions in knowledge communications, the traces of which are commonly otherwise absent from archival sources, and which often preceded and conditioned mobility on a global scale.

#### IV.4. The amomum of Dioscorides, or encountering the ancients in the Philippines

In 1699, Kamel announced himself to the wider scholarly world with two essays in *The Philosophical Transactions*. Both of these accounts were selected by Ray and Petiver from among the

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<sup>675</sup> Kamel 1704f: 83.1. The plant in question is probably *Magnolia sampaca*.

<sup>676</sup> *Ibid.*: 88.6.

<sup>677</sup> *Ibid.*: 53–56.

<sup>678</sup> For example, Margócsy 2014.



bulk of materials Kamel had submitted, and each focused on a single Philippine medicinal plant that Kamel had associated with a canonical Old World authority: the fragrant bush called *tugus* in Tagalog, which he identified with Dioscorides's amomum; and the drug he called *igasur*, rebranded as the St Ignatius bean by the Society of Jesus, and recognised as the true nux vomica of Serapion the Younger by Kamel. These two publications are representative of how Kamel employed and evaluated different kinds of evidence in describing local plants, in appropriating them into European frameworks and in convincing his audiences of his credibility. Drawing on the treatise on *tugus*, I will first illustrate how Kamel collated erudite and empirical evidence when building his learned authority and transplanting Philippine flora to Europe. Afterwards, I will discuss Kamel's handling of primary and secondary testimonies, pointing to the key role of personal experience in the construction of credible knowledge and authority. Finally, I will discuss these methods within the context of Kamel's fellowship in the Society of Jesus and consider the existence of a Jesuit empirical culture informed by spiritual concerns. In the subsequent two sections concerned with *igasur*, I will focus especially on Kamel's treatment and appropriation of indigenous knowledge.

Kamel opened his treatise on *tugus* in the following manner: "[u]pon inspecting the clustering bundle of the flowers of tugus [...], tasting its grapes [...] and comparing the facts with the descriptions of botanists, I am fully persuaded that tugus is the true amomum of Dioscorides."<sup>679</sup> Efforts to match plants described by the ancients with their contemporary counterparts were widespread throughout the early modern period, as their true identity had been lost over the centuries, but their efficacy was certified by the highest authorities.<sup>680</sup> As one of the 64 ingredients used in the preparation of the renowned alexipharmic theriac, amomum would have been familiar to medical practitioners and scholars alike.<sup>681</sup> Unlike authors concerned with American nature, Kamel could directly identify Philippine plants with those described by ancient authors without any intrinsic contradictions: the regions of *Indiae extra Gangem* ('Indies beyond the Ganges') and its products, such as cinnamon and nutmeg, were known to, and addressed by, ancient writers. In the eyes of European scholarship, it was by no means impossible that a plant mentioned by Dioscorides should be native to lands far to the east, even as far as the Philippines.

Besides *tugus* and *igasur*, there are numerous other similar examples throughout Kamel's work: for example, the aquatic plant *malalavas* was identified with Theophrastus's lemma, and the

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<sup>679</sup> Kamel 1699a: 2, "Racemoso Tugus [...] viso florum fasciculo: degustato ejusdem uvae acinis, seu oblongo semine & facta collatione cum Botanicorum Amomi descriptionibus Tugus legitimum Dioscoridis esse Amomum decrevi."

<sup>680</sup> For example, Pugliano 2017.

<sup>681</sup> For example, Tidicaeus 1607: 214–215, 314; *Pharmacopoea Amstelredamensis* 1683: 141–142.

herbs *hettig* and *paltoc* with Pliny's *aestum* and the *abutilon* of Avicenna (980–1037), respectively.<sup>682</sup> This approach underlines my earlier claim that Kamel sought to appropriate Philippine plants into European knowledge frameworks by embedding them within Old World traditions, and in this way downplaying their novelty and introducing them to his audience in familiar guise. As Michael Ryan aptly put it, “[e]stablishing that commonality [between the old and the new] was the first step towards assimilation.”<sup>683</sup> Furthermore, as suggested by Christopher Parsons, by embedding plants of new worlds into schemes that were both ancient and familiar to Europe, the Jesuits could construct unified human and natural histories of the world that could be traced back to the Garden of Eden.<sup>684</sup> Such attempts to draw parallels between nature and people of Europe and of other worlds served to highlight the humanity and the potential for conversion of non-Europeans.<sup>685</sup>

To persuade readers over his speculations, Kamel provided a careful description of *tugus*, in which he even used precisely the same wording and vocabulary found in Latin editions of Dioscorides. For example, compare Kamel's “*valde odorato et acre gustu, vim habente calefaciendi, adstringendi et exsiccandi*” with “*valde odoratum [...] acre, gustu mordens [...] vim habet calefaciendi, astringendi, exsiccandi*”, from the best-known edition of Dioscorides, by Mattioli.<sup>686</sup> Yet not all of Dioscorides's descriptions matched Kamel's *tugus* perfectly. Worryingly for the Jesuit, the ovoid leaves of *tugus* did not fit Dioscorides's comparison of *amomum* with *bryonia*, which had palmate, lobed leaves. To explain this discrepancy, Kamel reasoned that “whatever Dioscorides and Pliny wrote of *amomum* is only to be understood to concern the flower-bearing raceme and the turgid seeds of *tugus*, for they were not acquainted with the whole plant itself.”<sup>687</sup> In other words, Kamel argued that unlike himself, the ancients had access only to useful parts of this particular plant, which would have been brought to Europe across great distances as a commodity – not unlike the previously discussed *pao da cobra* and other ‘Portuguese’ goods, in Kamel's own case.

Therefore, the attention that Kamel paid to the text was not dissociated from first-hand knowledge of the plant. It was through invoking the principle of *autopsia*, direct observation or manipulation of the world, that he claimed the authority to dispute the ancients. Dioscorides's own preface emphasised the importance of *autopsia* and frequent observation of plants in order to grasp

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<sup>682</sup> Kamel 1704f: 11.7, 39.20, 40.2.

<sup>683</sup> Ryan 1981: 529.

<sup>684</sup> Parsons 2016.

<sup>685</sup> For example, Dorsey 1998; Clossey 2008. See also Rubiés 2005 for the Jesuit methods of accommodation.

<sup>686</sup> Mattioli 1554: 35.14; Kamel 1699a: 4. Both excerpts mean “strongly aromatic and pungent in taste, possessing warming, astringent and desiccative virtues”.

<sup>687</sup> Kamel 1699a: 3–4, “...quicquid Dioscorides & Plinius de Amomo tradidere solummodo de florigero & semine turgente Tugus racemo intelligenda esse censeo, utpote quibus integra & ipsa planta non innotuit.”

their nature and life cycle.<sup>688</sup> For Kamel, seeking truths about the world therefore entailed constant movement and negotiation between textual and empirical landscapes. He saw experience as located both in texts and in the world, and in describing Philippine plants he observed both nature and tradition. This approach echoes the conclusions of Gianna Pomata and Nancy Siraisi in the collection of essays on *historia*, a narrative description of an experience, both historical and contemporary, written and verbal.<sup>689</sup> Highlighting the close interlocking of empirical and textual methods of knowledge production, or of ways of observing and ways of reading, of *autopsia* and *historia*, contributors argue that early modern writers commonly saw and used authoritative texts as sources of empirical content. Pomata and Siraisi thus suggest interpreting *historia* as an epistemic tool and source of empirical knowledge that could be subjected to rational and empirical enquiry.

Kamel's treatment of Dioscorides points to the importance that the Jesuit ascribed to his personal experience when evaluating different *historiae*. As close reading of his work suggests, Kamel believed that although secondary testimonies provided a useful source of information, only empirical methods of experimentation and observation yielded reliable knowledge of the world. Since Dioscorides's description of amomum was not based on direct observation, Kamel could dispute what the Greek physician wrote about the plant's morphology, whilst treating Dioscorides's information on its virtues as entirely veritable. To present his own accounts of Philippine nature as credible, Kamel therefore strove to build status as an accurate and trustworthy observer, as well as to provide his readers with virtual access to the experiences that he was reporting. In this respect, Kamel relied on appeals to his personal experience from early on in the appendix to *Historia*, regularly emphasising its presence by stating "expertus sum", or 'I have experienced'. The phrase appears nine times in the first ten pages, twelve times in the first twenty pages, but only four more times in the remaining seventy.<sup>690</sup> Having asserted the main source of his information at the outset, in the rest of the appendix Kamel resorted to detailed reports of circumstantial information, which implied personal experience without exalting it directly. In cases where he lacked direct experience, Kamel did not fear to admit to this, conceding "non sum expertus".<sup>691</sup> Such displays of modesty were used as a technique for advertising the moral character of the observer and thereby boosting one's own credibility.<sup>692</sup>

When presenting his own *historiae* about Philippine nature to his readers, Kamel conformed to the conventions of the period and relied on common devices endorsed by rhetorical textbooks. To

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<sup>688</sup> Scarborough and Nutton 1982.

<sup>689</sup> Pomata and Siraisi 2005. See also Bleichmar 2005.

<sup>690</sup> Kamel 1704f: 3.31, 4.3, 5.11, 6.19, 7.23, 9.1, 9.2, 9.12, 10.2, 15.1, 15.3, 18.9, 26.1, 28.1, 81, 84.

<sup>691</sup> *Ibid.*: 7.23. See also Kamel 1699b: 91.

<sup>692</sup> Schaffer 1984; Shapin 1984. Miguel de Asúa has observed that Jesuits in Spanish America also relied on this technique (Asúa 2008: 57–58).

persuade his audiences of the veracity of his stories and engage them as virtual witnesses, Kamel followed the advice of Cicero (106–43 BC) that *historia* “should possess great vivacity” and sought to enliven his descriptions with copious circumstantial detail and colourful vocabulary.<sup>693</sup> For example, he opened his short treatise on the legendary wolf’s bane as follows: “[o]ne evenfall in the month of July, straying in a certain hill not far from the town of San Pedro, where the foliage drooping from the arches of the branches blocked the way and cast a green shade, I chanced upon something I had never seen before.”<sup>694</sup> In this way, Kamel invited the readers to join him on the protracted and laborious journey that eventually yielded his personal understanding of the plant. In a similar vein, when reporting experiences from his medical practice, Kamel typically provided the patients’ names, symptoms, and other circumstances concerning the treatment. His *historiae* were therefore essentially autoptic in nature, as Kamel used rhetorical tools to place emphasis on the direct experience that lay at their heart.

The view of experience as the bedrock of reliable knowledge, as well as the mechanisms of displaying modesty and of virtual witnessing, all closely mirror the attitudes embraced by the early Royal Society, which have been explored in detail by Steven Shapin and Simon Schaffer.<sup>695</sup> The methods employed by Kamel clearly resonated with his correspondents in London. In a letter to Ray, Petiver lauded Kamel for “his Designs [which] I beleive are true & most of them very accurately performed, his Descriptions w[ere] concise & exact, being I suppose all of them writ from his own Observation.”<sup>696</sup> Despite the Jesuit’s exchanges with the two Englishmen, it is questionable whether Kamel’s approach drew inspiration from the Royal Society. The attitudes discussed are clearly apparent already in the first treatises, written before the link with London was established. Moreover, *The Philosophical Transactions* and other materials published by the Royal Society were probably not readily available in Manila. As I will argue, empirical evidence possessed a special status within the Society of Jesus, which could explain why Kamel was so preoccupied with experience. Indeed, his use of empirical evidence finds echoes in Asúa’s recent work on Jesuit authors in natural history and medicine active in the Province of Paraquaria, who commonly invoked testing and experience as epistemological warrants and as criteria for knowledge production.<sup>697</sup>

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<sup>693</sup> Cicero 1949: 1.19.27. Numerous studies have discussed the use of vivid description to render audiences into virtual witnesses; for example, Shapin 1984; Wintroub 1997; Serjeantson 2006; N. Jardine 2014: 279–280.

<sup>694</sup> Kamel 1704f: 31.1, “Mense Julio quodam in colle paulo remotiori a villa Sancti Petri sub vesperum ubi recurvis frondibus arcuant arborum ramos, viridemque tendunt fornicis umbram, oberrans, casu in rem mihi antehac nusquam visam incid.”

<sup>695</sup> Shapin and Schaffer 1985. See also Dear 1985.

<sup>696</sup> Letter 92: 23v.

<sup>697</sup> Asúa 2014. The Province of Paraquaria covered modern Paraguay and parts of all of its neighbouring states.

Shapin and Schaffer have argued that early experimenters used the rhetorical tools discussed to turn themselves into modest witnesses, in an attempt to remove themselves from the experiment and thus turn their own eyes into the eyes of objectivity.<sup>698</sup> By contrast, Kamel strove to highlight his presence in the equation. Rather than a “naked way of writing”, in the words of Shapin, Kamel used flowery language and frequently addressed his readers in the first person and the active voice, as well as highlighting his personal experience and adventures whenever possible.<sup>699</sup> The fusion of his own identity with the image of the archipelago, discussed in Chapter III, turned Kamel’s eyes into those of the Philippines. His direct access to Philippine nature was the main source of his capital and learned status, and lent Kamel the authority to engage in scholarly debate and dispute the claims of writers of much greater stature, including Serapion, Mattioli, Carolus Clusius (1526–1609), Nicolás Monardes (1493–1588) and even his patron Ray.<sup>700</sup> For example, Kamel complained that “I am by no means satisfied with Cristóbal Acosta’s description of galangal; regarding his figure, I would say it is a young zedoary or curcuma (it seems that Acosta saw plants in India but drew in Europe).”<sup>701</sup> Here, Kamel drew attention to the fact that unlike himself, Acosta and naturalists in Europe in general lacked stable access to the source material in question. The first-hand knowledge of local flora and fauna that Kamel could boast added weight to his claims, and enhanced both his own and his work’s status in the eyes of his readers and correspondents.

Use of secondary evidence gained from informants presented scholars with additional issues concerning trust. To enhance the credibility of such testimonies, early modern authors commonly sought to emphasise the reputable status of their informants; a respectable gentleman surely would not lie.<sup>702</sup> Kamel’s work points to his overall discomfiture with secondary evidence. Despite the vast quantity of plants and animals described, he acknowledged fewer than thirty informants by name, usually providing only their names without further specifying their identities, let alone praising their reputations (Appendix 8). Rather than simply relying on the word of his intermediaries, he preferred to conduct further investigations on his own behalf. He often described his own efforts to verify secondary reports, either through his own experience or by seeking additional evidence. For example, he claimed that “although many affirm it to be true and verified” that the seeds of the herb *boo* protect their bearers from crocodiles, “my own experience does not conform [to this].”<sup>703</sup> Kamel’s treatment

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<sup>698</sup> Shapin and Schaffer 1985.

<sup>699</sup> Shapin 1984: 497.

<sup>700</sup> Kamel 1704f: 26, 28.1, 31, 32, 62.7.

<sup>701</sup> *Ibid.*: 27, “In descriptione Galangae majoris, mihi [...] nullomodo satisfacit Christobal Acosta, & hoc ob adjectam iconem (Acosta plantas in India vidisse, in Europa pinxisse videtur) quam potius junioris Zedoariae, aut Curcumae esse dicerem...”

<sup>702</sup> Shapin and Schaffer 1985; Shapin 1994.

<sup>703</sup> Kamel 1704f: 18.5, “...verumne sit mihi experientia non constat, multi tamen verum, & compertum esse affirmant.”

of secondary evidence thus resonates with what Harry Collins has called experimenter's regress: reliable knowledge can only be generated by good instruments, or observers, but good observers can only be recognised as such if they produce reliable knowledge.<sup>704</sup> To discern good observers from bad, Kamel relied on his own experience, which essentially served as a mechanism for evaluating the *historiae* he had compiled from both learned books and informants. It seems that as advocated (and rarely followed) by the Royal Society, Kamel truly took nobody's word for it.<sup>705</sup>

It was only when direct experience was hard or impossible to replicate that Kamel was faced with no choice but to resort to appeals to his informants' credit. In the Jesuit context, trustworthiness was tied primarily to faith: since a good Christian would not lie, confessional affiliation essentially served an epistemological function as a warrant of informants' reliability.<sup>706</sup> Among all the witnesses acknowledged, Kamel elaborated on the identity and character of just six. The rest of the informants remain unidentified, and it is only by consulting the Jesuit catalogues of the Philippine Province that we learn that the majority were fellows of the Society of Jesus (Appendix 8). With one exception, Kamel provided additional information only in cases of unique sightings of rare or even preternatural events. In his treatise on monsters, which also included a greater amount of circumstantial detail than any of his other works, Kamel acknowledged "the reverend Father Josephus Trepad, the prior in Panay", who saw a pygmy girl; "reverend Father Joaquín Assin and approximately 20 other travelling companions" who encountered a dragon; "Emmanuel Rodríguez de León, an eminent painter" and Assin's companion, who drew an image of the dragon for Kamel; and "Francisco de Alzaga [who] administered that Province [of Catbalogan]", where he witnessed a centaur-like monster.<sup>707</sup> The last instance in which Kamel endorsed a witness's character referred to a similarly extraordinary occurrence, in which "Pedro Durán de Montforte, Spaniard, a man worthy of trust" reported on a "pearl the size of a hen's egg".<sup>708</sup> It was due to the singular and unrepeatable nature of such experiences that guarantees in the form of appeals to the informants' status as good Christians or to their prominent standing were required.<sup>709</sup>

The sixth and final example illustrates that status was not the only means of validating reported information, and further testifies to Kamel's reverence for experience. In the only instance

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<sup>704</sup> Collins 1981.

<sup>705</sup> Dear 1985.

<sup>706</sup> Asúa 2014: 137.

<sup>707</sup> Kamel 1706b: 2269.26, "Prior Panayensis Reverendus Pater Josephus Trepad...", 2271.35, "...Dominus Franciscus de Alzaga, qui eo tempore illam provinciam [Catbaloganam] administrabat, & mortuum vidit.", 2271.38, "...cum Reverendo Patre Joachimo Assin, & aliis circiter 20 itineris Sociis...", 2272.38, "...Emanuelis Rodriguez de Leon Pictoris eminentis..."

<sup>708</sup> Kamel 1706a: 2401.26, "...Petrus Durian de Montforte Hispanus, vir fide dignus."

<sup>709</sup> Daston and Park 1998; da Costa 2002a.

that Kamel openly referenced an indigenous person, he discussed “an epidemic [that] killed many in the island of Catanduanes” and reported that “upon opening one of the deceased, an indigenous quack doctor Lucas Cadabdab found a worm of strange form in the stomach, which in the presence of Mr Francisco de Quiros did not die when sprinkled with oil, lemon juice or rice spirit, but with pineapple juice.”<sup>710</sup> Kamel continued that upon this finding, hundreds of the sick were cured with the said remedy. Here the credibility of the report was not bolstered with the informants’ status, but rather by the way in which the knowledge in question had been derived: through experimentation with the effects of different substances. Cadabdab, pejoratively branded as a quack doctor, deserved an acknowledgement because his path to knowledge relied on the same empirical methods adopted by Kamel.<sup>711</sup> Since validation through status was unavailable and quack doctors would not be regarded with great trust, Kamel felt the need to provide an additional witness: one Francisco de Quiros, who was another Jesuit, as the Society’s catalogues show. Kamel’s treatment of secondary testimonies therefore suggests that while the status of informants was an important method of certifying reported information, the manner in which knowledge was derived was also relevant. Genie Yoo has recently made similar observations concerning the acknowledgements that Georg Everhard Rumphius bestowed upon his Muslim informants in Ambon.<sup>712</sup> This suggests that if portrayed as acquired empirically, non-European knowledge could be more easily transferred into European systems. I will return to this argument in the discussion of *igasur* below.

The reverence for experience that Kamel showed in his work might perhaps partly be ascribed to his artisanal background.<sup>713</sup> However, considering the peculiar way he combined it with references to classical authorities and terminology, I suggest viewing his empirical orientation also in the context of his affiliation with the Society of Jesus. Jesuit education was deeply embedded in erudite texts endorsed by the Catholic Church, and involved thorough training in classical philology and learning. Alongside this adherence to canonical authorities, “the Jesuit image of knowledge encouraged a strongly active-empirical bent in all branches of Jesuit science,” as Harris put it.<sup>714</sup> In addition, John O’Malley and others have argued that the Jesuit ideology placed emphasis on first-hand experience and promoted commitment to empirical observation and rational study of the natural world.<sup>715</sup> As

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<sup>710</sup> Kamel 1708: 248.79, “In Insula Catanduan affectus endemius plurimos sustulit [...]. Aperto tandem defunctorum uno, invenit Lucas Cadabdab Medicaster Indus in ventriculo extraneae figurae vermem, qui in praesentia Dominis Francisci de Quiros, nec superafuso aceto, nec succo limoniorum, nec spiritu Orizae, sed succo Pinae, seu fructus Ananas tandem interiit.”

<sup>711</sup> Cadabdab was identified as “medicaster”, a term compound from Latin *medicus* (‘doctor’) and *-aster*, a suffix used to form nouns expressing incomplete resemblance, which are thus usually pejorative.

<sup>712</sup> Yoo 2018: 570–571.

<sup>713</sup> Especially Smith 2004.

<sup>714</sup> Harris 1989: 48. See also O’Malley 1993; Gray 1999.

<sup>715</sup> O’Malley 1993: 251, 369–371; Goddard 1995; Dorsey 1998; Gray 1999.

followers of the teachings of Saint Thomas Aquinas (1225–1274), the Jesuits saw little tension between faith and experience, as well as holding that “all our knowledge originates from sense.”<sup>716</sup>

These principles can clearly be traced in the writings of the founder of the Society, Ignatius of Loyola (c.1491–1556). Ignatius advocated the view of work as prayer and esteem for earthly labour, utility and individual initiative, which fostered an active, practical and empirical approach to the tasks assigned. In *Spiritual Exercises*, he portrayed the world as a source of knowledge and insisted on willingness to test personal experience as a part of the way to God, since it was precisely through life experience that God taught and tested his followers. In other words, one learned the Gospel by seeing it lived out. In the Society’s *Constitutions*, Ignatius introduced an innovative form of novitiate, characterised as a time of “experimenta et probationes”, during which the novice “should engage in experimenta” (*debet se in experimentis versari*) to test and prove his worth in serving the Society and God.<sup>717</sup> Therefore, throughout his writings, Ignatius emphasised the role of experience as a tool for learning about self, the faith and the world. As suggested by Peter Dorsey, Jesuit empirical orientation may have been further reinforced through their missionary experience, since non-European communities commonly relied on tangible proofs and sensory evidence in their understandings of the world.<sup>718</sup>

In the bid to elucidate what Ignatius meant by his words and how these may have been understood by early modern readers, I will briefly discuss the terminology used. In the original Spanish version, Ignatius used the word ‘experiencias’, which Sebastián de Covarrubias defined in his 1611 dictionary of Spanish language as “knowledge or information about something obtained through use and through testing and experiencing, without instruction from another”.<sup>719</sup> The additional ‘probaciones’ suggests that the meaning Ignatius had in mind was indeed ‘testing’. The Latin translators rendered Ignatius’s ‘experiencias’ into ‘experimenta’. As argued by Charles Schmitt, sixteenth-century writers often perceived no distinction between ‘experimentum’ and ‘experientia’, which were used interchangeably.<sup>720</sup> Moreover, unlike ‘experientia’, ‘experimentum’ was mentioned several times in the Latin Vulgate. It is indeed by turning to Scripture that we can gain perhaps the closest insights into how early modern readers might have interpreted Ignatius’s remarks about these terms. Although ‘experimentum’ and ‘probatio’ appear only ten times altogether, their meanings

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<sup>716</sup> *Summa theologiae*: I.I.9. For an English translation, see Bauerschmidt 2005: 40.

