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The Region of Imperial Strategy:  
Regino García, Sebastián Vidal, Mary Clemens, and  
the Consolidation of International Botany in the Philippines, 1858–1936

by

Kathleen C. Gutierrez

A dissertation submitted in partial satisfaction of the  
requirements for the degree of

Doctor of Philosophy

in

South and Southeast Asian Studies

and the Designated Emphasis

in

Science and Technology Studies

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Peter Zinoman, Chair  
Professor Penelope Edwards  
Professor Lisandro E. Claudio  
Professor Catherine Ceniza Choy  
Professor Massimo Mazzotti

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## Abstract

The Region of Imperial Strategy: Regino García, Sebastián Vidal, Mary Clemens, and the Consolidation of International Botany in the Philippines, 1858–1936

by

Kathleen C. Gutierrez

Doctor of Philosophy in South and Southeast Asian Studies  
and the Designated Emphasis in Science and Technology Studies

University of California, Berkeley

Peter Zinoman, Chair

This dissertation is the first to examine the history of botany in the Philippines under two successive colonial regimes—Spanish and U.S. (United States). I animate this study through the lives and scientific work of a Filipino illustrator, a Spanish botanist, and a U.S. plant collector. I examine their botanical careers in the Philippines, the institutional contexts in which they worked, the local and foreign actors who collaborated with them, and the science they produced. This examination demonstrates how botany developed as an internationalist endeavor, one that facilitated the political consolidation of old and emerging empires at the turn of the nineteenth and twentieth centuries. While this developed, so too did the ideas of Philippine proto-national and regional floristic space. I argue that regional floristic space as defined by botanists became the grounds for inter-imperial intellectual exchange and collaboration. In particular, this study interrogates how region-making through the science of botany was a key strategy deployed by both Spain and the U.S. to assert imperial dominance on the global stage.

I draw on archival research across three continents to make three broad contributions to Philippine history, the history of science, and Southeast Asia studies. First, I refuse the long-accepted periodization that overstates the intellectual divide of 1898 when the U.S. acquired the Philippine colony from Spain. By following three unstudied figures in the history of botany, I provide a more symmetrical analysis of two colonial botanies and the intellectual and institutional continuities facilitated by local Philippine actors. Doing so also enables me to bring light to botany's significance to the history of Philippine nationalism. Second, I emphasize the centrality of the archipelago, its botanists, and its plant collectors in the advancement of botany's internationalist direction, which on the whole has been overlooked in the literature on Anglo-European imperial botany. Finally, this dissertation reveals the importance of regional thinking as a strategy of empires. In the natural sciences, a scientific regionalism, I uncover, preceded the geomilitary strategy of World War II that regionally carved global space. This history offers new directions for how we might, therefore, reexamine the social scientific and political emergence of areas today like modern Southeast Asia.

To Estrella and Hermes  
for giving me the stars and the gods

## Acknowledgements

I tell my students that my passion for Southeast Asian studies began when I was in high school. I regale them with my story at the end of the semester. I am almost always teary-eyed, donning my “SOUTHEAST ASIAN” t-shirt stylized like the Run-DMC logo. I share that I grew up by the disgraced Rampart police station in a neighborhood called Historic Filipinotown in Los Angeles. Inequitable access to health services plagued my community. I was one of thousands of kids who was uninsured and without regular access to primary care. Early in my high school career, these types of problems compelled me to get involved with a community clinic that provides culturally sensitive healthcare to L.A.’s immigrant populations. Asian Pacific Health Care Venture still prides itself in offering services in a number of Southeast Asian languages.

I took to the Southeast Asian identity quickly. I saw it as an inroad toward equitable access to healthcare, to a unified approach to serving L.A.’s youth, to finding a community with a common cause. My mentors then, Dahlia Ferlito, Antoinette Reyes, Melissa Hilario, and Jeanne Aguinaldo, showed me the power of activism and community engagement. Before I left to start my undergraduate program at Berkeley in 2006, I brought with me an eagerness to learn what I could of Southeast Asia to try to map the historical circumstances that led to the displacement of millions.

I took my first Southeast Asia studies course in the spring of 2007 with the late Jeffrey Hadler, a specialist of the Minangkabau of Indonesia. His opening lecture both floored and dazzled me: what a scholarly and enthralling speaker he was. After purchasing the course reader, I color-coded our weekly readings well into the night. “How’ve I never learned ‘bout Singapore before? Malaysia? The Philippines!?” I wondered. How had I gone through thirteen years of public education without having learned much—if anything—in the classroom about the region? This had seemed like another wrong to right. I decided then that I, too, would someday specialize in and teach Southeast Asia.

I first graduated from the Department of South & Southeast Asian Studies in 2010. As I approach my second graduation ten years later, I reflect on my snaky path to and through Southeast Asia studies. What a path it’s been—one made possible by the people who have helped me trek along.

I first acknowledge the people who brought this dissertation to the finish line: Peter Zinoman, Penny Edwards, Massimo Mazzotti, Catherine Ceniza Choy, and Lisandro Claudio. Each of my mentors has sharpened my duller sides, encouraged me to think in targeted ways, and pushed me to be more intellectually intrepid. I thank Peter and Cathy for stepping in as mentors at a time of crisis. Peter has been my best writing instructor and a model historian. Cathy urged me early on to consider carefully my historical actors and sources and has been consistent in her professional guidance. Massimo, an advocate and intellectual beacon, honed my skills in Science & Technology Studies (STS) and brought my science-minded self into being. I am grateful for Leloy (Lisandro), who has accelerated my development in Philippine studies. I do not have sufficient words for Penny. How can I properly capture a mentorship that has spanned thirteen years and that has made me the student, scholar, and professor I am today? Penny deserves a volume of her own.

The Department of South & Southeast Asian studies was—and has been—my gateway to this long-running goal to become a specialist of modern Southeast Asia. In my undergraduate years, I credit Jeff for demonstrating expertise and giving 80-minute lectures with only a single sheet of paper in hand. Penny inspired me to think through the latitude of what could be considered a primary source and to tell stories in image-provoking ways. Joseph Scalice, my then graduate student instructor and now colleague and friend, pushed me to rediscover passion with every new thing learned. Through classes in the department, I met Virginia Shih, curator of the Southeast Asia Collection at Berkeley. In 2007, she walked me through English-language translations of Dutch colonial public health sources from Batavia. I now proudly refer my students to her for her astonishingly patient and thorough guidance through collections. As an undergraduate, I studied Thai language with Susan Kepner and was convinced I would be a mainland specialist. But it was my classes with Joi Barrios that redirected my focus toward the Philippines. I haven't looked back since (although, I have peeked over my shoulder once or twice).

I returned to Berkeley in 2013 to start the M.A./Ph.D. program. I credit Penny and Jeff for doing recruitment and retention work *right*. I would not be typing these acknowledgements if it were not for their gentle encouragement to apply to graduate school and more importantly, to stay. I had little sense of what training for—and a career in—the U.S. academy entailed. But Penny and Jeff recognized the spark of curiosity in me, and bless them, how different the world has become for this Angeleno.

I learned from several stunning scholars, all of whom influenced the questions I have brought to the dissertation: Laura Nader, Lawrence Cohen, John Alaniz, Charles Briggs, Harsha Ram, Pamela Smith (Columbia University), Jonathan Rosa and Londa Schiebinger (Stanford University), as well as Massimo, Penny, Peter, and Jeff. Sheila Zamar of the Southeast Asian Studies Summer Institute (2009 and 2014), Karen Llagas, and Joi taught me Filipino, and María José García Rufo took me under her skillful wings in Seville, where I sharpened my Spanish. My Sevillana family—Mari, Manolo, Inma, and Irene Andrade—still ensure that I learn Spanish outside of the formal classroom.

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## Abbreviations

### *Institutions*

IBC	International Botanical Congress
JBM	Jardín Botánico de Manila
IGM	Inspección General de Montes
RJB	Real Jardín Botánico de Madrid

### *Archives and Collections*

AHC	American Historical Collection, Rizal Library, Ateneo de Manila University
AHN	Archivo Histórico Nacional, Madrid
BHL	Bentley Historical Library, University of Michigan
FHL	Filipinas Heritage Library, Ayala Museum
HL	The Huntington Library
HL-UST	Heritage Library, Miguel de Benavides Library, University of Santo Tomas
LOC	Library of Congress, Washington D.C.
MPD	Mapas, Planos y Dibujos Collection, Archivo Histórico Nacional, Madrid
NAP	National Archives of the Philippines
NYBG	Archives of the New York Botanical Garden
PNH	Philippine National Herbarium, National Museum
PDTSC	Pardo de Tavera and Special Collections, Rizal Library, Ateneo de Manila University

## Glossary

<i>agrimensor</i>	land surveyor
<i>ayudante</i>	Assistant Forester of the Inspección General de Montes
<i>hoja de servicios</i>	record of Spanish government service
<i>ilustrado</i>	enlightened intellectual or members of the educated class in the late nineteenth century
<i>indio</i>	indigenous person born in the Philippines with no European or Chinese parentage
<i>ingeniero</i>	Forestry Engineer of the Inspección General de Montes
<i>inquilino</i>	leaseholder of agricultural land
<i>insular</i>	Philippine-born Spaniard
<i>licencia</i>	sabbatical
<i>mestizo</i>	mixed-race typically of Chinese parentage in the second half of the nineteenth century in the Philippines
<i>montero</i>	Ranger of the Inspección General de Montes
<i>oposición</i>	Spanish civil service exam
<i>peninsular</i>	Iberian Peninsula-born Spaniard
<i>pensionado</i>	boarding school

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## A Note on Orthography and Terms

I do not italicize the proper names of institutions that appear in Spanish or other European languages. Institutional abbreviations follow the Spanish names and not my English translation. Where necessary, I provide parenthetically the contemporary orthography for Philippine toponyms and local plant names. Furthermore, sources interchange the spelling of Regino García's second surname, Basa (or Baza). I have chosen to use "Basa" to reflect its spelling in the nineteenth-century source material. Since I rely on the orthography that appeared in late nineteenth-century records held in Madrid, I also use "Sebastián Vidal y Soler" instead of the Catalan variant, "Sebastià Vidal i Soler." I do preserve, however, the Catalan variants for institutions and other Catalan actors' names that appear in other primary and secondary sources. I include transcriptions of excerpts from original Spanish archival documents (including their orthographic variability) when I quote directly from primary sources. All translations are mine unless otherwise indicated. For botany publications, I provide the original Latin spelling for binomials and for the original species name even if more contemporary updates have been made to the identification.

I use "U.S." interchangeably as a demonym and a modifier. "Filipino" refers to the distinct political identity that emerged through the nineteenth century, whose use accelerated in the final decades of the nineteenth century to denote people of the Philippine colony. I do not use Filipinx, the nonbinary-gendered term, in the dissertation. "Filipino" and "Filipina" were gendered and gendering markers during the period of the present study, and these, as I show, were part of the imaginings of proto-national floristic space. Furthermore, I use "Spanish" as a demonym and a modifier and to refer to Castilian Spanish or the Iberian Spanish language. "Local" and "native" denote the people, intellectual production, and knowledges from the colonial Philippines. Because of the growth of "Filipino" as a unique identity in the late nineteenth century, I hesitate to refer to all Philippine-born actors during this time as such, especially if I have information on the ethnolinguistic community to which the actor was known or claimed to belong.



## Introduction

My thesis is that political and intellectual conquest are generally as inseparable as a man and his shadow.

- Harley Harris Bartlett, 1 March 1935

In 1935, U.S. botanist Harley H. Bartlett delivered a plenary address to the Third Philippine Science Convention. Held in Los Baños, Laguna, the convention featured academic papers on medicinal plants, forest products, and silviculture.<sup>1</sup> He commended scientific developments in the Philippines, most especially those advanced by U.S. colonial botanists and independent plant collectors. Bartlett regaled his audience with descriptions of the state of botany in the archipelago prior to U.S. colonization, which, according to him, had been practically non-existent. The Philippines had “no glorious scientific or intellectual past to point to,” and “her arrival to the international science, ready to take her part in the advance of human progress, is not in the nature of a comeback.”<sup>2</sup> He continued, “Spain had shown her increasing incompetence in the modern world, and needless to say had not lifted the Philippines to a state higher than her own. It is a folly to suppose that the culture she had given the Philippines would have sufficed to maintain national integrity through the thirty-five years that have passed.”<sup>3</sup> Bartlett was not alone in this view. Many U.S. colonial observers of the Philippines mocked Spain and celebrated the scientific rigor of the U.S. in the Philippines. Even National Scientist of the Philippines Eduardo Quisumbing considered U.S. colonization (1898–1946) the “scientific or progressive period” that brought the most eminent beginnings of Philippine botany.<sup>4</sup>

Beneath this gloss of scientific progress lies the deeply entrenched politics of botany. While botany may be neutrally understood as the study of plants, in the colonial Philippine context, it was an immensely significant discipline, substantively influenced by competing imperialist and nationalist objectives as well as internationalist impulses at the turn of the century. For the Spanish and U.S. empires, botany brought systematic order to the flora of the archipelago, which served intellectual, political, and economic interests in the metropole and the colony. For proto-nationalist forces in the Philippines, botany became critical to assertions of territorial sovereignty. According to Bartlett, nations do not “habitually prosecute scientific research outside of their own borders as a preliminary to political conquest.”<sup>5</sup> Rather, “just as a man is quite unconscious of his shadow, so nations may be quite as unconscious of the intellectual penetration that establishes scientific spheres of influence that are generally coincident with political ones.”<sup>6</sup> This dissertation

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<sup>1</sup> Arthur F. Fischer, *Annual Report of the Director of Forestry of the Philippines for the Periods January 1 to November 14, 1935 and November 15 to December 31, 1935* (Manila: Bureau of Printing, 1936), 26.

<sup>2</sup> Harley H. Bartlett, “Nationalism, Imperialism, and Spheres of Influence in Natural Science,” Manuscript, 43, Folder 3—Concerning botanical subjects, Box 7—Correspondence, Harley H. Bartlett Papers, BHL.

<sup>3</sup> Bartlett, 43.

<sup>4</sup> Eduardo Quisumbing, *Medicinal Plants of the Philippines* (Manila: Bureau of Printing, 1951), 44.

<sup>5</sup> Bartlett, “Nationalism,” 41.

<sup>6</sup> Bartlett, 41.

shows the contrary.

In the chapters that follow, I provide a history of Spanish and U.S. colonial Philippine botany narrated through the lives and scientific work of a Filipino illustrator, a Spanish botanist, and a U.S. plant collector. I examine their botanical careers in the Philippines, the institutional contexts in which they worked, the local and foreign actors who collaborated with them, and the science they produced. Not only do I offer scientific biographies of three unstudied figures, I lay out a history of critical botanical institutions, discuss the unique dynamics of scientific production, authorship, and collaboration in the colonial Philippines, and provide insight into the important question of continuity and change in Philippine history across the 1898 divide. The following study demonstrates how botany developed as an internationalist endeavor, one that paralleled the political consolidation of old and emerging empires at the turn of the century. While this developed, so too did the ideas of Philippine proto-national and regional floristic space. I investigate the heretofore unexamined role of botany and botanical discourse in the history of Philippine nationalism in the final decades of the nineteenth century. I further argue that it was regional floristic space as defined by botanists that became the grounds for inter-imperial intellectual exchange and collaboration. Region-making through the science of botany was a key strategy deployed by both Spain and the United States to assert imperial dominance.

In late nineteenth-century Manila, a generation of Philippine- and Iberian-trained artists emerged, many of whom were botanical illustrators in addition to classical painters. One such artist, Regino García y Basa (1840–1916), became the leading botanical illustrator during the final decades of Spanish colonial rule in the Philippines. García did not formally train in botany but instead gained expertise while working for secular Spanish botany institutions, like the Jardín Botánico de Manila (Manila Botanical Garden; JBM) and the Inspección General de Montes (Forestry Bureau; IGM). While with the JBM, García befriended Sebastián Vidal y Soler (1842–1889), a Barcelona-born botanist and forester, who first arrived in the Philippines in 1872 and became García's closest professional associate. Vidal's career in the archipelago, spanning his arrival until his untimely death in 1889, garnered international attention, making him one of the most revered colonial botanists in Spain's late overseas empire. At the start of U.S. colonization of the Philippines in 1898, U.S. botanists relied on both García's and Vidal's work to begin to make sense of the new tropical terrain before them. Overwhelmed by flora and understaffed by professional botanists, U.S. colonial science operations looked to independent collectors and naturalists to begin to develop the colony's floral catalog. One such figure was New York native Mary Strong Clemens (1873–1968), a fervid plant collector whose botanical collecting career lasted decades in the Philippines and in nearby colonies comprising what we know today as modern Southeast Asia. An examination of García's, Vidal's, and Clemens's (at once) remarkable and typical careers in botany reveals their participation in and contribution to larger proto-national, regional, and international developments in botany at the turn of the century.

### *A Recuperation of Spanish Scientific Operations*

Philippine historiography has tended to stress the intellectual rupture that came with U.S. colonization. "Prescott's paradigm," the historiographical trope first developed in William H. Prescott's 1837 history of fifteenth-century Spain, drew a sharp contrast between the U.S. and

Spanish imperial projects and emphasized Spanish civil and scientific decay.<sup>7</sup> After Spain ceded the Philippines to the U.S. under the Treaty of Paris, the new administration undertook a massive initiative to investigate the plant life of the archipelago, sending U.S. taxonomists, agriculture specialists, and foresters to the Philippines for research and teaching posts. Coterminous with this was the rise of histories of the Philippines that derided Spain and celebrated the ascent of the U.S. overseas empire. Botany was one of several natural sciences U.S. colonists relied upon to begin to understand the archipelago for academic, commercial, and political ends, and U.S. botanists were quick to publish their disappointment in Spanish scientific operations. “Americans in the colonial service,” as Warwick Anderson puts it, “often represented the Spanish colonial period as a howling wilderness for science.”<sup>8</sup>

This historiographical problem is linked to a trend in the study of European science dismissing the intellectual production of the Iberian Peninsula. “*La leyenda negra*” (“the black legend”) has marred perceptions of Spanish contributions to the Scientific Revolution and the Enlightenment.<sup>9</sup> But as William Eamon has asserted, not only has this negatively impacted Spanish scholarship, but it has also influenced historians’ accounts of the Scientific Revolution.<sup>10</sup> Because “the history of science has traditionally been written in the heroic mode,” historians have crafted narratives pronouncing “an epic struggle of truth to free itself from the bondage of ignorance and superstition.”<sup>11</sup> According to Eamon, Spain was apportioned “few heroic cultural figures” in grand narratives of the history of European science, leaving little room for imagining how the Scientific Revolution, Eamon postulates, occurred in the “rhythms of everyday life.”<sup>12</sup> Indeed, even Anderson writes against a conception of the history of Philippine science as a narrative of relentless progress, which would in turn “constitute a sundering of complex and fragile local entanglements of science and its circumstances.”<sup>13</sup> Yet, such has been the case regarding the secular colonial scientific production in the Philippines in the decades that surround 1898.

Vilifying rhetoric in Philippine historiography had once cast the near entirety of Spanish colonial operations as rife with “deception, wiles, graft and corruption, cruelty and injustice.”<sup>14</sup> Claims of Spanish colonial abuses have not been without adequate qualification and reason. Yet, they have come at the expense of a much more symmetrical analysis of secular Spanish colonial

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<sup>7</sup> Greg Bankoff, “The Science of Nature and the Nature of Science in the Spanish and American Philippines” in *Cultivating the Colonies: Colonial States and their Environmental Legacies*, ed. Christina Folke Ax et al. (Athens: Ohio University Press), 78–79.

<sup>8</sup> Warwick Anderson, “Science in the Philippines,” *Philippine Studies* 55, no. 3 (2007): 288.

<sup>9</sup> William Eamon, “‘Nuestros males no son constitucionales sino circunstanciales’: The Black Legend and the History of Early Modern Spanish Science,” *The Colorado Review of Hispanic Studies* 7 (2009): 13–15.

<sup>10</sup> Eamon, 16.

<sup>11</sup> Eamon, 20.

<sup>12</sup> Eamon, 21. More recent scholarship has highlighted the early Empire’s work on botanical collecting as a precursor to the Scientific Revolution and as essential to the Spanish Enlightenment. See, for instance, Paula S. De Vos, “Research, Development, and Empire: State Support of Science in the Later Spanish Empire,” *Colonial Latin American Review* 15, no. 1 (2006): 55–79; Antonio Barrera-Osorio, *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution* (Austin: University of Texas Press, 2006).

<sup>13</sup> Anderson, “Science in the Philippines,” 289.

<sup>14</sup> Teodoro A. Agoncillo, *Prelude to 1896* (Quezon City: University of the Philippines Press, 1974), 2. See also Teodoro A. Agoncillo, *Introduction to Filipino History* (Manila: Jonef Publications, 1974), 59–60.

science. While historians like Gregorio F. Zaide lauded the “remarkable scientific progress in the Philippines during the American period,”<sup>15</sup> others have emphasized how economic imperatives in the Philippines motivated Spain’s prioritization of agriculture in the colony,<sup>16</sup> which has led to an incomplete assessment of secular Spanish science. Such prioritizing has been seen as yielding little financial and intellectual success. Privately held agriculture eclipsed the Spanish government’s attempts to tap into the already booming export-oriented agricultural economy. The financial boons of Anglo–Chinese capital and the *inquilino* (leaseholder of agricultural land) class most especially threw the state’s agricultural failures into relief in the nineteenth century.<sup>17</sup>

But these histories have neglected the particulars of secular botanical science in the final four decades of Spanish colonial rule. Instead, scholarly focus has been directed at state-driven agricultural enterprise and that which was supported by private commercial bodies.<sup>18</sup> With regard to studies of the nineteenth-century natural sciences in the Philippines, we have more information on the work undertaken by the Catholic orders, especially through the publication of Francisco Manuel Blanco’s *Flora de Filipinas* (originally pub. 1837)<sup>19</sup> and the Observatorio Meteorológico

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<sup>15</sup> Ma. Mercedes G. Planta, *Traditional Medicine in the Colonial Philippines: 16<sup>th</sup> to the 19<sup>th</sup> Century* (Quezon City: University of the Philippines Press, 2017), 79; Gregorio F. Zaide, *History of the Filipino People* (Manila: Modern Book Company, 1969 [c1964], 220–221.

<sup>16</sup> Agoncillo, *Introduction to Filipino History and Kasaysayan ng Bayang Filipino, Ikaapat na Edisyon* (Quezon City: R.P. Garcia, 1984).

<sup>17</sup> In the nineteenth century, the Catholic orders controlled most leasable, agricultural land on the island of Luzon, where the colonial capital was located. According to Soledad Borromeo–Buehler, the *inquilino* class constituted a stratum of Philippine society, an intermediate middle class financially equipped to lease friar-controlled estates. See “The ‘Inquilinos’ of Cavite: A Social Class in Nineteenth-Century Philippines,” *Journal of Southeast Asian Studies* 16, no. 1 (1985): 69–98. For studies of the nineteenth-century Philippine economy and the sharp divide between privately held agricultural wealth and that of the colonial government, see Edilberto De Jesus, *Tobacco Monopoly in the Philippines: Bureaucratic Enterprise and Social Changes, 1766–1880* (Quezon City: Ateneo University Press, 1980); Benito Legarda, Jr., *After the Galleons: Foreign Trade, Economic Change and Entrepreneurship in the Nineteenth-Century Philippines* (Madison: University of Wisconsin Press, 1999) and “The economic background of Rizal’s time,” *Philippine Review of Economics* 48, no. 2 (2011): 1–22; John N. Schumacher, *The Making of a Nation: Essays on Nineteenth-Century Filipino Nationalism* (Quezon City: Ateneo University Press, 1991). Caroline S. Hau expands on the Chinese and Anglo-British elites who dominated the Philippine economy by the late nineteenth century. See *Elites and Ilustrados in Philippine Culture* (Quezon City: Ateneo University Press, 2017).

<sup>18</sup> On the uneven success of state-run agriculture, see Maria Lourdes Diaz-Trechuelo, “Eighteenth Century Philippine Economy: Agriculture,” *Philippine Studies* 14, no. 1 (1966): 65–126. On the eighteenth-century colonial botanical work of Juan José Ruperto de Cuéllar y Villanueva (ca. 1739–1801), that was backed by the private Royal Philippine Company, see María Belén Bañas Llanos, *Ang Pagbubukid ng Kalikasang: Una historia natural de Filipinas, Juan de Cuéllar, 1739?–1801* (Barcelona: Serbal, 2000).

<sup>19</sup> Luciano P. R. Santiago, “The Painters of the *Flora de Filipinas* (1887–1883),” *Philippine Quarterly of Culture and Society* 21, no. 2 (1993): 87–112; Planta, *Traditional Medicine*, 80–86; Jaume Josa Llorca, “La Historia Natural en la España del siglo XIX: Botánica y Zoología,” *Ayer* no. 7: La Ciencia en la España del siglo 19 (1992): 123; Anderson, “Science in the Philippines,” 294; Nathaniel Parker Weston, “Scientific Authority, Nationalism, and Colonial Entanglements between Germany, Spain, and the Philippines, 1850 to 1900,” (PhD diss., University of Washington, 2012), 147; Fred Sevilla, *Francisco Balagtas and the Roots of Filipino Nationalism: Life and Times of the Great Filipino Poet and his Legacy of Literary Excellence and Political Activism* (Manila: Trademark Publishing Corporation, 1997), 408; Zaide, *History of the Filipino People*, 125. Most recently, Domingo A. Madulid published a revised version of the magisterial illustrated text. See Manuel Blanco et al, *Fr. Manuel Blanco’s Flora de Filipinas*, Fifth Edition (Quezon City: Vibal Foundation, [1837] 2017).

de Manila (Manila Observatory; f. 1865).<sup>20</sup> Historically, the interests of clerical science and secular science in the colonial Philippines diverged at times.<sup>21</sup> Yet, I hesitate to distinguish morally the “the first generation of the selfless Spanish missionaries”<sup>22</sup>—several of whom were naturalists— from the commercially minded Spanish colonial botanists.<sup>23</sup> Doing so continues to reiterate a simplified understanding of the history of Philippine botany in particular and of science more generally.

There are outlying studies that have ventured beyond these simplified narratives. Greg Bankoff has completed valuable scholarship in the history of science to address the problem *la leyenda negra* in Philippine historiography. Bankoff’s publications on Spanish forestry in the Philippines persuasively illustrate that the U.S. did not arrive at a “scientific desert, a culture devoid of the new knowledge circulating in the wider world.”<sup>24</sup> He also has rightly pointed out that the destruction of Spanish and U.S. archives in Manila have torn out chapters from this history.<sup>25</sup> In this dissertation, I expand upon Bankoff’s contributions by interrogating the discipline of botany. I engage with unpublished primary documents held in Madrid, late Spanish colonial botany illustrations, local-language sources from the Philippines, and the writing and archives of U.S. botanists and plant collectors.<sup>26</sup> These complement Bankoff’s reading of unpublished Manila sources, as well as published material from the Spanish colonial operations, that have advanced our knowledge of Spanish forestry in the archipelago.

From this body of material, I add to Bankoff’s work by carefully detailing the earliest institutional history of the Spanish JBM, the IGM’s takeover of the JBM in the early 1870s, and the Comisión de la Flora y Estadística Forestal de Filipinas (Philippine Flora and Statistics Commission), which was established to survey the flora of the archipelago. With respect to the historiography, Bankoff, for example, has shown that French natural scientific traditions most

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<sup>20</sup> Kerby Alvarez, “Instrumentation and Institutionalization: Colonial Science and the Observatorio Meteorológico de Manila, 1865–1899,” *Philippine Studies* 64, nos. 3–4 (2016): 385–416; James J. Hennessey, “The Manila Observatory,” *Philippine Studies* 8, no. 1 (1960): 99–120; Charles E. Deppermann, “The Manila Observatory Rises Again,” *Philippine Studies* 1, no. 1(1953): 31–41; James J. Hennessey, “Ionosphere Research at the Manila Observatory,” *Philippine Studies* 3, no. 2 (1955): 164–186; John Schumacher, “One Hundred Years of Jesuit Scientists: The Manila Observatory, 1865–1965,” *Philippine Studies* 13, no 2 (1965): 258–286; Angel Hidalgo, “Miguel Salga, 1879–1956: Priest and Scientist,” *Philippine Studies* 15, no. 2 (1967): 307–347.

<sup>21</sup> Planta’s monograph argues the sustained intellectual interest in local medicinal plants conducted by the Catholic orders in the Philippines. The religious orders have been credited for a number of published works and unpublished manuscripts on Philippine plants. See Quisumbing, *Medicinal Plants of the Philippines*, 41–44. Planta enumerates these publications, as well.

<sup>22</sup> Agoncillo, *Prelude*, 2.

<sup>23</sup> Planta, *Medicinal Plants*, 52.

<sup>24</sup> Bankoff, “The Science of Nature,” 93.

<sup>25</sup> Greg Bankoff, “A Month in the Life of José Salud, Forester in the Spanish Philippines, July 1882,” *Global Environment* 3 (2009): 9.

<sup>26</sup>The National Archives of the Philippines also contains primary material on the JBM. Planta cites this collection in *Traditional Medicine in the Colonial Philippines*. As of this writing, the NAP is microfilming the material for public access since they no longer permit handling of primary documents. I thank Ma. Glenda V. Gomez and Ms. Aileen for their efforts. Although JBM and IGM material in Manila was destroyed in an 1897 fire, these NAP bundles are likely comprised of colonial government communiques that pertained to the two institutions and to the Comisión de la Flora y Estadística Forestal de Filipinas (Philippine Flora and Statistics Commission).

influenced Spanish colonial science. These traditions came to be dismissed with the British “Darwinian revolution” in the second half of the nineteenth century.<sup>27</sup> While I agree with the claim that this theoretical difference has fed an unfair assessment of Spanish colonial science, this dissertation shows how colonial, peninsular, and international forces—intellectual and political—also shaped the aims, practices, and intellectual output of the institutions. Furthermore, I describe a key similarity across Spanish and U.S. colonial botanies: the furtherance of regional floristic studies, which became essential to the internationalist configuration of botany at the turn of the century. It was through regional floristic studies that U.S. colonial botanists aimed to position themselves and U.S. botany as international powerhouses. This came at the expense of Spanish secular botany, the native intelligentsia, and local botanical labor. I interrogate U.S. colonial critiques to reveal their political stakes and argue that a U.S. “botanical nationalism,” as Peter Mickulas has termed it,<sup>28</sup> extended beyond its contiguous border and to the Philippines.

### ***Botany to Recast Philippine History***

To write this history, I refuse to mark 1898 as a strict “cut-off” year in the Philippine past.<sup>29</sup> Studies that cover both colonial periods of the Philippines have been substantial. My choice to not end or begin my study with 1898 attends particularly to an issue in the historiography of Philippine science, as I have previously outlined. Therefore, my study begins instead with García’s start in botany in 1858 and concludes with Clemens’s decision to end her Philippine botanical collecting career in 1936. By following historical actors with overlapping botanical careers instead of conventional historical periodization, I am able to more comprehensively show the role of botany in Philippine nationalism and the imperial transition, as well as the Philippines’ role in botany’s internationalist direction at the turn of the century.

Resil B. Mojares has written that a national intelligentsia coalesced in the second half of the nineteenth century and became visible during in the liberal interregnum of 1868–1871 after deposal of Isabella II of Spain.<sup>30</sup> Nationalist sentiment, Mojares has further explained, had its roots in the development of Spanish peninsular liberalism and the revolutions of Latin America in the early nineteenth century.<sup>31</sup> The establishment in 1810 of Spain’s first sovereign political assembly, the Cortes de Cádiz, and its promulgation of the short-lived Cádiz Constitution in 1812, had political implications for the Philippines because the liberalism of Cádiz, according to Lisandro E. Claudio, entitled representation to Spain’s overseas colonies.<sup>32</sup> But restored to the Spanish throne in 1813, Ferdinand VII quashed the constitution, which had been revived briefly under the

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<sup>27</sup> Bankoff, “The Science of Nature,” 95.

<sup>28</sup> Peter Mickulas, *Britton’s Botanical Empire: The New York Botanical Garden and American Botany, 1888–1929* (The Bronx: New York Botanical Garden, 2007), 134–159.

<sup>29</sup> Richard Chu, *Chinese and Chinese Mestizos of Manila: Family, Identity, and Culture, 1860s–1930s* (Boston: Brill, 2010), 16.

<sup>30</sup> Resil B. Mojares, *Brains of the Nation: Pedro Paterno, T. H. Pardo de Tavera, Isabelo de los Reyes and the Production of Modern Knowledge* (Quezon City: Ateneo de Manila University Press, 2006), 441.

<sup>31</sup> Resil B. Mojares, *Interrogations in Philippine Cultural History: The Ateneo de Manila Lectures* (Quezon City: Ateneo de Manila University Press, 2017), 27.

<sup>32</sup> Lisandro E. Claudio, *Jose Rizal: Liberalism and the Paradox of Coloniality* (Cham: Palgrave Macmillan, Global Political Thinkers Series, 2019), 5.

leadership of Rafael de Riego during a three-year period known as the *Trienio Liberal* (Liberal Triennium; 1820–1823).<sup>33</sup>

Such political developments provided “stimulus and space” for dissenting Creoles and secular clergy in the Philippines to express their discontent with the Spanish colonial and friar order.<sup>34</sup> The Glorious Revolution and Isabella II’s deposal subsequently catalyzed “more aggressive, public manifestations of discontent” that had been developing in the Philippines well before 1868. Struggles on behalf of the rights of native clergy and committees for political reforms coalesced during this period. As Claudio has written, “By the late nineteenth century, native clergy had become more assertive against the friar orders, who had a *de facto* monopoly over the Philippine parishes.”<sup>35</sup> Because the Spanish colonial government proliferated through churches, Claudio continues, which were the “centers of community life” throughout much of archipelago, it was “unsurprising that a nationalist controversy would erupt from the issue of parish control.”<sup>36</sup> In 1872, troops protesting increased colonial taxation staged a mutiny in the province of Cavite. The reactionary government under Rafael de Izquierdo suppressed the uprising, which served as a pretext for the arrest of known liberals and the execution of prominent secular priests, who by then had comprised a significant political formation.<sup>37</sup> Following the Cavite Mutiny of 1872, according to Mojares, a “national’ movement began to emerge,” comprised of journalists, polymaths, and intellectuals—including those trained in medicine—who sought, among other reforms, an end to clerical abuses and an increased representation in the Spanish Cortes.<sup>38</sup> As Mojares, Megan C. Thomas, and Filomeno V. Aguilar have shown, Philippine intellectuals—stationed in the colony and abroad in Europe—specialized in the fields of philology, ethnology, folklore, and anthropology to argue against Spanish colonial writing that had dismissed or failed to understand the civilizational history, languages, industrial capacity, and even folkloric breadth of the Philippines.<sup>39</sup> These were then positioned to espouse reformist and anti-colonial political ends.

But Philippine scholarship has yet to investigate the complex role of botany during the liberal and nationalist foment of the second half of the nineteenth century and into the start of the twentieth. Anderson and Hans Pols have usefully examined the “entanglement” of medical science and “nationalist self-fashioning” in the Philippines and the Dutch East Indies. They take seriously the “anticipatory nationalism derived from scientific enthusiasm and sensibility.”<sup>40</sup> In this dissertation, I show colonial botany’s role during and after the Glorious Revolution, the Philippine

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<sup>33</sup> Claudio, 5.

<sup>34</sup> Mojares, *Interrogations in Philippine Cultural History*, 27.

<sup>35</sup> Claudio, *Jose Rizal*, 10. Italics mine.

<sup>36</sup> Claudio, 10.

<sup>37</sup> Claudio, 11.

<sup>38</sup> Mojares, *Brains of the Nation*, 445.

<sup>39</sup> Filomeno V. Aguilar, Jr., “Tracing Origins: ‘Ilustrado’ Nationalism and the Racial Science of Migration Waves,” *Journal of Asian Studies* 64, no. 3 (2005): 605–637; Megan C. Thomas, *Orientalists, Propagandists, and Ilustrados: Filipino Scholarship and the End of Spanish Colonialism* (Minneapolis: University of Minnesota Press, 2012); Resil B. Mojares, “Jose Rizal in the World of German Anthropology,” *Philippine Quarterly of Culture and Society* 41, nos. 3–4 (2013): 163–194; Resil B. Mojares, *Isabelo’s Archive* (Mandaluyong: Anvil Publishing, Inc., 2013); Mojares, *Brains of the Nation*.

<sup>40</sup> Warwick Anderson and Hans Pols, “Scientific Patriotism: Medical Science and National Self-Fashioning in Southeast Asia,” *Comparative Studies in Society and History* 54, no. 1 (2012): 97.

political uprising of the 1890s, and the Philippine–American War (1899–1901) and its aftermath. A science almost exclusively practiced by colonial officials and the social elite, botany had a tenuous place in anti-colonial politics. But native Philippine intellectuals, I reveal, selectively deployed aspects of the science to begin to assert the uniqueness of Philippine territorial domain through its flora. Furthermore, practicing plant specialists, like García, found themselves able to commit their botanical knowledge in service to the short-lived revolutionary government of Emilio Aguinaldo y Famy and then later, to the U.S. colonial administration. Similar to *ilustrado* (enlightened intellectual) engagement with the aforementioned disciplines, botany’s role during this period in Philippine history was an ambivalent one, marked by contradictions but also political possibilities.

Individuals like García who worked for both colonial regimes. García provided a fundamental intellectual and institutional bridge between Spanish and U.S. colonial science. This continuity was essential, as I illustrate, to how the United States established institutions that built upon the remains of Spanish colonial operations and employed remaining personnel of the IGM, local field assistants, and botanical collectors. It is through individuals like García and their intellectual production that we are able to better pursue comparative studies of colonial science, most especially as they were carried out on the same colonial terrain.

Furthermore, throughout the dissertation, I demonstrate that science was uniquely shaped by the infrastructures, politics, cultures, environments, and people present in the Philippines. In other words, science in the colony was not simply derivative of that which was practiced in the metropolises. For example, the local political and economic motivations behind the establishment of the JBM not only colored the first decade and a half of its operations, but they were also eventually at odds with the desires of officials in Madrid. It was also the synergistic collaboration between a peninsula-born Vidal and the Manila-born García that produced one of the most noteworthy and visually remarkable texts of late-colonial Spanish botany. Colonial botany in the Philippines was therefore distinct from, but not unresponsive to, developments in peninsular, continental U.S., and international botanies.

Finally, a study of García, Vidal, and Clemens highlights the major developments in imperial botany at the turn of the century. García’s illustrations, Vidal’s publications, and Clemens’s botanical specimens contributed to an understanding of Philippine flora as part of an entire regional catalog of plants. It was during the period under my present study that metropolitan and colonial botanists shared botanical data, specimens, and illustrations that contributed to phytogeographic studies of Indo-Malaya and Malesia, to which the Philippines is currently understood to belong. This coincided with internationalist developments in botany to which Spanish and U.S. colonial botanists contributed. In 1864, European botanists organized the first International Botanical Congress (IBC) to convene plant specialists and to stabilize, among other practices, a system of nomenclature for the globe. By the 1930s, international intellectual cooperation became the rallying banner under which the botanies of old and emerging empires agreed to exchange duplicate plant specimens, co-publish serials, and standardize herbarium and nomenclatural practices across institutions. The IBC was just one of the “multilateral diplomatic



systems” that emerged during this time that moved beyond bilateral metropole-colony relations.<sup>41</sup> An internationalist ethos draped these systems, and in this dissertation, I interchange the terms “international’ and “inter-imperial” to draw attention to the formation of bodies like the IBC, whose goals were founded in the interest of Anglo-European empires.

### *Three Figures and Natures of Scientific Collaboration*

In the following chapters, I approach science as a historically contingent “sign” whose boundaries and practices change in meaning depending on context and time.<sup>42</sup> In this regard, the science of the late nineteenth-century colonial Philippines, for example, operated under rubrics and with practices distinct from the nationally backed science of 2020. Science, in other words, is a situated knowledge, as Donna Haraway has termed, that is locatable, embodied, and ever partial.<sup>43</sup> As Haraway also makes clear, “Situated knowledges are about communities, not about isolated individuals.”<sup>44</sup> Therefore, in addition to writing a comparative history of colonial science, I use scientific biography to give historiographical attention to the neglected categories that García, Vidal, and Clemens represented. Scientific biography as an approach, as Mott T. Greene has written, sits conveniently at the nexus of the natural sciences and the humanities.<sup>45</sup> I insist, however, that the use of this approach need not reproduce the heroic narrative of a scientist working in isolation.<sup>46</sup>

I focus on actors who have been occluded in Philippine history and how they collaboratively contributed to this vital period in international botany. While Luciano P. R. Santiago has offered a brief examination of García’s visual corpus and his influence in Philippine art history,<sup>47</sup> and Bankoff and Nathaniel Roberts of García’s role in the development of U.S. colonial forestry,<sup>48</sup> no extensive academic study has looked at the scientific and political impact of García’s botany illustrations, writing, and the labor he dedicated to both colonial orders and the Aguinaldo government. Furthermore, historical derision of Spanish science in the Philippines has left much of Vidal’s work under-investigated. While Bankoff has provided useful insight on Vidal’s writing as it pertained to forestry, most other profiles of Vidal have only briefly lauded his body of work. Through my investigation of his itinerancy, publications, and the botany he executed with García, I show how Vidal transformed late secular Spanish botany on an international stage. Finally, while

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<sup>41</sup> Alfred McCoy, “Fatal Florescence: Europe’s Decolonization and America’s Decline,” in *Endless Empire: Spain’s Retreat, Europe’s Eclipse, America’s Decline*, ed. Alfred W. McCoy, Josep M. Fradera and Stephen Jacobson (Madison: University of Wisconsin Press, 2012), 16. McCoy references the 1885 Conference of Berlin and the Versailles Peace Conference of 1919, for example.

<sup>42</sup> Dale J. Pratt, *Signs of Science: Literature, Science, and Spanish Modernity since 1868* (West Lafayette: Purdue University Press, 2001), 1–14.

<sup>43</sup> Donna Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” *Feminist Studies* 14, no. 3 (1988): 583–584.

<sup>44</sup> Haraway, 590.

<sup>45</sup> Mott T. Greene, “Writing Scientific Biography,” *Journal of the History of Biology* 40, no. 4 (2007): 737.

<sup>46</sup> Greene, 744.

<sup>47</sup> Santiago, “The Painters of the Flora de Filipinas,” 92–96.

<sup>48</sup> Nathaniel E. Roberts, “U.S. Forestry in the Philippines: Environment, Nationhood, and Empire, 1900–1937” (PhD diss., University of Washington, 2013), 79–82; 316–320 and Bankoff, “A Month in the Life of José Salud,” 18.

Clemens has been the subject of brief biographical sketches, these have not focused on the scientific impact of her collecting work on regional botany studies and on modern Southeast Asia.<sup>49</sup> It is in this study, as well, that I attend to Clemens's foreign and local collaborators, who amplified the breadth and success of her collecting.

For the three principal people in my dissertation, I bring attention to the collaborations that undergirded their work and botany at the turn of the century. In the context of the colonial Philippines, I define scientific collaboration in two ways: first, as a process behind intellectual production that involved two or more actors whose intellectual product unevenly accounted for the labors involved in its creation; and second, as an inter-imperial approach toward intellectual and political cooperation. With respect to the first, survival in unknown tropical terrain required collaboration with field assistants, translators, and local guides. Collaboration also facilitated García's, Vidal's, and Clemens's productivity, their published record, and the scope of their expertise. The three worked alongside European and North American botanists, Filipino artists, locally hired field assistants, contractual and independent collectors, and even close kin.

Filipino plant collectors, in particular, surface at times as nearly indistinguishable faces in Spanish and U.S. botany publications. These actors could be deemed "doubly invisible," as Steven Shapin would assert, invisible to the botanists and the audiences for whom the botanists wrote.<sup>50</sup> For Shapin, the technicians of northern European laboratories were largely unseen in text and image. The "momentary flashes of individual insight" seemed to have only happened in solitude, whereas mistakes in the laboratory were usually at the hand of a clumsy assistant.<sup>51</sup> Yet, as Anne Secord has indicated, European natural history operated differently: authors made contributors' names "extremely visible," although titles reflected contributors' social statuses and perpetuated social hierarchy on the whole.<sup>52</sup> In the colonial Philippine context, field assistants and Filipino personnel appear, albeit irregularly. But as I show in the dissertation, we can only begin to understand the broad developments of internationalist botany if we pay close attention to the experiences of native collectors, who were bound to a single colony's borders and to the inequitable circumstances intrinsic to colonial botany operations.

With respect to collaboration's second definition, Spain and the U.S. proffered colonial botanical work to metropolitan research centers and to other overseas colonies. This ran parallel to the initiation of the IBC. An intellectual diplomacy emerged during this time that hinged on inter-imperial collaboration during the "second wave of European expansion and colonization"<sup>53</sup> characterized by the emergence of new overseas imperial powers like Germany, Italy, and the U.S., alongside the older French, British, Dutch, and Spanish imperial states. I build on literature from

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<sup>49</sup> A long-awaited book-length biography of Clemens by Nelda B. Ikenberry, published by University of Texas Press, is forthcoming. Mike G. Price, communication with author, 31 July 2019, and Patricia O. Afable, communication with author, 14 January 2020.

<sup>50</sup> Steven Shapin, "The Invisible Technician," *American Scientist* 77, no. 6 (1989): 556.

<sup>51</sup> Shapin, "The Invisible Technician," 561.

<sup>52</sup> Anne Secord, "Corresponding Interests: Artisans and Gentlemen in Nineteenth-Century Natural History," *The British Journal for the History of Science* 27, no. 4 (1994): 398.

<sup>53</sup> Christopher Schmidt-Nowara, *The Conquest of History: Spanish Colonialism and National Histories in the Nineteenth Century* (Pittsburgh: University of Pittsburgh Press, 2006), 166.

the history of imperial botany to emphasize how the notion of the “region” became central to inter-imperial collaboration.

### *The Philippine Colony and the Region in Imperial Botany*

Previous studies have examined the interplay of botany and imperial governance, the movement of botanical knowledge from colonized terrain to Europe, and the intellectual developments of the science that demonstrate the unique scientific concerns emerging within colonial territories. While botany as a discipline in Europe has its roots in the *materia medica* traditions, botany during the early modern period was, as Londa Schiebinger has written, “big science and big business” in imperial expansion and colonial extraction.<sup>54</sup> As plant systematics—that is, the classification of plant life into taxonomic groups determined by their morphological or structural characteristics—developed through the eighteenth century, the science of botany was critical to the political and economic growth of European states and empires. Scientific agriculture, according to Richard Drayton, served the political and moral interests of the eighteenth-century British government, which sought to exploit the agricultural potential of its overseas empire. Botany, as an economic science in its Linnaean conception, could assist British social and financial governance of its territories; a utilitarian use of land could cultivate a productive, patriotic class of subjects, domestically and internationally.<sup>55</sup> Schiebinger adds to this analysis by writing, “Mercantilism flourished through the fecund coupling of naval prowess to natural history. Eighteenth-century botanical exploration followed trade routes, as naturalists of all stripes found passage on trading-company, merchant-marine, and naval vessels headed for European territories abroad.”<sup>56</sup>

My dissertation investigates both a less-explored period and locale in the history of imperial botany. The turn of the nineteenth and twentieth century was fundamental to the internationalist direction of botany. Furthermore, by taking the Philippine archipelago as the center of this study, I draw attention to stories from a less-studied colony and region. My study looks at how botanical developments in the Philippines reshaped, for instance, the scientific character of the Spanish state. I uphold that intellectual production from the Philippines facilitated Spain’s renewed intellectual veneer on the inter-imperial stage. My study also extends what we know of professional botany in the contiguous United States during this period. I build on the work of historians Elizabeth Keeney and Mickulas, who have fruitfully examined the “botanizing amateurs” and the “botanical nationalism” within U.S. botany at the turn of the century.<sup>57</sup> But their studies overlook how a U.S. colony like the Philippines could have also shaped plant collection, botanical fieldwork, and discursive deployments of national might in the science. While Mickulas refers to U.S.-backed colonial botanical work in Puerto Rico, I examine U.S. colonial operations, personnel, and writing in detail to suggest that U.S. botanical nationalism took root in the Philippines, too. The example

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<sup>54</sup> Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2007), 5.

<sup>55</sup> Richard Drayton, *Nature’s Government: Science, Imperial Britain, and the “Improvement” of the World* (New Haven: Yale University Press), 55–67.

<sup>56</sup> Schiebinger, 8.

<sup>57</sup> Elizabeth Keeney, *The Botanizers: Amateur Scientists in Nineteenth-Century America* (Chapel Hill: University of North Carolina Press, 1992); Peter Mickulas, *Britton’s Botanical Empire*.

of the Philippines changes what we know of botanizing amateurs in colonial contexts and illustrates how a U.S. botanical nationalism extended across the Pacific to feed imperial ambition. The Philippines, I hold, is fundamental to how we reconceptualize the history of U.S. botany.

My study of two successive imperial regimes in the Philippines allows me to conduct a comparative study of how two empires deployed botany at the end of the nineteenth and start of the twentieth centuries. My dissertation not only focuses on a less-studied period but also takes seriously how botany informed and was informed by inter-imperial collaboration. I reveal how regional botanical studies became integral to internationalist collaborative efforts that paralleled the development of internationally oriented organizations. As Julian Go has explained, the turn of the century marked a time in which “imperial powers tried to define global standards of colonial conduct and morality” and a shared ethics among imperial allies.<sup>58</sup> Go builds on the work of Frederick Cooper and Ann Laura Stoler, whose edited volume shows how politics, ideas, and scientific knowledge moved beyond the “metropole-colony axis” and traveled along new circuits in the “consolidating imperial word.”<sup>59</sup> I premise this dissertation on their observations. An internationalist politics set the stage for the development of botany and in turn, botany contributed to regional mapping upon which empires could share scientific data and expertise while permitting botanical personnel to travel intercolonially.

At the turn of the century, botanists engaged in phytogeographical studies of flora. A subfield of botany, phytogeography is the study of the geographical distribution of plants or taxonomic groups, in order “to explain the ranges of plants in terms of their origin, dispersal, and evolution.”<sup>60</sup> Popularized by F. W. H. Alexander von Humboldt (1769–1859) in the nineteenth century, the subfield then known more simply as plant geography set out to trace the relations among plants across space.<sup>61</sup> As early as 1857, the Philippines was grouped within a floristic region termed Malesia, which had been understood to extend from peninsular Siam, British Malaya, and the Dutch East Indies. By the first third of the twentieth century, Merrill revised key botanical works to contribute to the phytogeography of Indo-Malaya, a larger floristic zone extending from what we now consider the South Asian subcontinent and southern China, to which Malesia belonged and therefore, the Philippines, as well. As I uncover in this dissertation, the idea of the floristic region preoccupied colonial Philippine botanists, who envisioned the Philippine flora as constitutive of a zonal or regional whole. I use the term “region” throughout the present study to refer to geographical space defined by botanists to have had a shared floral distribution that, more importantly, crossed the colonial territories of multiple imperial powers. For imperial botanics to execute comprehensive regional studies, an inter-imperial collaborative approach was vital. Most

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<sup>58</sup> Julian Go, “Introduction: Global Perspectives on the U.S. Colonial State in the Philippines,” in *The American State in the Philippines: Global Perspectives*, eds. Julian Go and Ann L. Foster (Durham: Duke University Press, 2003), 21–22.

<sup>59</sup> Ann Laura Stoler and Frederick Cooper, “Between Metropole and Colony: Rethinking a Research Agenda,” in *Tensions of Empire: Colonial Cultures in a Bourgeois World*, eds. Frederick Cooper and Ann Laura Stoler (Berkeley: University of California Press, 1997), 28.

<sup>60</sup> Anne E. Bjune, “Paleobotany—Pollen Studies; PALEOBOTANY—Paleophytogeography,” *Encyclopedia of Quaternary Science* (2003): 730.

<sup>61</sup> Frank N. Egerton, “A History of the Ecological Sciences, Part 32: Humboldt, Nature’s Geographer,” *Bulletin of the Ecological Society of America* 90, no. 3 (2009): 255.

revealingly, this mapping of floristic space preceded the geomilitary mapping of modern Southeast Asia in the mid-twentieth century during World War II. Even if these floristic regions were not the grounds for military incursion and combat, they were the intellectual grounds for imperial cooperation in the name of science.

### *Chapter Outline*

In Chapter One, “The Intellectual Pivot to Botany,” I examine García's early career in botany, which began with the establishment of the JBM. García trained in classical painting, and his fumbling start in botany mirrored the shaky institutional beginnings of secular Spanish botany operations in the mid-nineteenth century. Their combined narratives bring forth a story of shifting intellectual and research priorities that expand what we know of Spanish colonial botany. In this chapter, I challenge prevailing Philippine historiography in particular, which has suggested that agricultural extraction guided the aims of secular Spanish colonial science writ large. Instead, I argue that while agriculture dominated the original aims of the JBM, the JBM's leadership in Madrid and Manila shifted its objectives to include descriptive and classificatory botanical research that addressed concerns for international science and domestic colonial ends. This coincided with the end of the reign of Isabella II and the transformation of the Spanish metropole into a modern liberal state.

Chapter Two, “A Scientific Statecraft,” follows Sebastián Vidal's two-decade career in Philippine botany. His travels brought him to colonial and metropolitan research centers in the United States, Cuba, England, and the Netherlands, which magnified his scientific-ambassadorial position as a representative of the Spanish state and Philippine colonial botany. The international character of his work enhanced Spain's scientific statecraft marked by inter-imperial intellectual exchange with the emerging empires of Germany and Italy. To advance this claim, I investigate Vidal's intellectual corpus, in addition to his publication, *Sinopsis de familias y generos de plantas leñosas de Filipinas* (Synopsis of families and genera of Philippine flowering plants), published in 1883. Written by Vidal and illustrated by García, the visual marvel captures the apex of Spanish colonial botany in the late nineteenth century.

In Chapter Three, “Sovereign Vernaculars toward Territorial Domain,” I examine how botany was caught in the crosshairs of Philippine reformism and revolution at the end of the nineteenth century. García was politically torn during the anti-colonial foment of the 1890s, and his vacillation is instructive when examining the role of botany during this time in Philippine history. I address the role of local nomenclature in the imagining of a sovereign Philippines by exploring local intellectual and cultural production on the *sampaga* and *sampaguíta* (the *sampaga*'s Spanish diminutive), a species of jasmine that grows indigenously in the archipelago. I introduce the term *sovereign vernaculars*, which I argue defied the definitive rationale of Latin as a *lingua franca* of plants, and which some deployed to conjure Philippine patriotism.

In Chapter Four, “The ‘Undeveloped Empire of Possibility,’” I investigate how U.S. colonial botanists discursively asserted their professional acumen over their Spanish predecessors and the native intelligentsia after U.S. acquisition of the Philippines. To U.S. botanist Elmer D. Merrill, who became the foremost authority on Philippine plants in the early twentieth century, Spain had little to show for Philippine botanical systematization. His claims, however, contradicted the extent to which U.S. colonial botany relied on Spanish intellectual production,

the remnants of Spanish colonial scientific operations, and the work of García, who continued to publish on local flora through the early U.S. colonial period. I argue that a botanical nationalism, which Mickulas locates among U.S. professional botanists at the turn of the century, extended to the Philippines, where colonial botanists entrenched the U.S. overseas empire and attempted to flex intellectual might over their once imperial rival in order to assert U.S. competitiveness in international botany.

Still, the severely understaffed U.S. colonial botany operations in the Philippines necessitated collaboration with independently employed collectors who could assist with fieldwork. Chapter Five, “Maximo Ramos and the Making of a Botanical Emissary,” looks at one such independent collector, Clemens. I argue that Clemens was what I term a *botanical emissary* in the development of imperial botany as it was conceived under the tenet of international intellectual collaboration in the first third of the twentieth century. Unbound by a national flag or a single colony’s borders, botanical emissaries were critical to an inter-imperial intellectual diplomacy that continued to coalesce through the IBC. For the Indo-Malayan phytogeographic zone, in particular, these individuals assisted with the coherence of a floristic regional identity because of their access to terrain otherwise inaccessible to metropolitan botanists. I contend, however, that Clemens’s role must be understood through the effacing hierarchies of colonial Philippine botany and through the act of exhuming—both literally and historiographically—the remains of Maximo Ramos, a Filipino plant collector.

## Chapter 1: The Intellectual Pivot to Botany

Regino García y Basa was considered unremarkable. After five years working at the Jardín Botánico de Manila (Botanical Garden of Manila; JBM), his probity was his main asset. At the age of twenty-five, the Manila-born painter was hired as a horticulturist at the garden and its Escuela de Agricultura (School of Agriculture) on February 24, 1866. He had no previous training in gardening, botany, or agriculture, but likely assumed the post because of his skills in surveying. He had enrolled at the Academia de Dibujo y Pintura (Academy of Drawing and Painting; ADP) in Manila in 1854. In 1870 after demonstrating unusual skill, he received a scholarship to study at the Escuela de Bellas Artes de San Fernando (School of Fine Art of San Fernando) in Spain. His parents' death, however, among other factors, necessitated his stay in Manila as it fell upon him to provide for his four younger siblings.<sup>62</sup> García (see fig. 1) continued his full-time appointment at the JBM while undertaking his studies at the ADP at night. He earned excellent marks each year of his enrollment and won first-prize honors among his classmates for his oils and watercolors. But in the eyes of JBM director Zoilo Espejo y Culebra, García's aptitude at the garden was mediocre. His application, just enough.<sup>63</sup>

### *Expanding the History of Spanish Colonial Botany in the Philippines*

Though fueled in part by unfortunate circumstance, García's start in botany coincided with the beginnings of a more institutionally advanced secular botany in the Philippines. Detailing the earliest years of García's career requires an examination of the JBM and the institutional choices colonial officials in Manila and in Madrid took to develop botanical science in the archipelago. His fumbling start mirrored the first years of the JBM, whose turnover in leadership, poorly executed agricultural objectives, and inferior infrastructure hampered the institution. But his length of service to the JBM and to Philippine botany outlasted his insular and peninsular Spanish colleagues. García's institutional longevity became one of his defining strengths as Spanish colonial botany developed in the second half of the nineteenth century and pivoted its own intellectual aims.