<sup>717</sup> *Constitutions* IIa §[1.8]. For an English version, see Ganss 1970: 82. Given the various meanings that ‘experimentum’ and ‘probatio’ possessed, I decided to keep them in their original Latin form.

<sup>718</sup> Dorsey 1998: 415.

<sup>719</sup> Covarrubias 1611: 377v, “...el conocimiento y noticia de alguna cosa que se ha sabido pro uso, provandola, y experimentandola sin enseñamiento de otro...”

<sup>720</sup> Schmitt 1969.



always refer to tests and proofs of faith or to instances of learning; Genesis 30:27 even reads that “I have learned by experience (*experimento didici*) that the Lord hath blessed me.”<sup>721</sup> Within the Society, testing and experience thus developed into commonly recognised standards of evaluation, giving rise to “sanctification of practicality”, in the words of Harris, which justified the adoption of any means that proved useful in attaining the fundamentally religious ends of the Society.<sup>722</sup>

I suggest that in the context of Jesuit science, the tools of tests and proofs may have become extrapolated from faith to practices of knowledge production. The emphasis on experience found resonance with Aristotelian philosophy, embraced by the Society, which considered *empeiria* and senses as ultimate source of all knowledge. Perhaps following this Aristotelian lead, the use of experience has received some attention for the case of Jesuit works of natural philosophy, mathematics and astronomy.<sup>723</sup> Most studies have focused on the frictions between singular experiences and the Aristotelian preoccupation with universal theories, rather than paying attention to the institutional and spiritual context of reliance on empirical evidence. The work of Mark Waddell presents one exception. He has argued that the Jesuit conceptions of spirituality encouraged active participation of the senses, among others in knowledge production, where this attitude found resonance with the Aristotelian emphasis on sensory experience.<sup>724</sup> Nonetheless, empirical practices adopted by the Jesuits in the making of natural and medical knowledge have been practically absent in secondary literature.

The evidence presented here highlights the importance that Kamel attributed to personal experience in learning about the world and presenting his findings, an attitude which echoed that of his fellows in the Americas. Whilst accounts of the early modern rise of empirical methods have explored in detail the commercial, artisanal and Baconian contexts of their development, the Jesuits have been absent from these narratives.<sup>725</sup> This is true even of the recent efforts that have sought to situate the roots of the so-called ‘Scientific Revolution’ into the realms of the Spanish Empire and its colonies.<sup>726</sup> Due to the centrality of experience to the lives and scholarly production of the Jesuits, the activities of the Society of Jesus and the question of the existence of a Jesuit empirical culture deserve further attention.

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<sup>721</sup> Genesis 30:27, 42:15; Esther 3:5; Romans 5.4; 2 Corinthians 2.9, 3.13, 8:2, 9:13; Philippians 2.22; James 1.3.

<sup>722</sup> Harris 1989: 50.

<sup>723</sup> Dear 1987; Elman 2002; Feingold 2002a; 2003; Jami 2012; Waddell 2015.

<sup>724</sup> Waddell 2015.

<sup>725</sup> For example, Daston 1991b; Dear 2001; Smith and Findlen 2002; Smith 2004; Serjeantson 2014; Keller 2015: 127–166.

<sup>726</sup> Cañizares-Esguerra 2004; 2005; Barrera-Osorio 2006; 2008.

#### IV.5. Collecting, transplanting, trialling: Gathering the evidence

Drawing on Kamel's treatise on *tugus*, I have shed light on deployment of different kinds of evidence in constructing knowledge about Philippine nature. In turning to the account of *igasur*, or the St Ignatius bean, I will build on these arguments by illustrating Kamel's *modus operandi* in collecting and testing this evidence, focusing in particular on indigenous knowledge. As with *tugus*, to translate *igasur* from local to Old World traditions Kamel identified it with a medicinal plant described by a canonical author: this time with the *nux vomica* of Serapion the Younger, a Christian physician writing in Arabic, whose work had been adopted into the Galenic tradition centuries before.<sup>727</sup> Kamel's discourse on the bean is remarkable in the way it provides more explicit, step-by-step insights into the Jesuit's *modus operandi* for gathering, analysing and constructing knowledge of Philippine nature. In this respect, the following brief passage is crucial: "At the friendly request of Domingo González, I once arranged [notes on] the powers and virtues of the nut *igasur* in the following manner; acquired not from my own experience but vicariously, collected and excerpted from various observations and remarks from both indigenes and otherwise curious [persons]."<sup>728</sup> This excerpt underlines the emphasis that Kamel placed on his own personal experience, as well as revealing the first stage of his research, which entailed collecting and excerpting from various secondary observations, including those of indigenous informants.

In the treatise, Kamel enumerated all sorts of information, from how the locals used the bean as a protective amulet against different kinds of corruptions to the different modes of preparation and application he had come across in his investigations. He occasionally inserted glimpses from his own experience to bolster the reports, but saved most of his empirical evidence for a separate section. In it, he introduced several cases from his medical practice, in which he probed the drug's virtues based on the material previously assembled. This suggests that Kamel's investigations of Philippine nature – and especially of useful plants – involved two stages. Echoing the arguments raised in the previous section, these stages were reflective of his Jesuit training. First off, Kamel drew any parallels that he could find with European lore, and collected all available relevant information, from learned books to statements from local informants. In practical terms, this approach mirrored the erudite, humanist methods employed by the Society in its educational programme and publications. When discussing a topic, it was not uncommon for Jesuit authors to provide a broad overview of different theories before

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<sup>727</sup> De Vos 2010: 31.

<sup>728</sup> Kamel 1699b: 91, "Nucis *igasur* denique vires, & virtutes, non propria experientia, sed relatione acquisitas, nec non de variis Indorum, aliorumve curiosorum, & observationibus, & adnotationibus excerptas, ac collectas, amice quondam a Dominico Gonzales rogatus in formam digesti sequentem." It was not possible to determine the identity of Domingo González. Since his name is absent from the catalogues of the Society of Jesus, he was probably not a Jesuit but perhaps a local official.

presenting their own argument.<sup>729</sup> For Kamel, useful information could be located anywhere in the world, including among the indigenes. However, to ascertain its veracity and utility, it needed to be tested. Here again, experience served as a sorting mechanism and an epistemological warrant.

The appendix to Ray's *Historia* provides further evidence of Kamel's methods. One of the pages consists of a long list of indigenous names, with only cursory descriptions of morphology and virtues (Figure 4.4). This section, organised in a form markedly resembling a list, is illustrative of the first stage of Kamel's research. The impression given is that the Jesuit had visited a set of local informants, or perhaps a plant market, and collected preliminary information on various specimens, which would form the basis for further investigations. The process of listing thus served as a starting point for Kamel's research, which was probably cut short by the urgency of sending the appendix to London as quickly as possible. Kamel's description of *gamagamatissan* also mirrors the steps involved in his approach. He opened by identifying this plant as "a species of *hedera terrestris*", before reporting what the authorities and locals opined and then relying on his own experience to assess these reports; for example, "the locals praise *gamagamatissan* as the best of all in expelling worms from horse wounds, as experience affirms."<sup>730</sup> When seeking to test or verify the information compiled and gather empirical evidence to bolster his accounts, Kamel relied largely on his apothecary practice, garden and collection, discussed in previous chapters. He often emphasised his possession of the specimens discussed to underline his personal experience and enhance the impression of authenticity.<sup>731</sup>

As mentioned, Kamel also gathered information from indigenous people. His accounts are brimming with information about local habits and customs, from useful plants to myths and beliefs. Some of this material may have come from fellow Jesuits or other outsiders; after all, Kamel only identified one of his informants as an indigene, the "quack doctor" Cadabdab. However, it is possible that there were more indigenes among the names he acknowledged: those who had been converted or lived in the proximity of Spanish settlements commonly adopted Hispanicised names, which makes their identification in colonial sources extremely difficult. Whilst publications include only occasional hints, his personal correspondence indicates more clearly that Kamel was aware of the expertise that local informants possessed and held it in high regard. For example, in his medical report of 1690, he wrote that a specific condition was "very dangerous in these islands due to the lack of wise women

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<sup>729</sup> Feingold 2002a.

<sup>730</sup> Kamel 1704f: 5–6.12, "...*Hederae terrestris* est species [...]. Expellendis item vermibus equorum efficacem *Gamagamatissan* vulgus vulnerariam depaedicat omnium praestantissimam, quod experientia comprobatur."

<sup>731</sup> da Costa 2002a. See for example Kamel's discussion of corals and ambergris (Kamel 1704f: 41–42; 1704g).

10. *Punayaman*, herbâ stupefaciente *Folios* instante bello uruntur, quâ epota tantus univerſo corpori inducitur ſtupor, ut nullomodo, etiamſi vulnera inſiſſa fuerint majora, nec gutta Sanguinis proſtuit. An illa, quam *M. de Leon* monſtrabat?
11. *Alangirigui* planta eſt folii parvi, ex atro virentis, ſimili *Thymelææ*.
12. *Baguiſ* adverſus omnia venena, morſus animalium venenatorum, & peſtem laudatur.
13. *Sanguilo* foliorum decoctum cum flore *Arecæ* factum, ſuaviter, & indemne hædicos, & hydropicos relaxat.
14. *Dayungſunga* exulcerationes fanat faucium.
15. *Dumba* capitis curat tineam.
16. *Galapon* herba abundat in *Lugban*, *Mabaybey*, & *Tayavas*, volunt eſſe *Alisma* Dioſcoridis.
17. *Baliſong* philtra diſſolvere ſerunt.
18. *Dalumiamentis* ad pleuritidem commendant.
19. *Budir* radix pota tumores corporis diſſipat.
20. *Ricinus* major, Indis *Tangantangan*, & *Linganbali*, Hiſpanis *Higuerilla del inferno*. *Unus* ordinarius:
21. *Alter* totus colore rubro-ferrugineo coloratur: uterque in multos durat annos, & arboreſcit. Oleum expreſſum, in hydrope ad gutt. ſ. propinatum potenter educit aquas. Colico item dolori, & renum calculo medetur. Exterius exhibetur oleum, & folium contraiſuris, luxatis, ſpafmo, & ſimilibus nervorum affectibus folia contuſa, aſſa, & aceto conſperſa ubera à lacte grumeſcæto indurata, reſtituunt, ut Flores *Gumamela*. Plura vide infra *Oleum Ricinum*.
22. *Bantana* folium ſub cinere coctum, & ulceribus impoſitum pus efficaciter prolicat.
23. *Pagangdang*, menſes, ſecundinas & fœtum mortuum pellit.
24. *Birangbirang*, oculos recreat inflammatos. An *Verecunda*?
25. *Arangan* radix ulcera emollit, folium tumores diſcutit.
26. *Tabalac*, ſeu *Amolung* dentes vacillantes corroborat.
27. *Magindato* confert in dyſenteria Radix; eſt arbor rara, & amans fluvios.
28. *Loon* contra retentionem urinx, & ſpafmodicum affectum *Pacurot*, ſeu *Dalongdong* commendatur.
29. *Limeum primum Indanenſis* locis enaſcitur uvidis, & uliginofis. Planta tota atrè viret, & pilis pubeſcit, folia ſermè quatuor tantum, ſibi oppoſita, negligenter crenata, obtuſè mucronata, ſermè palmum lata, & ſeſquipalmum longa. Flores ex albo morelli, quadriſolii, congeſti in racemulum foliolo amplexum ſubrotundo. Radix digitum craſſa & longa, fibris capillata eſt.
30. *Limeum Indanenſis alterum*, uda amat & aſiſſa, & aquarum ſcaturigines. Folia exerit ad ſummum ſeptem, *Lilii Cornwallii* ampliora, obſcurè virentia. Fructus parvi, ovales, in ovalem compaſſi racemum, primum Chermefino, mox gratioſè perpolitè ferruginis relucent colore, quaſi vitrei eſſent. Semen parvum, compreſſum, fulcum. An *Indorum Oloot*? Herba fructu nigro, perpolitè, vitreo.
31. *Limeum Luz. tertium Macatenſe*, lapidicinis, ac petroſis aſperginibus innaiſcitur. Folia priori latoria, ex fibrato, viridi, oblongo, ac carnoſo bulbo impellit ſermè ſena, è quorum medio duriuſculus, & anguloſus aſurgit caulis, aliquando cubitalis, ſpithameam in ſpicam, ex coarctatis, parvis, ſeſſilibus, & ſexangularibus pericarpis, deſinens, Semine farctis pulverulento.
32. *Barta* magnum eſt *Contrayerba*, id eſt *Antidotum*.
33. *Amindan* herba eſt bicubitalis, foliis longiuſculis ſecus vias proveniens. Magnum eſt *Contrayerba*, ſed fructus ejus *Gallinæ* venenum eſt.
34. *Bolol* ſeu *Oloolo* radix urinam pellit, emollit, ulcera & tumores diſcutit.
35. *Aptat* ſuccus fœtum expellit mortuum.
36. *Panaoli* herbæ folia ſub cinere aſſa, dolorem renum & capitis mitigant, ut *Mandaluſa*. Ventris dolorem leniunt in cataplaſmate cum foliis *Tangantangan*.
37. *Calintama* corticis recentis raſura dolorem & inflammationem genarum ex deſtillatione ortam tollit.
38. *Taquebol* planta creſcens in cultis cum flore morello, ad ſcabiem, & gummata Gallica cum fuligine folia contuſa. Annon *Malavinas*?
39. *Lobor* vel *Loborbor* herba eſt leguminofa, folio ſimili *Cananbanum*.
40. *Cavangang*, herba eſt, ſeu gramen ſpica valde aperta.
41. *Dalagan* radix camphoram redolet, decoctum ejus ad ſpafmum, diarrhœam & confortandum ventriculum.
42. *Pongus* radix prodeſt in dyſenteria.
43. *Panata* confert in balneo doloribus articulorum.
44. *Payaſu* emollit & maturat ulcera pertinacia.
45. *Langingi* herba eſt conſolidans, unde *Conſolida* à multis vocatur.
46. *Saguba* folia maſticata dolorem leniunt dentium.
47. *Baje* vulneraria eſt, ut *Oioioim* & *Tebate*.
48. *Tueg* prodeſt aſthmaticis. Ut *Oplinjugat*.
49. *Bagatapon* efficax eſt antidotum.
50. *Bagofalac* deſervit pro balneis.
51. *Sagiaravan* eſt contra lethargum.
52. *Colangrang* deſervit pro dentiſſicio dentibus corroborandis.
53. *Cayanga* deſervit ad vulnera, ulcera & ſcabiem, in *Cantanduan*.

Figure 4.4: Page 16 of Kamel's supplement includes predominantly indigenous names of plants alongside their virtues (Kamel 1704f: 16). The gathering and listing of such information could represent an initial stage in his research.

able to cure it.”<sup>732</sup> Recent studies have underscored that European authors stationed in colonial worlds interacted with both local and displaced female agents extensively and drew on their expertise in collecting, cultivating and preparing medicinal plants – yet typically without acknowledgement.<sup>733</sup> Hugh Cagle has even suggested that “[t]he prominent role of non-European and often non-Christian women in the production of new knowledge about the natural world was a defining feature of the practice of natural history in the Iberian Atlantic” – and probably beyond.<sup>734</sup> Kamel later reaffirmed his respect for the locals and their abilities, writing to ten Rhijne about “the ingenious and knowledgeable inhabitants of Luzon”.<sup>735</sup> However, information from the locals was not to be accepted uncritically. For example, when the Dutch authorities learned that the botanist Ericus Schepperius, stationed around 1730 in Batavia, simply copied what his indigenous informants said without further investigation, he was removed from the colony.<sup>736</sup> Local knowledge was a welcome – and necessary – source of information, but additional enquiries were required into its source and veracity.

Even if tested or verified, knowledge from indigenous sources raised several issues when it came to adoption or presentation. Firstly, since local healing and other practices lacked theoretical structure, they were not necessarily considered proper science and medicine by the Europeans. In her study of the British Atlantic, Kathleen Murphy has shown that whilst the Europeans actively drew on the expertise of indigenous and displaced people, such information was presented as mere know-how and as raw materials used in the production of new and genuine knowledge.<sup>737</sup> To be accepted as valid, non-European knowledge had first to be provided with grounding in systems acknowledged by the Europeans. Secondly, and perhaps more crucially for a Jesuit missionary, there were spiritual concerns at play. Since the locals had been pagans prior to the Spanish arrival, their knowledge was inherently regarded with suspicion, for its source and powers could well be demonic.<sup>738</sup> As discussed in Chapter I, the Franciscan missionary Juan Francisco de San Antonio cautioned his readers that there is “always suspicion of some diabolical art” when it came to the Philippine indigenes’ expertise in herbs.<sup>739</sup> Knowledge of plants frequently possessed ritual overtones, and thus fell within the domain

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<sup>732</sup> Kamel 1690: 24r, “...achagues continuos, y muy ariescados en estas Islas por falta de Mugerres que la sepan curar.” The roles of shamans and healers in many Philippine cultures were traditionally performed by females or feminised males (Brewer 2004).

<sup>733</sup> For example, Kupperman 2000: esp. 133–135; Carney 2001; Schiebinger 2004; Parrish 2006: 259–306; H.J. Cook 2007: 203–205; Bleichmar et al. 2009; Owens and Mangan 2012.

<sup>734</sup> Cagle 2012: 176.

<sup>735</sup> Letter 14: 131v, “...incolarum idoneorum et juxta tractus genium expertorum...”

<sup>736</sup> Boomgaard 2006: 195.

<sup>737</sup> Murphy 2011. See also Prieto 2011: 83; Bil 2016; Parsons 2016: 58–59; Breen 2019.

<sup>738</sup> Cervantes 1994; Griffiths and Cervantes 1999; Breen 2019. For the Jesuit context, see especially Prieto 2011: 36–89; Asúa 2014: 96–163.

<sup>739</sup> San Antonio 1738: 157, “...aunque [los Indios] se puedan atribuir a la multitud de Yervas, de que ellos tienen buen conocimiento; siempre dejan sospecha de algun Arte diabólico.”

of indigenous healers and shamans, whose expertise and practices were seen by the missionaries as a challenge to Christian authority. In the struggle for both spiritual and temporal power, local healers therefore had to be discredited and exposed as tricksters. In cases where their knowledge and practices proved efficacious, their powers could be either ascribed to demonic intervention or appropriated into frameworks compatible with the missionary effort. To make local remedies acceptable for adoption, therefore, the source of their virtues had to be dissociated from their original context and, instead, attributed either to chance, divine origins or natural causes, such as learning through observation and experience. This is one of the main reasons why indigenous people and their knowledge are so rarely mentioned in Jesuit works, which portrayed missionaries as using local plants without any help, discovering their virtues by accident or divine inspiration and testing them through experience. Effacement of indigenous agency presented the safest way towards adoption.

In the rare event that a Jesuit author decided to acknowledge the indigenous origins of the knowledge presented, the most common method of validation was by ascribing its source to experience or observation. If the locals had acquired their knowledge empirically, in a ‘natural’ way, any suspicions of associations with demonic or magical powers were avoided. For example, Prieto discusses an anecdote recorded by Antonio Ruiz de Montoya, missionary to the Guaraní, in his *Conquista espiritual* (‘Spiritual Conquest’, 1639).<sup>740</sup> The priest described how the Guaraní learnt about a specific antidote by observing the bird *macagua* feed on a specific plant after fighting venomous snakes, and subsequently mimicking its behaviour with good success. This incited the Jesuits to conduct further investigations, which confirmed these powers and yielded additional virtues. Echoing Murphy’s arguments, Prieto uses this example to underline that, even when dissociated from any diabolic connotations, indigenous knowledge was not considered by the missionaries to be a result of systematic engagement with nature, unlike European science.

In his work, Kamel acknowledged the indigenous origins of knowledge he presented on several occasions. For example, in his treatise of *tugus* he wrote that “[o]n account of the agreeable smell that the berries of tugus emit, they [indigenes] wear them around their necks; besides, experience has taught them that [these berries] preserve against infectious air and cure centipede bites when chewed and placed on the wound.”<sup>741</sup> In his discussion of *amuyong* seeds, which Kamel identified as a kind of Old World cardamom, he even stated that “[t]aught by Magistra Experientia, the indigenes and I know to use this in paralysis, numbness, cramps and sideration.”<sup>742</sup> Here, unlike the case cited by Prieto,

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<sup>740</sup> Prieto 2011: 81–82.

<sup>741</sup> Kamel 1699a: 3, “Ob gratum vero quem spirant odorem grana Tugus collo appensa gerunt ab infecto etiam praeservare aere & ictui mederi scolopendriae, masticata si super imponantur experientia docuit.”

<sup>742</sup> Kamel 1704f: 84, “Haec demum Indi Magistra experientia edocti, & ego in nervorum resolutione, stupore, contractura, & sideratione.”

reliance on empirical evidence placed Kamel and the indigenes on the same level in hierarchies of knowledge. Again, experience appears as a universal criterion that Kamel used to evaluate and validate different pieces of information, including those from indigenous sources. Above all, empirical evidence assumed this role here since it carried no baggage that would be objectionable in terms of religion and since it cleared the knowledge in question of any local cultural associations. As suggested earlier, therefore, non-European knowledge could be more easily assimilated into European systems if portrayed as acquired empirically.

#### IV.6. Appropriating *igasur*: Jesuit beans and vomitory nuts

The association of local knowledge with non-European practices presented one of the main obstacles to its adoption, as well as a challenge to the missionary effort. I will use the example of *igasur* to demonstrate that the healing powers of local plants could be legitimated through either empirical or supernatural means, with Galenism and Christianity providing the main theoretical frames of reference. By tracing this plant's trajectory from 'chance' discovery to introduction to European markets, I will demonstrate how the Society of Jesus reinvented *igasur* as the St Ignatius bean, and constructed its status as a religious object and a drug in order to pave the way for its local appropriation and global deployment.

Modern botanists have identified *igasur* with *Strychnos ignatii*, a tree native to the Visayas, where the locals had been using its seeds as a panacea for centuries prior to the European arrival.<sup>743</sup> The eastern portion of the Visayas fell under the Society's jurisdiction (Figure 1.4), and it was probably here, perhaps sometime in the 1670s, that the Jesuits learned about the powers the seeds possessed.<sup>744</sup> To place the source of their virtues on safe, non-indigenous foundations, the Society framed the bean's discovery as a fortuitous accident. In his treatise, Kamel recounted a captivating story of a Jesuit priest saved by the beans when a spiteful indigene attempted to poison him. It was "casualiter" – or by chance – that the priest "happened to have a dried bean on him [...] which was the first occasion that the Spaniards learned about the virtues and powers of *igasur*."<sup>745</sup> In a development that parallels Prieto's example, discussed above, Kamel reported that this chance discovery led to further investigations, the results of which he subsequently recounted. In this episode, the missionary *topos* of the battle between the virtuous missionaries and the demonic shamans was

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<sup>743</sup> Merrill 1903: 67.