In this chapter, I argue that while the original aims of the JBM were dominated by the concerns of agricultural extraction, its leadership shifted the JBM's objectives to include descriptive and classificatory botanical research that addressed the concerns of international science and the domestic colonial state. Officials in Manila and Madrid sought to enhance the theory and application of botany in the colony, encourage research that reflected international developments in botanical science, and facilitate a firmer economic and academic grasp of Philippine forests. These interrelated goals drove the JBM's expansion and that of the Inspección General de Montes (Forestry Bureau; IGM) during this time.

I begin with a portrait of García's Manila training and the likely road that led him to the JBM. His textual archive from this period is sparse. Unlike his *peninsular* (Iberian-born) Spanish

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<sup>62</sup> José G. Reyes, “¿Quién fué Don Regino García y Baza? Notas Biográficas sobre este ilustre Botánico Filipino,” 8, Unpublished manuscript, Manila, 1940, HL-UST.

<sup>63</sup> Ultramar, Legajo 527, Expediente 2, Número 19, AHN.

colleagues, his personnel file is nonexistent in the Madrid archives. For *insular* (Philippine-born Spaniard) and *mestizo* (mixed-race typically with Chinese parentage) skilled employees, these records were likely held in Manila and destroyed by fire in September of 1897.<sup>64</sup> Tracking García in the first fifteen years of the JBM's operations is difficult. Along with contemporary biographical sketches on García, I begin foremost with his *hoja de servicios* or record of Spanish government service in the Philippines. The three-page personnel log dates his official start at the garden and offers a very abbreviated sense of his work as a horticulturist. Its fortuitous placement in the Archivo Histórico Nacional (AHN) in Madrid has ensured its survival despite multiple destructive onslaughts on the libraries of Manila.

From there, I discuss the public-private partnership that led to the garden's successful founding in 1858. Unlike in the early nineteenth century, when funding setbacks and the short careers of Spanish colonial governors-general in the Philippines thwarted plans to establish a botanical garden,<sup>65</sup> a more tightly imbricated collaboration between Governor-General Fernando Norzagaray y Escudero and the Real Sociedad Económica de Amigos del País (Royal Economic Society of Friends of the Country) ensured mixed funding sources to see the garden's start. I then cover the belabored hiring of the garden's first Madrid-appointed director, Zoilo Espejo. During his tenure as director, Espejo collaborated with García to produce the first seed catalogs of the JBM, which were reportedly sent to research sites in the metropole and other colonies to begin to broadcast the scientific research of the institution. Their combined work drove the institution in its first years. But Espejo floundered as he sought to prove to Madrid the garden's agricultural potential, which had also been plagued by the JBM's poorly chosen flood-prone location. By the early 1870s, officials in Madrid insisted that the garden enhance its work in botany to increase the scientific merits of the institution and to meet its agricultural objectives.

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<sup>64</sup> Ultramar, Leg. 526, Exp. 8, Núm. 89, AHN. For secondary accounts of the fire, see also Greg Bankoff, "A Month in the Life of José Salud, Forester in the Spanish Philippines, July 1882," *Global Environment* 3 (2009): 9; Warwick Anderson, "Science in the Philippines," *Philippine Studies* 55, no. 3 (2007): 296, who cites Elmer D. Merrill, "Historical sketch of Philippine botany" in *Encyclopedia of the Philippines: The Library of Philippine Literature, Art and Science*, ed. Zoilo M. Galang (Manila: P. Vera and Sons, 1936), 7:511–512.

<sup>65</sup> In 1821, Madrid sent a royal order to the Governor-General of the Philippines, Mariano Fernández de Folgueras, to establish the first public botanical garden in Manila to facilitate the study of plants with commercial and medicinal utility. Only two years later, Governor-General Juan Antonio Martínez issued a similar order on behalf of a garden that could cultivate indigenous and exotic plants for medicine, art, and commerce. See Lorenzo Rodríguez, "El Jardín Botánico de Manila y don Sebastián Vidal y Soler," *Anales de la Real Academia de Farmacia* 28, no. 1–2 (1962): 77–8.



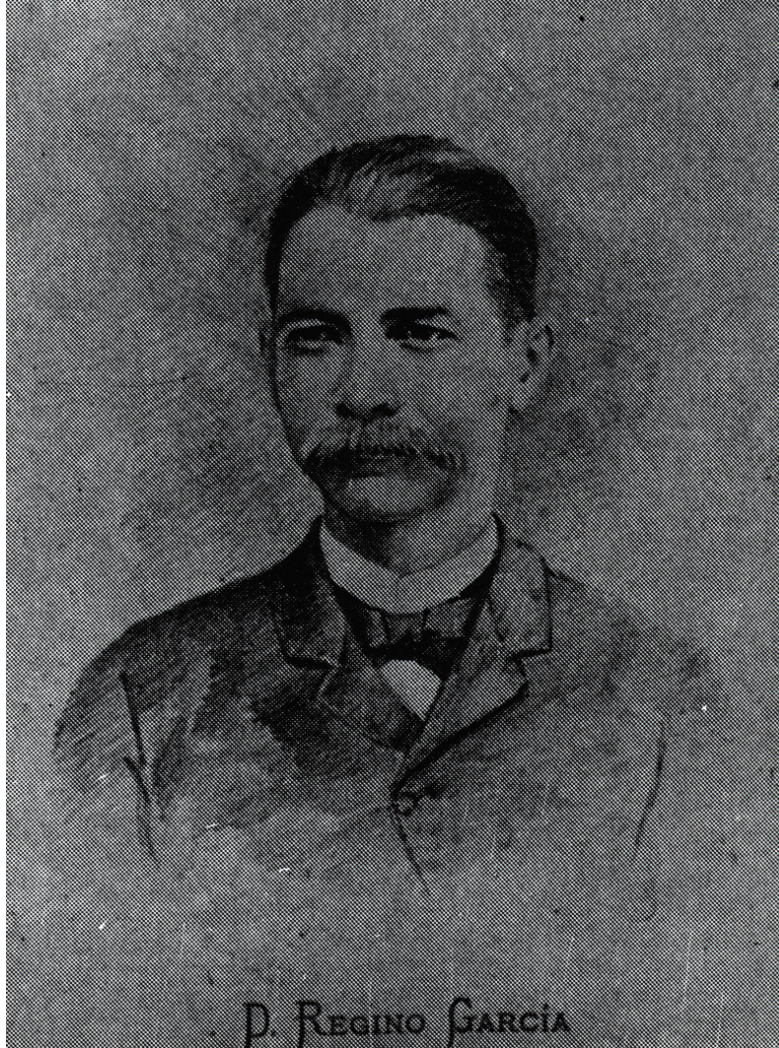


Figure 1. “D. Regino García” as printed on the front page of *La Ilustración filipina* (no. 82) on July 14, 1893. Reprinted in Ramon Ma. Zaragoza, *La Ilustración filipina, 1891–1894* (Manila: RAMAZA Publishing, 1992).  
Reproduction permission courtesy of the American Historical Collection, Rizal Library, Ateneo de Manila University.

In 1871, the garden fell under the auspices of the IGM, which was founded to survey and monitor Philippine forests. The IGM’s lead engineers and its field surveyors invested in intellectual projects that consolidated the IGM’s hold over forests and its position as a producer of tropical botanic knowledge. For officials in Madrid, the published output of the JBM and the IGM could position Spain as an intellectual competitor among the old empires of Britain, France, and the Netherlands, and the emerging empires of Germany and Italy in the late nineteenth century. Coincident with this were the beginnings of inter-imperial North Atlantic debates over standardizing practices and nomenclature in botanical science through the International Botanical Congress (IBC), as well as Spain’s overthrow of Isabella II, whose reign’s end accelerated liberal intellectual development on the peninsula. In this international environment, Spanish officials on both the peninsula and in Manila redirected botanical research priorities across the Philippine archipelago.

This institutional pivot toward botany in the Philippines happened in an important intellectual context. Christopher Schmidt-Nowara has studied how Spanish intellectuals, like

Wenceslao Retana, claimed Philippine nationalist histories as part of the Spanish national imaginary. Schmidt–Nowara places his analysis in the concept of *hispanismo*, “a political and intellectual movement in Spain that emphasized the essential cultural identity between Spain and its former colonies.”<sup>66</sup> He explains that historians have understood this as a “post-1898” response to decolonization, in order for Spain to re-assert its prominence after losing its remaining colonies at the close of the nineteenth century. Instead of viewing it as a response to 1898, he argues that it was a “continuation of efforts associated with the reconsolidating of empire over the course of the nineteenth century.”<sup>67</sup> He reads *hispanismo* diachronically in Spanish history and argues that Spain invested in efforts to defend and remake its image in the aftermath of the Spanish American revolutions. He writes, “These efforts involved not only the use of military force and economic restructuring, but also the attempts by the state and intellectuals to craft institutions and forms of knowledge that legitimized the continuation of Spanish rule, not least of which was the incorporation of the colonials into the archives, monuments, and narratives of Spanish history.”<sup>68</sup>

Botany plays a striking role in these efforts. An investment in secular botany bolstered Manila and Madrid’s appeal to other colonial and European research centers. The Ministerio de Ultramar (Overseas Ministry) celebrated famous botanical tracts by the religious orders that punctuated the three hundred years of Spanish presence in the Philippines. But the Ministerio did not exactly tout them as products of the Spanish state, as I elaborate in Chapter Two.<sup>69</sup> Attempts to start a botanical garden throughout the eighteenth and early nineteenth century did not have the coordinated backing of the metropole or the central government of Manila.<sup>70</sup> But in the second half of the nineteenth century, Spain’s intellectual investment in its remaining colonies and the formation of the IBC paralleled botany’s more secured standing in the Philippines. It also provided a more systematized approach to understanding colonial lands that agricultural science alone did not offer. Botany was part of Spain’s larger effort to shore its claim to imperial prominence in the face of other empires—a claim to what Schmidt–Nowara identifies as “continued international relevance.”<sup>71</sup>

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<sup>66</sup> Christopher Schmidt-Nowara, *The Conquest of History: Spanish Colonialism and National Histories in the Nineteenth Century* (Pittsburgh: University of Pittsburgh Press, 2006), 191.

<sup>67</sup> Schmidt-Nowara.

<sup>68</sup> Schmidt-Nowara.

<sup>69</sup> Ultramar, Leg. 528, Exp. 3, Núm. 4, AHN.

<sup>70</sup> For example, in 1788, pharmacologist and botanist Juan José Ruperto de Cuéllar y Villanueva (1739?–1801) reasoned with the superintendent of the Philippine colony on the utility of a botanical garden. Under the auspices of the Royal Philippine Company, which oversaw Spain’s trade relations with Manila, Cuéllar found it most beneficial for the archipelago to create a garden modeled after those found in New Spain and Madrid. Though blueprints and instructions for the garden’s development had been drafted, the project was abandoned for lack of funds, and Cuéllar lost his post at the Royal Philippine Company when it closed in 1795. See María Belén Bañas Llanos, *Ang Pagbubukid ng Kalikasang: Una historia natural de Filipinas, Juan de Cuéllar, 1739?–1801* (Barcelona: Serbal, 2000), 351–3.

<sup>71</sup> Schmidt-Nowara, *The Conquest of History*, 191. This prefigured the competing imperial claims to modernity that would be seen in the 1898 Spanish-to-U.S. colonial transition of the Philippines. For additional information, see María Dolores Elizalde, “Imperial Transition in the Philippines: The Making of a Colonial Discourse about Spanish Rule,” in *Endless Empire: Spain’s Retreat, Europe’s Eclipse, America’s Decline*, ed. Alfred W. McCoy, Josep M. Fradera and Stephen Jacobson (Madison: University of Wisconsin Press, 2012), 148–159, and

### *The Promising Artist in the Garden*

Regino García was born in Manila on September 7, 1840, to Joaquin García, a *peninsular* from Madrid and Melchora Basa y Calvo, a Spanish–Tagalog from Manila.<sup>72</sup> By the mid-nineteenth century, the cosmopolitan capital with its lively neighborhoods and bustling port provided its wealthiest residents opportunities for social advancement unmatched elsewhere in the archipelago. High social standing ensured young students' entry into the established secondary schools of the city. The oldest of five children, the young Regino was primed to study surveying. His parents sent him to the Escuela Náutica (Nautical School) on Calle de Cabildo in Intramuros, where he obtained training as an *agrimensor* (land surveyor). García's preparation at the Escuela Náutica acquainted him with the practices of land measurement and boundary demarcation. He also took to carpentry and metal smithing naturally and worked briefly in his late teens in building construction and repair.<sup>73</sup>

At around the age of 14, García had enrolled at the Academia de Dibujo y Pintura in 1854 to train formally in visual art.<sup>74</sup> The first ADP was founded in 1821 through the Real Sociedad Económica.<sup>75</sup> Lack of funds led to the ADP's closing on May 16, 1834, but it was reestablished in 1845.<sup>76</sup> The private board of local businessmen and investors backed a number of civic development projects, including the establishment of the JBM in 1858. García's talent earned him a place to study in Madrid at the Escuela de Bellas Artes de San Fernando through a *pensionado* (boarding school) program overseen by the ADP. In 1870, García would have sailed to the peninsula ahead of better-studied Filipino artists from the second half of the nineteenth century, like Juan Luna y Novicio (1857–1899) and Félix Resurrección Hidalgo y Padilla (1855–1913). But according to one of García's obituaries, the political unrest on the peninsula and the death of García's colleague who had also been accepted to the program foiled his departure.<sup>77</sup> He stayed in Manila, resumed studies at the ADP, and continued employment at the JBM in order to financially provide for his younger siblings.

There is slight uncertainty as to when García began at the garden. A short history of Spanish botanical work in the Philippines by U.S. botanist Elmer D. Merrill published in 1902 suggests that García had been associated with botanical work since 1858, soon after the JBM was founded.<sup>78</sup> García also served as Merrill's primary informant for the 1902 publication.<sup>79</sup> García's *hoja de servicios*, however, indicates that he was formally hired in 1866. Another source from the

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Christopher Schmidt–Nowara, "The Broken Image: The Spanish Empire in the United States after 1898," in *Endless Empire*, 160–166.

<sup>72</sup> Reyes, "¿Quién fué Don Regino García y Baza?," 8, HL-UST.

<sup>73</sup> Reyes, 4, HL-UST.

<sup>74</sup> "Ultramar, Leg. 527, Exp. 2, Núm. 19, AHN.

<sup>75</sup> Luciano PR. Santiago, "Philippine Academic Art: The Second Phase (1845-98)," *Philippine Quarterly of Culture & Society* 17, no. 1 (1989): 67.

<sup>76</sup> Carlos Quirino, "Manila's School of Painting," *Philippine Studies* 15, no. 2 (1967): 348.

<sup>77</sup> Reyes, "¿Quién fué Don Regino García y Baza?," 8, HL-UST.

<sup>78</sup> Elmer D. Merrill, *Botanical Work in the Philippines* (Manila: Bureau of Printing, 1903), 7.

<sup>79</sup> Merrill, 7.

U.S. colonial Bureau of Forestry in the Philippines dates García's start as "an official of the Philippine botanical and forest service" at 1866, as well.<sup>80</sup> Given the lengthy efforts to start the JBM and García's social station in Manila, he could have been hired informally to assist with the garden's earliest infrastructural development. His preparation as a land surveyor and skill in construction would have equipped him to do so. From the garden's inception through 1866, however, it remains unclear what his specific duties would have been.

### *Initiating the Jardín Botánico de Manila*

Popular history typically credits Governor-General Norzagaray for establishing the JBM. Conflicting accounts exist, however, regarding the garden's start. While public institutional records are voluminous, an 1872 publication suggests that different actors envisioned the original idea behind the garden. Taking these conflicting accounts seriously, I show in this section that a public-private partnership was responsible for the successful founding of the JBM. In fact, the Real Sociedad Económica was the original engine behind the JBM and had mainly prioritized the agricultural potential of the institution. This conflicted with Norzagaray's vision, which had been concerned with the sanitation and beautification of land adjacent to the walled city of Intramuros. But it was Norzagaray's political clout and promised investment from the public coffers and private funds that made the project fall favorably on Madrid officials' ears.

In 1872, Rafael García Lopez published *Orígen é historia del Jardín Botánico y de la Escuela de Agricultura de Filipinas* (Origin and History of the Botanical Garden and of the School of Agriculture of the Philippines) in which García Lopez disputes the garden's start under Norzagaray.<sup>81</sup> At the time of the garden's founding, García Lopez was registered as a *corresponsal* (agent) with the Real Sociedad Económica, and had been an administrator for various Philippine provinces in the mid-nineteenth century.<sup>82</sup> According to García Lopez, Norzagaray pilfered "our plucked original project" as his own. Rather dramatically, he endeavored to use the publication "to demonstrate presently the great accuracy of the Latin poet's verses—I wrote those verses, another took the honors."<sup>83</sup> Indeed, the government missives under Norzagaray and the writing of the Real Sociedad Económica bear great similarity surrounding the larger projected activities of the institution. More strikingly, some of the language quoted in García Lopez's work and in Norzagaray's first writings is identical.

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<sup>80</sup> "Brief Review of the Forestry Service during the Spanish Government. From 1863 to 1898. By Regino García, an official of the Philippine Botanical and Forest Service from 1866 to 1898. Entered Forestry Bureau May, 1900," File: Forests Philippine Islands, Insular Bureau of Forestry, General Organization, Box 586, Gifford Pinchot Papers, LOC.

<sup>81</sup> Rafael García Lopez, *Orígen é historia del Jardín Botánico y de la Escuela de Agricultura de Filipinas* (Manila & Madrid: Juan Iniesta, 1872).

<sup>82</sup> Francisco de Mas y Otzet, *Memoria del Sr. Socio Secretario de la Real Sociedad Económica Filipina de Amigos del País: leída en la sesión ordinaria celebrada el día 9 de Enero de 1877* (Manila: Plana and Company, 1877), 32.

<sup>83</sup> "Procuraremos ser concisos, si mucho que poder decir sobre el expediente, sui generis, que precedió para remitir á la soberana aprobacion nuestro ya desplumado proyecto original, que como prueba insertaremos para demostrar la grande exactitud, aplicada al presente caso, de aquellos versos del poeta latino—Hos ego versículos fecit; tulit alter honores." García Lopez, *Orígen é historia*, 3.

In *Origen é historia*, García Lopez's frustrations with the agricultural output of the JBM and with Philippine agricultural production in general are loudest. The document trail on the garden by García Lopez, however, ends with the publication. Still, his laments point to the conflicts that beset the garden at its inception. For one, he insists that he and his colleagues of the Real Sociedad Económica recommended the area of San Juan del Norte, a suburb of Manila, as a location for the JBM and its Escuela de Agricultura.<sup>84</sup> The government eventually erected the institution in the district of Arroceros, and he admonished that there was "no worse a place" to dedicate to the garden."<sup>85</sup>

According to García Lopez, "the past, present, and future of the Philippine islands belong[ed] exclusively to agriculture."<sup>86</sup> He articulated this alongside the need for the best scientific practices and principles that could enhance agriculture and the income to be drawn from it. As he wrote in 1858, a practical and theoretical school of agriculture could "inoculate the vital artery of the country with good agricultural practices."<sup>87</sup> I surmise that García Lopez and the Real Sociedad Económica had devised the original 1858 plan—the most developed and detailed Madrid had seen, on behalf of Manila in the nineteenth century. Theirs, dated January 1858, predates by eight months Norzagaray's decree issued September 1858.

In 1859, Norzagaray wrote to Madrid requesting that a plot of land lying outside of Intramuros be renovated to make way for better public use. The Arroceros area was a public health threat according to him and the likeliest location for the JBM. The plot, which measured 150,000 *varas*, "was constantly muddy during the hot season" with a "disgusting appearance and complete inutility for all types of service."<sup>88</sup> The open space drew plenty of pedestrian traffic and could allegedly harvest illness or discontent among the residents. From the vantage points of hygiene and of beautification, the projected garden was to be a point of refuge and recreation for the population. With such a garden, Norzagaray imagined an easier path for officials walking beyond the Intramuros walls that could simultaneously function as a practical school for agriculture and for the cultivation of exotic flora. Despite these two different visions for the garden, the society's collaborative effort with Norzagaray made the project more appealing to officials in Madrid, who

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<sup>84</sup> García Lopez, 9.

<sup>85</sup> "A no ser difusos, otros detalles á cual más prejudicial reseñaríamos para evidenciar que en todos los alrededores de Manila no había otro peor sitio para el fin á que tan inconvenientemente se destinó." García Lopez.

<sup>86</sup> "El pasado, presente y porvenir de las islas Filipinas pertenece exclusivamente á la agricultura." Ultramar 527, Exp. 2, Núm. 10, AHN. The opening letter and García Lopez's original plan are transcribed in *Origen é historia* (16–29).

<sup>87</sup> "Para que marche esta á su fin, siendo en Filipinas los productos naturales el único elemento de su existencia social y rentística, es apremiante necesidad la de una escuela normal de agricultura práctico-teórica, en que, por medio de la enseñanza voluntaria y forzada, moralizando, decrezca la ascendente estadística criminal, é inocule en la arteria vital de este país las buenas prácticas agrícolas, por más que gente non sancta intente egoístamente defender en pró del ocio y contra la ley de Dios, las franquicias de una legislación de circunstancias que á los primeros indios se dió." García Lopez envisioned "voluntary and forced" agricultural education among Philippine natives. This would not only ensure agricultural development throughout the colony but a decrease in criminality. Ultramar 527, Exp. 2, Núm. 10, AHN.

<sup>88</sup> One *vara* was the equivalent of 836 millimeters in nineteenth-century Spanish and Filipino measurements. The land area of Arroceros was 125,400 meters. Ultramar, Leg. 527, Exp. 1, Núm. 2, AHN.



acted prudently given the precarious financial state of the Philippine colony. Agricultural development with economic ends was still to be the primary focus of the garden and its school, but these would be erected in Arroceros and not San Juan del Norte.

The garden's Escuela de Agricultura started under the direction of the government and an oversight council composed of representatives of the Ayuntamiento (City Council), the Real Sociedad Económica, the Cuerpo de Ingenieros (Engineer Corps), the Junta de Comercio (Board of Commerce), and the administrators of the public budget.<sup>89</sup> On May 29, 1861, Norzagaray and the Real Sociedad Económica decreed the establishment of the Escuela de Agricultura. The school was to be staffed by a professor of botany, two horticulturists, and ten *alumnos-obreros* (student-workers), who were to be selected from among young farmers of various provinces and were to have a three-year enrollment at the school. A number of auxiliary workers were to be hired, as well, and were to be chosen from a class of convicts with the least serious convictions.<sup>90</sup>

Funds to cover the building and supply costs were expected to come from profits earned by the garden and from public and private budgetary allocations by the Ayuntamiento (1000 pesos), Junta de Comercio (1000 pesos), Real Sociedad Económica (500 pesos), and the Caja de Comunidad de Indios (3000 pesos), the communal coffers generated for and by native labor.<sup>91</sup> These funds would go to the completion of a modest arboretum that would form the walkways of the garden. Because the garden was projected to yield sellable crops and plant products, income generated from the sales was dedicated to the purchase of gardening and teaching tools. All construction was designed to follow building restrictions within Manila proper. This included smaller units like sheds, fences for the school premises, guard posts, and homes for workers.<sup>92</sup> Such support from the public and private sector represented the single-most extensive investment in the establishment of a botanical garden in Manila's history.

### ***An Agricultural Undertaking and the Toil to Hire a Person of Qualified Station***

By August 26, 1859, less than a year after the official decree, officials began to erect the basic infrastructure of the garden and school. They created small plantations, seed banks storing local Philippine varieties, and an arbor of indigenous trees and floral adornments from China.<sup>93</sup> Despite the developments, no individual had yet been formally appointed as a professor of botany for the garden. According to Norzagaray, this individual needed to be a *peninsular* with acumen in agriculture. He elaborated, "There are no people in the country that can fulfill the task with guarantee of strong performance and the professional background required."<sup>94</sup> A 1,500-peso annual salary was promised to any qualified candidate upon his embarking for Manila. The

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<sup>89</sup> José Montero y Vidal, *Historia general de Filipinas desde el descubrimiento de dichas islas hasta nuestros días*, Tomo 3 (Madrid: Cámara de S. M., 1895), 261.

<sup>90</sup> Montero y Vidal, 317–18.

<sup>91</sup> Ultramar, Leg. 527, Exp. 1, Núm. 7, AHN.

<sup>92</sup> Ultramar, Leg. 527, Exp. 1, Núm. 3, AHN.

<sup>93</sup> "Se da cuenta de la creación de un Jardín Botánico en esta Capital; se solicita la soberana aprobación y se pide un Profesor de botánica y elementos de agricultura," Ultramar, Leg. 527, Exp. 1, Núm. 2. AHN.

<sup>94</sup> Ultramar, Leg. 527, Exp. 1, Núm. 2. AHN.

candidate would be responsible for teaching botany and agriculture and for overseeing the work of the JBM.

Only two years after the garden's successful founding, Norzagaray died in Manila. Following his death, forlorn officials reinvigorated efforts to establish the garden as it had been imagined. Yet by 1860, Madrid had still failed to find a qualified and interested candidate to lead the institution. Spanish officials of the Real Consejo de Ynstrucción Publica (Royal Council of Public Instruction) deemed the appointment unrealistic for trained men from Spain, especially since the post only promised a 1,500-peso salary. The council cited the dangerous sea journey to the remote colony as one of several deciding factors for competent men. It would be improbable for such a person of merit and knowledge to "abandon his country and family, and to face the dangers of long navigation and acclimatization in an unhealthy land, without obtaining some compensation for such sacrifices."<sup>95</sup>

On May 29, 1861, the Ministerio de la Guerra y de Ultramar (Overseas and War Ministry) increased the allotted salary for the future director of the garden to 2,000 pesos. The responsibilities were reiterated by the Ministerio once more: 1) to teach botany and aspects of agriculture to natives of the colony; 2) to direct the practical work of the botanical garden and the acclimatization of plants; and 3) to develop quality cultivators, who in addition to theory would learn sufficient practical skills to be able to spread botanical knowledge to different provinces of the archipelago.<sup>96</sup>

Madrid officials opened the position at the JBM to *peninsulares* with training in the natural sciences or agronomy. They oversaw a rather selective process for the inaugural director. For several years, applicants vied for the position without demonstrating enough formal academic training for the post. Juan de Comínges, a 29-year-old from San Yldefonso (Segovia), had trained for six years with excellent marks in botany and was director of the local botanical garden. José María Rodríguez, an agronomist, competed against de Comínges for the position. On the surface, Rodríguez seemed the more qualified candidate, with better professional status and training. Comínges had dedicated five years to practical work with little academic training in agriculture.<sup>97</sup> Neither candidate, however, was selected.

In September of 1863, a native of the Canary Islands, Fernando Boullosa y Amador, applied to the position. He boasted fourteen years of agricultural experience and possessed theoretical and practical training in related sciences. For his application, Boullosa produced a written treatise on the agricultural possibilities of the Philippines that highlighted the potential value of Philippine cotton and tobacco.<sup>98</sup> Despite this effort, Madrid officials determined that Boullosa did not have the proper academic certification. By the close of 1863, they made clear to Manila that there were still no qualified applicants.<sup>99</sup>

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<sup>95</sup> "[N]o es probable que una persona de algun valer por sus conocimientos, se resigne a abandonar su pais y familia, y a arrostrar los peligros de una larga navegacion y de la acclimatacion en un pais mal sano, sin obtener alguna compensacion a tantos sacrificios." Ultramar, Leg. 527, Exp. 1, Núm. 8, AHN.

<sup>96</sup> Ultramar, Leg. 527, Exp. 1, Núm. 9, AHN.

<sup>97</sup> Ultramar, Leg. 527, Exp. 1, Núm. 19, AHN.

<sup>98</sup> Ultramar, Leg. 527, Exp. 1, Núm. 32, AHN.

<sup>99</sup> Ultramar, Leg. 527, Exp. 1, Núm. 34, AHN.

This effort to hire a qualified candidate contradicts earlier accounts of the careless manner by which Spain appointed its colonial officials in Manila. Members of the Real Consejo de Ynstrucción Pública had an idea of what constituted qualifications in botany and agriculture. The Dirección General de Ynstrucción Pública (Head Office of Public Instruction) in Madrid had announced a more thorough review of its personnel's qualifications on September 8, 1857. Madrid spent years finding the best candidate for the JBM. Its lengthy process for recruitment and apparently high standard consequently led to delays in appointing leadership in Manila. On February 22, 1864, the Ministerio de Ultramar wrote to the Real Consejo de Ynstrucción Pública insisting that the qualifications required were an obstacle to appointing a deserving candidate. According to the ministry, the academic titles for teaching that were favored by the Real Consejo were not required to fulfill the immediate objectives of the post.<sup>100</sup>

Soon after the Ministry's insistence on changing the parameters for qualifications, another applicant emerged. Zoilo Espejo y Culebra applied to the position on March of 1864. Espejo, an agronomist and interim professor of theoretical and practical agriculture in a provincial secondary school of Salamanca, applied and requested 4,000 pesos annually for his work. He emphasized that 4,000 pesos was a satisfactory sum for a *peninsular* to end his career in Spain for the Philippines' unknown terrain.<sup>101</sup> Nearly two years after his application, a tribunal panel was formed to assess the top candidates for the position. These included Espejo, Vicente Gonzalez y Canales, and Tomás Andrés y Andrés. The tribunal took place in the Facultad de Geología (Department of Geology) of the Universidad Central (Central University) in Madrid. The presiding panel prepared sixty questions or themes for the initial exercise. These were separated into thirty themes for botany and thirty for agriculture. Miguel Colmeiro, Lucas Tornos, Vicente Cutanda y Jarauta, and Antonio Blanco Fernandez comprised the panel for the initial round.

Miguel Colmeiro (1816–1901) was Chair of Agriculture and Botany at the Universitat de Barcelona (University of Barcelona) and eventually became the director of the Real Jardín Botánico de Madrid (Royal Botanical Garden of Madrid; RJB) from 1868 until his death in 1901. He was the first president of the Sociedad Española de Historia Natural (Spanish Society of Natural History; est. 1871), which sought to advance studies in natural history through surveys within Spain and its overseas colonies.<sup>102</sup> Jaume Josa Llorca has suggested that Colmeiro, along with Vicente Cutanda (1804–1866), who directed the RJB from 1846 to 1866, were at the forefront of botany in Spain in the mid-nineteenth century.<sup>103</sup> On peninsular botany, Colmeiro wrote *Ensayo histórico sobre los progresos de la botánica, especialmente en España* (Historical Essay on Botany's Progress, especially in Spain, Barcelona; pub. 1842), *Catálogo metódico de plantas observadas en Cataluña* (Catalog of Plants Observed in Cataluña, Madrid; pub. 1846), and *La botánica y los botánicos de la península hispano-lusitana* (Botany and Botanists of the Hispanic-Lusitanian Peninsula, Madrid; pub. 1858).

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<sup>100</sup> Ultramar, Leg. 527, Exp. 1, Núm. 37, AHN.

<sup>101</sup> Ultramar, Leg. 527, Exp. 1, Núm. 38, AHN.

<sup>102</sup> Jaume Josa Llorca, "La Historia Natural en la España del siglo XIX: Botánica y Zoología," *Ayer* 7 (La Ciencia en la España del Siglo 19), 130.

<sup>103</sup> Llorca, 130.



The *oposición* (civil service exam) for the post lasted from February 16 to 27. Since Tomás Andrés failed to appear for any portion of the *oposición*, Espejo and Gonzalez completed the candidacy exercises. The panel's questions assessed the candidates' knowledge of plant structures and growth patterns (inflorescence, germination, and chemical phenomena); features of specific plant families and their notable genera; and herbaria, their utility, and their development.<sup>104</sup> Espejo and Gonzalez provided extemporaneous and prepared lectures on specific topics such as radical absorption and the influence of water on vegetation; the cultivation of the potato and the sweet potato from Málaga in southern Spain; and the cultivation of the pea and the garbanzo bean. Members of the panel also required the candidates to demonstrate tool, instrument, and specimen handling at the RJB. In the garden, Espejo had to model how to plant stakes to support olive growth and to arrange a nursery of vines and olives. Gonzalez needed to arrange vines using the Jules Guyot system of cane pruning of vines for trellises, a method typically used for grapevines in the production of wine.<sup>105</sup> At the end of the exercises, the tribunal selected Espejo for the directorship at the JBM. Though the decision was not unanimous, the tribunal agreed that Espejo excelled during the exercises and that his skills consistently surpassed Gonzalez's.

In the first edition of Teodoro A. Agoncillo's *Introduction to Filipino History*, Agoncillo claims that slow economic development of the Philippine colony could be attributed to the "lazy, incompetent, and inefficient" Spanish officials appointed to the islands. He continues, "Incompetence was paramount among Spanish officials....Under these circumstances, the condition of the people practically remained as it was at the beginning of the conquest."<sup>106</sup> Histories like Agoncillo's and U.S. colonial accounts of Spanish colonial science in the Philippines inform Greg Bankoff's reading of the "second black legend that was a more measured, scientifically couched denunciation on the decadence, backwardness, and irrational nature of Iberian culture."<sup>107</sup> Yet, the meticulously documented, apparently arduous *oposición* behind the selection of the JBM's first director suggests at least one instance of careful consideration for Spanish officials' aptitude to serve in the Philippines.

### ***Manila's Institutional Moves***

Weeks before the start of the tribunal, notice reached Madrid that a local treasurer had been appointed to lead the garden during the peninsular hiring deliberations. The Manila government had named Francisco Ramos y Borguella Director of the JBM in November of 1865 in part because of the delayed appointment. By 1865, Ramos had worked in the Philippines for over two decades. In Manila, he was a treasurer with the Casa de Moneda (State Mint) and was licensed in medicine and surgery.<sup>108</sup> He also edited *Diario de Manila*, a Spanish-language newspaper founded in

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<sup>104</sup> Ultramar, Leg. 527, Exp. 1, Núm. 49, AHN.

<sup>105</sup> Ultramar, Leg. 527, Exp. 1, Núm. 49, AHN.

<sup>106</sup> Teodoro A. Agoncillo, *Introduction to Filipino History* (Manila: Jonef Publications, 1974), 59–60.

<sup>107</sup> Greg Bankoff, "The Science of Nature and the Nature of Science in the Spanish and American Philippines" in *Cultivating the Colonies: Colonial States and their Environmental Legacies*, ed. Christina Folke Ax et al. (Athens: Ohio University Press), 78.

<sup>108</sup> Establecimiento de los Amigos del Pais, *Guía de Forasteros en Filipinas para el año de 1865* (Manila: Estevan Plana, 1865), 135.

1848.<sup>109</sup> Ramos started the position on March 1, 1866 at a salary of 2,500 pesetas annually to oversee the development of the garden and its running order. García was appointed as a horticulturist for the JBM a month prior.

Despite the delay in Madrid, officials in Manila demanded leadership for the garden that could spearhead construction of the grounds and provide guidance to its personnel. Espejo eventually replaced Ramos, who stepped down on September 16, 1866, after only about six months on the job. Ramos died two days later. García, however, continued in his position after Ramos's death and through Espejo's seven-year tenure in Manila. García's consistent presence during the earliest phases of the garden's development—even before a formal director was appointed by either Manila or Madrid—begins to signal two important elements of his person and his significance to the JBM: first, his utility as one of the few people capable of ensuring JBM operations in the absence of other personnel and second, one of many institutional clashes between decision-making officials in the colony and on the peninsula. Given the seemingly rigorous standard Madrid deployed during Espejo's hiring, it is striking that García carried no academic training which might certify his expertise as a horticulturist. Officials in Manila, nonetheless, may have seen merit in his hiring. Practically speaking, García was educated labor from the Manila elite, who could support the garden's development as he completed his art training. At an institutional level, his consistent tenure at the JBM and eventually in the IGM would provide him with more expertise and knowledge because of the personnel turnover that plagued the institutions for three more decades.

As the newly appointed director of the JBM, Espejo left Cádiz on May 28, 1866 for the Philippines. During Espejo's first years, he and García arranged the herbarium and seed banks of the garden, and most of their efforts had gone to assembling the first major cataloged material for the garden's research objectives. On February 19, 1868, Espejo submitted a catalog of seeds that he claimed was the first of its kind published to facilitate scientific relationships between the JBM and other international gardens.<sup>110</sup> Since copies of the catalog would be shared with botanical gardens of "other nations," the catalog would announce the JBM's collections that could then lead to plant material and seed exchange with other robust gardens. He titled the work *Catalogus seminum in Horto Botanico Manilensi* (*Seed Catalog of the Botanical Garden of Manila*), a five-page booklet that reflects the JBM's 1867 collection.

As Timothy Barnard observes of the history of the Singapore Botanic Gardens, British directors increasingly corresponded and shared research findings with other botanical research centers globally, and not only with botanists at Kew.<sup>111</sup> Such growing autonomy implied the development of a research culture and practice that "broke away from the centralized overlord [of metropolitan science] in Europe."<sup>112</sup> In line with this, Espejo underscored that the work should not

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<sup>109</sup> Montero, *Historia general de Filipinas*, 297.

<sup>110</sup> "Tengo el honor de remitir a V.E. el primer catalogo de semillas que he redactado desde mi llegada a esta Capital hace poco más de un año, y el primero también que se ha publicado para establecer relaciones científicos entre el Jardín Botánico de mi cargo y los principales de las demas naciones." Ultramar, Leg. 527, Exp. 1, Núm. 59, AHN.

<sup>111</sup> Timothy Barnard, *Nature's Colony: Empire, Nation and Environment in the Singapore Botanic Gardens* (Singapore: National University of Singapore Press, 2016), 115.

<sup>112</sup> Barnard, 8.

only be perceived to have local relevance. He cautioned, however, that the modest catalog reflected the very limited capacity of the garden: he could not expand the garden's collection beyond the local environs since duties and resources constricted him.<sup>113</sup> The back of the catalog lists García as *seminum asservator* or seed conservator and in the booklet, Espejo acknowledges no other employees at the JBM.<sup>114</sup>

Published by Giraudier in Manila, the catalog followed the Candollian system of plant systematics, which had been originally published in 1813 in *Théorie élémentaire de la botanique, ou exposition des principes de la classification naturelle et de l'art de décrire et d'étudier les végétaux* and then updated in *Prodromus systematis naturalis regni vegetabilis* (1824–1873). The former director of the RJB, Mariano La Gasca y Segura (1776–1839), produced a Spanish translation of *Théorie élémentaire*. According to Jaume Josa Llorca, most natural history and botany publications produced in Spain in the nineteenth century followed Candollian systematics.<sup>115</sup> Augustin Pyramus de Candolle (1778–1841) had maintained robust correspondence with some of the most prolific Iberian agriculturists and botanists, including Joan Francesc Bahí (1775–1841) and La Gasca.<sup>116</sup>

The catalog features 83 families listed with 360 species. In 1869, Espejo and García produced a version with an updated list of 107 families and 497 species. In 1870, the two remitted another that listed 112 families and 628 species in the JBM's 1869 collection. This 1869 catalog, in particular, provided an extensive list of common rice (*Oryza sativa* L.) strains grown in the Philippines. The names of the rice strains were nearly all derived from a local language, which points to Espejo and García's efforts to collect local nomenclature.<sup>117</sup> These catalogs were one of the ways in which Espejo reminded Madrid of the JBM's potential so that he might once more insist the "growing scientific relationships of the [JBM] and with other foreign establishments."<sup>118</sup> Along with this, he emphasized the expansion of the Escuela de Agricultura and the potential of agricultural developments, which he hoped would be funded by Manila's city planning budget. Because he perceived it to be adequate to cover the costs of building the Escuela de Agricultura,

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<sup>113</sup> Barnard, 8.

<sup>114</sup> Ultramar, Leg. 527, Exp. 1, Núm. 58, AHN.

<sup>115</sup> Llorca, "La Historia Natural en la España," 118–119.

<sup>116</sup> Llorca, 118–119.

<sup>117</sup> Listed under *Oryza sativa* L. are the following varieties: "Acapulco, Anagsalet, Aristata, Baclao, Balayang, Bijod, Bilibor, Binagacay, Binamba, Binan-é, Binujaquir, Bonquit, Bulao, Cabagbag, Cabagte, Cabanque, Cabinlay, Cafino, Canlor, Capajon, Capoto, Capungo, Casore, Cinibuya, Ciniguayer, Cininbajan, Cobrador, Cotsian, Diamante, Dinimero, Engñan, glutinosa, Inaguio, Inaljin, Inanod, Inuser, Juquianan, Labas, Labioc, Lamuyo, Laua, Macan, Maclado, Macucuy, Maglijin, Malacquit, Malaguingay, Malegundana, Mangasa, Mayor, Minalan, Monjoan, Morado, Panalio, pilosa, Pinalapa, Pinursiguí, Piracat, præcox, Pular, Quinacuo, Quinafre, Quinalet, Quinandra, Quinarabao, Quinastila, Quinosijan, Quiriquiri, Romero, rubra, Sarsarín, Señora, Sinamailanon, Sinantol, Tabao, Tapo, Tiaong, Tinumbaga, Tipaclac, Tumaoc, violacea." Ultramar, Leg. 527, Exp. 2, Núm. 7, AHN.

<sup>118</sup> "Tengo el honor de ofrecer a V.E. los dos ejemplares adjuntos del Catalogo de semillas, correspondiente al año anterior, que he publicado para seguir cultivando las crecientes relaciones científicas de este jardín con los demás establecimientos del extranjero." Ultramar, Leg. 527, Exp. 1, Núm. 61, AHN.

he reminded officials in Madrid that “no investment would be more appropriate than that aimed at promoting the country’s agricultural wealth.”<sup>119</sup>

### *Refining the Garden’s Aims*

The unimpressive state of the JBM was the butt of cheeky humor at the time. One biting commentator wrote, “There exists a Director of the Botanical Garden [of Manila], and there is no such garden; it is ignored even if cinnamon is produced on these islands.”<sup>120</sup> Cinnamon, pepper, and nutmeg had been failures in colonial Philippine agriculture in centuries prior. Efforts to cultivate these products at a large scale met little of the success that had seemed certain to the Real Sociedad Económica and the Royal Philippine Society.<sup>121</sup> By the second half of the nineteenth century, popular references to such spices could be deployed to emphasize the JBM’s stagnant condition.

As García and Espejo completed the cataloging work, the Escuela de Agricultura was not gaining the traction that Espejo had projected upon his arrival to Manila. The JBM (see fig. 2) seemed woefully unimpressive. This perception of the garden lingered for decades. In the 1887 novel *Noli me tangere* by Philippine nationalist José Rizal, the JBM appears before the novel’s protagonist, who has returned to Manila after completing his studies in Europe. As the protagonist walks through the busy suburbs of Manila after his seven-year absence, childhood memories overcome him. The bustle of carriages, vendors, and cigarette girls amid emaciated almond trees, unpaved streets, and buildings fallen to disrepair provoke his nostalgia. This moment of wistful affections, however, is banished by the sight of Manila’s botanical garden: “the demon of comparisons” transports the protagonist to the lush and well-tended gardens of Europe, “in countries where much will and much gold are needed to make a leaf sprout or a flower’s calyx open” or to other colonies, where the gardens are “rich, well tended, and open to the public.”<sup>122</sup>

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<sup>119</sup> “Las existencias de fondos locales son con ascenso suficientes para cubrir los gastos de instalación, y ninguna inversión sería mas propia que la que tuviese por objeto el foment de la riqueza agraria del Pais.” Ultramar, Leg. 527, Exp. 1, Núm. 61, AHN.

<sup>120</sup> “Existe un Director del Jardín Botánico y no hay tal jardín; se ignora hasta si la canela se produce estas islas.” Pascual Lucas de la Encina, *Algunos escritos del Teniente de navio D. José Emilio Pardo de Figueroa* (Madrid: Thebussem, 1873).

<sup>121</sup> Edilberto C. de Jesus, *The Tobacco Monopoly in the Philippines: Bureaucratic Enterprise and Social Change, 1766–1880* (Quezon City: Ateneo de Manila University Press, 1980), 2.

<sup>122</sup> “El jardín botánico ahuyentó sus risueños recuerdos: el demonio de las comparaciones le puso delante los jardines botánicos de Europa, en los países donde se necesita mucha voluntad y mucho oro para que brote una hoja y abra su cáliz una flor, aun más, hasta los de las colonias, ricos y bien cuidados y abiertos todos al público. Ibarra [the protagonist] apartó la vista, miró a su derecha y allí vio a la Antigua Manila, rodeada aún de sus murallas y fosos, como una joven anémica envuelta en un vestido de los buenos tiempos de su abuela.” José Rizal, *Noli me tangere* (1887; repr., Caracas: Biblioteca Ayacucho, 1982), 51. Benedict Anderson and Filomeno V. Aguilar Jr. have written on this especially “spectral” and igniting moment of comparison in the novel. See Benedict O’G. Anderson, *The Spectre of Comparisons: Nationalism, Southeast Asian, and the World* (London: Verso, 1998) and Filomeno V. Aguilar Jr., “Romancing Tropicality ‘Ilustrado’ Portraits of the Climate in the Late Nineteenth Century,” *Philippine Studies* 64, no. 3/4: Disasters in History (2016): 417–454.

Manila, now “an anemic young woman shrouded by a dress from her grandmother’s best times,” must stand in comparison to cities oceans away.<sup>123</sup>



Figure 2. “Jardin Botánico.” This image has been dated circa 1898. The image was possibly taken at least several years before this since the JBM was heavily damaged in the revolution of 1896 and by fire in 1897. Image and reproduction permission courtesy of the Photo Archive of the Filipinas Heritage Library, Ayala Museum.

Outside of the Philippines, colonial botanical gardens functioned as beautification projects, nurseries, and centers for agricultural and botanical research. As Richard Drayton has written, economic botany was a concern across Britain’s overseas empire and within institutions like the Madras Botanic Garden (f. 1836).<sup>124</sup> The Calcutta Botanical Gardens (f. 1786) and Castleton Botanical Gardens in Jamaica (f. 1862) erected tropical palmeta—arboreta devoted to tropical tree species—that could cultivate ornamental and commercial trees.<sup>125</sup> Established by the Dutch in Java in 1817, the s’Lands Plantentuin (National Botanical Garden) was developed beside the colonial

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<sup>123</sup> Rizal, *Noli me tangere*, 51.

<sup>124</sup> Richard Drayton, *Nature’s Government: Science, Imperial Britain, and the “Improvement” of the World* (New Haven: Yale University Press, 2000), 195.

<sup>125</sup> Paul Elliott, Charles Watkins, and Stephen Daniels, “Combining Science with Recreation and Pleasure’: Cultural Geographies of Nineteenth-Century Arboretums,” *Garden History* 35 (2007): 9.



building of Buitenzorg. As Esther Helena Arens has suggested, s'Lands Plantentuin was one of the many colonial nodes along the academic and circulatory regimes of eighteenth- and nineteenth-century botany.<sup>126</sup> Under the Spanish empire, the Sociedad Económica of Cuba inaugurated the botanical garden in Havana in 1817. The local government eventually demolished the garden to make way for a railroad in 1838. The government erected a new botanical garden in the late nineteenth century that could accommodate more public recreation.<sup>127</sup> The institutional—if not aesthetic—success of these gardens composed some of the international environment to which Rizal likely referred.

Trying to improve the JBM's condition and perhaps its international status, Espejo opened another appeal to Madrid with flourish, suggesting that if the development of moral wealth were of timeless importance to officials then surely the development of material wealth was a means or complementary outcome to it.<sup>128</sup> Despite the scientific contributions made by the colonial botanical garden in Buitenzorg, Espejo reminded officials that the Escuela de Agricultura would be the first to study local vegetation through the lens of agriculture. As a center of information, it would radiate agronomic knowledge to enhance overall well-being and wealth.<sup>129</sup> Alongside this memorandum, Espejo sent a plan enumerating the organization, roles, and responsibilities fit for the garden and its school. The bureaucratic complexity that Espejo imagined points to the type of scientific infrastructure that Spanish colonial officials had hoped to erect in the Philippines. In Espejo's eyes, the Escuela de Agricultura, in particular, could also inaugurate a regimented training of local men, who could serve as model students and workers to advance the institution's aims. Writing on the enforcement of Portuguese imperial control over its maritime explorations, John Law cites the work of Michel Foucault to remind us, "The 'model' worker was one who had been drilled, who was a reliable automaton, and who accordingly offered a more convenient way of exercising power."<sup>130</sup> Indeed, the Espejo's Escuela de Agricultura could be seen as one instantiation of this in late Spanish colonial science.

To facilitate teaching, Espejo designed the school to have an amphitheater for lectures; an agronomic museum to model implements used for plant cultivation; a library; an herbarium; a seedbed; sheds for tools; and fields dedicated to the study of botany, plant acclimatization and spices, specialty crops, warehouses, and smaller nurseries. The plan further outlined the duties of the director, the horticulture teachers, the guards, and the student-workers. Admittees to the Escuela de Agricultura had to pass basic entrance exams in language and arithmetic. They needed to be seventeen years old, healthy, and accustomed to farming tools. Students in the *pensionado* program on the other hand, needed to be twenty-five years old and also had to know how to read and write. Espejo envisioned that students would study alongside the "agricultural year" that began

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<sup>126</sup> Esther Helena Arens, "Flowerbeds and Hothouses: Botany, Gardens, and the Circulation of Knowledge in Things," *Historical Social Research/Historische Sozialforschung* 40, no. 1 (2015): 265–283.

<sup>127</sup> Ultramar, Leg. 226, Exp. 8, AHN.

<sup>128</sup> Ultramar, Leg. 527, Exp. 1, Núm. 64, AHN.

<sup>129</sup> Ultramar, Leg. 527, Exp. 1, Núm. 64, AHN.

<sup>130</sup> John Law, "On the Methods of Long Distance Control: Vessels, Navigation, and the Portuguese Route to India," *Sociological Review* 32, no. 1 (1984): 234–263.

June 1 and concluded on the final day of February. He expected training to last three years and to be comprised of knowledge in plant classification in order to carry out the principles of crop cultivation for industrial and commercial farms. During the first year, students were obligated to study the fundamentals of botany and taxonomy. The second year included elements of agriculture and land surveying. Espejo dedicated the final year to the study of rural industry and agricultural work combined with daily practical exercises. He projected that students would commit two to four hours to work or practical exercises daily except on Sundays and holidays. To be granted a degree, a tribunal would determine if a student had successfully completed all three years of training and their theoretical and practical exercises.

Espejo clarified that any teaching details not outlined in his proposal would follow universal regulations for education that had been established by the officials on the peninsula. This acknowledgement reflected a major shift in colonial Philippine education following 1865. A growing middle class in Manila and its neighboring provinces increased the number of students and rapid demand for literacy education.<sup>131</sup> Even for the Escuela de Agricultura, applicants needed to demonstrate reading and writing skills in Spanish prior to enrollment. For much of the nineteenth century, secondary-school students attended private, unregulated Latinity schools that emerged throughout Manila. Due to poor regulation, the schools were notorious for their unstandardized systems of matriculation.<sup>132</sup> In 1865, the Spanish Crown standardized and required secondary education in the Philippines, which increased the opportunity for access to higher education and to vocational work in agriculture, industrial arts, nautical science, and drawing. Espejo envisioned that new students granted the title of *périto agrícola* (agricultural expert) would be authorized to evaluate and manage farmland, and that the degree would be a necessary requirement to obtain employment in the municipal public works or for certification in land surveying. Such a title would also determine preference for gardening posts in the public service.<sup>133</sup> This type of training was distinct from the liberal arts instruction provided by Ateneo Municipal de Manila (Municipal Athenaeum of Manila), the Universidad de Santo Tomás de Aquino (University of Santo Tomas), and the Colegio de San Juan de Letran (San Juan de Letran College), where notable *ilustrados* studied.

Espejo elaborated the duties of the horticulturists employed at the school. The first was the *maestro horticultor jardinero* (horticulturist-gardener) and the *maestro horticultor capataz* (horticulturist-foreman). These would have applied to García's position at the garden. By the time Espejo penned his plan for the Escuela de Agricultura, García was named *maestro horticultor*. From García's *hoja de servicios*, it is difficult to determine if he would have assumed the role of gardener or foreman based on Espejo's outline. Still, the descriptions for the roles show the combined managerial skills and practical botany and agricultural knowledge that a qualified horticulturist needed to demonstrate.

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<sup>131</sup> Eloisa Parco-De Castro, "Fostering Social Transformation through Philippine Secondary Education," (PhD diss., University of Santo Tomas, 2015), 49.

<sup>132</sup> Parco-De Castro, 49.

<sup>133</sup> Ultramar, Leg. 527, Exp. 1, Núm. 64, AHN.

In Espejo's plan, the horticulturist-gardener's responsibilities included managerial duties, groundskeeping, human resources, and oversight of the basic implements of the institution. His roles included the custodianship and conservation of all tools and buildings of the establishment, including collections in the library and all teaching supplies.<sup>134</sup> As far as practical botanical work, he was supposed to oversee the cultivation of flowers and vegetation. His daily and nightly duties included overseeing the work of the guards to ensure that they did not leave the premises and that they complied with expectations. For instance, guards who lived on the JBM grounds needed to obtain permission to have visitors. The horticulturist-gardener also needed to inspect the quarters of the students and was responsible for reporting any problems to the director. He would also oversee payroll of the subordinate staff of the garden and the school. In this capacity, he would account for the wages in the garden and present a regular log of the expenses to the director.

The gardener was expected to also work closely with the horticulturist-foreman, who would have more direct oversight of the student-workers, the vegetation growing in the garden, and the school's instruction. The foreman would oversee the lands used for botany teaching and agricultural practice. He would direct workers' tasks in the gardens and their acclimatization of material needed to maintain the live plant collections while monitoring students' practical work. Under the director's oversight, he needed to identify seeds and plants that could contribute to the enhancement of teaching. Should any tools become unusable or machines inoperable, the foreman was tasked with revising the inventory of supplies. Any products cultivated under his guidance would be given to the gardener.<sup>135</sup>

García's duties, whether as the projected gardener or foreman, required managerial know-how and knowledge of maintaining a botanical garden and an agricultural school. His formal training at the Escuela Náutica and the Academia de Dibujo y Pintura would not have given him the theoretical or practical training for the roles. In García's case, many of these skills were likely learned on the job. His alleged start at the garden in 1858 would have given him ample familiarity with the JBM's grounds, materials, and employees. Aside from being named *maestro horticultor* in 1866, García was Espejo's primary collaborator behind the catalogs. He was likely accumulating knowledge through the expansion of his duties as the aims of the garden were being rearticulated in the 1860s.

In 1869, Espejo published *Cartilla de agricultura filipina* (Primer on Philippine agriculture). He hailed his publication as the first of its kind published in the Philippines. He organized the primer in a question-and-answer format based on thirty themes in agricultural science. He reported that it had favorable reviews by the Junta Central de Agricultura, Industria y Comercio (Central Board of Agriculture, Industry, and Commerce) and the Comisión de la Censura (Censors Commission). That same year, the Catholic Archbishop's commission approved the work as a teaching text for children's schools. In January of 1870, a second edition was released

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<sup>134</sup> I have gendered the horticulturist as male. In the second half of the nineteenth century, men occupied teaching, research, and surveyor posts at the JBM and the IGM. To my current knowledge, no record exists at the AHN of female *peninsular* applicants to JBM or IGM positions.

<sup>135</sup> Ultramar, Leg. 527, Exp. 1, Núm. 63, AHN.



and ten copies of the primer were sent to the peninsular libraries.<sup>136</sup> On June 1, 1870, Espejo sent another catalog of seeds with a copy of the primer to remind Madrid of the growing work of the Escuela de Agricultura.<sup>137</sup> Additionally, Espejo remitted a carton of seeds to the RJB.<sup>138</sup> In November of 1871, Colmeiro, who had sat on Espejo's tribunal, acknowledged receipt of the seeds, which helped to complete the Philippine collection in Madrid. Colmeiro added that a parcel of duplicates was to be sent to the Museum of Natural History in Paris.<sup>139</sup>

On April 15, 1869, Espejo had sent another request to renovate the garden, which still was not functioning at its proposed capacity. The proposal included adjustments to the buildings and a revised plan of operation for the Escuela de Agricultura.<sup>140</sup> Cesar Lasaña, a member of the Real Sociedad Económica, issued a similar appeal on the state of the garden and the school.<sup>141</sup> But the Consejo de Filipinas (Council of the Philippines) did not permit renovation of the garden into a full school of agriculture because there was no money to dedicate to the project. For officials in Madrid, there were not enough palpable results to demonstrate the agricultural benefit of the garden. By the early 1870s, the garden had not identified more robust varieties of agricultural products nor refined the cultivation of commercial crops like tobacco, hemp, and sugar for large-scale production. Its flood-prone location had also made it an unreasonable investment.