<sup>744</sup> Kamel's treatise stated that bean had been 'discovered' by the Jesuit priest Alejo López in Guiuan in the island of Samar (Kamel 1699b: 89–90). López was stationed in the Philippines from early 1670s to the mid-1680s (ARSI, Philippinas 4: 59r, 66v, 80r, 84v, 87r, 89r, 505v).

<sup>745</sup> Kamel 1699b: 90, "...casualiter hanc nucem secum habentem expertus fuit: qua occasione primum Hispanis innotuit *igasur* virtus, & efficacia."

employed as a rhetorical device. Jesuit writers commonly relied on such anecdotes to infuse their narratives with liveliness, as well as to portray the Christian contest for pagan souls as justified, glorious and victorious.<sup>746</sup> A variation on this story appeared even in a contribution about the bean that Hans Sloane published alongside Kamel's account in *The Philosophical Transactions*.<sup>747</sup>

Kamel reported that the locals believed *igasur* to possess hidden or supernatural powers, and used it as a talisman and panacea that would protect them against all evil, or "all poisons, diseases, incantations and potions".<sup>748</sup> He wrote that it enjoyed such reputation that "the locals apply and employ the nut *igasur* to cure absolutely all ailments of the human body, without any regard to the time, disease, age or dose."<sup>749</sup> This again echoes Prieto's claim about the distinction between the systematic approach to knowledge of the Europeans and the haphazard and incomplete practices of the indigenes. To appropriate the object from local traditions and enable its deployment both locally and globally, the Society had to explain or reframe these and others of its powers in terms of sanctioned religious and medical theories, Catholicism and Galenism. Kamel's treatise provides insights into both of these processes.

To explain the hidden properties of *igasur*, the Society strove to reinvent it as a powerful Christian object. In renaming it as 'St Ignatius bean', the Jesuits not only branded the object with the Society's seal, but also incorporated it into Christian thaumaturgy. As discussed in Chapter I, the missionary situation demanded the construction of Christian objects endowed with supernatural powers, which would act as portents of divine favour and as symbols of the potency of the Catholic faith. One of the evils against which the bean was said to protect was the magic of local malevolent sorcerers, known as 'Barangas', who were believed to have the ability to curse their victims and afflict diseases upon them. Kamel wrote of "the sorcerers called Barangas, who in the proximity of these beans are disturbed, disquieted and sweat heavily", as his fellow missionary Cristoforo de Miralles "had learned by experience and, moreover, had it affirmed by other trustworthy [individuals], who had seen it." Therefore, "it is believed that these Barangas, or malevolent herbalists, are in a pact with the Devil."<sup>750</sup> To leave no doubt, Kamel added another episode in which "a man of great trustworthiness reported that in the presence of the sorcerer Barang, [the oil of *igasur*] effervesced and came running out of the container he was observing. Others have affirmed the same in their

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<sup>746</sup> Similar stories were circulated about other substances, including the Jesuits' bark (Prieto 2011: 1–2).

<sup>747</sup> Sloane 1699.

<sup>748</sup> Kamel 1699b: 89, "...ab omni veneno, peste, contagio, incantationibus magicis, philtris [...] immunes esse..."

<sup>749</sup> *Ibid.*: 91, "Vulgus autem nucem *igasur*, ad cuncta absolute corporis humani mala amovenda, nulla habita temporis, morbi, aetatis, aut dosis ratione indifferenter exhibet..."

<sup>750</sup> *Ibid.*: 89, "Magos etenim Barangas dictos ad praesentiam hujus nucis inquietari, conturbari, & sudore suffundi [...]. Quod experientia didicisse, insuper, & id ipsum sibi alias fide dignos viros affirmasse addit. Unde pactum cum daemone habere dictos Barangas, seu maleficos herbarios suspicatur..."



writings.”<sup>751</sup> Backed by numerous testimonies, including those of high-ranking fellows from the Society, Kamel saw no reason not to report this information.

In the eyes of the missionaries, these hidden spiritual powers were given to the plant by God, a fact which the pagan indigenes could not properly recognise prior to the arrival of the Gospel of Jesus. Therefore, since the effects of *igasur* came from God all along, what had to change was the cultural interpretation of the plant’s hidden virtues, which was to be translated into the Christian framework. Appropriation of the seeds’ protective effects promised a potent weapon in the local struggle against non-Christian forces. Through association with St Ignatius, the beans’ powers were sanctified and associated with divine origins: they now safeguarded against demonic forces in general, including the malicious ‘Barangas’. As if it had undergone a baptismal rite, the folk amulet *igasur* was thus reinvented as a powerful religious object, bearing the name of St Ignatius, and protecting against the Devil and his servants. Under its new identity, the Jesuits could deploy the object in their local missionary effort and use it as protection against unholy forces. This process of rebranding the seeds as a Catholic object is reminiscent of the strategy of accommodation and syncretism, or reinterpretation and incorporation of local religious beliefs into the Christian framework, for which the Society was infamous and even prosecuted.<sup>752</sup>

To conceptualise the bean as a drug and enable its introduction to the medical market, the Society had to explain its virtues in natural terms and embed them within a theoretical system familiar to druggists, physicians and customers. It was through ‘Galenisation’ that the bean acquired this theoretical grounding, which indigenous healing practices lacked, and which was necessary for it to be considered legitimate medicine. With theory tied to universality, this process also implied suitability for medical markets in Europe and beyond. To ‘Galenise’ *igasur*, Kamel relied on a combination of associations with Old World lore and empirical testing. As discussed, based on its morphology, taste and other qualities, Kamel recognised the plant as Serapion’s *nux vomica*. This drug was praised by the Arabic physician for its emetic qualities: “it helps to vomit and sets humours in motion, making it easier for them to come out by vomiting.”<sup>753</sup> Kamel’s identification of the plant with *nux vomica*, as well as his efforts to appropriate *igasur* into the Galenic tradition, were therefore contingent upon his demonstration of the purgative powers of the drug. In his treatise, he presented cases from his own medical practice which mimicked Serapion’s descriptions and attested to the bean’s emetic virtues. For example, after swallowing an entire bean and subsequently being relieved

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<sup>751</sup> *Ibid.*: 93, “...hoc [oleum ex *igasur*] ad magi Barang praesentiam effervescere, & vase quo asservatur exilire vir retulit fide dignissimus. Idem & alii in suis scriptis affirmant.”

<sup>752</sup> Rubiés 2005; Županov 2005a; 2008; 2009a; 2009b.

<sup>753</sup> Serapion 1531: 115, “...iuvat ad vomitum, & movet humores, & facit eos egredi facilius per vomitum.” Although based in the same root, the Latin *vomicum* actually means ‘foul’ rather than ‘vomiting’ or ‘vomitory’.

with oxymel, the judge Juan de Ozaeta “regurgitated a great deal of viscous phlegm.”<sup>754</sup> Based on the evidence provided, Kamel concluded that the bean “frequently tends to induce vomiting.”<sup>755</sup> In this way, he bolstered his erudite speculations, as well as presenting the knowledge of the bean’s virtues as emerging from Jesuit trials rather than borrowed from local healing practices.

The experiments also revealed some undesirable side-effects. Kamel reported that most of his patients suffered from violent seizures:

I once diluted one scruple of the powder of igasur and gave it to Vicente Olzina, endowed with a melancholic constitution, to provoke regurgitation. He was troubled with indigestion, diarrhoea, frequent nausea, sour belching and copious flatulence. As soon as he took it, he was seized with a tremor of the whole body, which lasted for three hours, together with an itching and terrible convulsive twitching, so that he could not stand; it was strongest and most troublesome in his jaws, forcing him to a kind of laugh: he was having a seizure. Meanwhile, there was no notable alteration in the pulse, he did not vomit, and there were no other subsequent symptoms. Afterwards he felt somewhat better.<sup>756</sup>

Kamel ascribed these violent effects to the difference between indigenous and European bodies: “in Spaniards, [igasur] almost always causes spasmodic convulsions, but not in the indigenes.”<sup>757</sup> This was in consonance with Galenic theory, which posited that the humoral constitutions of Europeans and indigenes, reared under very different climates, would differ, and hence react to the same substance in different ways.<sup>758</sup> This might also be the reason why the bean failed to produce the desired effect in this case, and Olzina did not vomit. As discussed in Chapter I, Kamel’s experiments with native *materia medica* were partly motivated by a desire to test its suitability for European humoral constitutions. This appertained to Kamel’s patients in Manila as much as to potential users elsewhere.

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<sup>754</sup> Kamel 1699b: 90, “...plurimum viscosi phlegmatis cum nucis particulis rejecit...”

<sup>755</sup> *Ibid.*: 91, “Vomitum pluries causare solet...”

<sup>756</sup> *Ibid.*: 90, “Pulveris igasur ꝑi quondam Vincentio Olzinae temperamenti melancholici praedito ad vomitum ciendum propinavi: hic dyspensia, diarrhaea et frequenti vomitu cum ructibus acidis nec non flatuum copia molestabatur; sed statim ac sumpsisset tremore totius corporis trium horarum spatio persistente, una cum pruritu et vellicationibus convulsivis horrendis ut pedibus insistere nequiverit, quae in maxillis vehementiores erant, ac magis molestae, ita ut quodammodo ridere cogeretur: correptus fuit. Nulla interim notabili pulsus alteratione, vomitu, aut alio quopiam insequente symptomate. De reliquo dein non nihilum melius sensit.”

<sup>757</sup> *Ibid.*: 91, “...motus spasmodico-convulsivos ferme semper in Hispanis, Indis non.”

<sup>758</sup> Earle 2012.

In the bid to naturalise the virtues of *igasur* further, Kamel tried to use these violent effects to provide an explanation in natural terms for its use as a local panacea. He argued that “sometimes, from such a vehement irritation of the animal spirits and alteration of humours caused by the nut [igasur], some heterogeneous and incongruous particles must be purged together with such a violent remedy; upon the excretion of which, humours shall be restored into a better balance and the desired health shall ensue.”<sup>759</sup> To summarise, Kamel’s treatment of the bean suggests that, in order to be redefined as a drug, the bean had to be stripped of its original cultural context, and codified within European theoretical frameworks. Through inscription into the Galenic corpus, local plants were turned into medicine, and indigenous beliefs into legitimate knowledge. With its powers, both natural and supernatural, reinterpreted within Galenic and Catholic frameworks, the bean was reinvented by the Society as a drug and a religious object, which enabled its deployment both locally and globally.

On the one hand, Kamel’s efforts to ‘Galenise’ local plants find resonance in the work of Miguel de Asúa, who has observed similar developments in the Jesuit missions in Paraquaria.<sup>760</sup> These attempts underscore the fact that Old World theories presented essential tools for making sense of the realities of new worlds and for appropriating the knowledge of their inhabitants. Galenism was fluid enough to incorporate new information, adapt to new environments and respond to the challenges of cross-cultural exchanges. On the other, the process of the reinterpretation of *igasur* from a talisman into a Christian object also underlines that religion and superstition were extensively involved in drug adoption and appropriation. This point echoes the works of Allan Greer, Tara Alberts and Samir Boumediene, who have highlighted the importance of taking spiritual and other symbolic meanings into account when considering early modern medical encounters and drug trade. In his investigation of medical exchanges in New France, Greer has highlighted that, despite the Jesuits’ best efforts, “medicines [...] could not be fully abstracted from the human and cultural milieus in which they acquired the capacity to heal.”<sup>761</sup> Alberts, in her exploration of the understandings and commerce of different remedies in seventeenth-century Portuguese Malacca, has convincingly argued that supernatural powers could be harnessed and exploited like any other commodity.<sup>762</sup> Finally, Boumediene has concluded in his early modern history of medicinal plants in the Spanish Americas that European forays overseas involved the colonisation of both geographical and intellectual landscapes, as the colonisers sought to exploit both plants and the associated knowledge and

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<sup>759</sup> Kamel 1699b: 91, “Nec dubium quin aliquando, a tam vehementi spirituum animalium irritatione, ac alteratione humorum ab hac nuce causata, haeterogenea, ac incongrua una cum tam infesti medicamenti particulis eliminantur, quibus rejectis, humoribusque crasi meliori restitutis, sanitas optata subsequatur.”

<sup>760</sup> Asúa 2014: 96–163.

<sup>761</sup> Greer 2005: 139.

<sup>762</sup> Alberts 2019.

rituals.<sup>763</sup> The context and objectives of the Jesuit – or more broadly Catholic – missionary effort encouraged and even required such developments to take place. As Stephen Harris has put it, “[e]specially in the hands of Jesuit missionaries, medical botany was as much a matter of defining and stabilising ‘the natural’ and monopolising ‘the supernatural’ as it was of fending off illness.”<sup>764</sup>

#### IV.7. The bean goes to Europe

In 1730, while waiting in Seville for his ship to New Spain, the German Jesuit missionary Philip Segesser sent home to his brother “twenty-five St Ignatius beans [which] are greatly desired both in Rome and in Vienna, and one has to consider it a blessing to get one or two.”<sup>765</sup> Segesser’s remarks reveal to what extent the bean was successfully introduced in Europe and became a valued remedy. In this section, I will briefly discuss these processes and consider Kamel’s role in the bean’s popularisation. The agents and the mechanisms involved in the introduction of the remedy in Europe remain in relative obscurity. The little evidence available points to the active role of the Jesuits, who were also involved in the early modern introduction and commerce of other drugs, most prominently Jesuits’ bark, or cinchona.<sup>766</sup> Eighteenth-century sources suggest that the bean began flowing into Europe through Portuguese channels in the late seventeenth century.<sup>767</sup> Travelling probably through Macau and Goa, the bean reached Lisbon, and was further redistributed from there. By the end of the century, it appeared in Dutch and German shops, and by the mid-eighteenth century even in the pharmacies of Kamel’s hometown, Brno (Figure 4.5).<sup>768</sup> There are also indications that the bean was



**Figure 4.5:** A mid-eighteenth century case for the St Ignatius bean from the pharmacy of the Order of the Sisters of St Elisabeth in Brno (Barokní lékárna kláštera alžbětinek, Muzeum města Brna). Reproduced with permission of Muzeum města Brna.

<sup>763</sup> Boumediene 2016.

<sup>764</sup> Harris 2005: 75. See also Daston 1991c; 1998; Daston and Park 1998.

<sup>765</sup> Thompson 2014: 71.

<sup>766</sup> Haggis 1941; Boumediene 2016; Crawford 2016.

<sup>767</sup> Valentini 1700: 6; Jaucourt 1751: 650; Alston 1770: 38.

<sup>768</sup> Neumann 1751: 288.

successfully introduced in the Americas through the Manila Galleon trade, but the focus here will be on the reception of Kamel's work in Europe.<sup>769</sup>

The bean seems to have been imported to Europe in relatively low quantities, perhaps as the Jesuits sought to safeguard its nature as rare and exclusive goods. For instance, during the eighteenth century, the bean featured in only 17 transactions at Amsterdam public auctions, which suggests that whilst it was known to traders and apothecaries, it was not widely available.<sup>770</sup> Even if the drug was supplied in limited amounts, the Jesuits could benefit from its trade in numerous ways. The beans could be displayed as curiosities, donated as gifts to patrons or used as bribes to solicit favours from officials, as well as commodified for profit. The bean's value was rooted in its rarity, or the status as a curiosity that it carried and the faraway curious archipelago that it represented. The Jesuits thus did not need to import the bean in vast amounts to make its commerce profitable. Indeed, the Dutch physician Herman Boerhaave wrote in his 1728 letter to Jean-Baptiste Bassand that despite the recent dip in its value, the bean "was formerly sold at a high price."<sup>771</sup> In Lisbon, the bean retained its value into the middle of the century, appearing among the most expensive items listed in a 1749 drug inventory.<sup>772</sup>

Kamel's treatise in *The Philosophical Transactions* was the first comprehensive account of the bean printed in Europe. Immediately after publication, it garnered extensive attention and only months later a summary was printed in *Acta Eruditorum* (1700).<sup>773</sup> However, Kamel's account was not the only source available at the turn of the century. The same year, another discourse on the bean was published in Frankfurt, in a volume on selected drugs new to Europe authored by the German physician Michael Bernhard Valentini.<sup>774</sup> This was a learned treatise: opening with an erudite definition of what constituted a bean, Valentini concluded that the bean was in fact not a bean *sensu stricto*. Subsequently, he proceeded to give an account of its virtues framed in chemical terms, drawing on both his own enquiries and works of others. Kamel's work was not mentioned, and Valentini probably did not know about it at the time of publication. However, just four years later in

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<sup>769</sup> The role of Kamel deserves further attention in that respect. His compatriot and correspondent Johannes Steinhöffer approved of the bean for coffin births "and other women's afflictions" in *Florilegio medicinal* (Steinhöffer 1712: 228), a recommendation that Kamel also made in his own treatise (Kamel 1699b: 93).

<sup>770</sup> For this information, I am most grateful to Wouter Klein, who built a database of ca. 112,000 drug transactions recorded between 1711 and 1815 at Amsterdam public auctions. See also Klein 2018.

<sup>771</sup> Lindeboom 1964: 267. I thank Dániel Margócsy for pointing me to this source.

<sup>772</sup> The bean was sold at a premium price of 2,400 reis per pound. For comparison, opium and cinnamon were sold at 3,120 and 1,000 reis per pound, respectively. A journeyman labourer could earn around 250 reis *per diem*. See T.D. Walker 2010: 85–86.

<sup>773</sup> *De faba* 1700.

<sup>774</sup> Valentini 1700.

his *Museum museorum* ('Museum of Museums', 1704), Valentini included a brief addendum about the bean, updated with Kamel's findings.<sup>775</sup>

Around the year 1700, another account of the bean, written in Spanish, was also in circulation in Europe.<sup>776</sup> Its origins most likely pre-dated Kamel's treatise. This was a simple list of different virtues and applications without elaborate explanations. Since it featured names and diseases in Philippine languages, it was probably compiled directly in the archipelago, possibly finding its way into Europe through New Spain. Selections from this account were published by Hans Sloane alongside Kamel's article in *The Philosophical Transactions* and by the Italian traveller Giovanni Francesco Gemelli Careri, who visited Manila in 1697, in his *Giro del Mondo* ('Voyage Around the World', vol. 5, 1700).<sup>777</sup> Gemelli Careri also revealed that the bean was popular in Batavia, where it was sold for "two guilders a piece".<sup>778</sup> Despite the differences in style, all these reports provided largely overlapping descriptions of the bean's virtues, praising it for digestive and nervous complaints and fevers, and against poisons and bleeding.

During the eighteenth century, the St Ignatius bean became incorporated into European medical practice and literature. By the 1760s, the Spanish Crown was regularly receiving shipments of the drug from the Philippines for the Royal Pharmacy in Madrid.<sup>779</sup> Although usually only briefly described, the drug found its way into numerous pharmacopoeias published in different corners and languages of Europe.<sup>780</sup> Despite the proliferation of new enquiries and publications, the treatise authored by Kamel remained an authoritative source on the bean in the English, French and German-speaking environments. Perhaps ironically, Kamel's account was never taken up in the Spanish-speaking world: the first pharmacopoeias to discuss the bean, published in the 1720s, drew on the aforementioned Spanish list and showed no awareness of Kamel's treatise.<sup>781</sup> This outcome can probably be ascribed to the unusual, non-Spanish route that took Kamel's work to Europe. Nonetheless, throughout the century, most authors continued to draw on Kamel's notes, with or without directly acknowledging the Jesuit.

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<sup>775</sup> Valentini 1704.

<sup>776</sup> An undated copy of the document survives in Biblioteca Nacional de España (BNE, MS 11039: 135r–138v).

<sup>777</sup> Sloane 1699; Gemelli Careri 1700: 103–106.

<sup>778</sup> Gemelli Careri 1700: 103, "...a una doppia d'oro l'uno."

<sup>779</sup> Audiencia de Manila 1761; 1765; 1768.

<sup>780</sup> For example, Suárez de Ribera 1723: 124, 194, 243; Palacios 1725: 673–674; Dale 1739: 357–358; *Pharmacopoeia Matritensis* 1739: 58; Fouquet 1750: 346–350; Hill 1751: 506–507; Jaucourt 1751; Neumann 1751; *The Medical Museum* 1764: 428–435; Alston 1770: 37–41; Lewis 1784: 455–456; *Pharmacopoea Wirtembergica* 1798: 82.

<sup>781</sup> Suárez de Ribera 1723: 124, 194, 243; Palacios 1725: 673–674.

Possibly the most comprehensive eighteenth-century treatment of the bean was penned in 1751 by the German Protestant clergyman and physician Caspar Neumann. Even fifty years after its initial appearance, Neumann admitted that “the best account we have to date of this plant and of the origin of this so-called bean is from Father Camelli.”<sup>782</sup> Neumann’s discussion indicates that Kamel’s longevity can be attributed to the privileged access to the source material that the Jesuit possessed. Although reports of the bean’s indigenous uses and supernatural powers were scoffed at by Neumann, the morphological description and the figures, based on observation of the whole plant rather than just of its commodified seeds, were still the best ones available. European scholars were keenly interested in the plant’s morphological features, information central to eighteenth-century European botanical practice. By contrast, the role of indigenous knowledge and uses was increasingly marginalised. Although essential for Kamel and the Jesuit missionary effort, the local contexts of the bean’s discovery and significance possessed little value in the eyes of European scholars.<sup>783</sup>

The bean was received with ambivalence in Europe, largely due to its violent effects. It was generally considered a new drug, unknown to the ancients. At the same time, however, Kamel’s association of the bean with Serapion’s *nux vomica* endured, and the two drugs were frequently classified and treated together.<sup>784</sup> Similarly, the uses and recipes introduced by Kamel were often cited and further developed, although most authors warned of the bean’s powerful effect and advised cautious use, drawing among other on the examples cited by Kamel himself. In Denis Diderot’s and Jean d’Alembert’s *Encyclopédie* (1751), Louis de Jaucourt even used the St Ignatius bean and Kamel’s treatise as a way to alert readers to the hazards posed by new remedies from overseas.<sup>785</sup> Given Kamel’s “observations which clearly prove how dangerous the bean is,” Jaucourt asked “what need do we have of foreign drugs, more capable of instilling alarm than confidence,” especially since “there are enlightened, wise and prudent remedies” for the same diseases? Despite the bean’s equivocal reception, Kamel’s treatise remained at the centre of discussions for nearly a century and played an important role in introducing the drug to European medicine. Today, this account remains the work for which Kamel is best known. Numerous sources, including Wikipedia, even wrongly credit him with discovering and naming the St Ignatius bean.<sup>786</sup>

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<sup>782</sup> Neumann 1751: 289, “Die beste Nachricht, die wir biß dato von dem Gewächse und Herkommen dieser sogenannten Fabae haben, ist vom Pater Camelli...”

<sup>783</sup> Christopher Parsons has recently made similar observations about Canadian ginseng (Parsons 2016: 47–48).

<sup>784</sup> In a sense, this association persists to this day, since *Strychnos nux vomica* and *Strychnos ignatia* are cognate plants from the same genus.

<sup>785</sup> Jaucourt 1751: 650, “...mais il [Camelli] ajoute à son récit des observations qui prouvent clairement combien la feve de Saint Ignace est dangereuse [...]. [...] aussi ce remede n’est point usité par tout ce qu’il y a des medecins éclairés, sages & prudens [...]. En effet qu’avons-nous besoin de drogues étrangères, plus capables d’inspirer des alarmes que de la confiance [...]?”

<sup>786</sup> ‘*Strychnos ignatii*’, *Wikipedia* <[https://en.wikipedia.org/wiki/Strychnos\\_ignatii](https://en.wikipedia.org/wiki/Strychnos_ignatii)> (accessed 14 August 2019).

#### IV.8. Kamel's legacy: *Camellia* and the importance of images

More than for his contributions to botany and medicine, Kamel is today remembered for *Camellia*, the genus of flowering plants that bears his name. This enduring monument to his work was erected by Carl Linnaeus in his *Species plantarum* ('The Species of Plants', 1753).<sup>787</sup> Perhaps because Linnaeus neither drew upon nor cited Kamel's work in his description of *Camellia*, virtually all secondary sources have suggested that Kamel never saw the plant. This assumption is clearly wrong, as Kamel described and depicted several species from the genus (Figure 4.6).<sup>788</sup> Moreover, the Jesuit college in Manila comprised a room fully dedicated to tea preparation, so he must have been closely familiar with dried leaves of the best-known member of the genus, *Camellia sinensis*.<sup>789</sup> Although Linnaeus did not refer directly to Kamel in his description, his acknowledgement reflects the attention that the Jesuit's work garnered among European scholars. Kamel's were the first comprehensive descriptions of Philippine nature available and, given the lack of any eighteenth-century successors, they would remain an authoritative source on the subject into the nineteenth century, effectively unsurpassed until the publication of Francisco Manuel Blanco's *Flora de Filipinas* ('Flora of the Philippines', 1837).<sup>790</sup> Nonetheless, the work of Kamel was not received without ambivalence, and increasingly fell into obscurity: so much so that he is now a forgotten figure in both his native and



**Figure 4.6:** Kamel's drawing of *tchia* or *Camellia sinensis* (NHM, Bauer Unit, shelf H7: 153). Reproduced with permission of the Library and Archives of the Natural History Museum, London.

<sup>787</sup> Linnaeus 1753: 698.

<sup>788</sup> Kamel 1704f: 71.19–71.22. For illustrations, see IF, MS 966: 74v; GBIB, PM0038/V: 234; NHM, Bauer Unit H7: 153.

<sup>789</sup> Velasco 1706: 250v.

<sup>790</sup> Blanco 1837.



adopted homelands. This final section will explore the legacy of his work in Europe and consider some of the reasons behind his gradual descent into oblivion.

Linnaeus's treatment of Kamel is symptomatic of some of the issues with his work. On the one hand, the Swede laid a wreath of camellias in his memory, and included his name among the list of 'renowned botanists', both in *Critica botanica* ('The Critique of Botany', 1737) and in *Amoenitates academicae* ('Academic Pleasures', 1760).<sup>791</sup> On the other, Linnaeus summarised Kamel's work in *Hortus Cliffortianus* ('Clifford's Garden', 1737) as "[i]mperfect descriptions. No attention to the flower."<sup>792</sup> I will suggest two explanations for this stern conclusion. Firstly, although Kamel followed Ray's tenets of classification based on the morphology of reproductive organs, these principles required time to be understood and adopted; Ray's publication did not immediately create a community of well-trained botanists preoccupied with anatomy of the flower. As Linnaeus implied in his commentary, Kamel did not necessarily report details of the numbers of stamens, pistils and other floral parts. Since this information was essential for Linnaean classification, Kamel's descriptions proved to have little value for Linnaeus. Secondly, and more importantly, with the exception of those few that appeared in Petiver's *Gazophylacium*, Kamel's images were never published. As argued, Kamel intended his descriptions to work in tandem with his illustrations. In the absence of images, his textual descriptions lacked any point of visual reference that would enable his readers to visualise and compare Philippine plants, and his work was effectively doomed to fall into oblivion. Where Ray, who was most qualified to judge, saw a man who "deserves to be by all means obliged [...] for the advancing of natural knowledge," other botanists including Linnaeus could hardly find any practical use.<sup>793</sup> This conclusion is supported by the fact that in the few instances when Linnaeus actually drew on Kamel's work, he referred to images in Petiver's *Gazophylacium* in tandem with descriptions in Ray's *Historia*, rather than on Kamel's treatises alone.<sup>794</sup>

Kamel was clearly aware of the importance of visual features to his work. He regarded his drawings as warrants of his direct observations and of his words and prided himself in "drawing almost all images of plants from live and recently collected specimens, almost always in their size and *ad vivum*."<sup>795</sup> The label of *ad vivum* was commonly used by early modern naturalists to enhance their credibility by presenting the claim that their illustrations were made as a faithful likeness of, or bore reliable information about, their subject.<sup>796</sup> Whenever Kamel suspected that other authors did not

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<sup>791</sup> Linnaeus 1737a: 92; 1760: 295.

<sup>792</sup> Linnaeus 1737b: xxii, "Descriptiones imperfectae. Florum nulla notitia."

<sup>793</sup> Letter 122.

<sup>794</sup> Linnaeus 1753: 35, 110, 635, 835, 953.

<sup>795</sup> Kamel 1704f: 32.

<sup>796</sup> Smith and Findlen 2002: 7–10; Daston and Galison 2007: 17–27; Kusukawa 2012; 2014.

adhere to the *ad vivum* principle, he openly called them out and took advantage of this opportunity to advertise his methods and his access to live specimens; for example: “I have not encountered any truthful image of *verecunda major*; since what [Cristóbal] Acosta, [Jacques Daléchamps’s] *Historia Lugdunensis* and [Dominicus] Chabraeus depict is not faithfully executed, it was acceptable to draw [one] truthfully and from life (*ex viva*).”<sup>797</sup> Conscious of the value of his drawings, Kamel showed a particular concern about their publication. He enquired of Ray, Petiver and even ten Rhijne whether the intention was to include his illustrations in the third volume of *Historia*.<sup>798</sup> The reply from London did not offer much hope. Although Ray was certain that Kamel’s “most beautiful drawings are worthy of publication,” he “fear[ed] that I will hardly succeed for them to be published by our printers and booksellers at their own expense due to the costs of the copperplates.” He promised, nevertheless, that “I will do whatever is in my powers” to have them printed.<sup>799</sup> Ray was hoping for an illustrated volume from the beginning, informing Sloane that “overtures have been [made] for procuring and printing icons for my History,” although confessing that “I look upon it as not feasible in these difficult times, and therefore shall not concern myself much in it.”<sup>800</sup> Indeed, Ray ultimately had to give up these prospects due to the money and work they required, and both *Historia* and Kamel’s appendix were published without illustrations.<sup>801</sup> Only an apologetic note from Ray alerted the readers to the fact that “[m]any images, drawn by the author in his own hand *ad vivum*, were also included, which it was impossible to print at present on account of the lack of the funds required for the copperplates.”<sup>802</sup> Just as so many scholarly projects, the fate of Kamel’s images – and his lifetime work on the flora of the Philippines – was at the mercy of funders.

It seems that Kamel did not simply rely upon his English friends to find the financial resources required for the publication of his work. His correspondence with ten Rhijne gives the impression that he sought wealthy and powerful patrons on his own initiative, from his humble workshop in Manila. In 1699, ten Rhijne replied that “I have handed over your two bundles of letters with my own hands to our General Governor, one for Madrid for the reverend [Superior] General of the venerated [men] of the Society of Jesus, the other for London for the most illustrious ambassador of the Catholic king

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<sup>797</sup> Kamel 1704f: 14.27, “Cum nullam legitimam *verecundae majoris iconem* inveniam, Acosta enim, & *Historiae Lugdunensis* quam & Chabraeus exhibet, non est fideliter desumpta, veram & *ex viva* delineare placuit.”

<sup>798</sup> Letters 14: 131r; 19: 132v.

<sup>799</sup> Letter 20: 68v, “*Icones pulcherrimas et lucem publicam videre dignissimas, quae descriptiones mirifice illustrant, a typographis et bibliopolis nostris ob sumptus in calchografos faciendos, ut impensis suis imprimant, me aegre impetraturum vereor.*”

<sup>800</sup> Letter 109: 45r.

<sup>801</sup> Letters 105: 307; 111: 49r; 112.

<sup>802</sup> Kamel 1704f: 1, “*Additis etiam plurimarum iconibus, ab autore propria manu ad vivum delineatis; quas ob sumptuum in chalcographos erogandorum defectum impraesentiarum emittere non licuit.*”

[of Spain] to the English king.”<sup>803</sup> The choice of the two addressees is peculiar at the least: why would a Jesuit lay brother pharmacist stationed in Manila seek contact with these two prominent men? Most likely, Kamel was striving to approach powerful patrons, one within his own Order and the other strategically located at the interface between England and Spain, who disposed of the influence and funds to assist him in the effort to publish his images. It is unclear whether Kamel’s letters were ever delivered and, if so, whether they elicited any official response. In the aftermath, Kamel’s attempt to find additional patrons bore no success.

In the following years, even after Ray’s and Kamel’s deaths, Petiver did not give up the idea of finding a patron to print Kamel’s images. In the early 1710s, a unique opportunity arose when he made the acquaintance of Ignatius White, acting physician to the English ambassador at the Spanish royal court. White introduced Petiver to Federico Bottoni, chief physician to the Spanish king, and with the help of these two, Petiver solicited the patronage of Philip V himself. Grieving that “it were great Pity [should] so valluable Designs should perish for way of so small an Incouragment,” he wrote to White:

I have acquainted Dr Bottoni that I have by me as many Manuscript Designs of the severall Animalls, & Vegetables of the Philippine Isles as will cost me 200 guineas the Engraving, they will fill at least 100 Folio Copper plates, which if the King of Spain will be at that Charge I will Dedicate to him, it being the Product of his own Territories, & now highly redound to his immortall ffame & so sm[all] a sum would not be mist in his immense[e] Treasury, which I hope Dr Bottoni as his Cheif Physician will effectually represent to him.<sup>804</sup>

It is uncertain whether Petiver’s designs were ever presented to the Spanish king. One thing remains clear: despite the efforts of both Kamel and his English patrons, the vast majority of the images were never published, due to the financial costs involved. They remain in manuscript to this day.

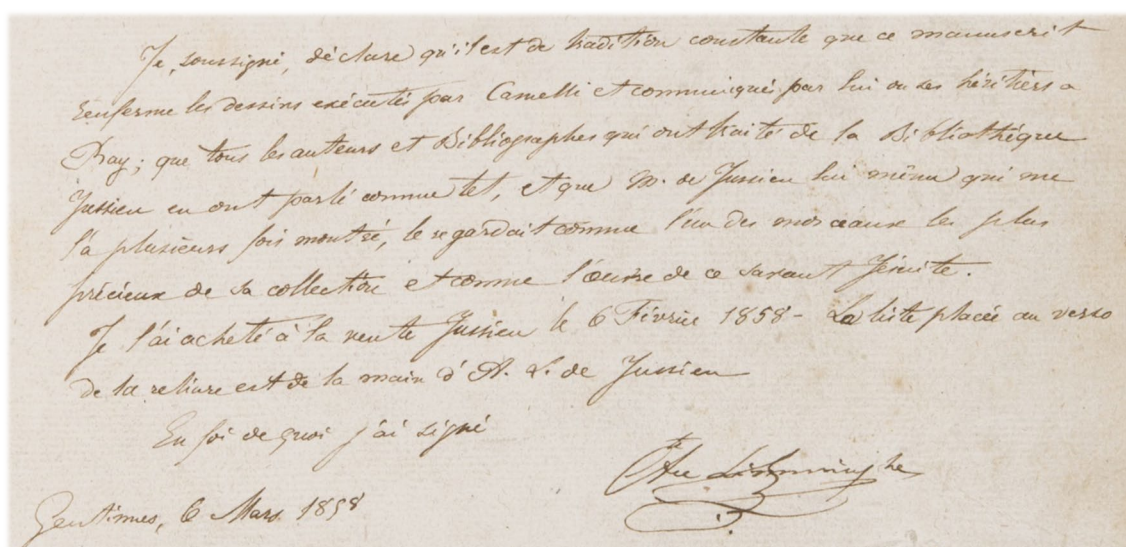
Besides Ray, there is only one eighteenth-century author who made extensive use of Kamel’s work: the French botanist Antoine-Laurent de Jussieu in his *Genera plantarum* (‘The Classes of Plants’, 1789). Just as Ray, Jussieu had direct access to Kamel’s illustrations. A volume of 261 folios of Kamel’s drawings formerly belonging to the Jussieu family is today held in the Maurits Sabbe Library of the

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<sup>803</sup> Letter 14: 131r, “...binas tuas epistolarum sarcinulas, unam ad reverendum valde venerandorum e Societate Iesu generalem Madritium, alteram ad illustrissimum regis catholici penes Angliae regum legatum Londinum transportandam nostro gubernatori generali propriis manibus, iunctim cum tuo ad me epistolio exhibui, tradidi...”

<sup>804</sup> Letter 168: 32v.

Katholieke Universiteit Leuven. It is not entirely clear how the manuscript came into the possession of the University. In 1858, the volume was purchased by the Belgian Count Alfred de Limminghe at the auction of the Jussieu family estate in Paris.<sup>805</sup> Only three years later, de Limminghe died a sudden death, and his father, Eugène-François, donated the volume to Father Auguste Bellynck, a Jesuit priest and botanist who had taught Alfred during his studies in Namur.<sup>806</sup> It is unclear how exactly the manuscript reached Leuven, but by 1869 it was in possession of the library of the local Jesuit college.<sup>807</sup> Alfred de Limminghe's inscription on the title page reveals that Jussieu "regarded it as one of the most valuable pieces in his collection."<sup>808</sup> With the exception of three of the illustrations, which are Kamel's originals executed in his hand, the volume includes only lower-quality reproductions with numerous spelling mistakes. Unlike Kamel's own drawings, these copies were drawn on European rather than Chinese rice paper.<sup>809</sup> Apart from images of animals depicted in the last three folios, the focus is clearly on plants. Their images are ordered alphabetically, in accordance with an index in Jussieu's hand, pasted in at the end. In his *Genera plantarum*, Jussieu acknowledged drawing on "Kamel's images, not engraved in copper".<sup>810</sup> Altogether, he referenced Kamel's work on six occasions, in all but one cases citing the corresponding folio in the Leuven manuscript in tandem with Ray's *Historia* – just as Kamel himself had intended.<sup>811</sup> Again, the availability of visual material proved to be the key resource to unlock the potential held by Kamel's descriptions appended to Ray's *Historia*.



**Figure 4.7:** Alfred de Limminghe's inscription in the Leuven volume (GBIB, PM0038/V: 1r). Reproduced with permission of the Maurits Sabbe Library, Katholieke Universiteit Leuven.

<sup>805</sup> Decaisne 1857: no. 3888.

<sup>806</sup> Bogaert-Damin and Piron 2018: 10. A large portion of de Limminghe's library is still housed at the university in Namur. I am most grateful to Bernard Deprez for providing information on the manuscript's trajectory.

<sup>807</sup> Backer 1869: 1022.

<sup>808</sup> GBIB, PM0038/V: 1r, "...Monsieur de Jussieu [...] le regardait comme l'un des morceaux les plus précieux de sa collection..."

<sup>809</sup> *Ibid.*: 83, 175, 185.

<sup>810</sup> Jussieu 1789: 4, "...Camelli icones Luzonenses delineatae non aeri incisae..."

<sup>811</sup> *Ibid.*: 103, 325, 326, 331, 352, 451.

During my research, I have found two manuscripts previously unknown to scholarship in the library of Institut de France in Paris, which form a set of three with the Leuven volume.<sup>812</sup> The first, MS 967, includes 100 folios filled with some 300 original drawings in Kamel's hand, while the complementary MS 966 contains their copies. Three of the originals copied over in MS 996 are missing from MS 967, which, coincidentally, are the three originals present in the Leuven volume. The provenance of these manuscripts is unclear: there are no indications as to where these originals came from, nor of who made the copies, when or why. The two Paris manuscripts once belonged to the library of Benjamin Delessert (1773–1847), an affluent French banker and naturalist, who bequeathed his vast collection to the Institut. In his youth, Delessert studied with Antoine-Laurent de Jussieu, which would explain the connection with the Leuven volume.<sup>813</sup> Given Delessert's wealth, it is not impossible that he purchased the rare manuscripts directly from Jussieu, or perhaps they were part of the payment or collateral for a loan that the banker Delessert provided to his friend.

Whilst the relationship between Jussieu and Delessert might shed light on how the three manuscripts became split, the origins of the volumes still remain unclear. The paper sheets used in MS 966 and in the Leuven manuscript suggest that the copies could be dated to mid-eighteenth-century France. Watermarks in the two volumes show designs of several paper-making families active in the Auvergne region in the first half of the eighteenth century, as well as other motifs associated with the city of Auvergne, which supplied Paris with paper until the 1760s.<sup>814</sup> Two series of watermarks in MS 966 even indicate the years in which the paper sheets were produced: 1742 and 1749. This raises the possibility that the copies came about in connection with one of Antoine-Laurent's uncles, either Antoine (1686–1758) or Bernard (1699–1777). Although both brothers were exchanging letters with Petiver and Sloane, Kamel's images or the possibility of loaning materials were not mentioned in the correspondence consulted. Another possible route that may have taken Kamel's images to France was through the French Jesuits in China. Both Antoine and Bernard were educated at the Jesuit college in Lyon, and maintained relations with French Jesuits sent to China, including Joachim Bouvet (1656–1730), Thomas Gouye (1651–1725) and Pierre Nicolas Le Chéron d'Incarville (1706–1757).<sup>815</sup> As discussed, a volume held in the Vatican Library suggests that Kamel's materials found their way to China, probably through Jesuit channels.<sup>816</sup> Despite these clues, there is as yet no firm evidence for the provenance of these manuscripts.

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<sup>812</sup> IdF, MSs 966; 967.

<sup>813</sup> For Delessert, see Spary 2014: 302–308.

<sup>814</sup> Reynard 1999; Bustarret 2012.

<sup>815</sup> For example, Bernard 1949; Spary, forthcoming.

<sup>816</sup> BAV, Barberini oriental 151.

#### IV.9. Conclusion

There are several threads running through this chapter. To begin with, there are Kamel's scholarly ambitions: his goal of writing the complete flora of the Philippines, developing a classification system informed by philosophical principles and seeking patronage to publish his work in Europe. Although a humble artisan from the periphery of Europe and a low-ranking Jesuit stationed at the periphery of the world as known to European travellers, Kamel managed to earn the praise of prominent scholars of his day. For his contributions to learning, he was honoured with an eternal monument in the form of the genus *Camellia*. The sad story of his images and his eventual fall into oblivion underscore the essential role that visual elements played in early modern natural history.

Kamel's publication activity also points to the relevance of ancient and canonical knowledge for describing and understanding the realities of new worlds. Old World knowledge frameworks proved flexible enough to accommodate numerous plants and drugs native to the Philippines, enabling Kamel to downplay their novelty and embed them within received European knowledge. Through providing a common set of theoretical principles and a terminology stabilised through centuries of tradition, classical knowledge and systems retained importance throughout early modernity, offering tools for establishing shared meanings and appropriating knowledge. As elegantly put by Spary, "travellers never leave home, but merely extend the limits of their world by taking their concerns and apparatus for interpreting the world along with them."<sup>817</sup> Despite the efforts to efface local agencies and trajectories, I have argued that close attention to scientific practices, movements of names, and conventions of genre and composition, used alongside ethnographic evidence, can provide insights into cross-cultural interactions and colonisation and commodification of knowledge.

For Kamel, the production of credible knowledge of Philippine nature entailed constant and systematic oscillation between erudite and empirical evidence. Special attention has been paid to Kamel's understanding and use of empirical practices, since it was direct experience and observation of local nature that served as the main source of his scholarly authority and a guarantee for his words. For the most part, Kamel's approach and methods did not differ significantly from those embraced by the early Royal Society; however, I have argued that these stemmed not from a Baconian project, but perhaps rather from Kamel's Jesuit training and affiliation. The strong emphasis that Kamel placed on empirical evidence found an echo in other Jesuit works produced in the colonial context and, as I have argued, reflected the Society's 'sanctification of practicality'. Based on these developments, I have presented preliminary evidence about the existence of a Jesuit empirical culture informed by spiritual concerns: a hypothesis which will require further research rooted in primary and secondary research.

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<sup>817</sup> Spary 2000: 87.

## V. Conclusion

Through the lens of the career and activities of Georg Joseph Kamel, this thesis has examined how early modern knowledge travelled across the geographic and socio-cultural spaces that separated the Philippines and Europe. Having traced these flows from the point of local encounters and appropriations to worldwide movements and receptions, I have demonstrated how local traditions came to shape global knowledge in the early modern era. These questions are central not only to the history of science, but also to our understanding of the emergence of the modern, increasingly globalised world.<sup>818</sup> To tackle these issues, I have drawn on methodologies from the histories of science and medicine, world and imperial histories, religious and postcolonial studies, as well as material, practical and spatial turns. I have opened with a close examination of how Kamel understood Philippine nature and adopted local plants into his medical practice, before investigating how he and his correspondents built and managed worldwide networks of communication, and finally considering how knowledge produced locally in the Philippines was equipped for the journey between Kamel's humble workshop and the printing presses in London. Thus, I have used Kamel, his local encounters and his worldwide networks to provide insights into translations of knowledge across spaces and traditions, as well as into the entanglements between local worlds and global forces.

A major argument of this thesis has been to reassess previous accounts of the mobility of early modern knowledge, which have been criticised for their restricted focus on European metropolitan institutions and on developments within national frameworks. By investigating communications of knowledge from a decentred perspective, this dissertation has underscored that science was not invented by scholars in Europe. Instead, the interactions that Kamel brings into view emphasise that input from local traditions, and from agents across the social spectrum, were essential to the production and mobilisation of knowledge, which was negotiated in complex cross-cultural situations. I have demonstrated how the processes of knowledge construction and communication commonly spanned the frontiers of empires, as well as religious, ethnic and other socio-cultural boundaries. Thus, this dissertation underscores the importance of cross-cultural and spatial mobility of people and information in the making of science, medicine and the modern world.

The preoccupation of my dissertation with the processes of the movement of knowledge rather than with its accumulation in centres has been crucial to these considerations, and to my efforts to decentre scientific networks. On the one hand, the switch in attention from static centres to dynamic movements has brought into focus stories of missed connections and disruptions. Kamel, Petiver and their respective networks point to the arduous and fragile nature of the connections that

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<sup>818</sup> Bayly 2004; Safier 2010; Sivasundaram 2010a.

enabled worldwide movements of information and objects. The caprices of the environment, political issues, as well as strifes, misunderstandings and competition among correspondents all placed limits on the mobility of knowledge. Movement was not the default property of science, and networks were not machines that moved objects and information around automatically.