In April and May of 1872, the Consejo de Filipinas and Ministerio de Ultramar reiterated much of the same. Without agricultural results from the garden, it was risky for the council to dedicate the over 72,000 *escudos* requested for the renovated institution and the 22,940-*escudo* annual increase in the personnel and supply budget given the Philippines' tight financial position.<sup>142</sup> There would need to be more botanical work completed to prove its utility. The Ministerio suggested that the Director of the Botanical Garden "make the proper applications of botany to agriculture, and plainly but conscientiously explain the part of this science most related with the crops that can be of teaching benefit to the archipelago."<sup>143</sup> Compared to Cuba, the Philippines had been under-performing in the production of high quality, exportable crops.<sup>144</sup> Though Espejo had touted the garden's capacity to rival the work of other colonial botanical gardens, more would need to be invested in material exchange and botanical research to convince

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<sup>136</sup> Ultramar, Leg. 527, Exp. 2, Núm. 8, AHN.

<sup>137</sup> Ultramar, Leg. 527, Exp. 2, Núm. 6, AHN.

<sup>138</sup> Ultramar, Leg. 527, Exp. 2, Núm. 13, AHN.

<sup>139</sup> Ultramar, Leg. 527, Exp. 2, Núm. 15, AHN.

<sup>140</sup> Ultramar, Leg. 527, Exp. 1, Núm. 66, AHN.

<sup>141</sup> Ultramar, Leg. 527, Exp. 1, Núm. 63, AHN.

<sup>142</sup> Ultramar, Leg. 527, Exp. 2, Núm. 24, AHN.

<sup>143</sup> "Vista la carta de V.E. de 12 de Febrero de 1870, reproduciendo la de 15 de Julio de 1869 sobre reforma del Jardín Botánico de Manila y creación de una Escuela de Agricultura, S. M. el Rey oído el Consejo de Filipinas, se ha servido disponer, que por ahora y hasta tanto que la situación desahogada de las Cajas de esas Islas lo permita, no procede a creación de la Escuela de Agricultura. Es también la voluntad de V.E. al Director de ese Jardín Botánico, haga las convenientes aplicaciones de la botánica a la Agricultura, y sumaria, pero concienzudamente explique la parte de esta ciencia que más se relacione con los cultivos que se practiquen puedan ensayarse con ventaja en ese Archipiélago." Ultramar, Leg. 527, Exp. 2, Núm. 25, AHN. Emphasis original.

<sup>144</sup> Ultramar, Leg. 527, Exp. 1, Núm. 7, AHN.

officials in Madrid. Based on this exchange, it is clear that financial and intellectual concerns preoccupied those on the peninsula.

Despite the letdown, Espejo and García sent another catalog to the peninsula in 1872.<sup>145</sup> But by 1873, Espejo requested a year of sabbatical in Spain. He pled that after seven years of uninterrupted service in the Philippines, he needed to return to Spain and undergo a regimen that could restore his health. A Manila doctor of medicine and surgery, Rufino Pascual y Torrejon, certified Espejo's request and cited herpetic sores and indigestion among Espejo's ailments. During his leave, the Escuela Superior de Agricultura (Advanced School of Agriculture) in Madrid hired him as Professor of Zootechnics, and he took the post on October 5, 1875. García remained with the JBM as the directorship was left vacant. García's outlasting directors Ramos and Espejo would be just the first two of many instances wherein García's Philippine botany career would extend beyond that of other foreign colonial officials stationed in Manila.

### *Revising Objectives under the Inspección General de Montes*

Besides García, it is unclear which personnel continued to work at the JBM after Espejo's leave. Ahead of officials in Madrid, the Manila government in 1874 granted interim directorship to Ynocencio Madrigal y Garrido. Madrigal was a *peninsular* and a practicing pharmacist. In his appeal for the position, he expressed interest in medicinal plants and the chemical compounds potentially derived from Philippine flora. Though he was untrained in botany, he claimed that his training in chemistry equipped him with the skills to study the botanical compounds in order to provide cures to common ailments.<sup>146</sup> Officials in Manila endorsed Madrigal and clarified to Madrid that Madrigal's work would be supervised by Ramón Jordana y Morera (1839–1900), inspector-general of the IGM appointed on February 8, 1873.<sup>147</sup>

By 1871, the JBM was moved under the administration of the IGM, the Spanish colonial administration's most robust scientific forestry operation in the Philippines. The IGM was created by royal order on March 23, 1855, and its operation became fully functional in the Philippines by 1863.<sup>148</sup> Though the forests of the Philippines had transfixed the earliest Spanish inhabitants of the archipelago, Spanish authorities worked more methodically to develop the colony's forest economy by the late eighteenth and early nineteenth centuries.<sup>149</sup> This coincided with a greater overseas effort to conserve the forests in colonial Puerto Rico and Cuba, which had been threatened by unfettered consumption and unsuitable weather patterns.<sup>150</sup> According to a 1900 report by García, the Crown of Spain promulgated the IGM in the Philippines to curtail unregulated international export of timber to China and unsustainable logging practices on public lands.<sup>151</sup> The

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<sup>145</sup> Ultramar, Leg. 527, Exp. 2, Núm. 27, AHN.

<sup>146</sup> Ultramar, Leg. 528, Exp. 1, Núm. 1, AHN.

<sup>147</sup> Ultramar, Leg. 524, Exp. 26, Núm. 17, AHN.

<sup>148</sup> Sebastián Vidal y Soler, *Memoria sobre el ramo de montes en las islas Filipinas* (Madrid: Aribau and Company, 1874), 5.

<sup>149</sup> Greg Bankoff, "The Tree as the Enemy of Man': Changing Attitudes to the Forests of the Philippines, 1565–1898," *Philippine Studies* 52, no. 3 (2004): 321–8.

<sup>150</sup> Ultramar, Leg. 526, Exp. 1, Núm. 1, AHN.

<sup>151</sup> "Brief Review of the Forestry Service during the Spanish Government."

IGM's responsibilities in the Philippines included the classification of mountains in the Philippines, an assessment of the forest growth, the processing of licenses for felling trees, and guarding against illegal logging.<sup>152</sup> As Jordana once described, though the "*terra ignota* [of the Philippines] can lend itself to expansive flights of fantasy," the land's richness could not be exaggerated and contained a "precious treasure that can be the source of very significant income for the state."<sup>153</sup>

The closure of the galleon monopoly in 1815 led to increased commercial economy and urbanization in Manila through the nineteenth century. Financial gains from the galleons had long been funneled to a small merchant elite that benefited directly from the Manila–Acapulco transpacific trade and the shipping industry. Goods from China and other Asian markets flooded the Philippines, reducing the potential of a thriving domestic industry.<sup>154</sup> Following the end of the galleons, ports opened across the colony to fewer trade restrictions and more limits on the trade of other Asian products. Foreign and local entrepreneurs migrated to Manila to capitalize on these new trade opportunities. The influx of merchants and workers from neighboring provinces heightened the demand for urban infrastructure that could support the expanding city. Joseph Burzynski has argued that this growth "engendered networks of rural suppliers and urban merchants" that supported early domestic economic integration in the archipelago.<sup>155</sup> "Manila was the ultimate destination for wood," Burzynski writes in his study of domestic timber trade records beginning in 1864.<sup>156</sup>

Appointed in 1863, Juan González de Valdés was the inaugural chief engineer of the IGM. He oversaw an operation consisting of only four auxiliary staff that was tasked with monitoring the forests and mountains in southern Luzon. A shortage of personnel motivated Gonzalez de Valdés to request at least another engineer and ten more auxiliaries to increase operations. The first men to be employed at the IGM helped contribute to the production of biannual reports that covered forest assessments in Tarlac and expeditions to the mountains of Makiling, San Cristobal, San Pablo, and Banajao (Banahaw) in Laguna.<sup>157</sup> Notably, this corps of *ayudantes* (assistant foresters) and *monteros* (rangers) were stationed in the furthest reaches in the Philippines. As historian Maria Florina Orillos–Juan explains, one of the many tasks of the *monteros* was to guard the outskirts of the forests and mountains, thereby invoking policing powers in the outlying

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<sup>152</sup> Ma. Florina Yamsuan Orillos–Juan, "Ang Inspección General de Montes at Pagpapalawak ng Estadong Kolonyal na Español noong Huling Hati ng Dantaong 19," *Malay* 22, no. 2 (2010): 80.

<sup>153</sup> Ramón Jordana y Morera, *Memoria sobre la producción de los montes públicos de Filipinas en el año económico de 1872–1873, elevada al Excmo Señor Ministro de Ultramar* (Madrid: Manuel Minuesa, 1874), 5–6.

<sup>154</sup> María Dolores Elizalde, "The Philippines at the Cortes de Cádiz," *Philippine Studies* 61, no. 3 (2013): 341–345.

<sup>155</sup> Joseph Burzynski, "The Timber Trade and the Growth of Manila, 1864–1881," *Philippine Studies* 50, no. 2 (2002): 168–169.

<sup>156</sup> Burzynski, 169.

<sup>157</sup> *Cuerpo de Yngenieros de Montes, Inspección de Filipinas, Parte semestral–Movimiento*, Ultramar, Leg. 526, Exp. 8, Núm. 57, AHN.

provinces. These personnel were more equipped to know the terrain of various islands, like Mindanao, due to their long-term immersion in the locales.<sup>158</sup>

The augmented operations of the IGM met not only the commercial needs demanded by Manila and the timber industry but also the intellectual demands of peninsular and insular officials. Schmidt–Nowara argues that Spain was “largely in a defensive position” with regard to its colonies. As José Álvarez Junco writes, “A salient political fact marks nineteenth-century Spain: its degradation to a third-rate power in the international scene.”<sup>159</sup> Instead of participating in more imperial incursions in the late nineteenth century, much effort was placed in maintaining its colonial grip over Puerto Rico, the Philippines, and Cuba. According to Schmidt–Nowara, Spain did not participate in Europe’s “second wave” of imperial overseas expansion. This “second wave” was marked by the emergence of overseas imperial powers, like Germany and Italy followed by the United States and Belgium, alongside the consolidation of the imperial states of Britain, France, and the Netherlands. As María Dolores Elizalde has written on Spain’s weakening hegemony in the Philippines, Spain also lacked the financial ability, administrative capacity, military might, and international alliances to reentrench its position as an overseas power.<sup>160</sup> Spain did, however, invest in intellectual innovation common to this second wave.<sup>161</sup> The IGM was part of this milieu of intellectual development, which prioritized among other sciences the advancement of botany. Botany could feature Spain’s systematic understanding of its colonial landscapes and fashion it as an intellectually competitive modern state.

Greg Bankoff has observed that the growing demand for timber encouraged the IGM to manage Philippine forests in a more “scientific way.”<sup>162</sup> According to Bankoff, this included the application of German and French silvicultural theory along with locally made adjustments to address the unique tropical features of Philippine forests. He further cites the IGM’s work to artificially reforest terrain by re-planting nursery-grown saplings in the wild.<sup>163</sup> Indeed, the timber industry was one of the motivators behind the IGM’s work. In order to expand upon Bankoff’s observations, I endeavor to answer more comprehensively why botany would become a major pursuit of the IGM and an important objective of the JBM, particularly after its failings as an agricultural research center. At the turn of the century, the enterprise of taxonomy and systematics—and of non-woody plants—was the pursuit of botany. In the decades after the IGM’s founding, the institution and its engineers published tracts on Philippine botany, which described seed-producing plants and illustrated the diversity of Philippine flora. These departed from forestry publications dedicated to forest products and timber-yielding trees. The herbarium practices of the JBM were also more fully developed under the IGM’s leadership. Before its ruin in 1897, the herbarium contained at least 1,400 specimens obtained by exchange with neighboring

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<sup>158</sup> Orillos–Juan, “Ang *Inspección General de Montes*,” 81.

<sup>159</sup> José Álvarez Junco, “The Formation of Spanish Identity and Its Adaptation to the Age of Nations,” *History and Memory* 14, no. 1–2, Special Issue: Images of a Contested Past (2002): 22.

<sup>160</sup> Elizalde, “Imperial Transition in the Philippines,” 158.

<sup>161</sup> Schmidt–Nowara, 166.

<sup>162</sup> Greg Bankoff, “‘Deep Forestry’: Shapers of the Philippine Forests,” *Environmental History* 18, no. 3 (2013): 541.

<sup>163</sup> Bankoff, 541–542.

colonies and at least 4,000 in total.<sup>164</sup> Furthermore, *ayudantes* of the IGM were not only responsible for surveying lands and issuing licenses for felling. They also remitted botanical material to Manila for systematic identification.

### ***Working within a New International Botany***

Spanish officials' decision to increase botanical research in the Philippines shifted as inter-imperial negotiations emerged to standardize botanical nomenclature for the globe. In 1864, the first meeting of the International Botanical Congress (IBC) was held in Brussels. The IBC was a forerunner to other inter-imperial bodies that emerged at the turn of the century.<sup>165</sup> No botanist representing a Spanish institution was recorded to have attended the first congress. In 1865, Vicente Rocca Soler (1843–1891), a horticulturist from Valencia, attended the second annual proceedings, but other international botanists, like Heinrich Moritz Willkomm (1821–1895), delivered lectures on Spanish flora.<sup>166</sup> By the third congress in London in 1866, no Spaniard or botanist representing a Spanish institution sat on the IBC's governing committee, which had appointed French–Swiss botanist Alphonse Pyramus de Candolle (1806–1893) as its president.

Ahead of the fourth congress meeting in Paris, de Candolle produced a 60-page primer on nomenclatural rules for the IBC to consider. He was joined by botanists Barthélemy Charles Joseph Dumortier (1797–1878) of Belgium, August Wilhelm Eichler (1839–1887) of Hesse, and of France, Hugh Algernon Weddell (1819–1877), Ernest Saint–Charles Cosson (1819–1889), Jules Émile Planchon (1823–1888), and Louis Édouard Bureau (1830–1918) to amend the proposal before the meeting.<sup>167</sup> Again, no Spanish botanist was recorded as participating in the pre-meeting deliberations. During the 1867 congress, Félix Robillard Clossier, a botanist from Valencia, gave a lecture on the leaf system of the *Pelargonium capitatum*, a species of the rose geranium.<sup>168</sup> Outside of a handful of citations to the works of Spanish botanists or botanists conducting research under the auspices of Spanish institutions, Spain was not well represented at the IBC, which was already moving forward to adopt its first laws of botanical nomenclature.

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<sup>164</sup> “Brief Review of the Forestry Service during the Spanish Government.”

<sup>165</sup> Alfred McCoy, “Fatal Florescence: Europe’s Decolonization and America’s Decline,” in *Endless Empire*, 16. McCoy references the 1885 Conference of Berlin and the Versailles Peace Conference of 1919, for example. See also Kathleen Cruz Gutierrez, “What’s in a Latin name?: *Cycas wadei* and the politics of nomenclature,” *Philippine Journal of Systematic Biology* 12, no. 2 (2018): 24–35.

<sup>166</sup> International Botanical Congress Amsterdam and Exposition universelle d’horticulture Paris, *Bulletin de Congrès international de botanique et d’horticulture, réuni à Amsterdam les 7, 8, 10 et 11 avril 1865, en coincidence avec l’Exposition universelle d’horticulture, organisée par une commission des délégués de la plupart des Sociétés d’horticulture et d’agriculture de Pays–Bas* (Rotterdam: S. Mostert, 1866).

<sup>167</sup> Dan H. Nicolson, “A History of Botanical Nomenclature,” *Annals of the Missouri Botanical Garden* 78, no. 1 (1991): 33–34.

<sup>168</sup> Eugène Pierre Nicolas Fournier, *Actes de Congrès international de botanique tenu a Paris en août 1867 sous les auspices de la Société Botanique de France* (Paris: G. Bailliére, 1867), 57–58.

At the fourth congress, de Candolle and his colleagues sought to rectify the “instability of a nomenclature” and the alarming “increase of names proceeding from the different views taken of genera and species.”<sup>169</sup> “Natural History,” they determined, “can make no real progress without a regular system of nomenclature, acknowledged and used by a large majority of naturalists of all countries.” The principles of nomenclature in zoology and in botany were to be similar, and scientific names were expected to be in Latin or with “as great a resemblance as possible to the original Latin names.”<sup>170</sup> Given what historian Londa Schiebinger has called “the Babel of non-Latin names” in common plant nomenclature,<sup>171</sup> members of the IBC ratified Latin scientific names as preferable to “names of any other kind. . . . Every friend of science,” they insisted, “ought to be opposed to the introduction into a modern language names of plants that are not already there, unless they are derived from a Latin botanical name that has undergone but a slight alteration.”<sup>172</sup> Departing from such variability of nomenclature was necessary for nineteenth-century European botanists, especially those who worked in colonized territories, in order to maintain the philosophical value of systematic botany.<sup>173</sup>

Advancements in Spanish botany, which were concurrent with the first several meetings of the IBC, appeared insulated from IBC progress. Yet, Spain had historically excelled in botany on the peninsula and in the Americas.<sup>174</sup> When Miguel Colmeiro assumed directorship of the RJB in 1868, he and other botanists of the “intermediate generation,” such as Madrileño biologist Blas Lázaro e Ibiza (1858–1921) and Valencian botanist Antoni Cebrià Costa I Cuxart (1846–1921), sought to revive Spanish botany after the turbulent reign of Isabella II (1833–1868). Intellectual repression on the peninsula during the reign of Isabella II may have impeded more Spanish participation at the IBC convenings. Writing on the Iberian reception of Charles Darwin’s *On the Origin of Species* (pub. 1859), Jerry Hoeg writes, “Spanish intellectual production was heavily censored by the ultraconservative, neo-Catholic politics of the final governments under Isabella

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<sup>169</sup> Alphonse de Candolle, *Laws of Botanical Nomenclature Adopted by the International Botanical Congress Held at Paris in August, 1867; Together with an Historical Introduction and a Commentary*, trans. Hugues Algernon Weddell (London: Reeve & Co., 1868), 8–9.

<sup>170</sup> De Candolle, 17.

<sup>171</sup> Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2007), 99.

<sup>172</sup> De Candolle, *Laws of Botanical Nomenclature*, 35–36.

<sup>173</sup> Christophe Bonneuil, “The Manufacture of Species: Kew Gardens, the Empire and the Standardisation of Taxonomic Practices in Late 19<sup>th</sup> Century Botany,” in *Instruments, Travel and Science: Itineraries of Precision from the 17<sup>th</sup> to the 20<sup>th</sup> Century*, ed. Marie-Noelle Bourguet, C. Licoppe, and O. Sibum (London: Routledge, 2002), 208.

<sup>174</sup> Paula S. De Vos, “Research, Development, and Empire: State Support of Science in the Later Spanish Empire,” *Colonial Latin American Review* 15, no. 1 (2006): 55–79; Antonio Barrera-Osorio, *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution* (Austin: University of Texas Press, 2006); Daniela Bleichmar, *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment* (Chicago: University of Chicago Press, 2012); Raquel A. G. Reyes, “Collecting and the Pursuit of Scientific Accuracy: The Malaspina Expedition in the Philippines, 1792” in *Empire and Science in the Making: Dutch Colonial Scholarship in Comparative Global Perspective, 1760–1830*, ed. Peter Boomgaard (New York: Palgrave-Macmillan, 2013): 63–88; Richard Herr, “Flow and Ebb, 1700–1833” in *Spain: A History*, ed. Raymond Carr (Oxford: Oxford University Press, 2001), 180.

II.”<sup>175</sup> Crown funding for Spanish botanical institutions had also been inconsistent.<sup>176</sup> Her overthrow and the Revolution of 1868, after which “the liberals opened the intellectual floodgates, if only briefly,”<sup>177</sup> ushered a new momentum for Iberian botanical institutions and publications.

But the peninsular liberal foment of the early nineteenth century had also impacted botany in Spain’s colonial territories. During the Napoleonic Wars (1803–1815), Napoleon’s armies invaded Spain to control the Iberian Peninsula. From 1808 to 1814, Spain and its allies fought against French forces in the Spanish War of Independence. Though under French occupation, members of the Cortes de Cádiz, Spain’s first national assembly, produced the first liberal constitution of 1812, as I discussed in the dissertation’s introduction. Spain’s constitution upheld values of suffrage, government sovereignty, and rights to private property. However, these liberal efforts to centralize the state, especially after the successful defeat of Napoleon’s armies, were not felt equally in Spain’s overseas territories. With the end of the Ancien Régime and the emergence of the Spanish liberal state, Spain intensified its colonial relationship to its remaining overseas territories—Cuba, Puerto Rico, and the Philippines—through political, economic, and social means.<sup>178</sup> According to José Aguilera-Manzano, these political tensions were expressed on the island of Cuba. Two factions surfaced during the construction of the botanical garden in Havana. Composed of creole and peninsular elites, the factions divided over a commitment to the centralist liberalism of the metropolitan state or to a more politically and economically autonomous status for the island.<sup>179</sup> Indeed, peninsular liberalism had influenced both Iberian and colonial botany from the days of the Cortes de Cádiz through the Glorious Revolution and its aftermath.

In Spain, under Colmeiro’s directorship of the newly founded Sociedad Española de Historia Natural (renamed the Real Sociedad Española de Historia Natural) in 1871, the publication *Anales de la Sociedad Española de Historia Natural* (Annals of the Spanish Society of National History) began. Despite Spain’s partial absence in IBC deliberations, Spanish botany was not dormant in the years following the Glorious Revolution. Spanish botanists were not removed from inter-imperial developments in botany in the second half of the nineteenth century either. Candollian systematics dominated the arrangement of Spanish publications on the peninsula and in the Philippines. Its use in Espejo and García’s JBM catalogs had to meet the overwhelming variety of plant species unseen in peninsular floras. French advancements in agricultural practice penetrated Spanish botanical science, as seen in the records of Espejo’s *oposición*. Spanish botanists would continue to respond to and incorporate changes in inter-imperial systematics as the Bentham and Hooker taxonomic system eclipsed Candollian arrangement by the close of the

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<sup>175</sup> Jerry Hoeg, “The Reception of Charles Darwin in Spain and the Problem of Abulia in Pío Baroja’s *Camino de perfección*” in *Modernity and Epistemology in Nineteenth-Century Spain: Fringe Discourses*, ed. Ryan A. Davis and Alicia Cerezo Paredes (Lanham: Lexington Books, 2017), 140.

<sup>176</sup> Llorca, “La Historia Natural en al España,” 132.

<sup>177</sup> Hoeg, “The Reception of Charles Darwin,” 141.

<sup>178</sup> For an extensive history on this shift, see Josep María Fradera, *Colonias para después de un imperio* (Barcelona: Ediciones Bellaterra, 2005).

<sup>179</sup> José María Aguilera-Manzano, “Havana’s Botanical Garden in the Construction of Cuban National Identity,” *EUI Working Paper Max Weber Programme* No. 2007/17 (Fiesole, Italy: European University Institute, 2007), 5–6.

nineteenth century. As Nathaniel Parker Weston has observed, “Spanish scientific, historical, and literary writings about the Philippines after 1868 reasserted national, racial, and cultural dominance over the inhabitants of the colony, which in turn acted as justification for colonization.”<sup>180</sup> I argue that botany was part of this.

***Conclusion: Executing the Intellectual Pivot to Botany***

A little over four months after Manila’s endorsement of Madrigal, officials in Madrid rejected the appointment, expressing greater confidence in the engineers of the IGM to oversee the work of the garden. Since the JBM had come under the IGM’s authority, the Ministerio de Fomento (Ministry of Development) in Madrid asserted that a qualified engineer within the institution needed to oversee the garden’s work. After his failed petition, Madrigal joined the Real Sociedad Económica in 1876 and was its advisor for the natural sciences in the 1870s.<sup>181</sup> Madrid’s choice to override Madrigal’s appointment would be one of the last of the major personnel decisions it would insist upon over the JBM in the 1870s. Madrid’s investment in the IGM would be reflected by the greater autonomy imbued in the IGM’s leadership and by the expansion of its operations. The head engineers directed new projects that veered away from agricultural investigations and instead tactically combined botany and forestry to produce more rigorous systematic investigations on Philippine flora and to advance the exploitation of forests. Although Madrid continued to approve or disapprove financial requests made on behalf of the IGM, the IGM became a more independent entity with enhanced local expertise to guide the direction of research.

García was part of this local expertise. He remained at the JBM during its establishment and its institutional reorganization. He also outlasted all three of its first directors. In the JBM archives at the AHN that cover the JBM’s earliest operations, only García’s and Espejo’s *hojas de servicios* are preserved. While it is possible that the personnel files of the earliest JBM workers were kept and eventually destroyed in Manila, García and Espejo were the principal drivers of the institution in its first decade. After Espejo’s indefinite *licencia* to Spain, the leadership of the IGM would have had to rely on García to ensure a more effective institutional transition. Records indicate that García stayed amid this change and continued to co-publish collection catalogs with the IGM-appointed leadership at the garden.<sup>182</sup> García eventually left the JBM in 1877, only to work as an *ayudante* of the IGM.

By the 1870s, it was clear that the Spanish state struggled to develop its own robust agricultural economy in the Philippines. Except for tobacco, sugar, hemp, and coffee, most other plant-goods were not cultivated and produced at rates that could compete with other colonial markets or those dominated by private landholders. The Bohemian intellectual Ferdinand Blumentritt once quipped, “Whatever grows in the Dutch East Indies can also be grown in the Philippines, and if there is any difference in this respect between the two countries it is due to the Spanish system of government and not to the climate or soil or to any peculiarity of the

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<sup>180</sup> Nathaniel Parker Weston, “Scientific Authority, Nationalism, and Colonial Entanglements between Germany, Spain, and the Philippines, 1850 to 1900,” (PhD diss., University of Washington, 2012), 16.

<sup>181</sup> De Mas y Otzet, *Memoria del Sr. Socio Secretario*, 38-43.

<sup>182</sup> Ultramar 527, Exp. 2, Núm. 59, AHN.



inhabitants.”<sup>183</sup> An intellectual pivot in the 1870s revamped how Spanish colonial officials in Manila prioritized the garden, land surveying, and research into local flora. Espejo’s leave and the rejection of Madrigal’s appointment marked a shift in the aims of the garden. Originally, agriculture had been a major priority for Espejo, Madrid, and the Real Sociedad Económica. The garden and its school, however, did not live up to their vision. The aims to beautify a parcel of land did not correspond with the practical needs for an operating garden. The “mad quagmire, inhabited by poor Chinese families” that had incited the desire for a beautification project had become swampy terrain and the target of sarcastic humor.<sup>184</sup> The growing realization that the garden was not situated in an apt location motivated calls to change the location of the garden and its principle aims.

In 1874, under his leadership of the IGM, Jordana submitted a full assessment of the JBM. He reviewed the duties and functions of the garden and referenced García Lopez’s 1872 publication on the institution’s origins. Jordana emphasized that the custodianship of the garden belonged to qualified officials and that the garden should be rebuilt altogether in a better location. The report addressed the superior government of the Philippines and lamented the garden’s deplorable state. Jordana complained that the land’s proximity to the Pasig River meant that it was subjected to inundations of salt water from river tides and was destitute of nitrogen-rich soil that could facilitate vegetative growth. These qualities prevented adequate tilling of certain vegetation, the acclimatization of exotic plant types, and the cultivation of flora that could be used in teaching. Jordana reminded officials of the goal of creating a professorship in botany, which had remained unfulfilled under Espejo. Botany education, according to Jordana, could result positively in the opening of new careers for natives and for Iberian-trained employees of the IGM. It would be best delivered, in his opinion, by the IGM.<sup>185</sup>

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<sup>183</sup> Ferdinand Blumentritt, *The Philippines: A Summary Account of their Ethnographical, Historical and Political Conditions*, trans. David J. Doherty (Chicago: Donohue Brothers, 1900), 11.

<sup>184</sup> Rodriguez, “El Jardín Botánico de Manila,” 80.

<sup>185</sup> Ultramar, Leg. 527, Exp. 2, Núm. 37, AHN.

## Chapter 2: A Scientific Statecraft

In this chapter, I focus on the botanical work of Sebastián Vidal y Soler, a peninsular botanist and forester who was stationed in the Philippines intermittently for two decades. A well-traveled and widely regarded colonial official, Vidal functioned in a scientific-ambassadorial role on behalf of the Spanish state. By examining Vidal's intellectual corpus and tracing his itinerancy in the late nineteenth century, I show how secular colonial Philippine botany developed a more international character, one that was marked by newer kinds of mobility unseen in centuries prior. I argue that Vidal, and more significantly the work he completed with Regino García, advanced Spain's scientific statecraft as peninsular officials began to exchange colonial botany information with emerging European empires and to broadcast the innovative botanical work conducted in the archipelago.