On the other hand, my model brings into focus the diversity of the human agencies involved in the communication of knowledge and the complex trajectories that it underwent before ever reaching Europe (or failing to do so). From European colonisers tapping into local sources and regional networks in search of capital and credit to merchants of Asian origin mediating exchanges across the borders of European empires, Kamel's activities reveal the variety of the sites, agents and traditions involved in the production and communication of knowledge. Previous studies built around European hubs and markets have largely bypassed this cross-cultural diversity. By contrast, the model of scientific networks introduced in this dissertation points towards new geographies of early modern knowledge. Whilst revealing the plurality of the agents involved, from Jesuits and Philippine indigenes to Spanish authorities and English men of letters, this dissertation has also highlighted that relationships in the networks that enabled knowledge to travel were not a level playing field. Movements of knowledge, patronage and capital were all structured by relative status and power relations.

To examine how local knowledge attained mobility on a worldwide scale, I have used as a case study the global life of *igasur*, or the St Ignatius bean. Despite receiving little attention in the past, I have used this obscure plant as a route towards building a global history, which brings together spiritual, imperial, scientific and commercial concerns with movements on many scales and across different contexts. By providing an account that integrates its indigenous uses, its appropriation and its reception in new contexts, my dissertation demonstrates how a local medicinal plant used by non-European communities became a globally marketed and consumed commodity. To complete this picture, future research may devote further attention to the local consequences of making *igasur* global, to the mechanisms of its introduction and consumption in Europe, as well as its reception in the Americas and other non-European spaces. With its global lives, the example of the St Ignatius bean points to the potential of using Jesuit accounts and networks to trace worldwide movements of indigenous knowledge and investigate the creation of a globalised medical pharmacopeia.

To transplant *igasur* and other Philippine medicinal plants from local into European frameworks of knowledge, Kamel relied on the Galenic medical tradition. His medical activities demonstrate that Galenism provided a compelling framework for understanding and interpreting nature in new worlds, as well as an important tool of appropriation. Due to its flexibility and the



inventiveness of its adherents, Galenism could be used to describe and absorb new realities and facilitate their translation into frameworks understandable to the Europeans. It was through incorporation into the Galenic corpus that Kamel turned local plants into drugs and indigenous beliefs into legitimate knowledge. Through 'Galenisation', Kamel equipped plants for the journey from the Philippines to Europe and paved the way for their introduction as drugs on new markets.

Kamel's treatment of Philippine plants suggests that foreign drugs and foreign knowledge were always in danger of being regarded with suspicion by European colonisers and by scholars in Europe alike. This notion is underlined by the unfortunate fate of the class of climbing plants, a knowledge category inspired by Philippine traditions, which was removed from Kamel's work upon arrival in Europe and thus lost in translation between Manila and London. To overcome such scepticism and enable mobility on a global scale, plants had to be detached from their original cultural contexts and codified within Old World theoretical frameworks. Although local agencies and trajectories have largely become obliterated by these practices, this thesis joins recent scholarship in employing new methodologies – including the use of ethnographic and linguistic evidence – to tease out the interactions in which European and non-European knowledge became entangled. It is by recovering these processes that we gain modest insights into what cross-cultural knowledge encounters involved.

Medical developments in the Philippines demonstrate that whilst Galenism could be used as an instrument of appropriation, it also underpinned Spanish preoccupation with Old World remedies and scepticism towards foreign substances. As argued, the Spanish Crown imported vast quantities of Old World drugs for its subjects, whilst Kamel and other Jesuits turned to local remedies largely because they lacked the finances required for such an operation. This contrasts with previous research on drugs in colonial contexts, which tends to highlight the insufficiency of European medicines in new worlds and European hunger for new remedies.<sup>819</sup> In the early modern Philippines, therefore, drugs travelled from west to east rather than the other way around; the story of *igasur* presents an exception rather than the rule. I have situated this adherence to Old World remedies within the association between climate, bodies and substances posited by Galenism, which was embraced by the Spanish authorities and the Jesuits alike.

These links between climates, bodies and substances raise several further issues which deserve consideration: especially, those of acclimatisation, new diseases and experimentation. How did acclimatisation work, in terms of both bodies and substances introduced into new environments? How would Old World remedies work against foreign diseases encountered in new worlds? Did the

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<sup>819</sup> Barrera-Osorio 2002; 2008; Schiebinger 2004; 2005; Schiebinger and Swan 2005; Chakrabarti 2007.

Europeans and non-Europeans experiment with exploring the boundary between different kinds of bodies? As European bodies deteriorated in new worlds, could non-European bodies develop superior constitutions upon exposure to more beneficial climates and substances? The answers to these questions promise crucial insights into European engagements with nature and the people of new worlds.

It is important to note that everyday patterns of drug consumption among the populace could, of course, have differed from the contents of official royal consignments and registers in sanctioned medical institutions. This contingency deserves further investigation. The evidence discussed here might suggest that the adoption of new substances began in the lower strata of the society, which did not possess the finances or the privileges to access Old World drugs. This would fit with Marcy Norton's discussion of chocolate in Spanish America, in which case "the transmission of taste did not accord with the top-down structure of society [but] flowed in the opposite direction: from the colonised to the coloniser, from the 'barbarian' to the 'civilised', from the degenerate 'creole' to the metropolitan Spaniard."<sup>820</sup>

Despite the extensive presence of Old World medicines in Spanish colonial spaces, their uses and receptions in new contexts are yet to receive proper attention. Scholars have explored how substances such as chocolate, tobacco and tea became global commodities and how they transformed cultures in Europe.<sup>821</sup> However, with our Eurocentric gaze, we have focused on the global lives of substances that were new only to the Europeans and neglected how European medicines were received in new spaces. Attention to the emergence of European drugs as globalised goods would yield new insights into local agencies in non-European spaces and thus contribute to the decentring of early modern histories of science and medicine. Such analyses promise to underscore that the early modern period was an age of discovery as much for the Europeans as it was for non-European cultures.

For similar reasons, past research has neglected the exchange of natural and medical substances between Asia and America, mediated by the Manila Galleon. Nearly 50 years ago, Alfred Crosby's pioneering study shed light on the ecological consequences of the trans-Atlantic 'Columbian' exchange, which has since become a commonplace term and a benchmark in environmental studies.<sup>822</sup> Although Kamel's work hints at a lively, mutual exchange in plants, goods and the associated knowledge between America and Asia, we know comparatively little about the early modern opening of the trans-Pacific route and about its impact on the environments, cultures and

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<sup>820</sup> Norton 2006: 670.

<sup>821</sup> For example, Norton 2008; Ellis et al. 2015.

<sup>822</sup> Crosby 1972.

especially medical traditions on both sides of the ocean. The Philippines emerge here as an important cross-cultural and cross-continental juncture and a missing link in the connections spanning the increasingly globalised early modern world. Studies of early modern movements of objects and knowledge, nonetheless, have been historically dominated by the focus on European markets and institutions, which have overshadowed transfers between non-European spaces. For this reason, increasingly more common have been pleas to “provincialise Europe” in the emergence of science, medicine and modernity, in Dipesh Chakrabarty’s words.<sup>823</sup> This thesis argues that attending to early modern knowledge transfers between America and Asia might provide one avenue.

Using the communications of Kamel and Petiver as a case study, I have shown how scribal tools integrated different means of early modern knowledge production: correspondence, collections, prints and books were all connected through practices such as listing and other kinds of ‘paperwork’. By transcending the distance between the open air and the collection, between Manila and London, and between the author and the reader, these technologies were essential tools that enabled locally produced knowledge to attain globality. The relationship between the apothecary profession, scribal practices and global contexts were therefore central to the interaction between Kamel and Petiver, as well as to their ability to participate in the worldwide commonwealth of learning. This in turn enabled them to accrue different forms of capital locally that were convertible to credit. Petiver drew on his ability to conquer distance and acquire knowledge from faraway lands to gain the support of prominent patrons and obtain membership in spheres beyond his humble status. For Kamel, appearance in print and engagement in epistolary exchange with London boosted his local status in Manila, both as a medical practitioner and as a man of learning. The focus on movement adopted in this dissertation therefore brings together different modes of knowledge production, as well as demonstrating how these practices interacted with things-in-motion and spatiality in the production of credit and value. It is in turning from centres to transits that we gain a better understanding of the relationship between knowledge, capital and power.

To explore these processes, I have drawn on the notions of cultural, social and symbolic capital as defined by Pierre Bourdieu and conceptualised the letters and objects mobilised within networks as extensions or claims of self. As this thesis demonstrates, these concepts are of particular value in studying how early modern agents used letters, specimens and the knowledge thereby communicated as instruments to accrue credit and negotiate between different personae and modes of exchange. One of the advantages that this approach presents is the possibility to consider how entities such as geography, language, social status and code of conduct played into these processes. Thus, I have

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<sup>823</sup> Chakrabarty 2000.

investigated how early modern correspondents established the terms of exchange and negotiated the fuzzy boundaries between gifts and commodities; how capital and social credit were generated in knowledge transactions and deployed by individual collectors; and how the items mobilised acquired their status as objects of science, curiosity or trade. From this methodological perspective, knowledge networks transform from static structures into lively systems of human interactions, or markets in which agents invested different kinds of assets and adopted various strategies in pursuit of their goals.

By exploring Kamel's negotiations between different communities, practices and personae, this thesis has provided a decentred account of Jesuit knowledge production and communication. The Society of Jesus was not a perfectly centralised organisation that could be "likened to a body in which the 'head' guides and directs the movement of its 'members'", in the words of Stephen Harris.<sup>824</sup> As the case of Kamel demonstrates, Jesuit missionaries were deeply embedded within wider networks of trade and empire, and their practices were extensively shaped by local needs. The success of their projects was contingent on their negotiations with local agents and on their ability to tap into existing, often non-European systems and networks. This thesis shows members of the Society as skilled empirical practitioners and cross-cultural go-betweens, who participated widely in the global drug trade and pioneered the documentation and testing of knowledge new to Europe. In doing so, the Jesuits played an important role in the birth of modern science and medicine.

Despite the highly individual approach that Jesuit missionaries were encouraged to adopt in their works, their practices were shaped by their institutional affiliation. Particular attention has been devoted in this dissertation to the Jesuit production of natural and medical knowledge. Kamel's work points to the Jesuit reliance on scribal tools and vernacular languages in organising and classifying knowledge, as well as to the crucial role of empirical evidence in deriving, validating and recognising credible knowledge. Due to the centrality of direct and lived experience to the Jesuit lives and scholarly production, this thesis has raised the question of a Jesuit empirical culture, rooted in the spiritual context of usefulness to the greater glory of God. In light of the evidence presented, the striking absence of the Society from narratives of the development of early modern experimental practices is striking. Nonetheless, further research will be required to substantiate this claim and provide a more thorough account of Jesuit empiricism. Of particular value would be a close consideration of how the interplay between Ignatian spirituality, engagement in missionary work and involvement in the global trade in drugs and curiosities fed into the Jesuit use and understanding of empirical evidence.

This thesis has used the remarkable life of a single individual as a microcosm to recreate the complex and dynamic worlds that he lived in and traversed. In this way, my project has sought to

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<sup>824</sup> Harris 2000: 216.

answer wider questions about how historians could turn to account a life such as that of Kamel. Having to carve out and constantly negotiate his position at the interstices of cultures and communities, of organisations and empires and of erudite and commercial spheres, Kamel encompasses the historical experiences and entanglements of different socio-cultural systems. Rather than approaching these processes from the perspective of the institutions that formed the structures in which these interactions took place, I have turned to individual agents who built and negotiated connections across spaces and cultures. A focus on communication and mediation has enabled me to explore and connect different aspects of the early modern landscapes that these individuals navigated. Pushing these connections too far, however, would present the risk of disintegrating the idiosyncrasies that make Kamel, his correspondents and their stories so appealing; their lives makes sense only insofar as firmly rooted within the worlds that they left behind. This thesis therefore showcases that seeing the world through the eyes of a missionary stationed in an archipelago far from metropolitan Europe can raise and answer big questions about how socio-cultural and scientific systems emerged, interacted and evolved.



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## **6. Websites**

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## Appendix 1: The correspondence consulted

### 1. The correspondence of Georg Joseph Kamel

No.	From	To	Sent	Received	Source
1.	Kamel, Georg Joseph	Boruhradský, Šimon	25 June 1691		MZA, G11 571: 56r–57v
2.	Browne, Samuel	Kamel, Georg Joseph	July[?] 1696		Lost
3.	Kamel, Georg Joseph	Browne, Samuel	January 1697		Lost
4.	Kamel, Georg Joseph	Steinhöffer, Johannes	20 May 1697		AGN, Jesuitas Caja 5361: exp. 42
5.	Browne, Samuel	Kamel, Georg Joseph	25 May 1697	25 June 1698	Lost
6.	Kamel, Georg Joseph	Petiver, James	January 1698		Lost to pirates
7.	Kamel, Georg Joseph	Ray, John	January 1698		Lost to pirates
8.	ten Rhijne, Willem	Kamel, Georg Joseph	20 July 1698		BL, Sloane MS 4083A: 128r–129v
9.	Kamel, Georg Joseph	Browne, Samuel	November 1698		Lost
10.	Petiver, James	Kamel, Georg Joseph	January 1699	7 October 1700	Lost
11.	Kamel, Georg Joseph	Ray, John	3 January 1699	summer 1700	BL, Sloane MS 4062: 292r–293r
12.	Kamel, Georg Joseph	ten Rhijne, Willem	5 January 1699		Lost
13.	Kamel, Georg Joseph	Browne, Samuel	12 January 1699		BL, Sloane MS 4062: 294r–296v
14.	ten Rhijne, Willem	Kamel, Georg Joseph	29 August 1699		BL, Sloane MS 4083A: 130r–131v
15.	Petiver, James	Kamel, Georg Joseph	December 1699	18 September 1700	Lost
16.	Ray, John	Kamel, Georg Joseph	19 January 1700	18 September 1700	Lost
17.	Bulkley, Edward	Kamel, Georg Joseph	3 July 1700		BL, Sloane MS 3321: 50r
18.	Kamel, Georg Joseph	Ray, John	28 October 1700		Lankester 1848: 377–378
19.	Kamel, Georg Joseph	Petiver, James	29 October 1700	early February 1702	BL, Sloane MS 4083A: 132r–133v
20.	Ray, John	Kamel, Georg Joseph	20 May 1701	23 September 1704	BL, Sloane MS 3334: 68v–69r Lankester 1848: 378–379
21.	Kamel, Georg Joseph	Petiver, James	1 November, 1701		BL, Sloane MS 4083A: 134r–134v
22.	Petiver, James	Kamel, Georg Joseph	23 February 1702	23 September 1704	BL, Sloane MS 4063: 140r–140v
23.	Kamel, Georg Joseph	Petiver, James	9 October 1702		BL, Sloane MS 4083A: 135r–135v
24.	Kamel, Georg Joseph	Petiver, James	15 October 1704	13 June 1707	BL, Sloane MS 3321: 151r–154v
25.	Kamel, Georg Joseph	Ray, John	s.d. [15 October 1704?]		BL, Sloane MS 3321: 155r–156v
26.	Petiver, James	Kamel, Georg Joseph	December 1704		Lost
27.	Kamel, Georg Joseph	Petiver, James	s.d. [1705?]		BL, Sloane MS 4083C: 2r
28.	Petiver, James	Kamel, Georg Joseph	late January 1706		Lost
29.	Serrano, Vicente	Bulkley, Edward	s.d. [mid-1706?]	January 1709[?]	Lost (copy in Bulkley's hand: no. 153)
30.	Petiver, James	Kamel, Georg Joseph	16 December 1706		BL, Sloane MS 3335: 74r–74v
31.	Petiver, James	Kamel, Georg Joseph	11 February 1708		BL, Sloane MS 3336: 45r–46r
32.	Petiver, James	Kamel, Georg Joseph	18 January 1709		BL, Sloane MS 3337: 15r–18v
33.	Petiver, James	Kamel, Georg Joseph	1709		Lost
34.	Petiver, James	Serrano, Vicente	28 March 1710		BL, Sloane MS 3337: 99v–101r
35.	Petiver, James	Serrano, Vicente	15 January 1711		BL, Sloane MS 3337: 114v–115v (English) BL, Sloane MS 4067: 78r–78v (Latin)
36.	Kamel, Georg Joseph	Petiver, James	s.d.		BL, Sloane MS 4083A: 63v
37.	Kamel, Georg Joseph	Petiver, James	s.d.		BL, Sloane MS 4083C: 2r

### 2. The correspondence of John Ray and James Petiver consulted

No.	From	To	Sent	Received	Source
38.	Petiver, James	Browne, Samuel	s.d. [1691/1692?]		BL, Sloane MS 3332: 9r–10r
39.	Petiver, James	Browne, Samuel	17 February 1692		BL, Sloane MS 3332: 13r–14r BL, Sloane MS 3332: 19r
40.	Petiver, James	Browne, Samuel	s.d. [1693?]		BL, Sloane MS 3332: 14r–15v
41.	Petiver, James	Browne, Samuel	25 March 1693		BL, Sloane MS 3332: 31v–32
42.	Petiver, James	Browne, Samuel	5 March 1694		BL, Sloane MS 3332: 57r–61
43.	Petiver, James	Browne, Samuel	s.d.		BL, Sloane MS 3332: 70v–71v
44.	Petiver, James	Browne, Samuel	s.d.		BL, Sloane MS 3332: 110r–110v
45.	Petiver, James	Wheeler, George	18 May 1695		BL, Sloane MS 3332: 123r–124r
46.	Ray, John	Sloane, Hans	s.d. [May 1695?]		BL, Sloane MS 4060: 163r Lankester 1848: 473–474

47.	Petiver, James	Browne, Samuel	before September 1696		BL, Sloane MS 3332: 175v–178v
48.	Petiver, James	Bulkley, Edward	5 March 1697		BL, Sloane MS 3332: 260r–261r
49.	Petiver, James	Browne, Samuel	7 March 1697		BL, Sloane MS 3332: 270r
50.	Petiver, James	Browne, Samuel	15 April 1697		BL, Sloane MS 3332: 271–274v
51.	Petiver, James	Bulkley, Edward	1 January 1698		BL, Sloane MS 3333: 98v–99v
52.	Petiver, James	Bulkley, Edward	s.d. [early January 1698?]		BL, Sloane MS 3333: 100r–102r
53.	Petiver, James	Browne, Samuel	10 January 1698		BL, Sloane MS 3333: 107r–107v
54.	Petiver, James	Ray, John	16 July 1698		BL, Sloane MS 3333: 148r–149r
55.	Ray, John	Robinson, Tancred	17 August 1698		Gunther 1928: 303
56.	Browne, Samuel	Petiver, James	30 September 1698		BL, Sloane MS 4062: 290r–291v
57.	Petiver, James	Ray, John	6 October 1698		BL, Sloane MS 3333: 254r
58.	Petiver, James	Browne, Samuel	s.d. [mid-October 1698?]		BL, Sloane MS 3333: 171r–173v
59.	Browne, Samuel	Petiver, James	s.d. [mid-October 1698?]		BL, Sloane MS 3333: 173v–174v
60.	Browne, Samuel	Petiver, James	s.d. [mid-October 1698?]		BL, Sloane MS 3333: 174v–176
61.	Browne, Samuel	Petiver, James	18 October 1698	April 1700	BL, Sloane MS 3321: 17r
62.	Petiver, James	Ray, John	21 October 1698		BL, Sloane MS 3333: 254r
63.	Ray, John	Sloane, Hans	26 October 1698		BL, Sloane MS 4037: 145r–146r Lankester 1848: 345–346
64.	Petiver, James	Browne, Samuel	s.d. [late October 1698?]		BL, Sloane MS 3333: 195r–198r
65.	Petiver, James	Bulkley, Edward	1 November 1698		BL, Sloane MS 3333: 199r–200v
66.	Ray, John	Sloane, Hans	16 November 1698		BL, Sloane MS 4037: 155r–156r Lankester 1848: 347–348
67.	Ray, John	Sloane, Hans	14 December 1698		BL, Sloane MS 4037: 172r–172v Lankester 1848: 348–349
68.	Ray, John	Sloane, Hans	28 December 1698		BL, Sloane MS 4037: 174r–174v Lankester 1848: 358–359
69.	Petiver, James	Browne, Samuel	s.d. [turn of 1698/1699?]		BL, Sloane MS 3333: 216r–220r
70.	Petiver, James	Browne, Samuel	s.d. [turn of 1698/1699?]		BL, Sloane MS 3333: 220v–222v
71.	Petiver, James	Browne, Samuel	12 January 1699		BL, Sloane MS 3333: 243r–244v
72.	Ray, John	Sloane, Hans	17 January 1699		BL, Sloane MS 4037: 186r–187r Lankester 1848: 335–336
73.	Ray, John	Sloane, Hans	1 March 1699		BL, Sloane MS 4037: 220v–221r Lankester 1848: 336–337
74.	Ray, John	Sloane, Hans	14 March 1699		BL, Sloane MS 4037: 230r–231r Lankester 1848: 360–362
75.	Ray, John	Sloane, Hans	22 March 1699		BL, Sloane MS 4037: 235r–236r Lankester 1848: 362–363
76.	Ray, John	Sloane, Hans	2 June 1699		BL, Sloane MS 4037: 281r–282r Lankester 1848: 364–365
77.	Ray, John	Sloane, Hans	16 August 1699		BL, Sloane MS 4037: 361r Lankester 1848: 366
78.	Ray, John	Sloane, Hans	13 September 1699		BL, Sloane MS 4037: 330r–331r Lankester 1848: 367–368
79.	Bulkley, Edward	Petiver, James	12 October 1699	29 April 1700	BL, Sloane MS 3321: 18r–18v
80.	Bulkley, Edward	Petiver, James	13 October 1699	2 May 1700	BL, Sloane MS 3321: 19r
81.	Bulkley, Edward	Petiver, James	23 February 1700	7 October 1700	BL, Sloane MS 3321: 28r–29v
82.	Bulkley, Edward	Petiver, James	24 February 1700		BL, Sloane MS 3321: 30r BL, Sloane MS 4066: 292r (copy in Petiver's hand)
83.	Bulkley, Edward	Petiver, James	25 February 1700	29 November 1700	BL, Sloane MS 3321: 31r
84.	Ray, John	Sloane, Hans	13 April 1700		BL, Sloane MS 4038: 4r Lankester 1848: 371–372
85.	Bobart, Jacob	Petiver, James	15 April 1700		BL, Sloane MS 3321: 36r
86.	Ray, John	Sloane, Hans	14 August 1700		BL, Sloane MS 4038: 49r Lankester 1848: 373–374
87.	Ray, John	Sloane, Hans	18 September 1700		BL, Sloane MS 4038: 70r–71r Lankester 1848: 375–376
88.	Bulkley, Edward	Petiver, James	14 October 1700		BL, Sloane MS 3321: 56r
89.	Bulkley, Edward	Petiver, James	6 February 1701		BL, Sloane MS 3321: 66r
90.	Bulkley, Edward	Petiver, James	24 February 1701	30 January 1702	BL, Sloane MS 3321: 67r–67v

91.	Robinson, Tancred	Lister, John	25 March 1701		Gunther 1928: 307
92.	Petiver, James	Ray, John	1 April 1701		BL, Sloane MS 3334: 23r–24r
93.	Ray, John	Petiver, James	4 April 1701		BL, Sloane MS 4063: 77v–78r Lankester 1848: 389–391
94.	Ray, John	Petiver, James	15 April 1701		BL, Sloane MS 4063: 80r Lankester 1848: 393–394
95.	Petiver, James	Ray, John	17 April 1701		BL, Sloane MS 3334: 30r
96.	Ray, John	Lhuyd, Edward	30 April 1701		Gunther 1928: 278–280
97.	Ray, John	Petiver, James	3 May 1701		BL, Sloane MS 4063: 85r Lankester 1848: 394–395
98.	Ray, John	Petiver, James	20 May 1701		BL, Sloane MS 4063: 88r Lankester 1848: 395–396
99.	Ray, John	Lhuyd, Edward	11 June 1701		Gunther 1928: 281
100.	Petiver, James	Ray, John	s.d. [July 1701?]		BL, Sloane MS 3334: 53v
101.	Ray, John	Sloane, Hans	10 October 1701		BL, Sloane MS 4038: 250r–251 Lankester 1848: 398
102.	Bulkley, Edward	Petiver, James	9 November 1701	27 June 1702	BL, Sloane MS 3321: 84r–85v
103.	Ray, John	Petiver, James	3 February 1702		BL, Sloane MS 4039: 137r Lankester 1848: 388–389
104.	Bulkley, Edward	Petiver, James	26 February 1702	17 September 1702	BL, Sloane MS 3321: 95r
105.	Robinson, Tancred	Lister, Martin	23 May 1702		Gunther 1928: 307–308
106.	Lhuyd, Edward	Richardson, Richard	17 July 1702		Gunther 1928: 308
107.	Bulkley, Edward	Petiver, James	9 October 1702		BL, Sloane MS 3321: 103r
108.	Bulkley, Edward	Petiver, James	17 October 1702		BL, Sloane MS 3321: 104r–104v
109.	Ray, John	Sloane, Hans	18 November 1702		BL, Sloane MS 4039: 45r–46r Lankester 1848: 405–406
110.	Ray, John	Petiver, James	11 December 1702		BL, Sloane MS 4063: 182r Lankester 1848: 405–406
111.	Ray, John	Sloane, Hans	16 December, 1702		BL, Sloane MS 4039: 49r–50r Lankester 1848: 405–406
112.	Ray, John	Sloane, Hans	23 December[?] 1702		BL, Sloane MS 4039: 57r Lankester 1848: 410–411
113.	Ray, John	Petiver, James	25 [???] 1702		BL, Sloane MS 4063: 187r Lankester 1848: 403–404
114.	Ray, John	Sloane, Hans	20 January 1703		BL, Sloane MS 4039: 75r–76r Lankester 1848: 408–409
115.	Bulkley, Edward	Petiver, James	12 February 1703		BL, Sloane MS 3321: 110r–111v
116.	Vernon, William	Richardson, Richard	12 February 1703		Gunther 1928: 308
117.	Ray, John	Petiver, James	24 April 1703		BL, Sloane MS 4063: 198r Lankester 1848: 417–418
118.	Ray, John	Petiver, James	25 August 1703		BL, Sloane MS 4063: 207r Lankester 1848: 432–433
119.	Ray, John	Petiver, James	1 September 1703		BL, Sloane MS 4063: 208r Lankester 1848: 433–434
120.	Ray, John	Sloane, Hans	17 November 1703		BL, Sloane MS 4039: 210r–211r Lankester 1848: 436
121.	Ray, John	Sloane, Hans	24 November 1703		BL, Sloane MS 4039: 216r–217r Lankester 1848: 437
122.	Ray, John	Petiver, James	22 December 1703		BL, Sloane MS 4063: 227r Lankester 1848: 439
123.	Ray, John	Petiver, James	12 January 1704		BL, Sloane MS 4063: 232r Lankester 1848: 411
124.	Bulkley, Edward	Petiver, James	10 February 1704		BL, Sloane MS 3321: 133r–133v
125.	Bobart, Jacob	Petiver, James	2 March 1704	13 March 1704	BL, Sloane MS 3321: 135r–136v
126.	Ray, John	Petiver, James	17 May 1704		BL, Sloane MS 4064: 9r Lankester 1848: 443–444
127.	Ray, John	Sloane, Hans	8 June 1704		BL, Sloane MS 4039: 309r–310r Lankester 1848: 444–445
128.	Ray, John	Sloane, Hans	10 June 1704		BL, Sloane MS 4039: 311r–312r Lankester 1848: 446–447

129.	Ray, John	Petiver, James	19 June 1704		BL, Sloane MS 4039: 319r Lankester 1848: 447–448
130.	Ray, John	Petiver, James	9 August 1704		BL, Sloane MS 4064: 26r Lankester 1848: 450–451
131.	Ray, John	Petiver, James	10 August 1704		BL, Sloane MS 4064: 32r Lankester 1848: 451–452
132.	Ray, John	Sloane, Hans	22 August 1704		BL, Sloane MS 3321: 350v–351r Lankester 1848: 453–454
133.	Bulkley, Edward	Petiver, James	7 February 1705	13 November 1705	BL, Sloane MS 3321: 169r–169v
134.	Bulkley, Edward	Petiver, James	1 March 1705	13 March 1706	BL, Sloane MS 3321: 171
135.	Bulkley, Edward	Petiver, James	15 March 1705	12 March 1706	BL, Sloane MS 3321: 172
136.	Bobart, Jacob	Petiver, James	14 June 1705		BL, Sloane MS 3321: 173r–173v
137.	Bulkley, Edward	Petiver, James	24 January 1706 6 February 1706	29 May 1706	BL, Sloane MS 3321: 185r (draft) BL, Sloane MS 3321: 186r–186v
138.	Bulkley, Edward	Petiver, James	7 February 1706	4 February 1707	BL, Sloane MS 3321: 187r
139.	Bulkley, Edward	Petiver, James	23 February 1706		BL, Sloane MS 3321: 190r
140.	Bulkley, Edward	Petiver, James	23 February 1706		BL, Sloane MS 3321: 191r
141.	Petiver, James	Bobart, Jacob	29 August 1706		BL, Sloane MS 3335: 30v–31r
142.	Bulkley, Edward	Petiver, James	9 October 1706		BL, Sloane MS 3321: 205r
143.	Bulkley, Edward	Petiver, James	s.d. [February 1706?]	9 December 1706	BL, Sloane MS 3321: 211r–212v
144.	Petiver, James	Bulkley, Edward	16 December 1706		BL, Sloane MS 3335: 48r
145.	Bulkley, Edward	Petiver, James	12 February 1707	11 March 1708	BL, Sloane MS 3321: 213r–213v
146.	Bulkley, Edward	Petiver, James	16 February 1707	19 December 1707	BL, Sloane MS 3321: 214r
147.	Petiver, James	Bobart, Jacob	2 December 1707		BL, Sloane MS 3335: 55v–56v
148.	Bulkley, Edward	Petiver, James	20 December 1707		BL, Sloane MS 3321: 222r
149.	Bulkley, Edward	Petiver, James	18 January 1708		BL, Sloane MS 3321: 223r
150.	Petiver, James	Bulkley, Edward	12 February 1708		BL, Sloane MS 3336: 46v–47v
151.	Petiver, James	Rickets, [??]	s.d. [March 1708?]		BL, Sloane MS 3336: 39v–41r
152.	Petiver, James	Sherard, William	18 October 1708		BL, Sloane MS 3337: 11r–11v
153.	Bulkley, Edward	Petiver, James	9 January 1709		BL, Sloane MS 4064: 157r
154.	Bulkley, Edward	Petiver, James	25 January 1709	13 March 1710	BL, Sloane MS 3321: 239r–239v BL, Sloane MS 3321: 241 (incomplete) BL, Sloane MS 4020: 103 (incomplete)
155.	Petiver, James	Bulkley, Edward	27 January 1709		BL, Sloane MS 3337: 32v–33r
156.	Petiver, James	Bulkley, Edward	25 February 1709		BL, Sloane MS 3337: 46v
157.	Petiver, James	Bulkley, Edward	28 December 1709		BL, Sloane MS 3337: 65r–66r
158.	Bulkley, Edward	Petiver, James	3 January 1710		BL, Sloane MS 3321: 240r
159.	Petiver, James	Bulkley, Edward	28 March 1710		BL, Sloane MS 3337: 80v–81r
160.	Petiver, James	Sherard, William	26 September 1710		BL, Sloane MS 3337: 84v–85v
161.	Bulkley, Edward	Petiver, James	11 January 1712		BL, Sloane MS 3321: 268r
162.	Petiver, James	Bulkley, Edward	15 January 1711		BL, Sloane MS 3337: 127v–128v
163.	Petiver, James	Bobart, Jacob	8 March 1712		BL, Sloane MS 3338: 36v–37r
164.	Bulkley, Edward	Petiver, James	28 October 1712	2 July 1713	BL, Sloane MS 4065: 71r
165.	Petiver, James	Bulkley, Edward	20 January 1713		BL, Sloane MS 3338: 130r–130v, 133v–134r
166.	Bulkley, Edward	Petiver, James	2 February 1713		BL, Sloane MS 4065: 94r
167.	Petiver, James	White, Ignatius	s.d. [mid-February 1713]		BL, Sloane MS 3338: 143r–144v
168.	Petiver, James	White, Ignatius	s.d. [September 1713?]		BL, Sloane MS 3339: 32r–32v, 49r–49v
169.	Bulkley, Edward	Petiver, James	13 September 1713	12 July 1714	BL, Sloane MS 3322: 30r
170.	Petiver, James	Bulkley, Edward	25 January 1714		BL, Sloane MS 3340: 10r–11r
171.	Bulkley, Edward	Petiver, James	1 February 1714	21 July 1714	BL, Sloane MS 3322: 41–41v
172.	Bulkley, Edward	Petiver, James	8 February 1714		BL, Sloane MS 3322: 42r
173.	Bulkley, Edward	Petiver, James	11 February 1714		BL, Sloane MS 3322: 43r
174.	Jussieu, Antoine de	Petiver, James	7[?] December 1714	18 January 1715	BL, Sloane MS 4065: 187r–188r
175.	Petiver, James	Sherard, William	s.d. [early 1715?]		BL, Sloane MS 4065: 229r–229v
176.	Petiver, James	Toller, William	19 November 1716		BL, Sloane MS 3340: 275v–276r.
177.	Ray, John	Petiver, James	s.d.		BL, Sloane MS 4067: 120r Lankester 1848: 461

## Appendix 2: Medical works in the library of the Jesuit college in Olomouc (1704)<sup>825</sup>

Catalogue entry	Author, title, first edition
Francisci Alexandri Phaebus medicorum	Francesco degli Alessandri, <i>Phoebus medicorum</i> (1613)
Anonymi de anatomia mystica	Anonymous, <i>De anatomia mystica</i>
Anonymi ars chymica	Anonymous, <i>Ars chymica</i>
Anonymi de herbis	Anonymous, <i>De herbis</i>
Anonymi observationes medicorum liber tertius	Anonymous, <i>Observationes medicorum</i> , vol. 3
[Anonymi] tractatus utilis de fractura cranei	Anonymous, <i>Tractatus utilis de fractura cranei</i>
Wenceslai Ardenbasch Tartaro clypeus	Wenceslas Maximilian Ardensbach, <i>Tartaro clypeus</i> (1671)
Problema Arlii et aliorum medicorum	Arlius? and other physicians, <i>Problema</i>
Christophori Barzizii	Christophorus Barzizius, [ <i>Introductorium in medicinam</i> (1518)?]
Bauhini Theatrum anatomicum	Caspar Bauhin, <i>Theatrum anatomicum</i> (1592)
Bauhini Pinax theatri botanici	Caspar Bauhin, <i>Pinax theatri botanici</i> (1623)
Domini Caspari Bravo de Sobre monte Tractati duae	Gaspar Bravo de Sobremonte (1603–1683), two tractates
Hieronimi Cardani Opus divinum	Girolamo Cardano, <i>In Hippocratis Coi prognostica</i> (1568)
Joannis De Concoregio Practica nova medicinae	Giovanni Concoregio, <i>Practica nova medicinae</i> (1501)
Thaddaei Duno Muliebrium morborum remedia	Thaddaeus Duno, <i>Muliebrium morborum omnis generis remedia</i> (1565)
Galenı Pergameni epitome operum	Galen (130–210 AD), epitome of his works
Roderici Coclenii tractatus novus de magnetica vulnem curatione	Rudolph Goclenius, <i>Tractatus novus de magnetica vulnerum curatione</i> (1608)
Joannis De Gradi Practica noviter correctă	Giovanni Matteo da Grado, <i>Practica noviter correctă</i> (1502)
Antonii Pnainerii Practica celeberrima	Antonio Guainerio, <i>Practica</i> (1497)
Joannis Hertoda Tartaro mastyx moraviae	Johannes Hertod, <i>Tartaro-mastix moraviae</i> (1669)
Heurnii Ultraiectini uinstitutiones medicae	Johannes Heurnius, <i>Ultraiectini institutiones medicae</i> (1592)
Joanii Jonstoni Idea universae medicinae practicae	Jan Jonston, <i>Idea universae medicinae practicae</i> (1642)
De miraculis oculis naturae libri quattuor Levini Lemnii	Levinus Lemnius, <i>De miraculis occultis naturae libri quattuor</i> (1574)
Levini Lemnii De miraculis et naturae et de vita recte instituenda	
Alchymia triumphans Libau	Andreas Libavius, <i>Alchymia triumphans</i> (1607)
Manlii de Bosco Luminare maius	Johannes Jacobus Manlius de Bosco, <i>Luminare maius</i> (1536)
Joannis de Mediolano Schola salertina	Johannes Mediolanensis, <i>Schola Salernitana</i> (1648)
Marcati De curatione febris malignae	Luis de Mercado, <i>Libellus de essentia, causis, signis et curatione febris malignae</i> (1594)
Joannis Merenda Evacuandi ratio	Giovanni Pietro Merenda, <i>Evacuandi ratio</i> (1547)
Antonii Mizaldi monluciani Secretorum agri enchiridion	Antonio Mizauld, <i>Secretorum agri enchiridion primum, hortorum curam</i> (1560)
Möellenbrocii De variis	Valentin Andreas Möllénbrock, <i>De variis seu arthritide vaga scorbutica tractatus</i> (1663)
Joannis Montani Consilia medica	Gianbattista da Monte, <i>Consilia medica omnia</i> (1559)
Oddi Aphorismi Hippocratis.	Oddo degli Oddi, <i>Aphorismi Hippocratis</i> (1572)
Philippi Aureoli Theophrasti Chirurgia magna tomı 1 et 2	Paracelsus, <i>Chirurgia magna</i> , vols. 1–2 (1536)
Theophrasti Paracelsi Labirynthus Medicorum	Paracelsus, <i>Labyrinthus medicorum errantium</i> (1538)
Pharmacopoeia Augustana	<i>Pharmacopoeia Augustana</i> (first edition 1564)
<del>La quinta et ultima parte de secreti del donno Piemontese</del> <sup>826</sup>	Alessio Piemontese, <i>De' secreti</i> (1555)
Joannis Porta Magiae naturalis libri quattuor	Giambattista della Porta, <i>Magiae naturalis libri quattuor</i> (1558)
Curationes morborum gravissimorum Jacobi Saidelis	Jacobus Seidelius, <i>Curationes morborum gravissimorum</i> [?] [Bruno Seidel, <i>Liber morbum incurabilium</i> (1593)?]
De Graffenberg Observationes medicae de capite humano	Johannes Schenck von Grafenberg, <i>Observationes medicae de capite humano</i> (1584)
Anonymi Theatrum naturae et artis	Anonymous [Johann Andreas Schmidt?], <i>Theatrum naturae et artis</i> [1680?]
De compositione theriacae libri duae Silvatici	Giovanni Battista Selvatico, <i>De compositione et usu theriacae libri duo</i> (1597)
Matthaei Sommer De balneo Caroli Imperoris	Fabian Sommer, <i>De thermarum Caroli IV</i> (1571)
Troxitenis Liber herbarum	Michael Toxites (Johann Michael Schütz), <i>Kreüterbuch</i> (1576)
Onomasticum philosophicum, medicum Toxitis	Michael Toxites (Johann Michael Schütz), <i>Onomasticon Theophrasti Paracelsi</i> (1574)
Victoris Trincavelii opera omnia	Vittore Trincavelli (1496–1588), complete works
Problema medicinalia Aloysii Trissini	Alvise Trissino, <i>Problematum medicinalium ex Galeni sententia</i> (1547)
Pauli Zacchiae quaestionum medico-legalium tomı 1, 2 et 3	Paolo Zacchia, <i>Quaestiones medico-legales</i> , vols. 1–3 (1621–1651)

<sup>825</sup> MZA, G11, Sbírka rukopisů Františkova musea č. 591: 61r–62r.

<sup>826</sup> This entry was crossed out in the list.





### Appendix 3: Colonial hospitals in Manila at the turn of the eighteenth century<sup>827</sup>

Name	Years	Administration	Patients
<i>Hospital Real de Españoles de Manila</i> (Royal Spanish Hospital)	1571–1898 1578–1636 1684–1704	Spanish Crown Franciscans Franciscans	Spanish civil and military servants
<i>Hospital de los Naturales/ de Santa Ana</i> (Hospital for the Natives/ St Anne Hospital)	1578–1596 1596–1603 1603–??	Franciscans Brotherhood of Mercy Franciscans	Indigenes, slaves
<i>Hospital de la Santa Misericordia</i> (St Mercy Hospital)	1603–1656	Brotherhood of Mercy	Women, slaves, indigenes
<i>Hospital de San Juan de Dios</i> (St John of God Hospital)	1656–1866 1866–1868 1868–present	Brothers Hospitallers Spanish Crown Daughters of Charity	
<i>Hospital de San Pedro Mártir</i> (St Peter the Martyr Hospital)	1587–1597	Dominicans	
<i>Hospital de San Gabriel</i> (St Gabriel Hospital)	1598–1774 1639–1644 1644–1774	Dominicans Spanish Crown Dominicans	Chinese
<i>Hospital Real del Espíritu Santo de Cavite*</i> (Royal Hospital of the Holy Spirit in Cavite)	1591–1642 1619–1662 1642–1662	Franciscans Spanish Crown Brothers Hospitallers	Spanish civil and military servants (especially sailors and mariners)
<i>Hospital de San Juan de Dios de Cavite</i> (St John of God Hospital in Cavite)	1670s–1890 1670s–1880 1885–1890	Spanish Crown Brothers Hospitallers Daughters of Charity	
<i>Hospital de los Baños</i> (The Baths Hospital)	1603–present	Franciscans	
<i>Hospital de San Lázaro</i> (St Lazarus Hospital)	1603–1636 1636–1641 1641–present	Franciscans Spanish Crown Franciscans	Leprosy patients

\* Since large and heavy ships (such as Spanish galleons) were unable to enter the shallow harbour in Manila, the nearby Cavite technically served as its main port.

<sup>827</sup> Based especially on Guerra 1994: 535–578.



#### Appendix 4: Medicines listed in the 1718 audit of the *Hospital Real* pharmacy<sup>828</sup>

Spanish term	English equivalent	Quantity
goma armoniaco	gum ammoniac	0.5 libra
cascarilla del perith[?]	cascarilla[?]	6 libras
oro pigmento	golden pigment	1 libra
piedra lipis	lapis lazuli	0.5 libra
caveza de adormideras	poppy heads	1 libra
cañosuelas de rosas	stalks[?] of roses	2 onzas
cortesas de granada	pomegranate peels	6 libras
cortesas de zidras y naranjas	lemon and orange peels	0.5 libra
semilla de cubovas	cubeb seeds	1.5 libras
calamento	calamint	3 libras
flor de epitimo	thyme flower	2 libras
borrajas	borage	1 libra
xarave de epitimo	thyme flower syrup	11 libras
conserva de torongil	lemon balm preserve	4 libras
sumo de acacia	acacia juice	2 libras
unguento de atanita [= artanita?]	sowbread[?] ointment	22 libras
raiz de pelitre	Spanish chamomile root	2 libras
esquinanto	camel grass	2 libras
raiz de seduario	zedoary root	2 libras
raiz de valeriana	valerian root	1 libra
simiente de azederas	sorrel seeds	1 libra
azeite de dialthea	marshmallow oil	1 libra
simiente de peregil	parsley seed	1 libra
semilla de apio	celery seed	2 libras
sumo de acacio	acacia juice	0.5 libra
salvia	sage	1 tenate
tomillo	thyme	1 tenate
trebolo	clover	1 tenate
parietaria	pellitory	1 tenate
torongil	lemon balm	1 tenate
raiz de apio	celery root	1 tenate
marullos	[???	1 tenate
meliloto	sweet clover	1 tenate
raiz de borrajas	starflower root	1 tenate
raiz de lirios	lily root	1 tenate
raiz de brucio	[???] root	1 tenate
ruibarbo	rhubarb	6 libras
epildoras	pills[?]	1 libra
trosiscos de espedia	purging troches	1 onza

<sup>828</sup> The identities of the drugs and their English equivalents were determined using a combination of various Spanish pharmacopoeias printed in the late seventeenth century (especially Oviedo 1692 and Fuente Pierola 1698), *Neuman and Baretti's Dictionary of the Spanish and English Languages* (1831), and contemporary works in the history of medicine (especially Norri 2016, also Fresquet Febrer 1999; Davis and López Terrada 2010). Substances of American origin are marked in black, substances of (south)east Asian origin in grey. One *arroba* is the equivalent of ca. 11.5 kg; one *libra* is approximately equivalent to its modern English counterpart; one *onza* is about 290 g; *tenate* was a sizeable leather bag (Villasana Haggard 1941: 72, 79, 81).

eligir propietatis	elixir propietatis <sup>829</sup>	1 onza
semilla de membrillos	quince seeds	3 libras
semilla de agras	sour grapes seeds	3 libras
xarave de cantueso	French lavender syrup	10 libras
<b>xarave de zarsa</b>	<b>sarsaparilla syrup</b>	<b>10 libras</b>
xarave de echicoria	chicory syrup	10 libras
frazqueras desquadradas, sin vidrios, ni llaves	disorderly bottle-cases without glass or keys	4
caxa sin llave	box without the key	1
raiz de peonia	peony root	1 libra
raiz de brionia	bryony root	0.5 libra
raiz de gencian	gentian root	1 libra
eufracia	eyebright	0.5 libra
raiz de azaro	European wild ginger root	4 onzas
raiz de erebolo [= eleboro?] blanco	root of white hellebore[?]	1 libra
raiz de yndivia	endive root	3 libras
<b>cortesas de palo de guayacan</b>	<b>peels of the guaiacum wood</b>	<b>4 libras</b>
eleboro negro	black hellebore	0.5 libra
raiz de bruzco	butcher's-broom root	4 libras
semilla de lechugas	lettuce seeds	2 libras
oalo de balsamo	copaiba wood	2 libras
mirabolanos de belericos	myrobalan <sup>830</sup>	8 libras
mirabolanos quebulos	myrobalan <sup>811</sup>	3 onzas
mirabolanos emblicos	myrobalan <sup>811</sup>	6 libras
albayerde	ceruse	1 libra
bleo [= bleado?]	strawberry blite[?]	
palo de taray	tamarisk wood	2 libras
ojas de sabina	savin juniper leaves	1 libra
cortesa de mejo [= mijo] del sol	common gromwell peels	4 libras
calamo aromatico	sweet flag	1 libra
semilla de enelda	dill seeds	4 libras
semilla de agno casto	chaste tree seeds	4 libras

<sup>829</sup> Ascribed to Paracelsus and used for digestive problems (Alleyne 1733: 196).