I divide this chapter into two sections. In the first, I begin with Vidal's arrival to the archipelago followed by a discussion of his translation of Andreas Fedor Jagor's 1873 *Reisen in den Philippinen* (Travels in the Philippines; hereafter *Reisen*). Complementing the work of Nathaniel Parker Weston, I suggest that Vidal's translation enhanced inter-imperial intellectual exchange between Spain and Germany toward the exploitation of colonial lands in the floristic region known as Malesia. It was at this time that region-wide botany studies spurred dialogue among botanists who were studying flora that crossed the colonial terrain of different empires. From there, I summarize Vidal's career outside of the Philippines as a functionary of the Spanish state and the founding of the Comisión de la Flora Estadística Forestal de Filipinas (Philippine Flora and Statistics Commission; hereafter Comisión). Vidal first elaborated the aims of the Comisión in his *Memoria sobre el ramo de montes en las islas Filipinas* (Report on Philippine forests; hereafter *Memoria*) in 1874. The Comisión's eight years of operation led to several surviving publications that reveal how colonial botanists invested in a two-pronged approach toward the exploitation of the Philippine environment.

In the second section, I examine the Comisión's most notable publication: *Sinopsis de familias y generos de plantas leñosas de Filipinas* (Synopsis of families and genera of Philippine flowering plants; hereafter *Sinopsis*) written by Vidal, illustrated by García, and published by the Comisión in 1883. As Resil B. Mojares writes, "No decade in Philippine intellectual history has been as productive and as consequential as the 1880s."<sup>186</sup> Mojares cites several *ilustrado* (enlightened intellectual) publications from the decade, including polymath José Rizal's *Noli me tangere* and the books of politician-writers Pedro Paterno, Isabelo de los Reyes, and Trinidad Pardo de Tavera. To this library, I add Vidal and García's *Sinopsis*. I conduct a formal analysis of García's atlas, which is comprised of one hundred lithograph plates depicting roughly 1900 plant figures. By comparing García's illustrations to others he completed on behalf of the Augustinian-backed reissue of Francisco Manuel Blanco's *Flora de Filipinas* and other illustrated natural science publications of the time, I demonstrate how *Sinopsis* captures the apex of secular Spanish botany at the end of the nineteenth century through its visually distinctive and classificatory quality.

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<sup>186</sup> Resil B. Mojares, *Brains of the Nation: Pedro Paterno, T. H. Pardo de Tavera, Isabelo de los Reyes and the Production of Modern Knowledge* (Quezon City: Ateneo de Manila University Press, 2006), 451.

*Sinopsis* furthermore enacted a novel mobility for Spanish colonial botany and Philippine plant life through García's artistic techniques. An invitation for heightened imperial scientific investigation, *Sinopsis* became an intellectual and diplomatic tool to further imperial intellectual undertakings in tropical terrain.

Based on these two sections, I agree with Frederick Cooper and Ann Laura Stoler, who show how policies, ideas, and scientific knowledge moved beyond the “metropole-colony” axis and were in fact exchanged along new circuits in the “consolidating imperial world” at the turn of the century.<sup>187</sup> This was part of a new scientific internationalism that pervaded botany well into the twentieth century. But as I make clear in this chapter, this internationalist impulse began as early as the 1870s among colonial botany officials working in the Philippines. For the case of Philippine botany, circuits of intellectual exchange not only included the archipelago and Spain but also empires looking to capitalize on the promise of colonial expansion in the floristic region of Malesia. Region-wide investigations, I hold, were one of the avenues by which imperial officials and colonial botanists could formalize collaboration beyond the single axis.

### *I: Vidal's Introduction to the Philippines: An Opportunity for Botany and Forestry*

In 1871, the Ministerio de Ultramar (Overseas Ministry) named Sebastián Vidal (see fig. 3) chief engineer of the Philippine Inspección General de Montes (Forestry Bureau; IGM). The death of the inaugural Philippine IGM chief engineer, Juan Gonzáles de Valdés, left an opening to be filled by the educated native of Barcelona. An appointment to the IGM came with the uncertainties of travel to and life in a distant, unfamiliar land. But it also came with handsome pay compared to that given to other peninsular botanists and foresters. Vidal likely hailed from a family of fine station that could afford to send him to school in the country's capital. At the age of 29, Vidal's application for the Philippine position cited his botany and forestry training in Madrid at the Escuela Ingenieros de Montes (School of Forestry Engineers; f. 1846), in Tharandt at the Königliche-Sächsische Forstakademie (Royal Saxon Academy of Forestry; f. 1811), and in Zurich at its federal polytechnic school (Eidgenössische Technische Hochschule Zürich; f. 1855).<sup>188</sup> At a salary of 6,000 *pesetas* with a *sobresueldo* (bonus) of 12,000 for additional expenses and with a promotion to first-class engineer, Vidal set sail for the Philippines in November of 1871 and arrived to Manila in January of 1872.<sup>189</sup>

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<sup>187</sup> Ann Laura Stoler and Frederick Cooper, “Between Metropole and Colony: Rethinking a Research Agenda,” in *Tensions of Empire: Colonial Cultures in a Bourgeois World*, ed. Frederick Cooper and Ann Laura Stoler (Berkeley: University of California Press, 1997), 28.

<sup>188</sup> Paloma Blanco Fernández de Caleyá, “Sebastián Vidal y Soler,” Real Academia de la Historia, <http://dbe.rah.es/biografias/28779/sebastian-vidal-y-soler>. Accessed 11 March 2020.

<sup>189</sup> Ultramar, Leg. 524, Exp. 14, Núms. 6–7, AHN.



Figure 3. “El Excmo. Sr. D. Sebastián Vidal y Soler” as printed on the front page of *La Ilustración filipina* (no. 31) on 21 June 1892. Reprinted in Ramon M. Zaragoza, *La Ilustración filipina, 1891–1894* (Manila: RAMAZA Publishing, 1992). Reproduction permission courtesy of the American Historical Collection, Rizal Library, Ateneo de Manila University.

Once in Manila, Vidal likely met the Jardín Botánico de Manila (JBM) director Zoilo Espejo and horticulturist Regino García. In March of the same year of Vidal’s arrival, Espejo and García provided their *hojas de servicios* (service record) to the local government. A new civil administration had been created in August of 1870 with the reorganization of public institutions.<sup>190</sup> Vidal did not set out immediately to reform the garden’s operations for which he would have been responsible. As described in Chapter One, Ramón Jordana y Morera, inspector-general of the IGM beginning in 1873, had issued the first of several recommended improvements for the JBM. During the first year of his station abroad, Vidal primarily surveyed provincial Philippine forests.

With the expanded operational plans of the IGM, Vidal’s principal task was to evaluate the state of the forests and to appraise timber-bearing trees for commercial exploitation. He surveyed the southern island of Mindanao, which he reported in his *Memoria sobre el ramo de montes en las islas Filipinas*, published in Madrid in 1874. Vidal’s work coincided with Spain’s increased effort to penetrate the large southern island that until the mid-nineteenth century had been largely inaccessible and fiercely resistant to Spanish incursion. Since Spanish contact with the archipelago, Moro sultanates in the south engaged in a series of military conflicts with colonizing Spanish Catholics in what Ethan P. Hawkey has characterized as a continuation of the

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<sup>190</sup> Ultramar, Leg. 527, Exp. 2, Núm. 17, AHN.

Reconquista in Southeast Asia.<sup>191</sup> Moro naval vessels also held notable advantage over Spanish seacraft, which made both land and sea piracy difficult to suppress.<sup>192</sup> With the passage of the “Act of Incorporation” in 1851, the Spanish crown sought to finally quell the Moro south and wide-scale piracy through edict and might.<sup>193</sup> Like other European empires newly armed with steamship technology,<sup>194</sup> Spain deployed these new technologies to expand its governmental reach in formerly remote regions. Vidal’s expedition to Mindanao was part of this southward stratagem. His publication was also one among an intellectual corpus on Mindanao that emerged in the late nineteenth century. As Megan Thomas has pointed out, Ferdinand Blumentritt updated his *Versuch einer Ethnographie der Philippinen* (Toward an ethnography of the Philippines; originally pub. 1882) in 1890 when “exciting new data” on the islands of Paragua and Mindanao from Jesuit and European researchers enabled him to revise his racial index of the Philippines.<sup>195</sup>

Beginning in February of 1872, and in the company of *peninsular* José Centeno García, chief engineer of Philippine mines and director of the Real Sociedad Económica de Amigos del País (Royal Economic Society of Friends of the Country), Vidal recorded geographical, ethnological, meteorological, and botanical data from the island.<sup>196</sup> He described Mindanao as a “precious jewel that alone would comprise the wealth of any European nation, that measures almost the same area as Cuba and in whose exceptional soil the most esteemed tropical plants flourish.”<sup>197</sup> Directed toward the interests of the colonial state and its capitalist enterprise, Vidal took care to describe Mindanao and its Moro population for the “success of any Spanish company” that took hold there.<sup>198</sup> He even collected information on natural events that plagued regions of the islands, including a day-by-day account of a series of tremors that rocked Cottabato (Cotabato) from December 1871 through January 1872 and had damaged the town’s infrastructure.<sup>199</sup>

On the expedition, Vidal encountered the most common timber-bearing trees available in the south. *Guijo, molave, narra, ipil, malatumbaga, lauán, camagon,* and *camuning* were the most notable to him, though he also offered a more extensive list of trees with an assessment of their

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<sup>191</sup> Ethan P. Hawley, “Reviving the Reconquista in Southeast Asia: Moros and the Making of the Philippines, 1565–1662,” *Journal of World History* 25, no. 2/3 (2014): 288.

<sup>192</sup> Francisco Mallari, “The Spanish Navy in the Philippines, 1589 – 1787,” *Philippine Studies* 37, no. 4 (1989): 412–413.

<sup>193</sup> Anthony Reid, “Violence at Sea: Unpacking ‘Piracy’ in the Claims of States over Asian Seas,” in *Elusive Pirates, Pervasive Smugglers: Violence and Clandestine Trade in the Greater China Seas*, ed. Robert J. Anthony (Hong Kong: Hong Kong University Press, 2010), 24. Reid cites James Warren, *The Sulu Zone, 1768–1898: The Dynamics of External Trade, Slavery and Ethnicity in the Transformation of a Southeast Asian Maritime State* (Singapore: Singapore University Press, 1981).

<sup>194</sup> Eric Tagliacozzo, *Secret Trades, Porous Borders: Smuggling and States Along a Southeast Asian Frontier, 1865–1915* (New Haven: Yale University Press, 2005), 84–87.

<sup>195</sup> Megan C. Thomas, *Orientalists, Propagandists, and Ilustrados: Filipino Scholarship and the End of Spanish Colonialism* (Minneapolis: University of Minnesota Press, 2012), 91–92.

<sup>196</sup> Sebastián Vidal, *Memoria sobre el ramo de montes en las Filipinas* (Madrid: Aribau and Company, 1874), 183.

<sup>197</sup> Vidal, 13.

<sup>198</sup> “*Es tan esencial estudiar bien el carácter de los moros para el buen éxito de cualquier empresa española allí, que se me dispensará éntre en tan minuciosos detalles...*” Vidal, 193.

<sup>199</sup> Vidal, 203–206.

potential for timber production.<sup>200</sup> But he bemoaned the lack of a pure botanical assessment of the forests. A dearth of research materials hampered the collection of herbarium-grade samples and their botanical identification.<sup>201</sup> In the *Memoria*, Vidal tactically combined botany and forestry practice to ensure the most promising intellectual and commercial outcome for the state. Based on his assessment, the existing forestry and botany data on the Philippines, and the institutional workings in the Philippines, he issued the following:

I have already indicated the surveys fundamental to [resource] exploitation. These have the double character of statistical forestry and botanical forestry. The latter, a highly subordinate field on the peninsula given an engineer's initial knowledge of tree species in the early years of his career, excels in the Philippines and has a preferential place such that an engineer enters its forests referring laboriously to typical plant forms. If he has done specialized botany study, he remembers to have seen in descriptive publications on Asiatic and Oceanic flora the species that rise gigantically before him, trunk half-hidden under the lianas that embrace it, adorning it with their bright flowers, the orchids in their fantastic shapes and brilliant hues, the whimsically trimmed fronds of ferns and the wrapping of their foliage among the leaves of a hundred climbers, that frequently confuse one into making the grossest errors of observation of the species.<sup>202</sup>

This strategic combination became integral to how he conceived the Comisión, which I discuss later in the chapter. Yet, as promising as the Philippine forests seemed to be, Vidal cautioned against the popular, uninformed perception of the forests as “immense” and with an “inexhaustible” supply of valued woods. “Such statements sin of notorious exaggeration,” he chastised, claiming that the inexhaustible supply was unheard of and that precious woods were becoming rare in many localities.<sup>203</sup> Vidal's writing at the time coincides with Greg Bankoff's astute claim that the Spanish colonial state made extensive efforts toward forest exploitation and that competing approaches to

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<sup>200</sup> Vidal, 215–216. For a more extensive accounting of timber-bearing trees and forest products, see *Memoria's* Appendix A, “Breve descripción de algunas de las maderas más importantes y mejor conocidas del archipiélago filipino,” 143–181.

<sup>201</sup> Vidal, 217.

<sup>202</sup> “He indicado ya los estudios fundamentales de los planes de aprovechamiento. Tienen éstos un doble carácter, puramente estadístico-forestal y botánico-forestal. El último, muy subordinado en la Península por el previo conocimiento de las especies arbóreas que el Ingeniero posee desde los primeros años de su carrera, sobresale en Filipinas y adquiere un lugar preferente, pues el Ingeniero entra en aquellos bosques refiriendo trabajosamente a formas típicas que, si ha hecho un estudio special de botánica, recuerda haber visto en las obras descriptivas de las floras asiáticas y oceánicas los individuos que gigantescos se levantan a su vista medio oculto el tronco bajo las lianas que lo abrazan adornándolo con sus vistosas flores, las orchideas con las suyas de fantásticas formas y brillantes colores, los helechos de caprichosamente recortadas frondas y envuelto su follaje entre las hojas de cien trepadoras, que confunden frecuentemente al observador llevándole a los más groseros errores en la observación de la especie.” Vidal, 18–19.

<sup>203</sup> “Tales asertos pecan de notoria exageración.” Vidal, 20.

Philippine forests depended on the unique and sometimes overlapping interests of residents, small-scale loggers, entrepreneurs, forestry engineers, and botanists.<sup>204</sup>

### *Translating toward Intellectual Exchange*

During Vidal's first deployment to the archipelago, he suffered an accidental point-blank gunshot wound while in the province of Tayabas on February 28, 1873. The bullet hit Vidal's left temple, just shy of more severe injury. Because of a lack of medical facilities in Tayabas, he was rushed to Manila where he was treated successfully. His presiding doctor, the same physician who recommended Espejo's *licencia* (sabbatical) to the peninsula, suggested that Vidal take one year of medical leave to Spain, away from the sight of *indios* (natives), who allegedly incited hallucinations and duress in him following the accident.<sup>205</sup> This facilitated his return to the peninsula in 1873.

The ability to return to Spain to recover one's health was a privilege for *peninsular* IGM workers. While many petitioned the state to regain their strength in a more amenable climate, passage back to the peninsula was not always guaranteed or depended on the health concern raised. For less aggressive ailments, IGM employees were sent to the town of Sibul in the province of Bulacan, just north of the capital of Manila. In the municipality of San Miguel, Sibul offered natural springs to which colonial officials turned for respite although the location could not assure full recovery for its visitors.<sup>206</sup> The colonial government in Manila transmitted Vidal's request for a one-year *licencia* to Spain on March 14, 1873.<sup>207</sup> Though Madrid approved Vidal's leave on May 20, 1873, he had already been in transit to the peninsula ahead of the approval.<sup>208</sup> His station as a

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<sup>204</sup> Greg Bankoff, "The Tree as the Enemy of Man': Changing Attitudes to the Forests of the Philippines, 1565–1898," *Philippine Studies* 52, no. 3 (2004): 329.

<sup>205</sup> Ultramar, Leg. 524, Exp. 14, Núm. 10, AHN. Vidal's first medical leave to the peninsula is vague across the sources. The Real Academia de la Historia cites malaria as the cause of his return to Spain and dates his recovery period from 1872 through 1873. Greg Bankoff dates Vidal's unspecified medical leave to 1873. In Elmer D. Merrill's 1903 *Botanical Work in the Philippines*, Merrill also writes of Vidal's returning to Spain "on account of ill health" in 1873. Regino García's 1900 report on the Spanish forestry service suggests that Vidal returned to Spain "on account of sickness" leading to his "having had but a short stay in the Philippines."

According to the archival record in Madrid, malaria was not behind his first medical leave. Vidal was en route to Spain in May 1873 as certified by the Spanish consulate in Marseille on May 5. See Ultramar, Leg. 524, Exp. 14, Núm. 11, AHN. I speculate that given the sensitivity and as yet unclear circumstances surrounding the accident, general illness would have been cited as the reason for Vidal's repatriation. For sources referencing his peninsular reprieve, see Blanco, "Sebastián Vidal y Soler"; Greg Bankoff, "The Science of Nature and the Nature of Science in the Spanish and American Philippines" in *Cultivating the Colonies: Colonial States and their Environmental Legacies*, ed. Christina Folke Ax, et al. (Athens: Ohio University Press), 86; Elmer D. Merrill, *Botanical Work in the Philippines* (Manila: Bureau of Public Printing, 1903), 18; "Brief Review of the Forestry Service during the Spanish Government. From 1863 to 1898. By Regino García, an official of the Philippine Botanical and Forest Service from 1866 to 1898. Entered Forestry Bureau May 1900," File: Forests Philippine Islands, Insular Bureau of Forestry, General Organization, Box 586, Gifford Pinchot Papers, LOC.

<sup>206</sup> One such case is that of Antonio Casanovas y Lordella. Casanovas was an IGM *ayudante* (forestry assistant) from Madrid. In October 1885, he petitioned to revive his health in Sibul. Though the colonial government granted him a 45-day leave, he died of chronic gastrointestinal illness in Sibul on April 11, 1886. See Ultramar, Leg. 524, Exp. 17, AHN.

<sup>207</sup> Ultramar, Leg. 524, Exp. 14, Núm. 9, AHN.

<sup>208</sup> Ultramar, Leg. 524, Exp. 14, Núm. 11–12, AHN. Vidal mentions his April 1873 departure from the Philippines in his *Memoria*, 212.

high-ranking functionary and the disturbing details of his condition likely hastened his departure ahead of the need for Madrid's formal decision.

While in Madrid, the state extended Vidal's *licencia* at least four times for work that the Ministerio de Ultramar commissioned him to complete.<sup>209</sup> What would have ended in the spring of 1874 was extended through the spring of 1875. During this time, Vidal wrote and published his *Memoria* on the Philippines. On May 6, 1875, Vidal also submitted his translation of German naturalist Fedor Jagor's (1816–1900) *Reisen in den Philippinen*, published in 1873.<sup>210</sup> Vidal published his Spanish translation soon after he submitted his manuscript in 1875, coincident with an English translation published in London by Chapman and Hall that same year.

*Reisen* chronicles Jagor's travels through parts of Luzon and the Visayas from 1859 through 1860. It features commentary on Philippine agricultural products, environmental phenomena and formations, and Spanish colonial-bureaucratic and clerical systems. With *Reisen*, Jagor sought to provide what Weston describes as a "total representation" of the Philippines that could supplant Spanish colonial data, which to Jagor were "incomplete, inaccurate, or altogether absent."<sup>211</sup> But foremost as a work of German anthropology, *Reisen* details the racial and customary differences of the peoples of the archipelago. According to Mojares, Jagor took special interest in the racist science that was German anthropology, and *Reisen* contributed to other German anthropological writings that classified "the population of the Philippines according to grades of culture and anatomical differences (such as skin color, hair, and cranial composition)."<sup>212</sup> As Weston also points out, Jagor "built his career on his initial travels in the Philippines" and after returning, received an honorary doctorate from the University of Berlin's philosophical faculty.<sup>213</sup>

In the translation's opening, Vidal lauds Jagor's work for its "scientific accuracy and precision," for which translation into Spanish would hopefully stimulate further travel to and analogous study of the Philippines.<sup>214</sup> It is unclear why the Ministerio de Ultramar commissioned Vidal for the task. However, it is likely that there were both practical and political elements at play for the translation. Jagor had allegedly received special field access to materials, localities, and documents for the publication from resident Europeans in the Philippines.<sup>215</sup> Vidal, who was conveniently recovering on the peninsula during his *licencia*, was locally available to complete the translation. Vidal had also culled information from *Reisen* and from the writings of another German ethnologist, Carl Gottfried Semper (1832–1893), toward the completion of his *Memoria*.<sup>216</sup> Furthermore, Jagor's was not the only German-language work Vidal was translating. In 1875, Vidal also published "Los arrecifes de corales en el archipiélago filipino y la vida animal

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<sup>209</sup> Ultramar, Leg. 524, Exp. 14, Núm. 13–16, AHN.

<sup>210</sup> Ultramar, Leg. 524, Exp. 14, Núm. 8, AHN.

<sup>211</sup> Nathaniel Parker Weston, "Scientific Authority, Nationalism, and Colonial Entanglements between Germany, Spain, and the Philippines, 1850 to 1900," (PhD diss., University of Washington, 2012), 58.

<sup>212</sup> Resil B. Mojares, "Jose Rizal in the World of German Anthropology," *Philippine Quarterly of Culture and Society* 41, nos. 3–4 (2013): 181.

<sup>213</sup> Weston, "Scientific Authority," 53.

<sup>214</sup> Fedor Jagor, *Viajes por Filipinas*, trans. Sebastián Vidal y Soler (Madrid: Aribau and Company, 1875), vii–viii.

<sup>215</sup> Weston, "Scientific Authority," 45.

<sup>216</sup> Weston, 46.



en el mar” (Sea life and coral reefs in the Philippines) originally written by Semper.<sup>217</sup> Vidal’s training in Tharandt likely cemented his German language skills such that he could translate German natural histories. While studying in Tharandt, Vidal also studied under botanist Heinrich Moritz Willkomm, who had specialized in Iberian flora in his early career.<sup>218</sup> The subject matter, therefore, fell within the purview of Vidal’s professional specialization even though José Rizal reportedly found Vidal’s translation lacking and desired to translate a version himself.<sup>219</sup>

Politically speaking, as Weston argues, Jagor’s tract on the Philippines was a colonial one, even if not completed on the terrain of a formal German colony. Jagor’s and other German natural histories of the mid-nineteenth century on the Philippines “identified with and mimicked the Spanish conquest at the same time that they described commercial opportunities in the colonies.”<sup>220</sup> Leading up to the second wave of European expansion, German naturalists “rehearsed and therefore anticipated Germany’s entrance into the age of the empire.”<sup>221</sup> But Weston further argues that the translation reinforced Spanish dominion over the Philippines: *Reisen’s* ethnological assessment of the peoples of the archipelago reiterated racial hierarchies set against a landscape of natural resources for exploitation. *Reisen* was not without critiques, however, and Jagor’s commentary on the Spanish colonial government was both a negative appraisal and an articulation of the superiority of a German empire yet to come.<sup>222</sup> In September of 1875 after the translation was published, Governor-General of the Philippines José Malcampo y Monge (1828–1880) demanded its censorship. “The book pours of ideas contrary to patriotic interests, ideas whose propagation is of utmost necessity to prevent among the different races that populate this country,” Malcampo insisted.<sup>223</sup> It is unclear if Malcampo successfully enacted his resolution since the work was listed as essential reading on the Philippines and at least one state-run trade school’s library carried it into the 1890s.<sup>224</sup> In Manila and in Madrid, no sources suggest that Vidal was professionally reprimanded for his translation.

Building upon Weston’s interpretation of *Reisen*, I suggest that the translation operated as a way for both an old empire and an emerging one to agree upon a shared lexicon of territorial and intellectual conquest. I agree with Weston that Vidal, beyond his translation of *Reisen*, regularly engaged with German scholarship that in turn showed “Spanish willingness to look to German information about the Philippines.”<sup>225</sup> This willingness had a political quality about it that

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<sup>217</sup> “Los arrecifes de corales en el archipiélago filipino y la vida animal en el mar,” *Revista de Filipinas*, Tomo I, July 1875–June 1876, Núm. 9, 1 November 1875, HL-UST.

<sup>218</sup> Vidal, *Memoria*, 115.

<sup>219</sup> Mojares, “Jose Rizal in the World,” 173.

<sup>220</sup> Weston, “Scientific Authority,” 24–25.

<sup>221</sup> Weston, 25.

<sup>222</sup> Weston, 77–81. Weston addresses Jagor’s negative appraisal—and that of other German intellectuals—which would come to inform Filipino nationalist writing at the turn of the century.

<sup>223</sup> Letter from José Malcampo to the Sr. Ministro de Ultramar, 27 September 1875, Varios Personajes, 21388–21389, NAP.

<sup>224</sup> “Bibliografía filipina,” *Revista de Filipinas*, Tomo 1, July 1875–June 1876, Núm. 16, 471, 1 February 1876, HL-UST; “Memoria leida por el director de la Escuela practica profesional de artes y oficios” (Manila: Imprenta de la Escuela de Artes y Oficios, 1891), Memorias, NAP.

<sup>225</sup> Weston, “Scientific Authority,” 153. For example, Vidal’s *Sinopsis* relied considerably on German botanist Wilhelm Sulpiz Kurz’s *Forest Flora of British Burma* (1877).

advanced Vidal's scientific-ambassadorial position in the following decade and a half. To show an openness to German science, in other words, was to also demonstrate an openness to inter-imperial collaboration.

Territorial and intellectual collaboration was necessary to execute proper studies of regional Malesian flora. Defined as a unique floristic region, "Malesia" was first defined in 1857 by Swiss botanist Heinrich Zollinger and included all of what we now consider modern island Southeast Asia and peninsular Thailand and Myanmar.<sup>226</sup> A floristic region implied a commonality of plant families across a geographical zone. Zollinger argued that Malesia defied the boundaries of colonial territories then belonging to the British, Dutch, Spanish, and Portuguese empires.<sup>227</sup> To specialize in Malesian flora, therefore, required enhanced intellectual exchange among colonial and metropolitan botanists. While a Spanish botanist could execute a broad study of Philippine flora and a Dutch botanist that of the Dutch East Indies, a systematic indexing of a family of plants that spanned Malesia required an engagement with Spanish, Dutch, and British botanical tracts. Beyond *Reisen*, Jagor's natural history studies included Singapore, Java, and Malacca, and Jagor needed to look to British and Dutch intellectual production, like Thomas Stamford Raffles's *The History of Java* (1817), to complement his regional writing.<sup>228</sup>

This development in botanical science, I argue, corresponded with enhanced diplomatic relations between imperial states and the Spanish-German colonial knowledge exchange Weston suggests. The execution of regional botany both reinforced and relied upon a territorial diplomacy that acknowledged a greater need for the movement of information and intellectuals across colonial domains. Soon after Vidal submitted his translation of *Reisen* to the Spanish state, he was awarded third-class honors by order of the Prussian Crown and formal accolades from the Ministry of Agriculture in Berlin.<sup>229</sup> Curiously, the award and honors were not conferred for his translation of *Reisen* but for his *Memoria*, which Vidal donated to the library of the Prussian Ministry of Agriculture.<sup>230</sup> This act initiated a series of exchanges that continued through Vidal's career and highlighted the diplomatic power of Philippine botanical study.

### *Intensifying Philippine Botany*

Vidal returned to the Philippines in mid-1875. Months after his arrival, the Spanish-language serial *Revista de Filipinas* (Philippine review) advertised his *Memoria* for its reports on forestry, the Philippine climate, and local woods.<sup>231</sup> Featured in the *Memoria* as well were Vidal's appeals

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<sup>226</sup> Niels Raes and Peter C. van Welzen, "The Demarcation and Internal Division of Flora Malesiana: 1857–Present," *Blumea* 54 (2009): 6–7. Raes and van Welzen correct the assumption that Dutch botanist Cornelis G. G. J. van Steenis first defined "Malesia" in the mid-twentieth century. In van Steenis's first volume of *Flora Malesiana*, van Steenis credits Zollinger for the term. See Cornelis G. G. J. van Steenis, *Flora Malesiana*, Series 1, Volume 1 (Jakarta: Noordhoff-Kolff, 1950), xiii.

<sup>227</sup> Raes and van Welzen, "The demarcation and internal division," 6.

<sup>228</sup> Fedor Jagor, *Singapore, Malacca, Java: Reiseskizzen* (Berlin: Julius Springer, 1866). The work references comparative data from the Philippines throughout.

<sup>229</sup> Ultramar, Leg. 524, Exp. 14, Núm. 32, AHN.

<sup>230</sup> Ultramar, Leg. 524, Exp. 14, Núm. 32, AHN.

<sup>231</sup> "ANUNCIO: Sebastián Vidal y Soler," *Revista de Filipinas*, Tomo 1, July 1875–June 1876, Núm. 10, 15 November 1875, HL-UST.

for the creation a special commission to undertake intensive botanical study of the Philippines.<sup>232</sup> These plans were eventually enacted through the founding of the Comisión de la Flora Estadística y Forestal de Filipinas on July 21, 1876.<sup>233</sup> Following his return to the Philippines, the Ministerio de Ultramar named Vidal head of the Comisión on July 28 of 1876.<sup>234</sup>

A few months before, Vidal had received a glowing recommendation from the ministry to sit as secretary of the Comisión de Ultramar (Overseas Commission) in Philadelphia for the Centennial International Exhibition (1876).<sup>235</sup> The ministry notified the governors-general of the Philippines, Cuba, and Puerto Rico of the appointment, suggesting that Vidal's growing acclaim in Madrid heightened his standing over much of the similar scientific work being undertaken in Spain's remaining colonies. While he left for Philadelphia in 1876, plans for the Comisión and the hiring of its personnel carried on over next two years until its operations began in 1878.<sup>236</sup> During this time, Vidal was to conduct research on tobacco cultivation in Cuba, Virginia, Kentucky, and Maryland, thereby extending his leave.<sup>237</sup> Historically, according to Edilberto C. de Jesus, "tobacco was the easiest and most lucrative crop to grow" in the West Indies and Virginia.<sup>238</sup> Although tobacco cultivation in the Philippines was more prolific than that of trade-competitive spices, peninsular officials and agriculturists regarded Cuba's agricultural output as altogether more robust than the archipelago's.<sup>239</sup> At the end of his research in Cuba, he continued onto London and Amsterdam to acquire research supplies and books for the Philippine Comisión and to review herbaria collections.<sup>240</sup>

Some of Vidal's contemporary repute among Anglophone scholars appears to have come from Elmer D. Merrill, who praised Vidal's work in European herbaria.<sup>241</sup> Following Merrill's arrival to the archipelago 1901, his high approval of Vidal contrasted starkly with his assessment of the legacy of Spanish botany in the Philippines. Merrill wrote, "The Spanish Government gave little encouragement to the study of flora of the Islands, other than the establishment and support of the floral and forestry commission, under the direction of Sebastian Vidal, from 1876 to Vidal's death, in 1889."<sup>242</sup> In his 1903 evaluation of botany work completed in the Philippines, Merrill

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<sup>232</sup> Vidal, *Memoria*, 113–136.

<sup>233</sup> Ultramar, Leg. 534, Exp. 2, Núm. 4, AHN.

<sup>234</sup> Ultramar, Leg. 524, Exp. 14, Núm. 28, AHN.

<sup>235</sup> Ultramar, Leg. 524, Exp. 14, Núm. 30, AHN.

<sup>236</sup> Luis Ángel Sánchez Gómez, *Un imperio en la vitrina: el colonialismo español en el Pacífico y la Exposición de Filipinas de 1887* (Madrid: Consejo Superior de Investigaciones Científicas, 2003), 98.

<sup>237</sup> Ultramar, Leg. 524, Exp. 14, Núms. 31 & 35, AHN.

<sup>238</sup> Edilberto C. de Jesus, *The Tobacco Monopoly in the Philippines: Bureaucratic Enterprise and Social, 1766–1880* (Quezon City: Ateneo de Manila University Press, [1980] 1998), 5.

<sup>239</sup> As I discussed in Chapter One, Fernando Boulosa y Amador, a candidate for the JBM directorship, produced a treatise that lauded Cuba's agricultural output in order to argue the potential for Philippine agriculture. During the JBM's earliest years, Madrid officials also emphasized the superior quality of Cuban agricultural products like tobacco. See Ultramar, Leg. 527, Exp. 1, Núm. 32, AHN and Ultramar, Leg. 527, Exp. 1, Núm. 7, AHN.

<sup>240</sup> Ultramar, Leg. 524, Exp. 14, Núm. 34, AHN.

<sup>241</sup> Greg Bankoff and Warwick Anderson rely on Merrill's turn-of-the-century writings on Vidal. I do not disagree with this since little Anglophone writing explored the work of Vidal in the early twentieth century. Merrill has offered a useful starting point for investigating Vidal's body of work.

<sup>242</sup> Merrill, *Botanical Work in the Philippines*, 5.

enumerated Vidal's colonial and international efforts, emphasizing that Vidal "recognized the absolute necessity" of comparing his collected Philippine material with the "authentic material in various European botanical institutions."<sup>243</sup> These praises are repeated in Anglophone biographical sketches of the Barcelona-born botanist.<sup>244</sup>

International travel was a privilege monopolized by the elite in the Philippines. It was also more frequently enjoyed by secular scientists in the late nineteenth century. For botanizing clergy of the Spanish colonial Philippines such as Georg Josef Kamel (1661–1706), Francisco Manuel Blanco (1778–1845), or Francisco Ignacio Alcina (1610–1674), physical travel beyond the archipelago was an uncommon luxury. To compare collected specimens with the "master collections" of Europe would have been an intellectual excess for the missionaries. Since mobility was not possible on a physical level, objects, correspondence, information, and plant material traveled instead. As Šebestián Kroupa demonstrates, mobilities still marked the transmission of early modern knowledge of Philippine *materia medica* for the stationery Jesuit priest, Kamel, who spent the entirety of his overseas career in the Philippines. "For science to be successful," Kroupa aptly writes, "it has to be able to travel; to travel it must rely on the intermediaries that take it from place to place."<sup>245</sup>

Vidal was away from the archipelago as the institutional work was undertaken to reform the JBM and restructure the duties of the IGM to fit the objectives of the Comisión. He continued to earn merits for Spanish science as a traveling scientific functionary. His goals for the Comisión came into being while he was abroad developing contacts and acquiring materials that would serve his career and buttress his publications on Philippine plants in the late 1870s and 1880s.

To rationalize the founding of the Comisión, the Ministerio de Ultramar articulated the intrinsic link between state wealth and the natural sciences. The Philippines seemed to have been "selected by nature to display all its magnificence."<sup>246</sup> Furthermore, the ministry explained, "The abundance of families, genera, and species of plants existing there not only offers a wide scope for scientific investigation but also invites study from a utilitarian standpoint because its products consist of excellent woods, fruits, juices, essences, and a thousand other elements of industry, arts, and commerce."<sup>247</sup> The Comisión consequently set out on a two-pronged approach toward the

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<sup>243</sup> Merrill, 18. What constituted authentic versus inauthentic material for Merrill remains unclear. He more likely valued cross-referencing species with others collected in different localities in order to determine whether a species was "authentically" new and not previously described by another botanist.

<sup>244</sup> The first volume of *Flora Malesiana* reiterated Merrill's appraisal: "[Vidal] was the first of the local botanists in the Philippines to recognize the necessity of a local botanical library and herbarium, and further, the absolute necessity of comparing current collections of Philippine material with extant types in various European herbaria." See van Steenis, *Flora Malesiana*, 544. An online biographical sketch of Vidal also reproduces Merrill's early perspective on his work. See "Vidal y Soler, Sebastian," National Herbarium Nederland, <http://www.nationaalherbarium.nl/FMCollectors/V/VidalySolerS.htm>. Accessed 13 March 2020.

<sup>245</sup> Šebestián Kroupa, "Georg Joseph Kamel (1661–1706): A Jesuit Pharmacist at the Frontiers of Colonial Empires," (PhD diss., Cambridge University, 2019), 20.

<sup>246</sup> *Gaceta de Madrid*, Tómo III, Núm. 210, 28 July 1876, Ultramar, Leg. 534, Exp. 2, Núm. 7, AHN.

<sup>247</sup> "España posee en las Islas Filipinas un extenso territorio que, por su favorable situación y privilegiado suelo, parece que ha sido elegido por la naturaleza para ostentar toda su magnificencia... La abundancia de familias, géneros y especies de plantas que allí existe, no sólo ofrece ancho campo a la investigación científica, sino que, bajo el punto de vista utilitario, convida también al estudio, porque sus productos consisten en excelentes maderas, frutos,

exploitation of Philippine lands: first through statistical surveys, and second through a systematic classification of flora. According to the Comisión, the work the religious orders completed on Philippine plants—while informative and pioneering—did not methodically isolate plants of practical use nor distinguish them from the flora of other countries. To properly classify flora, therefore, a distinction needed to be made between “general” and “forest.” In the eyes of the metropole, IGM engineers were intellectually equipped for such a task.<sup>248</sup>

A study of “general” flora most reflected conventional botany investigations. The Comisión had to describe phanerogamic (seed-bearing) and vascular cryptogamic (non-seed bearing) species and had to cross-reference findings with all existing data. Description of a new species and its structures had to be accompanied by an illustration, satisfactory enough to further study and classification. The Comisión had to also establish an herbarium of fruiting samples with corresponding labels arranged by Latin names and principal synonyms including the sample’s locality and date of collection, which were all standard herbarium practices conducted outside of the Philippines at the time. The JBM was to house the herbarium, which would be at the disposal of the IGM. The JBM had to also continue much of its seed-storing activities prior to the IGM takeover and had to participate in seed exchange with gardens on the peninsula and abroad.<sup>249</sup>

## ***II: Visualizing Philippine Plants***

Vidal did not return to Manila until early 1878, at which point he confirmed the final appointments to the Comisión.<sup>250</sup> During the roll-out of the Comisión, Santiago de Ugaldezubiari served as first engineer under Vidal. One of two active horticulturists at the JBM, García was appointed to the Comisión as an *ayudante* (forestry assistant) along with Anacario Camacho, another IGM *ayudante* who worked through the 1880s.<sup>251</sup> With his extensive institutional memory of the JBM, García oversaw the construction of a research pavilion at the JBM that enabled the Comisión’s classificatory and herbarium work.<sup>252</sup> In addition to García’s and Ugaldezubiari’s appointments, the Comisión named Cayetano Argüelles y Fernández its natural history conservator, and Francisco Domingo y Casas its draftsman.<sup>253</sup>

Luciano P. R. Santiago has cataloged some of the work of García, Argüelles, and Domingo and describes them as an “uncommon breed of artists-naturalists.”<sup>254</sup> Like García, Argüelles and Domingo likely trained at the Academia de Dibujo y Pintura (Academy of Drawing and Painting; ADP). Despite his being appointed as a conservator, Argüelles completed illustrations on behalf

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*jugos, esencias y otros mil elementos de la industria, las artes y el comercio.” Gaceta de Madrid, Tómo III, Núm. 210.*

<sup>248</sup> *Gaceta de Madrid*, Tómo III, Núm. 210.

<sup>249</sup> *Gaceta de Madrid*, Tómo III, Núm. 210.

<sup>250</sup> Ultramar, Leg. 524, Exp. 14, Núm. 36, AHN.

<sup>251</sup> Ultramar, Leg. 534, Exp. 2, Núm. 56, AHN.

<sup>252</sup> Ultramar, Leg. 534, Exp. 3, Núm. 2, AHN.

<sup>253</sup> Ultramar, Leg. 534, Exp. 2, Núm. 57, AHN.

<sup>254</sup> Luciano P. R. Santiago, “The Painters of the *Flora de Filipinas* (1887–1883),” *Philippine Quarterly of Culture and Society* 21, no. 2 (1993): 93.

of the IGM prior to his appointment on the Comisión.<sup>255</sup> Both Argüelles and Domingo, along with a cadre of Philippine- and peninsula-born artists, went on to execute extensive illustrations for the Comisión and the IGM. Partnering with such a class of painters changed the dynamic of Philippine botany, putting at the IGM and Comisión's disposal an arsenal of visualizing capacities to bring a novel mobility to Philippine plants in the late nineteenth century.

Illustrations of Philippine flora had by no means been absent earlier in the Spanish colonial period. As Kroupa has shown, Kamel's seventeenth-century work on the Philippines was originally fit with illustrations, but these were unpublished due to costs. "In the absence of these images," Kroupa rightly argues, "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."<sup>256</sup> In the seventeenth century, Augustinian friar Ignacio de Mercado Morales (c. 1648–1698) wrote and illustrated a manuscript on Philippine medicinal plants, but few copies of the work have reportedly survived.<sup>257</sup> In the late eighteenth century, artists recruited for the well-studied Malaspina Expedition (1779–1784) produced hundreds of images on Philippine flora. The manuscripts, folios, and data gathered from the expedition, however, saw little public light. Citing the work of Jorge Cañizares-Esguerra, Raquel A. G. Reyes suggests that the secrecy of the Spanish state, then protective of its maritime holdings and cognizant of its imperial rivals, stifled the circulation of such natural history knowledge especially in published form.<sup>258</sup> A similar conclusion could be drawn regarding an expedition under the command of Juan José Ruperto de Cuéllar y Villanueva (1785–1795), which sought commercially promising plants on behalf of Spain and private business interests in the Philippines.<sup>259</sup> Philippine artists José Lodén, Tomás Nazario, and Miguel de los Reyes collaborated with Cuéllar,<sup>260</sup> and their unpublished images bear similarity to a particular style of New World cultural production that, as Bleichmar has observed, contextualized flora through "profusions of local color" and a visible "inalienable interconnectedness" within the environment.<sup>261</sup> Reyes has added that had the work of secular botanists on the Philippine journey

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<sup>255</sup> "Plano del Jardín Botánico de Manila," 24 July 1876, MPD, 5489, AHN. Argüelles completed the plan of the JBM, which Ramón Jordana approved. Argüelles's is one of the few extant illustrated layouts of the JBM stored in Madrid.

<sup>256</sup> Kroupa, "Georg Josef Kamel," 181.

<sup>257</sup> Santiago, "Painters of the *Flora de Filipinas*," 87.

<sup>258</sup> Raquel A. G. Reyes, "Collecting and the Pursuit of Scientific Accuracy: The Malaspina Expedition in the Philippines, 1792" in *Empire and Science in the Making: Dutch Colonial Scholarship in Comparative Global Perspective, 1760–1830*, ed. Peter Boomgaard (New York: Palgrave-Macmillan, 2013), 77–78. Reyes engages with Jorge Cañizares-Esguerra, *Nature, Empire and Nation: Explorations of the History of Science in the Iberian World* (Stanford: Stanford University Press, 2006).

<sup>259</sup> In 1788, Cuéllar advocated for the establishment of a botanical garden in Manila. Under the auspices of the Real Compañía de Filipinas (Royal Philippine Company), which oversaw Spain's trade relations with Manila, Cuéllar found it advantageous for the archipelago to create a garden modeled after those found in New Spain and Madrid. Though blueprints and instructions for the garden's development had been drafted, the project was abandoned, and Cuéllar lost his post at the Real Compañía when it closed in 1795. See María Belén Bañas Llanos, *Ang Pagbubukid ng Kalikasang: Una historia natural de Filipinas, Juan de Cuéllar, 1739?–1801* (Barcelona: Serbal, 2000), 351–353.

<sup>260</sup> Santiago, "Painters of the *Flora de Filipinas*," 88.

<sup>261</sup> Daniela Bleichmar, *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment* (Chicago: University of Chicago, 2012), 152.

of the Malaspina Expedition like Antonio Pineda y Ramírez (1751–1792), Thaddäus Haenke (1761–1816), and Luis Néé (1735–1807) been published, “the authority of clerical writings would surely have been challenged long before the late nineteenth century.”<sup>262</sup> Up through the early nineteenth century, botanizing missionaries produced the manuscripts and publications we know of today on early modern Philippine flora. Likely due to cost, these did not circulate widely even if they featured handmade illustrations or renditions of the tropical landscape.<sup>263</sup> Even into the first half of the nineteenth century, Manuel Blanco’s *Flora de Filipinas* (1837) featured no illustrations. Its second edition, produced by friar Antonio Llanos Aller (1806–1881), was not illustrated either. It was not until its update in the late nineteenth century that several of the same artists associated with the Comisión illustrated the *Flora de Filipinas*. That team of botanical illustrators also included Emina Jackson y Zaragoza, the spouse of Domingo Vidal, who was the editor of the reissue, an IGM engineer, and Vidal’s older brother.<sup>264</sup> This, as Santiago insinuates, coincided with the reopening of Manila’s ADP.<sup>265</sup>

By the late nineteenth century, illustrated publications on Philippine plants signaled a shift in the way in which the Spanish state exchanged information with other empires. As exemplified through publications produced by the Comisión and functionaries of the IGM, inter-imperial exchange ran in tandem with the intellectual and economic standing the Spanish state hoped to achieve through more extensive botanical research. Illustrated works on the Philippines fashioned late-Spanish colonial botanists in a number of ways. As Daniela Bleichmar has observed in her study of José Celestino Mutis’s (1732–1808) natural history, “Illustrated books provided a visual and verbal vocabulary that was shared by naturalists throughout and beyond Europe.”<sup>266</sup> In this sense, illustrations were part of a collective empiricism of which colonial Philippine botanists could see themselves a part.<sup>267</sup>

### *A Visual Invitation: Sinopsis*

This is especially evident in *Sinopsis de familias y generos de plantas leñosas de Filipinas*, published by Vidal and illustrated by García under the auspices of the Comisión. As I have written elsewhere, Vidal proscribed the boundary of rigorous botanical study by denouncing an “eclecticism” that

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<sup>262</sup> Reyes, “Collecting and the Pursuit,” 78. For an extensive and recent recuperation of Luis Néé’s botanical work on the Malaspina expedition, see Andrés Galera Gómez and Paloma Blanco Fernández de Caleyá, *El arca de Néé: plantas recolectadas por el botánico Luis Néé durante el Expedición Malaspina* (Madrid: Consejo Superior de Investigaciones Científicas, Real Jardín Botánico, 2016).

<sup>263</sup> Santiago, “The Painters of the *Flora de Filipinas*,” 87–88.

<sup>264</sup> Kathleen Cruz Gutierrez, “*Diospyros embryopteris* by Emina Vidal Jackson y Zaragoza, Philippine Botanical Illustrator,” in *Women in the History of Science: A Liberating the Curriculum Sourcebook*, ed. Rebecca Martin, et al. (London: University College London Press), Forthcoming.

<sup>265</sup> Santiago, “The Painters of the *Flora de Filipinas*,” 89.

<sup>266</sup> Daniela Bleichmar, “Visible Empire: Scientific Expeditions and Visual Culture in the Hispanic Enlightenment,” *Postcolonial Studies* 12, no. 4 (2009): 449.

<sup>267</sup> I rely on Lorraine Daston and Peter Galison’s “collective empiricism, involving investigators dispersed over continents and generations,” joined not only by shared epistemic virtues but also common objects of inquiry, like a plant illustration. For further elaboration, see Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007), 19–27.

plagued other botany publications.<sup>268</sup> Rejecting such eclecticism was necessary for nineteenth-century European botanists, especially those who worked in colonized territories, to maintain the philosophical value of systematic botany.<sup>269</sup> By following the Bentham and Hooker systematics advanced by British botanists George Bentham (1800–1884) and Joseph Dalton Hooker (1817–1911), *Sinopsis* allegedly subscribed to the most rigorous and updated arrangement for plants.<sup>270</sup> In Vidal’s view, this would have contrasted with floristic inventories that failed to adhere strictly to one European taxonomic system.

Its accompanying atlas formed “the most important part,” Vidal mused, which would not have come to being were it not for García’s industry and enthusiasm.<sup>271</sup> As written in the publication, García completed all illustrations and lithographs, with “R. Garcia dib y lit” marking each plate.<sup>272</sup> The atlas’s index furthermore indicated the collecting locality of the illustrated specimens in order “to facilitate verifications.”<sup>273</sup> Vidal, therefore, had envisioned the work as a possible guide for future research excursions. This was not only an invitation made to the peninsular or overseas Spanish botanists. It was one made to a much broader botany community and acknowledged the potential for scientific advancement made beyond the Spanish Empire.<sup>274</sup> A portable guide to Philippine flora could facilitate this collective effort.

Indeed, illustrated publications could be mobilized more readily than a perishable live plant or fragile herbarium sheet.<sup>275</sup> IGM employees remitted plant specimens to Manila, and Vidal and the Comisión remitted herbarium sheets to the Real Jardín Botánico de Madrid (Royal Botanical Garden of Madrid). Herbarium sheets functioned as material for exchange between empires, especially to shore up the collections of colonial and metropolitan repositories. But illustrations from the Philippines could visually transport more structures of a typical plant specimen than could reasonably be sent internationally. As Bleichmar has pointed out, natural history illustrations “were

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<sup>268</sup> Kathleen Cruz Gutierrez, “Botanical Knowledge within Itneg Weaving and Dyeing: Tracking Contemporary Negotiations with Plant-based Technologies,” in *Anthropological, Mathematical Symmetry and Technical Characterisation of Cordillera Textiles Project*, ed. Anlyn Salvador-Amores (Quezon City: University of the Philippines Press), 72.

<sup>269</sup> Christophe Bonneuil, “The Manufacture of Species: Kew Gardens, the Empire and the Standardisation of Taxonomic Practices in Late 19<sup>th</sup>-Century Botany,” in *Instruments, Travel and Science: Itineraries of Precision from the 17<sup>th</sup> to the 20<sup>th</sup> Century*, ed. Marie-Noëlle Bourguet, C. Licoppe, and O. Sibum (London: Routledge, 2002), 208.

<sup>270</sup> Bonneuil, 24.

<sup>271</sup> “Acompañamos al texto un Atlas objeto de nuestros constantes afanes y que creemos forma la parte más importante de la *Sinopsis*. Sin la laboriosidad y el entusiasmo del Ayudante de la Comisión D. Regino García no hubieramos logrado dar cima á tal tarea.” Sebastián Vidal y Soler, *Sinopsis de familias y generos de plantas leñosas de Filipinas, introducción á la flora forestal del archipiélago filipino* (Manila: Chofre and Company, 1883), x.

<sup>272</sup> “Dib y lit” stand for “*dibujante y litógrafo*” (draftsman and lithographer) or *dibujo y litografía* (drawing or figure and lithograph).

<sup>273</sup> Ultramar, Leg. 534, Exp. 3, Núm. 2, AHN.

<sup>274</sup> Vidal cited the works of other important and well-known tracts to advance the study of Philippine flora: the de Candolle’s *Prodromus systematis* (1824–1873), Wilhelm Gerhard Walpers’s *Repertorium botanices systematicae* (1842–1848) and *Annales botanices systematicae* written with Carl Müller (1848–1868), *Genera plantarum* by George Bentham and Joseph Dalton Hooker (1862–1883), and Sulpiz Kurz’s *Forest Flora of British Burma* (1877). Vidal, *Sinopsis*, xviii.

<sup>275</sup> Bleichmar, “Visible Empire,” 458–459.



collapsed into a single paper” thereby making nature “always and perfectly available for exploration.”<sup>276</sup> A single specimen’s image, for instance, might have each stage of the specimen’s reproductive cycle, even though the constraints of time and the organic development of a species would impede faithful collection of the species at each reproductive stage. Its visual representation would also likely be the composite of several specimen samples from which the illustrated type would be created. Even if herbarium samples were the most preferred material for botanical investigation, illustrations could more readily weather the uncertainties of travel, insect infestation, and rot that plagued dried plant samples in transit from a colonial context.<sup>277</sup>

Instead of single specimens, however, the images in *Sinopsis* feature species and representative plant structures of entire plant families. While it was typical of the synopsis genre in the natural sciences to explore shared characteristics among members of the same taxonomic family, García’s visual presentation of plant material was uncommon. For instance, French botanist Ernest Saint-Charles Cosson (1819–1889) published *Synopsis analytique de la flore des environs de Paris destine aux herborisations* (Analytical synopsis of the flora surrounding Paris intended for botanical study; third edition pub. 1876), a 646-page work with no illustrations. García’s style was also unusual of Spanish colonial botany in the late nineteenth century, and no other colonial contemporary of *Sinopsis* offers such a display. On the peninsula, two major synopses immediately preceded Vidal and García’s: *Sinópsis de los ortópteros de España y Portugal* (Synopsis of orthoptera in Spain and Portugal; pub. 1876) by Ignacio Bolívar y Urrutia (1850–1944) and *Sinópsis de las especies fósiles que se han encontrado en España* (Synopsis of fossil species found in Spain; pub. 1878) by Lucas Mallada y Pueyo (1841–1921). But Bolívar’s is an etymological work with only seven illustrated plates, and Mallada’s a work on faunal and floral fossils has only thirty-six. The plates in Bolívar’s and Mallada’s publications also present structures arranged in a relatively linear horizontal or vertical fashion. This resembles the presentation of plants in *Synopsis filicum* (pub. 1883) by English botanists William Jackson Hooker (1785–1865) and John Gilbert Baker (1834–1920)—fern structures are boxed and segmented by genus.<sup>278</sup> As I show below, García’s style erodes altogether this kind of visual organization.

On a single plate in *Sinopsis*, García captures plants’ reproductive stages, combines several species reported as members of the same family of plants, and does so with less linearity of arrangement. Scientifically speaking, these images present more than just one species for purposes of investigation and comparison while also demonstrating the classificatory capacity of García, Vidal, and the Comisión. Artistically, the plates depart from a more two-dimensional aspect that had characterized earlier Philippine botanical drawings, like those attributed to Lodén, Nazario, and de los Reyes. By also skillfully illustrating the structural resemblances within a single family, García presents an updated approach to colonial botany in the Philippines that, until that point, had either not published thorough images or had ventured to provide only single-species illustrations like in the revised *Flora de Filipinas*, as I discuss below.

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<sup>276</sup> Bleichmar, 459.

<sup>277</sup> Lorraine Daston, “Type Specimens and Scientific Memory,” *Critical Inquiry* 31, no. 1 (2004): 160.

<sup>278</sup> I thank Emily Sessions for her comparative insight on nineteenth-century illustrations in the natural sciences.

García's plate for the Euphorbiaceae family (Euforbiáceas; fig. 4), for example, illustrates the structures of species from eight different genera. For Species A (*Mallotus moluccanus* Müll.), García includes an example of a branch in bloom (A-1), an opened male flower (A-2), the *M. moluccanus* fruit (A-3), and a cross-section of the fruit (A-4). The *M. moluccanus* branch (A-1) is centered on the page, taking the focus with its enlarged leaves, including one that has been separated from the branch with full view of the leaf's midrib and veins. García captures the inflorescence of other species at a much smaller scale (*Macaranga mappa* Müll. D-1, *Excoecaria agallocha* Linn. G-1, *Homolanthus fastuosus* H-1). For Species B through H, García favors the fruits, flowers, and seeds, and separates each species with faint dashed lines; these largely compose the bottom half of the plate. He illustrates *Cleidion javanicum* Blume? (B) with its fruit along with its cross-section, taking care to include a cross-section of a seed within it. Vidal and García clarify that they had not seen live flowers of *C. javanicum*, which explains the absence of an illustrated sample.<sup>279</sup> Still, García endeavors to show the reproductive stages of the varied specimens by illustrating their seeds, fruits, and in one case for the *Macaranga mappa* (D), a fertilized flower (D-3). In the explanatory index for this plate, Vidal and García list the collection sites from which the samples that informed the illustrations could have come. These sites included Manila proper and its suburbs, as well as the provinces of Pampanga and the municipality of Montalvan (Montalban).

Most of the plates in *Sinopsis* contain an unusual abundance of plant material crowded to the edges of each printed page. García and Vidal may have done this, in part, for sensible purposes. Printing an illustrated survey of Philippine plants was costly. The publication of Ramón Jordana's 500-page *Bosquejo geográfico é historico-natural del archipiélago filipino* (Geographic and natural history sketch of the Philippine archipelago; pub. 1885) required at least 1,500 *pesos* for printing in Madrid and only featured 12 lithograph plates.<sup>280</sup> This was 150 percent of the total budget for materials in the Comisión's first year of operations.<sup>281</sup> Vidal and García likely chose a local publisher for purposes of proximity and cost. The publisher of *Sinopsis*, Chofre y Compañía (Chofre and Company) was a popular Manila-based publishing house at the time, producing children's publications, civil reports, and other documents of the Comisión.<sup>282</sup> The Chofre y Compañía provided commercial printing services from 1882 through 1898.<sup>283</sup> Salvador Chofre, the Spanish proprietor of the publishing house, imported a lithographic machine to the colonial capital.<sup>284</sup> With lithography at the Comisión's disposal, Vidal and García could produce more copies of the *Sinopsis* and its atlas at a faster rate. By October 1883, at least 106 of the 250 copies planned for peninsular distribution were sent to libraries, research centers, specialized schools, and press houses.<sup>285</sup>

<sup>279</sup> Soler, *Sinopsis*, xxxix.

<sup>280</sup> Ultramar, Leg. 524, Exp. 26, Núm. 44, AHN.

<sup>281</sup> Ultramar, Leg. 534, Exp. 2, Núm. 58, AHN.

<sup>282</sup> Morton J. Netzorg, "Books for Children in the Philippines: the Late Spanish Period," *Philippine Quarterly of Culture and Society* 10, no. 4 (1982): 285.

<sup>283</sup> Dominador D. Buhain, *A History of Publishing in the Philippines* (Quezon City: Rex Printing Company, Inc., 1998), 137.