<sup>830</sup> Overall, five different kinds of myrobalans were recognised, all native to south Asia (Davis and López Terrada 2010: 592).

## Appendix 5: Medical provisions brought with the 1642 *socorro*<sup>831</sup>

### Xaraves (syrops) 16 arrobas (≈ 184 kg)

Spanish term	English equivalent	Quantity
miel rosada espesada	thickened rose honey	4 arrobas
xarave de nueve ynfuciones	syrup of nine infusions <sup>832</sup>	1 arroba
arope de matlaliste especado	thickened matlalitztic syrup <sup>833</sup>	2 arrobas
arope de agras	sour grape syrup	2 arrobas
garave de cantueso	French lavender syrup	1.5 arrobas
oximiel sechilitico[?]	oxymel [??]	1 arroba
garave de artemisa	estragon syrup	1.5 arrobas
xarave de menta simple	simple mint syrup	2 arrobas
xarave de ajenjos	absinthe syrup	1 arroba

### Aceytes (oils) 21.5 arrobas (≈ 247 kg)

aceyte de almendras dulces	sweet almonds oil	1 arroba
aceyte de mancanilla	chamomile oil	3 arrobas
aceyte rosado completo	full rose oil	3 arrobas
aceyte de menbrillos	quince oil	2 arrobas
aceyte de espique	spikenard oil	1 arroba
aceyte de ajenjos	absinthe oil	1 arroba
aceyte de aparicio	oleum magistrale <sup>834</sup>	2 arrobas
aceyte de lenti[s]co	mastic oil	1 arroba
aceyte de laurel	laurel oil	0.5 arroba
aceyte de cat[.]gueia	[??] oil	6 arrobas
aceyte comun	common oil	1 arroba

### Ungentos (ointments) 9 arrobas (≈ 103.5 kg)

ungunto [sic] rosado	rose ointment	2 arrobas
ungunto desopilativo del umos[?]	deobstructive ointment from [??]	1 arroba
ungunto apostolorum	Apostles' ointment <sup>835</sup>	1 arroba
ungunto confortativo	soothing ointment	1 arroba
trementina comun buena	common good turpentine	2 arrobas
trementina de abeto	fir tree turpentine	2 arrobas

### Letuarios y confeciones (electuaries and preserves) 8 arrobas, 3 libras, 16 onzas (≈ 94 kg)

letuario di acatasticion	electuary against cold[?]	2 arrobas
letuario di aphinicion	affinity electuary[?]	1 arroba

<sup>831</sup> The identities of the drugs and their English equivalents were determined using a combination of various Spanish pharmacopoeias printed in the late seventeenth century (especially Oviedo 1692 and Fuente Pierola 1698), *Neuman and Baretti's Dictionary of the Spanish and English Languages* (1831), and contemporary works in the history of medicine (especially Norri 2016, also Fresquet Febrer 1999; Davis and López Terrada 2010). Substances of American origin are marked in black. One *arroba* is the equivalent of ca. 11.5 kg; one *libra* is approximately equivalent to its modern English counterpart; one *onza* is about 290 g (Villasana Haggard 1941: 72, 79, 81).

<sup>832</sup> Prepared from roses and other substances (Fuente Pierola 1698: 84).

<sup>833</sup> Used as purgative (Mendieta 2011: 522).

<sup>834</sup> Ascribed to Aparicio de Zubia (d. 1566) and used to treat wounds and ulcers (Ungerer 1986).

<sup>835</sup> A renowned dodecapharmacum ascribed to Avicenna, which gained its moniker for the number of ingredients used in its preparation (Norri 2016: 58).

xerapliega	hiera picra <sup>836</sup>	1 arroba
atriala[?] magna	???	2 libras
pildoras de fumaría	fumitory pills <sup>837</sup>	4 onzas
pildoras agregativas	purging pills <sup>818</sup>	4 onzas
pildoras coquias	colocynth pills <sup>818</sup>	4 onzas
pildoras de hiera	hiera pills <sup>817, 818</sup>	4 onzas
escamonea	scammony	1 libra
acucar rosado	rose sugar	4 arrobas

### Emplastos (poultices)

7 arrobas (≈ 80.5 kg)

emplasto estomacicon	stomach poultice	1 arroba
emplasto diaquilon menor	lesser diachylon poultice <sup>838</sup>	1 arroba
emplasto diaquilon mayor	greater diachylon poultice <sup>839</sup>	0.5 arroba
emplasto diapalma	diapalma poultice <sup>840</sup>	2 arrobas
emplasto geminis	geminis poultice <sup>841</sup>	2 arrobas
emplasto meliloto	sweet clover poultice	0.5 arroba

### Powders and simples

46 arrobas, 50 libras (≈ 554 kg)

polvos de [con]sueidas	comfrey powder	0.5 arroba
polvos de almasiga	mastic powder	4 libras
polvos de juanes	HgO powder	6 libras
atutia preparada	tutty	2 libras
flor de manzanilla en manojos	chamomile flowers in bundles	2 arrobas
matlalistic	matlalitztic <sup>814</sup>	2 arrobas
caqualtipan	jalap from Zacualtipán <sup>842</sup>	2 arrobas
oja de sen	senna leaves	1 arroba
pinaja	[???	2 arrobas
alholvas	fenugreek	2 arrobas
sublimates	sublimates[?]	4 arrobas
mirra	myrrh	2 libras
canfora	camphor	2 libras
almasiga blanca	white mastic	0.5 arroba
albayalde	ceruse	3 arrobas
todas las rayces diureticas	diuretic roots	1 arroba
pimiente de adormideras blancas y negras	white and black poppy seeds	4 libras
rosa colorada y blanca	colour and white rose	2 arrobas
sarsa de mechoacan	sarsaparilla from Michoacán	4 arrobas
pes griega	colophony	6 arrobas
agua rosada en frascos	bottled rose water	4 arrobas
polvos de rosa	rose powder	4 libras
romero	rosemary	1 arroba
origano	oregano	0.5 arroba

<sup>836</sup> Hiera was a purgative electuary with aloe as its main ingredient. For its different kinds, see Norri 2016: 507–509.

<sup>837</sup> For some of the different kinds of pills, see Davis and López Terrada 2010: 607.

<sup>838</sup> A compound poultice against tumours and other ailments (Fuente Pierola 1698: 172–173).

<sup>839</sup> A compound poultice against inflammations and other ailments (Fuente Pierola 1698: 172).

<sup>840</sup> A desiccative plaster according to Galen's recipe (Oviedo 1692: 454–455; Fuente Pierola 1698: 173–174).

<sup>841</sup> Prepared using rose oil and ceruse, used to treat ulcers and wounds (Fuente Pierola 1698: 178).

<sup>842</sup> Barrios 1607: 79r.

quannenepile	cohuanenepili <sup>843</sup>	0.5 arroba
nueces de sipres	cypress nuts	0.5 arroba
las tres harinas	three flours	3 arrobas
cardenillo	verdigris	1 arroba
arope comun	common syrup	0.5 arroba
asarcon castellano	Castilian minium	1 arroba
polipodio	polypody	0.5 arroba
polvos de polipodio	polypody powder	2 libras
anis	anise	0.5 arroba
semilla de ynojo	fennel seeds	8 libras
polvos de sansa[?]	[???] powder	6 libras
polvos reales	royal powder[?]	1 arroba
alquitira	tragacanth	6 libras
hermodatiles	iris	4 libras
tecamehaca	tacamahaca	12 bottles

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<sup>843</sup> Used as antidote (Mendieta 2011: 522; Pardo-Tomás 2013b: 44).





## Appendix 6: Medical provisions brought with the 1717 *socorro*<sup>844</sup>

### Crate no. 1

Spanish term	English equivalent	Quantity
confiton de jacynthos	hyacinth preserve	3 libras
confiton cardiaca gentil contra melancolia	fine motherwort preserve against melancholy	1 libra, 4 onzas
confiton alchernies	alchermeres preserve <sup>845</sup>	2 libras, 4 onzas
theriaca de esmeraldas	emerald theriac	1 libra, 2 onzas
polvos de diamargariton frio	diamargaritum calidum powder <sup>846</sup>	3 libras, 6 onzas
polvos de aromatico rosado	aromatic rose powder	3 libras, 6 onzas
polvos de diarrhodon Abbad	diarrhodon abbatis powder <sup>847</sup>	6.5 libras
polvos de contra vermes	antihelmintic powder	4 libras, 12 onzas
hiera simple de Galeno	Galen's hiera simplex <sup>848</sup>	10.5 libras
sal de tartaro	salt of tartar	2 libras, 2 onzas
especie de benedicta	benedict electuary <sup>849</sup>	13.5 libras
xarave de coral	coral syrup	2 libras, 4 onzas
confiton micleta	micleta preserve <sup>850</sup>	1 libras, 2 onzas
estopa	tow	part of 3 arrobas

### Crate no. 2

hiera magna de Galeno	Galen's hiera magna <sup>829</sup>	18 libras
hiera picra	hiera pigra <sup>829</sup>	27 libras
hiera diacoloquintidos	hiera diacoloquintidos (Ruffi) <sup>829</sup>	12 libras
hiera logodion	hiera logodion <sup>829</sup>	16 libras
diacatholicon	diachylon <sup>851</sup>	22 libras
diaprunis simple	diaprunis simplex <sup>852</sup>	16.5 libras
confiton Hamec simple	Hamech's simple preserve <sup>853</sup>	6 libras

### Crate no. 3

benedicta	benedict electuary <sup>830</sup>	29 libras
diaphenicon de Mesue	Mesue's diaphenicon <sup>854</sup>	6 libras
loc de pulmone vulpis	fox lung loc <sup>855</sup>	2.5 libras
loc de amigdaliz	almond loc <sup>836</sup>	2 libras, 4 onzas
loc de sumo de orosus	liquorice juice loc <sup>836</sup>	1 libra, 4 onzas

<sup>844</sup> The identities of the drugs and their English equivalents were determined using a combination of various Spanish pharmacopoeias printed in the late seventeenth century (especially Oviedo 1692 and Fuente Pierola 1698), *Neuman and Baretti's Dictionary of the Spanish and English Languages* (1831), and contemporary works in the history of medicine (especially Norri 2016, also Fresquet Febrer 1999; Davis and López Terrada 2010). Substances of American origin are marked in black. One *arroba* is the equivalent of ca. 11.5 kg; one libra is approximately equivalent to its modern English counterpart; one *onza* is about 290 g; one *cuartillo* is about 0.56 l; *tenate* was a sizeable leather bag (Villasana Haggard 1941: 72, 79, 81).

<sup>845</sup> The main ingredient was kermes or cochineal (Davis and López Terrada 2010: 604).

<sup>846</sup> A cooling compound prepared from powdered pearls and other substances (Lémery 1720: 158).

<sup>847</sup> Cordial powder prepared from roses and other substances. Used to strengthen the heart, stomach and liver, and assist in digestion (Simpson 1937: 146; Sánchez González de Herrero 1990: 167).

<sup>848</sup> *Hiera* was a purgative electuary with aloe as its main ingredient. For its different kinds, see Norri 2016: 507–509.

<sup>849</sup> A purgative electuary (Norri 2016: 93).

<sup>850</sup> An electuary against haemorrhoids and stomach afflictions (Norri 2016: 679).

<sup>851</sup> Plaster prepared from plant mucilage or juices and other substances (Norri 2016: 286).

<sup>852</sup> *Diaprunis* was an electuary containing the pulp of Damask prunes (Norri 2016: 295).

<sup>853</sup> A compound purgative (Norri 2016: 238–239).

<sup>854</sup> *Diaphenicon* was a purgative electuary with dates as its main ingredient (Norri 2016: 293).

<sup>855</sup> *Loc* was a liquid kind of electuary (Norri 2016: 608–609).

pulpa de siruelas	plum pulp	8 libras
espiritus de vitriolo	spirit of vitriol	2.5 libras
espiritus de azufre	spirit of sulphur	1 libra, 4 onzas
espiritus de rosa	spirit of rose	2 libras
espiritus de sal comun	spirit of common salt	1 libra, 2 onzas
xarave rosado simple	simple rose syrup	18 libras
oximiel simple	simple oxymel	36 libras
estopa	tow	part of 3 arrobas

#### Crate no. 4

miel rosada	rose honey	96 libras
arrobe de borrajas	borage syrup	30 libras

#### Crate no. 5

oximiel compuesto	compound oxymel	12 libras
arrobe de julepe rosado	rose julep syrup	12 libras
arrobe de fumaria	fumitory syrup	24 libras
arrobe de buglossa	small bugloss syrup	30 libras
miva aromatica	aromatic miva <sup>856</sup>	6 libras
miva simple	simple miva <sup>837</sup>	12 libras
xarave de membrillos	quince syrup	24 libras
xarave de fumaria compuesto	compound fumitory syrup	6 libras

#### Crate no. 6

xarave de yerva buena compuesto	compound mint syrup	10 libras
xarave de yerva buena simple	simple mint syrup	18 libras
xarave de cortesas de sidra	lemon peel syrup	18 libras
xarave de cinco raizes con vinagre	syrup from five roots with vinegar	30 libras
xarave de cinco raizes con vinagre	syrup from five roots with vinegar	6 libras
xarave de eupatorio	agrimony syrup	12 libras
xarave solutivo de nueve infuciones	soluteive syrup of nine infusions <sup>857</sup>	30 libras

#### Crate no. 7

xarave de ajenos	absinthe syrup	30 libras
xarave de cantueso simple	French lavender syrup	18 libras
xarave de arraixan	myrtle syrup	18 libras
xarave de granadas	pomegranate syrup	30 libras
xarave de jujuvas	jujube syrup	30 libras

#### Crate no. 8

xarave solutivo del rey	soluteive king's syrup <sup>858</sup>	18 libras
xarave de dialthea	marshmallow syrup	18 libras
xarave de cantueso compuesto	compound French lavender syrup	6 libras
xarave de arthemisa	estragon syrup	12 libras
xarave de mucilagos	mucilaginous syrup	18 libras
xarave de zarsa	sarsaparilla syrup	18 libras
diaphenicon de Alexandro	Alexander's diaphenicon <sup>835</sup>	28 libras
unguento de dialthea compuesto	compound estragon ointment	6 libras

<sup>856</sup> Medicinal preparation for stomach, containing juices extracted from fruits, especially quinces or pears (Norri 2016: 685).

<sup>857</sup> Prepared from roses and other substances (Fuente Pierola 1698: 84).

<sup>858</sup> Prepared from violets and other substances (Oviedo 1692: 210; Fuente Pierola 1698: 84).

**Crate no. 9**

unguento rosado	rose ointment	15 libras
unguento del corazon de Gainerio	Guainerio's heart ointment <sup>859</sup>	12 libras
unguento de manzanas	apple ointment	15 libras
unguento de calabaza	gourd ointment	16 libras
unguento pleuritico	pleuritic ointment	5 libras
unguento de azahar	orange flower ointment	11 libras
unguento apostolorum	Apostles' ointment <sup>860</sup>	23 libras
manteca de bacas	berry pulp	11 libras

**Crate no. 10**

unguento dialthea simple	simple marshmallow ointment	30 libras
unguento Ysis	Isis' ointment <sup>861</sup>	22 libras
unguento deobstruente del estomago	ointment for stomach obstructions	5 libras
unguento deobstruente del vientre	ointment for gas obstructions	6 libras
unguento deobstruente del vazo	ointment for spleen obstructions	11 libras
unguento deobstruente del higado	ointment for liver obstructions	11 libras
unguento deobstruente de sumos	ointment for humoural obstructions	11 libras
unguento sandalino	sandalwood ointment	12 libras
unguento de Alderete	Alderete's ointment <sup>862</sup>	6 libras
unguento defencivo de bolo	protective Armenian bole ointment	6 libras

**Crate no. 11**

trimentina colada	filtered turpentine	30 libras
tutanos preparados	prepared marrow	5 libras
cebo de macho	mutton's tallow	25 libras
azeite rosado	rose oil	43 libras
azeite de arraixan	myrtle oil	11 libras

**Crate no. 12**

azeite de mansanilla	chamomile oil	36.5 libras
azeite violado	violet oil	16.5 libras
azeite de alacranes	scorpion oil	5.5 libras
azeite de ruda	rue oil	16 libras
azeite de almaciga	mastic oil	16 libras
azeite rosado omphansin	rose oil [??]	17 libras
balsamo negro	balsam of Peru	5 libras, 4 onzas

**Crate no. 13**

azeite de espicanardo	spikenard oil	16.5 libras
azeite de membrillos	quince oil	26 libras
azeite de lirios	lily oil	21 libras
azeite de eneldo	dill oil	27 libras
azeite de yerva buena	mint oil	21 libras

**Crate no. 14**

azeite de almendras dulces	sweet almond oil	30 libras
azeite de almendras amargas	bitter almond oil	16 libras
azeite de lombrices	worm oil	16 libras

<sup>859</sup> Antonio Guainerio was a fifteenth-century physician active in Padua.

<sup>860</sup> A renowned dodecapharmacum ascribed to Avicenna, which gained its moniker for the number of ingredients used in its preparation (Norri 2016: 58).

<sup>861</sup> A compound remedy against putrid ulcers (Capello 1751: 175).

<sup>862</sup> A compound remedy against scabies (Oviedo 1692: 442).

azeite de ajexos	absinthe oil	37 libras
azeite de enebro	juniper oil	3.5 libras
azeite de ladrillos	brick oil <sup>863</sup>	1 libra
azafran de Castilla	Castilian saffron	5 libras

#### Crate no. 15

azeite de abeto	fir oil	24 libras
balsamo de romero	rosemary balsam	3 libras
pez griega	colophony	25 libras
una piedra de preparar con su moleta	slab with a mallet	1
alumbre	alum	5.5 libras
tequesquite	tequesquite	15.5 libras
piedra lipis	blue vitriol (copper sulphate)	4 libras, 4 onzas
alcaparrosa	vitriol	4 libras, 4 onzas
espodio	espodio <sup>864</sup>	1 libra

#### Crate no. 16

rossa colorada	colour rose	11 libras
vino blanco	white wine	34 cuartillos
alholvas	fenugreek	16 libras
linasa	linseed	16 libras
simiente de eneldo	dill seeds	7 libras
raiz de azaro	European wild ginger root	3 libras
simiente de ynojo	fennel seeds	8 libras
raiz de rubia tintorum	dyer's madder root	4 libras
carmin	carmine	4 libras
alcanfor	camphor	4 libras
un marco de dos libras	two-pound weight	1
estopa	tow	part of 3 arrobas

#### Crate no. 17

rossa de Castilla	Castilian rose	11 libras
vino blanco	white wine	34 cuartillos
balaustrias	pomegranate flowers	15 libras
simiente de eneldo	dill seeds	10 libras
simiente de santónico	santonica seed	8 libras
dictamo blanco	white dittany	2 libras
aristoloquia redonda	rotund-leaved birthwort	4 libras
anis	anise	9 libras
ligni aloes	agarwood	1 libra
simiente de rabanos	radish seed	1 libra
estopa	tow	part of 3 arrobas

#### Crate no. 18

ojasen	senna	21 libras
vino tinto	red wine	34 cuartillos
simiente de melon	melon seeds	9 libras
simiente de calabasa	gourd seeds	8 libras
simiente de sandia	watermelon seeds	8 libras
simiente de membrillos	quince seeds	7 libras
simiente de adormideras blancas	white poppy seeds	3 libras
simiente de adormideras negras	black poppy seeds	2 libras, 4 onzas

<sup>863</sup> Prepared from old red bricks according to Mesue's recipe (López de León 1628: 332v–333r).

<sup>864</sup> Calx found in copper furnaces or ashes of burnt ivory or reeds (Neuman and Baretti 1831: 335).

saragatona	dark psyllium	3 libras, 4 onzas
raiz de pelitre	Spanish chamomile root	2 libras
emplasto contrarotura magistral	magisterial poultice against ruptures <sup>865</sup>	5.5 libras
estopa	tow	part of 3 arrobas

#### Crate no. 19

violetas	violets	21 libras
vino tinto	red wine	34 cuartillos
raiz de mechoacán	mechoacán root	9 libras
raiz de jalapa	jalap root	8.5 libras
acibar hipatica	hepatic aloes juice	3 libras
sebestenes	sebesten plums	3 libras
hermodatiles	iris	3 libras
raiz de genciana	gentian root	3 libras
altramuces	lupine	12.5 libras
higos passados	fig paste	10.5 libras
ciruelas passas	plum paste	21 libras
emplasto contra rotura de pelle	poultice against skin ruptures	5 libras, 4 onzas
emplasto estomaticon	stomach poultice	8 libras, 4 onzas
emplasto Guillen Servent	Guillén Servent poultice <sup>866</sup>	4 libras, 4 onzas
emplasto triapharmaco	triapharmacon poultice <sup>867</sup>	3 libras
estopa por estriva	tow as ballast	part of 3 arrobas

#### Crate no. 20

flor de manzanilla	chamomile flowers	16 libras
vino tinto	red wine	34 cuartillos
garvanzos	chickpeas	17 libras
havas	beans	23 libras
raiz de peonia	peony root	12 libras
aristoloquia longa	long aristolochia	2 libras
jarina de havas	bean flour	12 libras
azibar sucotrina	Socotrine aloe	3 libras
simiente de ynojo	fennel seeds	4 libras
mirabolanos citrinos	yellow myrobalan	4 libras
laudan dipurado	purified? laudanum	3.5 libras
estopa	tow	part of 3 arrobas

#### Crate no. 21

oregano	oregano	13 libras
lantexas	lentils	20 libras
vinagre de Castilla	Castilian vinegar	32 cuartillos
almaciga	mastic	19 libras
tecomahacas	tacamahaca	6 libras (24 jicarillas)
jarina de lentexas	lentil flour	12.5 libras
goma opopanaco	opopanax	3 libras, 4 onzas
alquitira	tragacanth	6.5 libras
goma bdelio	bdellium	3 libras, 4 onzas
hysopo yerva	hyssop plant	5 libras
hysopo uvas	hyssop grapes	4 libras
cortesas de alcaparras	caper peels	2 libras

<sup>865</sup> Oviedo 1692: 494–495; Fuente Pierola 1698: 180.

<sup>866</sup> A compound plaster used for painful bruises (Fuente Pierola 1698: 178; García Álvarez 1986: 489).

<sup>867</sup> Plaster made by boiling wheat flower, olive oil and water (Fuente Pierola 1698: 182).

emplasto de ranas duplicado	double frog poultice	3 libras, 4 onzas
estopa por estriva	tow as ballast	part of 3 arrobas

#### Crate no. 22

oregano	oregano	13 libras
azucar rosada	rose sugar	26 libras
manna	manna (ash-tree gum)	12.5 libras
cucharas	spoons	2
balanzas	scales	2
cardenillo	verdigris	12 libras
polipodio	polypody	10 libras
emplasto diapalma	diapalma poultice <sup>868</sup>	8.5 libras
piedras bezoares	bezoar stones	2 libras, 2 onzas
flor de azufres	flowers of sulphur	1 libra, 2 onzas
gallia muscato de Mesue	<i>Mesue's gallia muscata</i> <sup>869</sup>	4 onzas
todas las pildoras	all kinds of pills <sup>870</sup>	?
chistal de tartaro	crystallised cream of tartar	1 libra, 2 onzas
bolo armenio preparado	prepared Armenian bole	1 libra, 2 onzas
polvos del Papa Benedicto	Pope Benedict's powder <sup>871</sup>	10 onzas
piedras ynferral	stone of hell (silver nitrate)	4 onzas
atutia preparada	prepared tutty	9 onzas
opio	opium	4 onzas
marfil preparado	prepared ivory	4 onzas
ojos de cangrejo	lapis cancri <sup>872</sup>	4 onzas
emplasto gracia Dei	gratia Dei poultice <sup>873</sup>	3 libras
espicanardo	spikenard	3 libras
mirrha	myrrh	4 libras, 4 onzas
flor de esquinantho	camel grass flower	3 libras
goma armoniaco	gum ammoniac	6.5 libras
emplasto meliloto	sweet clover poultice	15 libras
estopa por estriva	tow as ballast	part of 3 arrobas
emplasto de ranas simple	simple frog poultice	3.5 libras

#### Crate no. 23

flor de borrajas	borage flowers	8 libras
flor de buglossa	small bugloss flowers	8 libras
agua ardiente	aqua ardiente	18 cuartillos
vinagre rosado	rose vinegar	17.5 cuartillos
casita mayor	larger box	1
casita menor	smaller box	1
cazito de cavolargo	pan/ladle with a long handle[?]	3
zarsa	sarsaparilla	part of 1 arroba
estopa	tow	part of 3 arrobas
libro de Dioscorides	book by Dioscorides	1
emplasto deachilon maior	greater diachylon poultice <sup>874</sup>	5 libras, 6 onzas
emplasto deachilon menor	lesser diachylon poultice <sup>875</sup>	5 libras, 4 onzas

<sup>868</sup> A desiccative plaster according to Galen's recipe (Oviedo 1692: 454–455; Fuente Pierola 1698: 173–174).

<sup>869</sup> A compound remedy with musk as its main ingredient (Norri 2016: 453).

<sup>870</sup> For some of the different kinds of pills, see Davis and López Terrada 2010: 607.

<sup>871</sup> Used for digestive problems, headaches, renal issues and other ailments (Fuente Pierola 1698: 136).

<sup>872</sup> Calcareous gastroliths formed in crayfish.

<sup>873</sup> A poultice for cleansing wounds (Oviedo 1692: 517–519; Fuente Pierola 1698: 182).

<sup>874</sup> A compound poultice against inflammations and other ailments (Fuente Pierola 1698: 172).

<sup>875</sup> A compound poultice against tumours and other ailments (Fuente Pierola 1698: 172–173).

emplasto de la Madre	Virgin Mary's poultice <sup>876</sup>	5 libras, 4 onzas
emplasto de achilon gomado	resinous diachylon poultice	5 libras, 4 onzas
espadrapo	cerecloth	5 libras

#### Crate no. 24

tamises	sieve	2
caxetas de membrillos	boxes of quince	24 (3 arrobas)
todos los trosiscos	all kinds of troches <sup>877</sup>	?
laudano opiato	opiate laudanum	3 onzas
coral rubio preparado	prepared red coral	5 libras, 5 onzas
polvos de sangre de drago	dragon's blood in powder	2 libras, 4 onzas
emplasto Ysis	Isis's poultice <sup>878</sup>	8.5 libras
ceroto de Filagro	Philagrius's cerate <sup>879</sup>	5 libras
zarsa	sarsaparilla	part of 1 arroba

#### Crate no. 25

sumo de rosa	rose juice	5 botijas (60 cuartillos)
azeite de Castilla	Castilian oil	3 botijas

#### Crate no. 26

agua rosada	rose water	66 cuartillos
sumo de granadas	pomegranate juice	24 cuartillos

#### Crate no. 27

xarroperas	vials for xaropes (syrops)	53
cordialeros	vials for cordials	53

#### Crate no. 28

raiz de borrajas	borage root	2 tenates
raiz de apio	celery root	5 tenates
raiz de esparragos	asparagus root	1 tenate
raiz de ynojo	fennel root	1 tenate
manzanilla	chamomile	11 tenates
fumaria	fumitory	8 tenates
endivia	endive	1 tenate
malvas	mallow	10 tenates

#### Crate no. 29

raiz de perexil	parsley root	7 tenates
malvabisco	marshmallow	1 tenate
raiz de bruzco	butcher's-broom root	2 tenates
borrajas	borage	2 tenates
doradillas	spleenwort	7 tenates
betonica	betony	2 tenates
agrimonia	agrimony	1 tenate
chicoria	chicory	2 tenates
endivia	endive	2 tenates
parietaria	pellitory	4 tenates
laurel	laurel	3 tenates

<sup>876</sup> Oviedo 1692: 502.

<sup>877</sup> For some of the different kinds, see Davis and López Terrada 2010: 608.

<sup>878</sup> Oviedo 1692: 495–502

<sup>879</sup> Used for abdominal pains (Fuente Pierola 1698: 168).

meliloto	sweet clover	6 tenates
trevol	clover	2 tenates
ruda	rue	2 tenates

**Crate no. 30**

raiz de endivia	endive root	9 tenates
raiz de chicoria	chicory root	1 tenate
torongil	lemon balm	4 tenates
cabezas de adormideras	poppy heads	3 tenates
cabezas de rosa	rose heads	3 tenates
culantrillo	maidenhair	8 tenates
alhucema	lavender	1 tenate
romero	rosemary	1 tenate
mercuriales	mercuries	10 tenates

**Crate no. 31**

raiz de esparragos	asparagus root	6 tenates
chile ancho	poblano	2 tenates
chile passilla	pasilla chile	2 tenates
azederas	sorrel	7 tenates
malvas	mallow	2 tenates
endivia	endive	1 tenate
borrajas	borage	9 tenates
chicoria	chicory	1 tenate
raiz de ynojo	fennel root	7 tenates
salvia	sage	2 tenates
zarsa	sarsaparilla	part of 1 arroba

**Crate no. 32**

grana	cochineal	25 libras
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## Appendix 7: Kamel's clientele

### Society of Jesus

Name	Treated with	Latin binomial <sup>880</sup>	Form used	Treated for	Reference
Joaquín Assin	Igasur (St Ignatius bean) Tarampola	<i>Strychnos ignatii</i> <i>Solanum ferox</i>	Seed Inhaled smoke from seeds	Purgative Toothache	Kamel 1699b: 90 Kamel 1704f: 15.3
Andrés Díaz	Tanglat	<i>Cymbopogon citratus</i>	Water distilled from bulbs	Constipation	Kamel 1704f: 28.1
Pedro Silvestre Navarro	Tanglat	<i>Cymbopogon citratus</i>	Water distilled from bulbs	Constipation	Kamel 1704f: 28.1
Vicente Olzina	Igasur (St Ignatius bean)	<i>Strychnos ignatii</i>	Seed powder	Digestive problems	Kamel 1699b: 90
Antonio de Robles	Tanglat	<i>Cymbopogon citratus</i>	Water distilled from bulbs	Constipation	Kamel 1704f: 28.1
Manuel Rodríguez	Banglay	<i>Zingiber</i> spp.	Root mixed with sesame oil	Ecchymosis	Kamel 1704f: 26
Pedro de Sylva	Gamagamatissan Tanglat	<i>Solanum nigrum</i>	Elixir, salts	Obstructions	Kamel 1704f: 5.12
		<i>Cymbopogon citratus</i>	Syrup, juice, infusion, decoction	Renal calculi	Kamel 1704f: 28.1
	Cayutana Lactang	<i>Zanthoxylum</i> spp. <i>Anamirta cocculus</i>	Powdered root (compound drug) Root scrapings	Obstructions Obstructions	Kamel 1704f: 74.1 Kamel 1704d: 1810.106
Antonio Varaona	Igasur (St Ignatius bean)	<i>Strychnos ignatii</i>	Seed	Purgative	Kamel 1699b: 90
P. Vasquez	Banglay	<i>Zingiber</i> spp.	Root mixed with sesame oil	Wounds	Kamel 1704f: 26
	Tanglat	<i>Cymbopogon citratus</i>	Elixir, salts	Obstructions	Kamel 1704f: 28.1
J. Zarzuela	Tanglat	<i>Cymbopogon citratus</i>	Water distilled from bulbs	Constipation	Kamel 1704f: 28.1

### Royal officials

Juan de Ozaeta y Oro	Igasur (St Ignatius bean)	<i>Strychnos ignatii</i>	Seed	Excess of phlegm	Kamel 1699b: 90
B. Rayo Doria*	Tanglat	<i>Cymbopogon citratus</i>	Spirit essence, tincture	Obstructions	Kamel 1704f: 28.1

\* Relative of the royal official Sebastián Rayo Doria.

### Indigenous people

Anonymous <sup>881</sup>	Yerba de las cinco yagas	? <sup>882</sup>	Decoction	Wounds	Kamel 1704f: 4.3
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### Unknown

A. Alarcon	Gamagamatissan	<i>Solanum nigrum</i>	Enema[?]	Dysentery	Kamel 1704f: 5.12
Angelo Caspar	Palis	<i>Callicarpa bicolor</i>	Poultice	Tumours	Kamel 1704d: 10.2
M. Bolio	Banglay	<i>Zingiber</i> spp.	Root mixed with sesame oil	Submental tumours	Kamel 1704f: 26
A. Fabregas	Tanglat	<i>Cymbopogon citratus</i>	Syrup, juice, infusion, decoction	Renal calculi	Kamel 1704f: 28.1
C. Franco's son	Banglay	<i>Zingiber</i> spp.	Root mixed with sesame oil	Submental tumours	Kamel 1704f: 26
A. Girau	Igasur (St Ignatius bean)	<i>Strychnos ignatii</i>	Seed	Purgative	Kamel 1699b: 90
Pedro Gordillo	Yerba de las cinco yagas	? <sup>863</sup>	Decoction	Wounds	Kamel 1704f: 4.3
A. Marin	Tanglat	<i>Cymbopogon citratus</i>	Elixir, salts	Obstructions	Kamel 1704f: 28.1
M. Merino	Tanglat	<i>Cymbopogon citratus</i>	Spirit essence, tincture	Obstructions	Kamel 1704f: 28.1
St. Olmeido	Tanglat	<i>Cymbopogon citratus</i>	Spirit essence, tincture	Obstructions	Kamel 1704f: 28.1
Philippus de los Rios	Palis	<i>Callicarpa bicolor</i>	Poultice	Tumours	Kamel 1704d: 10.2
Miguel de Salas	Tanglat	<i>Cymbopogon citratus</i>	Elixir, salts	Obstructions	Kamel 1704f: 28.1

<sup>880</sup> Latin binomials have been determined using Merrill 1903.

<sup>881</sup> This patient was recorded simply as "Indus", an indigene.

<sup>882</sup> Possibly cognate to *Tagetes lunulata*, known as 'hierba de las cinco llagas' in the Americas.



## Appendix 8: Kamel's informants and collectors<sup>883</sup>

### Society of Jesus

Name	Kamel's identifier	Matter in question <sup>884</sup>	Information/specimen provided	Reference
Joaquín Assin	Reverend Father	Crested dragon	Saw the dragon alongside ca. 20 more witnesses	Kamel 1706b: 2271.38
<b>Antonio Borja</b>	---	<b>Unicorn horn</b>	<b>Donated Kamel half of his own specimen</b>	<b>Kamel 1706b: 2274.62</b>
Jacinto Capdevila	---	Sorogsorog ( <i>Euphorbia neriifolia</i> )	Medical use among the locals	Kamel 1704f: 50.1
Mathias Cuculínus	---	Sea pen	Saw a specimen in Puerto Rico	Kamel 1704f: 41.2
José Encalada	---	Copal tree Tugus ( <i>Amomum</i> spp.) Vanilla	Information about the plant Provided an image Information about the plant	Kamel 1704f: 60.10 Kamel 1699a Kamel 1704e: 1837.193
Anton Kirsbaumer	---	Sea pen Worms	Saw a specimen in Puerto Rico Saw twigs turning into worms near Ingolstadt	Kamel 1704f: 41.2 Kamel 1708: 248.85
Antonio Molero	---	Ipo (poisonous tree)	Information about the plant	Kamel 1704f: 87.1
Jeronimo Perez	---	Balete ( <i>Ficus</i> spp.)	Saw an extremely large specimen	Kamel 1704f: 49.1
Francisco del Prado	---	Alipata ( <i>Excoecaria agallocha</i> )	Milky sap poisonous, can cause blindness	Kamel 1704f: 87.2
Francisco de Quiros	---	Human worms	See pp. 162–163	Kamel 1708: 248.79
Manuel Rodríguez	--- Eminent painter Lived in Mexico and Peru	Cannabis Crested dragon Vanilla	Efficient against bleeding wounds Saw the dragon, provided its image Information about the plant	Kamel 1704f: 7.27 Kamel 1706b: 2271.38 Kamel 1704e: 1837.193
Josephus Trepad	Reverend Father, Prior in Panay	Girl suffering from dwarfism	Saw the girl, related by Manuel Rodríguez	Kamel 1706b: 2269.26
Francisco Antonio de la Zarza	--- --- --- --- --- ---	Centaur-like monster Girl suffering from giganteism Shrimps Igasud ( <i>Strychnos ignatii</i> ) Pansipansi Turtles	Saw the monster Saw the girl Behaviour during reproduction Efficient against poison Provided description and image Provided descriptions	Kamel 1706b: 2270.5 Kamel 1706b: 2271.37 Kamel 1704a: 2071.5 Kamel 1699b: 92 Kamel 1704f: 48.7, 77.3 Kamel 1708: 246.54–59

### Spanish officials

Francisco de Alzaga	Former governor of the province of Catbalogan	Centaur-like monster	Saw the monster's carcass	Kamel 1706b: 2270.35
<b>Manuel Argüelles</b>	---	<b>Snake stone</b>	<b>Donated Kamel a specimen from the Talim Island</b>	<b>Kamel 1706b: 2274.63</b>
Pedro Durán de Montforte	Spaniard worthy of trust	Pearl oyster	Saw pearls the size of hen's egg	Kamel 1706a: 2400.26
<b>Juan de Morales</b>	<b>Peace treaty with Borneo</b>	<b>Borneo camphor</b>	<b>Brought Kamel some from Borneo</b>	<b>Kamel 1704f: 69.8</b>

### Other

Lucas Cadabdab	Indigenous quack doctor	Human worms	See pp. 162–163	Kamel 1708: 248.79
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### Unknown

Jacobus Antolinus	Lived in Mexico and Peru	Mimosa plant Vanilla	Saw a similar specimen in Peru Information about the plant	Kamel 1704f: 15.29 Kamel 1704e: 1837.193
<b>Antonio Bandeira</b>	---	<b>Sea pen</b>	<b>Provided Kamel with a specimen</b>	<b>Kamel 1704f: 41.2</b>
Melchior Barros	---	Balete ( <i>Ficus</i> spp.)	Saw an extremely tall specimen	Kamel 1704f: 49.1
<b>Tomas Caruzalegui</b>	---	<b>Glossopetrae</b>	<b>Brought Kamel a specimen from the Ilocos region</b>	<b>Kamel 1706a: 2404.10</b>
Pedro Diaz	---	Purgative underground grains	Possesses a specimen	Kamel 1704f: 44.24
J. Frixolius	---	Talampunay ( <i>Datura metel</i> )	Efficient against asthma	Kamel 1704f: 15.2
D. Gusman	---	Talampunay ( <i>Datura metel</i> )	Efficient against asthma	Kamel 1704f: 15.2
Juan Molero	---	Mampul ( <i>Loranthus pentandrus</i> ) Mistletoe	Against snake and crocodile bites Protects from snakes, centipedes	Kamel 1704f: 3.35 Kamel 1704f: 3.36
Juan Montemayor	---	Mampul ( <i>Loranthus pentandrus</i> )	Protects against crocodiles	Kamel 1704f: 3.35
J. Ruiz	---	Talampunay ( <i>Datura metel</i> )	Efficient against asthma	Kamel 1704f: 15.2
Pedro de San Buenaventura	---	Fruit bat	Saw a specimen with the wingspan of one fathom	Kamel 1706c: 2198.3

<sup>883</sup> Individuals who provided Kamel with a specimen are marked in bold.

<sup>884</sup> Latin binomials have been determined using Merrill 1903.



## Appendix 9: List of individuals acknowledged by Petiver as his greatest benefactors<sup>885</sup>

Name	Capacity	Location	Specimens
Mr George Alfrey	Surgeon to Captain Halley	Coast of Brazil	Plants
Mr Barklay	Surgeon	China	Plants
Mr Edward Barter	---	Cape Coast in Guinea	Plants, medicinal roots
Duchess of Beaufort		Gardens in Badminton	Plants
Mr Jacob Bobart	Garden superintendent	Oxford Physic Garden	Plants
Mr Edmund Bohun	Gentleman	Carolina	Plants, insects, reptiles
Mr James Braylsford	Merchant	Turkey, Middle East	Plants
Dr Johann Philipp Breyne	Physician	Holland Danzig	Plants Plants
Mr Samuel Browne	Surgeon	Fort St George Ceylon China	Plants Plants Plants
Mr Edmund Bohun	Gentleman	Carolina	Plants
Mr Edward Bulkley	Surgeon	Fort St George Tonkin Persia	Plants, seeds, shells, insects Seeds, <i>materia medica</i> Seeds, <i>materia medica</i>
Father Georg Joseph Kamel	Learned Jesuit	Philippine Islands	Plants, curiosities
Mr William Clerk	Surgeon	Turkey	Plants, seeds
Mr Matthew Colvill	Surgeon	Straits of Malacca	Shells
Captain John Conway	Ship captain	Fort St George Cape of Good Hope Fort St David	Collections Collections Plants
Lord Henry Compton	Bishop of London	Gardens in Fulham	Plants
Mr Charles Coombs	Surgeon	Calabar Maryland	Plants Insects
Mr James Cuninghame	Surgeon	La Palma Batavia Emuy (Xiamen) Colonshu (Gulangyu) Chusan Straits of Malacca Cape of Good Hope Ascension Island Pulo Condore	Mostly plants and seeds, also insects, shells, curiosities
Mr John Dickinson	---	Bermuda	Plants
Mr Robert Ellis	Gentleman	Carolina	Plants, insects, reptiles
Mr Fifield	Surgeon	Bay of Campeche	Shells, plants
Mr John Foxe	Surgeon	Cape of Good Hope Bay of Bengal	Plants, shells Plants, insects, shells
George Franklyn	Apothecary	Carolina	Plants
Madam Elizabeth Glanville	Curious gentlewoman	Western England	Insects
Dr Charles Goodall	Physician	Tunbridge Wells	Mushrooms
Captain Edmund Halley		Trinidad	Plants
Major William Halstead	Officer	Carolina	Curiosities
Mr Claudius Hamilton	Surgeon	Barbados	Plants
Dr Johann Crato Hiegel	Physician	Trier	Fossils
Mr Hugh Jones	Reverend	Maryland	Fossils, plants, insects, shells
Mr Jezreel Jones	Secretary to envoy	Portugal	Plants, insects, shells, fossils Reptiles
Mr Roleston Jacobs	Young gentleman	Spice Islands	Shells
Mr Walter Keir	Surgeon	Johor China	Plants Plants

<sup>885</sup> Reconstructed from Petiver 1699a: 43–47; 1700: 79–80; 1703b: 94–96; 1704b.

Dr Godfried Klem	Physician to the Tsar	Moscow, Azov Persia	Plants, animals Shells
Dr David Krieg	Physician	Maryland Riga	<i>Naturalia</i> Curiosities
Mr Sylvanus Landon	Surgeon	Cádiz, Alicante, Cartagena Borneo Flores	Plants Plants, serpents Plants, shells
Mr Timothy Langley	Ingenious friend	---	Specimens from Braylsford
Dr George Lewis	Reverend	[Fort St George]	Shells
Mr George London	His Majesty's gardener	[London]	Plants from Hugh Jones
Dr Nissole	Physician	Montpellier	Plants
Dr Henry Oldenland	Physician	Cape of Good Hope	Plants
Madam Margaretha Hendrina van Otteren	Widow to Dr Oldenland	Cape of Good Hope	Plants
Mr Henry Pasmore	Reverend person	Jamaica	Plants
Mr Richard Planer	Surgeon	Cape Mesurado Cartagena Coasts of Guinea	Plants, shells, insects Insects Plants, insects
Mr Rance	Surgeon	Borneo	Shells
Mr John Ray		England	Insects
Dr Richard Richardson	[Physician]	Northern England	Plants, fossils
Mr Robert Rutherford	Surgeon	Carolina	Plants, insects, shells
Dr Frederick Ruysch	Professor of botany Professor of anatomy	Amsterdam Cape	Reptiles, insects, plants Plants
Dr Johann Jakob Scheuchzer	Physician	Zurich	Plants
Dr William Sherard		London	Plants
Mr James Skeen	Surgeon	Coast of Guinea	Plants, shells, insects
Dr Hans Sloane	Physician Royal Society Secretary	London	Curiosities
Dr Christian Maximilian Spener	Physician	Prussia	Fossils
Mr John Staremborg <sup>886</sup>	Gentleman	Cape of Good Hope	Plants
Mr John Stocker	A stranger	Bay of Bengal East Indies	Shells Shells, insects
Mr James Sutherland	Garden superintendent	Edinburgh Physic Garden	Plants
Mr Alex Simpson	Surgeon	Gallipoli	Plants
Mr Isaac Teal	Army apothecary-general	---	Fossils from Dr Hiegel
Dr Pitton Tournefort	Physician Professor of botany	Paris Spain, Portugal	Alpine and Pyrenean plants Plants
Monsieur [Sébastien] Vaillant	[Physician]	Paris	Plants
Myn Heer Levinus Vincent	Collector [and merchant]	Amsterdam	Insects
Mr Thomas Walker	Generous gentleman	Bahamas	Plants
Mr Watt	Surgeon	Coast of Guinea	Plants, shells, insects
Mr Richard Wheeler	Kind and hearty friend	Norway	Plants, insects
Madam Williams	Gentlewoman, a stranger	Carolina	Insects
Anonymous (obliged to conceal)	Curious person	Carolina	Plants

<sup>886</sup> Perhaps from the Austrian noble family, the Starhembergs.