<sup>284</sup> Buhain, 15.

<sup>285</sup> Ultramar, Leg. 534, Exp. 3, Núm. 39, AHN.



Figure 4. "Fam. LXXXIV—*Euforbiaceas*," *Sinopsis* Vol. 2, Atlas (Manila: Chofre y Compañía, 1883). The plate features the structures of eight distinct species presented as members of the same taxonomic family.  
Image courtesy of Biblioteca Digital Real Jardín Botánico.



García's illustration style could have contributed to the overall lower cost of the *Sinopsis*, which helped make the work more accessible. Printed with no color, *Sinopsis* was not only cheaper to print but also cheaper to buy. Compared to the four-volume revision of Blanco's *Flora de Filipinas*, *Sinopsis* illustrated more individual structures and presented botanical classification in a manner unseen in the magisterial work. *Flora de Filipinas* has been remembered as "the crowning glory of Philippine art and science in the colonial era" because of its botanical erudition and colored illustrations.<sup>286</sup> In 1876, the Order of Saint Augustine in the Philippines initiated the reissue of *Flora de Filipinas*, which was placed under the editorial direction of Domingo Vidal.<sup>287</sup> While the text of the revised editions was printed in Manila, the 477 colored lithographs were printed in Barcelona. Five hundred colored copies were produced with another thousand printed with black-and-white plates.<sup>288</sup> According to Santiago, the Augustinians paid 73,000 *pesos* for the entirety for the project—a sum that was more than double the personnel costs of the Comisión in its total eight years of operation.<sup>289</sup>

The *Flora de Filipinas* project featured peninsular and insular painters in Manila, including García's brothers Rosendo and Juan.<sup>290</sup> García signed thirty-five plates for the *Flora*, though he is believed to have painted all the unsigned plates in the reissue.<sup>291</sup> His command of visual representation reflects not only his artistic ability but also the privilege bestowed to trained *mestizo* (mixed-race typically of Chinese parentage), *peninsular*, and creole painters in Manila at the time. The majority of illustrators trained at the ADP under Agustín Sáez y Glanadell (1828–1891). Sáez was joined by Lorenzo Rocha é Icaza (1837–1898), the only other professor at the ADP, to judge the submissions for the frontispiece of the reissue of *Flora*.

Santiago intimates that the visual conventions seen in the *Flora* most likely emanated from the ADP's standard of training.<sup>292</sup> The "Philippine academic art" style of the ADP, as Santiago has termed it, was informed by the Spanish academic tradition, specifically that from the Escuela de Bellas Artes de San Fernando (School of Fine Art of San Fernando) in Madrid.<sup>293</sup> Peninsular masterpieces were copied—many of them religious in subject and royal portraits—and the copies served as models for ADP students to emulate or duplicate during their training.<sup>294</sup> Sáez taught ornamentation, landscapes, composition, and modeling, while Rocha instructed students in figure

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<sup>286</sup> Santiago, "The Painters of the *Flora de Filipinas*," 87.

<sup>287</sup> Santiago, 91.

<sup>288</sup> Santiago, 91–92.

<sup>289</sup> Santiago, 92; Ultramar, Leg. 534, Exp. 2, Núm. 58, AHN.

<sup>290</sup> Santiago, "The Painters of *Flora de Filipinas*," 92. Santiago includes Rosendo and Juan in what he calls the "uncommon breed of artist-naturalists" from the time. According to one source, Rosendo practiced pharmacy in Nueva Cáceres, specialized in medicinal plants, and worked for a short while as an assistant to the Comisión. See *Exposición de Filipinas: Colección de artículos publicados en El Globo Diaro ilustrados politico, científico, y literario* (Madrid: J. Salgado de Trigo, 1887), 46.

<sup>291</sup> Santiago, 96.

<sup>292</sup> Santiago, 94–95. Santiago does not clarify if Luna had submitted pieces to be considered for the illustrated volume.

<sup>293</sup> Luciano P. R. Santiago, "Philippine Academic Art: The Second Phase (1845–98)," *Philippine Quarterly of Culture and Society* 17, no. 1 (1989): 68–69.

<sup>294</sup> Santiago, 70–71.

and life drawing.<sup>295</sup> According to Santiago, “Philippine art catalyzed and paralleled the unfolding of national awareness and vice versa,” particularly because of the number of fine arts students—government- and self-funded—who studied on the peninsula and because of the racial diversity of the ADP’s student body.<sup>296</sup> Due the ADP’s artistic consulting for the project and given the training of most of its contributors, the *Flora de Filipinas*, Santiago writes, “can serve as a ‘Who’s Who’ among the early students, alumni and teachers of the academy.”<sup>297</sup>

The *Flora de Filipinas* was prohibitively expensive for individuals. Its cost is especially evident in the sumptuous style of the illustrations and the presentation of plant material on its pages. While the images of *Flora de Filipinas* do not depart considerably from the conventions of natural history illustrations, when compared with the images in *Sinopsis*, they reveal the opulence of negative space and color. The plate for *Ocimum americanum* (fig. 5) exemplifies this. Centered on the page is a flowering branch of the *O. americanum*. The branch is resplendent with leaves bearing shades of green and blossoming buds of gentle pink.<sup>298</sup> The illustration is dynamic: while some flowers have fully bloomed, others only partially so. The same pink and brown hues that comprise the flowers are used to highlight the underside of the sample’s leaves and provide visual balance to the image, demonstrating the technical capacity of the artist. To the specimen’s right is a faint sketch of what looks like a portion of a stem with leaves. This is incomplete and uncolored, which offers the total page a sense of being a work in progress toward the production of the central focal point, the colored *O. americanum*. To apparently keep faithful to the size of the plant, the illustrator does not magnify the plant structure, leaving much more expensive blank space unused. The illustrator did not sign the plate but it could be attributed to García. The colored plates throughout the volume evidence a similar visual style to that of *O. americanum*. The image of *O. americanum* does not include a key to the specimen’s structures.

In the text of *Flora de Filipinas*, the species appears under the *Ocimum* genus. The text includes references to Blanco’s original text and to Georg Eberhard Rumphius’s (1628–1702) *Herbarium amboinense* (pub. 1741).<sup>299</sup> But this information appears in a different volume altogether since the images stand alone in the final volumes of the reprint. To identify the locality and any previous publication on the species, a reader needed to have purchased the illustrated volume alongside the text. This manner of publication, which would have the required the purchase of several volumes to complete an owner’s set, reinforces the affluence of the project. Like *Flora de Filipinas*, the atlas of *Sinopsis* is separate from the text, except the atlas’ index also functions as a key for the plates, indicates specimens’ collecting localities, and includes other collecting data. But the index also references corresponding page numbers in the *Sinopsis* text, suggesting that both volumes needed to be read together.

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<sup>295</sup> Santiago, 74.

<sup>296</sup> Santiago, 79.

<sup>297</sup> Santiago, 80.

<sup>298</sup> These shades appear in the digital reproduction of the *Flora de Filipinas* available through the online database of Spain’s Biblioteca Nacional.

<sup>299</sup> Manuel Blanco, *Flora de Filipinas* (Manila: Plana and Company, [1837] 1880), 4:162.



Figure 5. "*Ocimum americanum*: —Blanco," *Flora de Filipinas*, Láminas Vol. 2 (Barcelona: Verdager, 1883). Santiago credits the unsigned prints in *Flora de Filipinas* to García.

Reproduction courtesy of Biblioteca Digital Hispánica, Biblioteca Nacional de España.

Even in the absence of color and negative space, García's plates for *Sinopsis* utilize considerable technical skill to present organized plant structures in service to plant classification.

While cost may have been a contributing factor behind the visual production of *Sinopsis*, much merit should be attributed to García's compositional capacity, making the atlas a work of science and art.

The plate for the Bignoniaceae family (Bignoniáceas; see fig. 6), for example, presents four different genera and species, which are not separated by faint dashed lines. To organize the structures, García includes letters by numbers that correspond with the atlas's index. For the Bignoniaceae plate, he repeats letters, like A and B, to indicate that certain numbered structures correspond to species A (*Stereospermum quadripinnatum* Fern.) or species B (*Oroxylum indicum* Vent.). He does this so as not to confuse observers since the A and B structures are illustrated in such close proximity to each other. To illustrate *O. indicum*'s open corolla and stamens (B-2), García draws a cross-section of the specimen's flower that overlays an illustration of a midway longitudinal slice of *O. indicum*'s fruit (B-4) and the fruit of *Dolichandrone rheedh* Benth. & Hook. (D-2), which itself extends nearly the entire length of the plate. The fruit for *S. quadripinnatum* (A-7) also extends the entire length of the plate and weaves through a flowering branch of *S. quadripinnatum* (A-1) and a small leafed branch of *Crescentia alata* H. B. & Kunth (C-1). The flowers of the plate take focal primacy, like that of *O. indicum* (B-1) and *D. rheedh* (D-1), because no other structure overlays them, and they cast a shadow on the structures behind them thereby enhancing the illusion of three-dimensional depth. The flowering branch of *S. quadripinnatum* (A-1) does the same, as its leaves cast shadows on the specimen's fruit (A-7). This profusion of plant specimens on the plate gestures less toward the financial circumstances of the entire project and more toward the fecund Philippine environment. Compositionally, the plate communicates abundance of both colonial botanical research and plant life in the Philippines, as the structures seem more organically arranged, layered with a depth of field, and are unbound by linear horizontal or vertical orientation. As mentioned in Chapter One, by the early 1880s the IGM's operations expanded to include outlying provinces far beyond those surrounding the capital of Manila. The atlas makes clear that the collecting work toward the completion of *Sinopsis* was conducted in places like Ilo-ilo (Iloilo), Tanay in Morong, Bataan, Tarlac, and Nueva Ecija. Vidal cites some of the JBM's own material—either in its live form or that which was stored in its seed bank or herbarium—in the *Sinopsis*. This presentation therefore worked to counter the negative appraisal that had beset the garden since its establishment over two decades prior to the publication of *Sinopsis*. Instead, the crowded plates maximize the sense of scientific advancement in the colony while emphasizing an element of discovery. Instead of single, isolated species, the plates present fuller systematic relations between plants ripe for investigation while accentuating García's aesthetic taste and talent, which he likely employed at his own discretion.

By showing the systematic relation among species, García invites further study of Philippine plants. The species are presented beside one another to spur comparative curiosity: the flowers of *O. indicum* (B-1) and of *D. rheedh* (D-1) bear similarity but are not altogether duplicates. The same can be said of the fruit of *D. rheedh* (D-2) and *S. quadripinnatum* (A-7). This move to invite classificatory investigation came well after the publication of Charles Darwin's (1809–1882) *On the Origin of Species* (1859). As Daniel Lewis has argued for the field of U.S. ornithology, the production of checklists corresponded to advances made by Darwinian principles



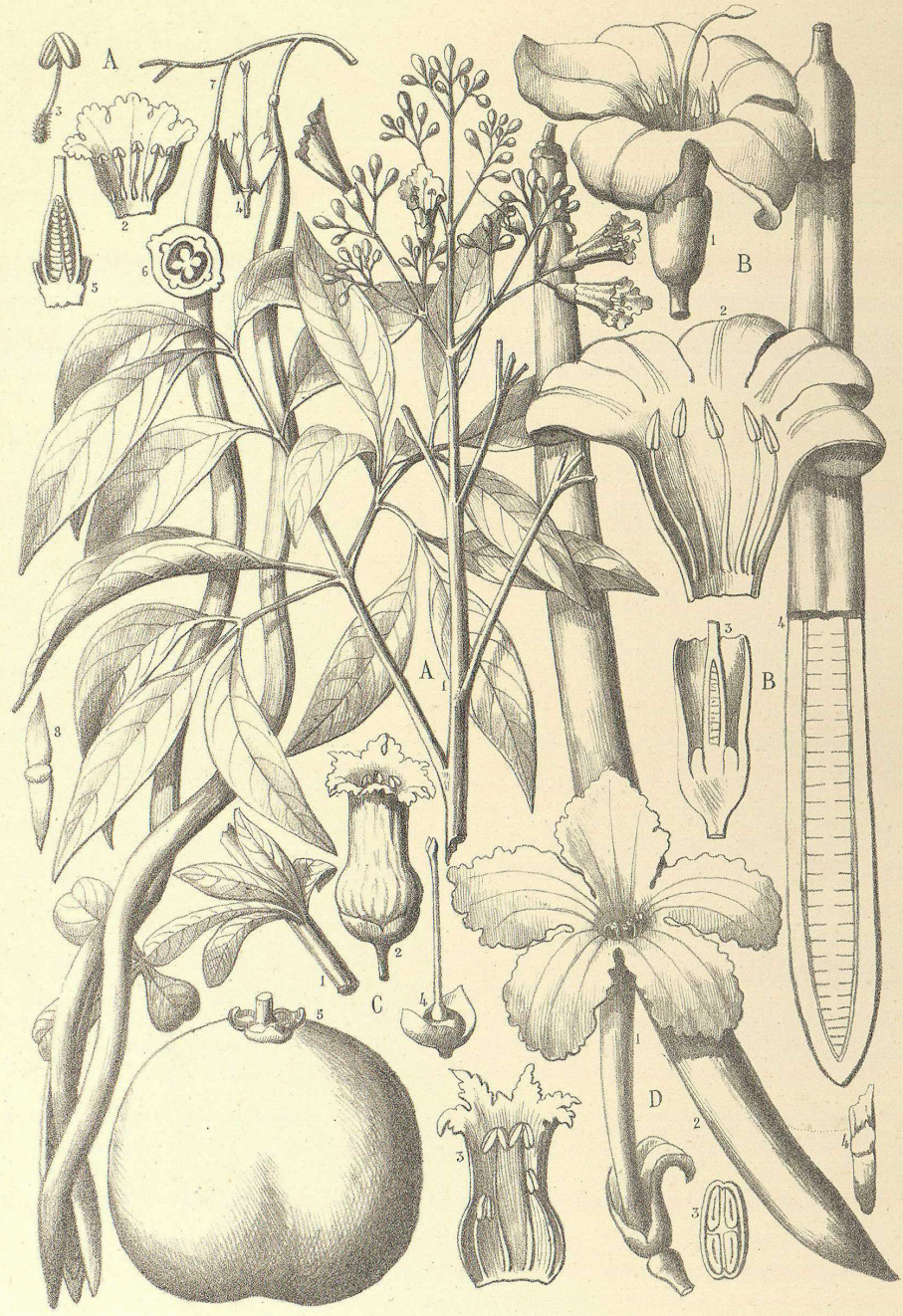


Figure 6. "Fam. LXXIII— Bignoniáceas," *Sinopsis* Vol. 2, Atlas (Manila: Chofre y Compañía, 1883). This plate features the structures of four distinct species presented as members of the same taxonomic family. Image courtesy of Biblioteca Digital Real Jardín Botánico.



of evolution.<sup>300</sup> A fierce urgency to revise approaches to the natural kingdom emerged, and bodies like the American Ornithologists' Union (formerly Committee on Classification and Nomenclature; f. 1883) sprang up to re-approach the natural world with a revised classificatory schema that reflected developments in phylogenetics.<sup>301</sup> In the field of botany, the International Botanical Congress (IBC) had already made inroads with new nomenclatural rules. But Candollian systematics, which had been used in the Philippines by Vidal's JBM forerunner Espejo, preceded Darwin's field-changing work.

As mentioned earlier, however, Vidal chose to arrange the book using Bentham and Hooker systematics, which members of the Comisión viewed as an update to the Candollian system of arrangement.<sup>302</sup> In the field of botany, Darwinian developments were made in Germany with the system of arrangement introduced by Heinrich Gustav Adolf Engler (1844–1930) and later with Karl von Prantl (1820–1888) in the mid-1880s through the 1890s,<sup>303</sup> after the publication of *Sinopsis*. But Vidal acquired the first two volumes of Bentham and Hooker's *Genera plantarum* (1862–1883), among other German and British botanical works, for the Comisión in London in 1877.<sup>304</sup> *On the Origin of Species* was not included in the materials acquisition. While in London, Vidal met Hooker, who had invited Vidal to use the Kew facilities at his disposal.<sup>305</sup> Bentham and Hooker systematics did not reflect Darwinian principles of evolution and instead subscribed to the notion of natural affinities, or key structural traits to which a botanist could turn to assign an angiosperm (flowering plant) to a particular family. García's plates capture this system, as each functions as a synopsis of characteristics to which a botanist can refer when classifying a family of plants. This should not be read as a complete avoidance of Darwinian developments in the realm of botany. Instead, it may have been due to the works made available to the Comisión—acquired mainly by an itinerant Spanish functionary and transported to the colony by him—and the gradual appearance of updates that incorporated phylogenetics in the late nineteenth century.

### *Sinopsis toward Scientific Statecraft*

The *Sinopsis* plates present the Philippine environment as lush and overwhelming. They compress plant structures to suggest the environmental wealth that the tropical environment provides. While the colored plates of *Flora de Filipinas* present the gems of Philippine plant life, they do not do so to spur family-wide investigations that emphasize relations within the Philippine or Malesian plant world. This kind of encouragement toward wider investigation of the regional tropical environment continued alongside the publication of *Sinopsis*. Some of its readership did not see the work as existing within a narrow axis of Spanish-Philippine relations. In addition to the other writings of the Comisión, *Sinopsis* was seen by reviewers as an achievement that could match the

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<sup>300</sup> Daniel Lewis, *The Feathery Tribe: Robert Ridgway and the Modern Study of Birds* (New Haven: Yale University Press, 2012), 180.

<sup>301</sup> Lewis, 159.

<sup>302</sup> Ultramar, Leg. 534, Exp. 3, Núm. 2, AHN.

<sup>303</sup> Richard A. Overfield, *Science with Practice: Charles E. Bessey and the Maturing of American Botany* (Ames, IA: Iowa State University Press, 1993), 188.

<sup>304</sup> Ultramar, Leg. 534, Exp. 2, Núm. 35, AHN.

<sup>305</sup> Ultramar, Leg. 534, Exp. 2, Núm. 23, AHN.

work of British, Dutch, and German botanists, especially that which had been conducted on “the great Malay archipelago” or Malesia.<sup>306</sup> Instead of remaining sequestered in peninsular or colonial Spanish libraries, the Spanish state shared *Sinopsis* with other imperial plant specialists. On the grounds of regional floristic study, especially, inter-imperial intellectual exchange was both necessary and facilitated area-wide botany work.

By the mid-1880s, Philippine botany drew more international acclaim from European botanists engaged in Malesian study. In 1885, the Italian plenipotentiary in Spain appealed to the Ministro de Estado (state minister) for a copy of the illustrated *Flora de Filipinas* on behalf of Odoardo Beccari (1843–1920), a Malesian palm specialist. Between 1877 through 1889, Beccari published a three-volume study on Malesian flora drawn from fieldwork he carried out from 1865 through 1878. The plenipotentiary expressed Beccari’s delight if he were to obtain a copy of Blanco’s *Flora* from the Spanish government and offered Beccari’s publication, *Malesia*, in exchange.<sup>307</sup> Beccari also sought “as complete as possible [a set] of Philippine plants from the director of the Jardín Botánico de Manila” for which he would also provide a collection of Malesian and Papuan plants in exchange.<sup>308</sup> The plenipotentiary emphasized that his successful facilitation of the acquisition and exchange would render a great service to science.<sup>309</sup>

Although it is unclear if Beccari had a professional relationship with Vidal or García ahead of his request, it seems probable they did not. Although the three are recorded to have had professional ties to the same botanists at Kew, I have uncovered no documents revealing direct correspondence between them. Still, by the 1880s, not all work of the JBM or the Comisión had to course through peninsular channels. Unlike the earliest years of JBM operations, in which Philippine samples were remitted to the peninsula ahead of their disbursement to other research centers, the peninsula was no longer filtering all botanical exchange. The work of the Comisión, most especially, operated more independently as Vidal developed direct professional relationships with botanists in London and Leiden while conducting international work on behalf of the Comisión.<sup>310</sup> After receiving a copy of the communiqué from the state minister, the Ministerio de Ultramar relayed to the Philippines that any exchange of plants had to be at Vidal’s discretion.<sup>311</sup> At this point, the Comisión, JBM, and IGM functioned with what historian Timothy Barnard rightly names a “complex autonomy” and did not have to fully execute the objectives outlined by the metropole.<sup>312</sup> The botanical science conducted in the colony ran parallel to peninsular Spanish statecraft but was no longer completely subjected to the state’s directives.

After the state minister communicated the Italian plenipotentiary’s appeal, the Ministerio de Ultramar responded directly to the state minister denying Beccari’s request for *Flora de*

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<sup>306</sup> *Exposición de Filipinas*, 46.

<sup>307</sup> Ultramar, Leg. 528, Exp. 3, Núm. 2, AHN.

<sup>308</sup> “*El mismo ilustre sabio desearia tambien con interes obtener una coleccion tan complete como sea posible de las plantas de Filipinas, del Director del Jardín Botánico de Manila, al que en cambio de halla dispuesto a proporcionarle una coleccion de plantas de Malesia y de la Papuasía.*” Ultramar, Leg. 528, Exp. 3, Núm. 2, AHN.

<sup>309</sup> Ultramar, Leg. 528, Exp. 3, Núm. 2, AHN.

<sup>310</sup> Ultramar, Leg. 534, Exp. 2, Núm. 34, AHN.

<sup>311</sup> Ultramar, Leg. 528, Exp. 3, Núm. 3, AHN.

<sup>312</sup> Timothy Barnard, *Nature’s Colony: Empire, Nation and Environment in the Singapore Botanic Gardens* (Singapore: National University of Singapore Press, 2016), 7.

*Filipinas*. The Ministerio de Ultramar clarified that *Flora de Filipinas* was not a work of the Spanish state but instead, of the Augustinian Order.<sup>313</sup> In its place, the ministry offered Vidal and García's *Sinopsis* as another work—one funded by the coffers of the Spanish state—that was “of no less import that could be very useful” to Beccari.<sup>314</sup>

While it would be too much to suggest that the Spanish state worked to stifle the inter-imperial circulation of *Flora de Filipinas* (it was, after all, a very expensive set of volumes), its upholding *Sinopsis* as a product of the secular state is telling. As Vincente R. Pilapil has written, after Isabella II's deposal in 1868 and “[w]ith the triumph of liberalism in Spain” came the appointment of a “liberal governor-general” Carlos María de la Torre in the Philippines.<sup>315</sup> De la Torre has been credited for issuing a number of liberal measures in the colony, including an effort to secularize the clergy of the Universidad de Santo Tomás de Aquino (University of Santo Tomas). But with the ascension of the conservative Prince Amadeo of Savoy to the Spanish Crown, the reactionary Rafael de Izquierdo replaced de la Torre.<sup>316</sup> Izquierdo's government oversaw the execution of those associated with the 1872 Cavite Mutiny, which was coordinated as a separatist revolt against Spain, as John Schumacher has argued.<sup>317</sup> Still, the events of 1872 implicated among other colonial abuses those mediated by Catholic friars. The mutiny has been seen as one of a series of events that triggered the reformist and revolutionary movements in the Philippines wherein anti-friar rhetoric proliferated. *Ilustrados* in the colony and on the peninsula denounced the ills of friar corruption. The Spanish state's decision to distinguish its intellectual work from the Augustinian publication is therefore curious if we consider how the state may have been responsive to liberal developments on the peninsula and in the Philippines. For botany, specifically, Spanish statecraft was unmistakably responsive to scientific developments in the Philippines and worked to incorporate colonial intellectual production in its diplomatic relations with other European empires. It was the botanical initiative conducted in the Philippines that the Spanish state leveraged to present itself to other imperial states as a reinvigorated intellectual power. In the end, Beccari gratefully provided copies of *Malesia* in exchange for *Sinopsis*.<sup>318</sup>

### ***Exhibiting Philippine Botany***

Philippine botany continued to run the axes of inter-imperial intellectual exchange during a series of international expositions from the 1870s through 1880s. As mentioned earlier, the overseas ministry selected Vidal to represent the Spanish overseas holdings at the Philadelphia exposition of 1876. He did the same at the colonial exhibition (Internationale Koloniale en Uitvoerhandel

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<sup>313</sup> Ultramar, Leg. 528, Exp. 3, Núm. 4, AHN.

<sup>314</sup> “Como quiera que este Ministerio puede en cambio disponer de algunos ejemplares de otra obra no menos importante y que pudiera ser muy útil al professor Beccari para sus estudios, a saber, la titulada *Sinopsis de familias y generos de las plantas leñosas de Filipinas, publicada a costa del Estado y escrito por el Yngeniero Jefe de la Comisión de la Flora de Filipinas D. Sebastián Vidal y Soler.*” Ultramar, Leg. 528, Exp. 3, Núm. 4, AHN.

<sup>315</sup> Vincente R. Pilapil, “The Cause of the Philippine Revolution,” *Pacific Historical Review* 34, no. 3 (1965): 255.

<sup>316</sup> Pilapil, 255.

<sup>317</sup> John Schumacher, “The Cavite Mutiny Toward a Definitive History,” *Philippine Studies* 59, no. 1: The *Ilustrado* (2011): 62.

<sup>318</sup> Ultramar, Leg. 528, Exp. 3, Núm. 5, AHN.

Tentoonstelling) in Amsterdam in 1883, the same year *Sinopsis* was published. Around the time of publication, Vidal requested a four-month *licencia* to the peninsula for persistent asthma attacks. His doctors recommended that he recover in the peninsula's temperate climate.<sup>319</sup> The colonial government approved the request and while on the peninsula, Vidal provided assurances that he was still carrying out his duties on the Comisión. To be sure, Vidal's traveling privileges did not go unnoticed by colleagues on the peninsula and in the Philippines. His returns to Spain drew some measure of professional envy, especially as other functionaries had not been able to return as readily. Ramón Jordana's brother, who had been convalescing in Madrid, made light of this inequity, and insisted that Ramón be able to return to the peninsula given his uninterrupted service, especially while "others had spent long stretches in Europe and America."<sup>320</sup>

During his leave, Vidal attended the Amsterdam exposition and represented the Comisión. It was from his meeting with other botanists in the Netherlands that Vidal executed the exchange of Malesian plant material.<sup>321</sup> These duties kept Vidal on the continent and he did not return to the Philippines until the following year.<sup>322</sup> Ahead of his return to Manila in 1884, the Dutch state conferred Vidal the Knight of the Order of the Lion of the Netherlands.<sup>323</sup> He was likely awarded for his work on the Comisión at the exposition and for facilitating the trade. Within weeks, the Spanish government commended both Vidal and García for their publication of *Sinopsis*. The state awarded Vidal with the Encomienda de Número de Ysabel Católica and García, the Cross of Carlos III.<sup>324</sup> While back in the Philippines, Vidal engaged in botanical collections with the Comisión. From his collected numbers, he published *Revisión de plantas vasculares de Filipinas* (Revision of Philippine vascular plants; hereafter *Revisión*) in 1886 for which García again provided illustrated plates. That same year, the Comisión closed. Vidal and García's internationally oriented botanical work, however, did not. Among other former Comisión personnel, both were appointed to be the custodians of Philippine flora for Spain's 1887 Exposición de Filipinas (Philippine Exposition) and to craft the Philippine botanical exhibits for the Exposición universal (Universal Exposition) in Barcelona in 1888.

Spanish government records detail Vidal and García's travels in Europe during their service toward the expositions.<sup>325</sup> In 1887, Vidal and García, along with officials of the office of the governor-general and of public works, Pedro Urtuoste, Abelardo Cuesta Cardenal, and Mariano Sánchez Villanueva, embarked for Madrid for the Exposición de Filipinas to oversee the natural history exhibits.<sup>326</sup> Vidal was tasked with ensuring the transport of live Philippine plant material to be put on display.<sup>327</sup> His wife, Leonor Paulí, and their *criado indígena* (indigenous servant),

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<sup>319</sup> Ultramar, Leg. 524, Exp. 14, Núm. 40, AHN.

<sup>320</sup> Ultramar, Leg. 524, Exp. 26, AHN.

<sup>321</sup> Ultramar, Leg. 534, Exp. 3, Núm. 29, AHN.

<sup>322</sup> Ultramar, Leg. 524, Exp. 14, Núm. 47, AHN.

<sup>323</sup> Ultramar, Leg. 524, Exp. 14, Núm. 44, AHN.

<sup>324</sup> Ultramar, Leg. 524, Exp. 14, Núm. 45, AHN.

<sup>325</sup> *Presupuestos generales de gastos é ingresos de las Islas Filipinas para el año de 1891* (Madrid: Impresores de la Real Casa, 1890), 46–49.

<sup>326</sup> Ultramar, Leg. 524, Exp. 14, Núm. 62, AHN.

<sup>327</sup> Ultramar, Leg. 524, Exp. 14, Núm. 58, AHN.

Felipe de los Santos, accompanied.<sup>328</sup> García oversaw the transport of plant material, as well, including his exhibit of more than 144 native rice varieties that exposition attendees, like journalist and *ilustrado* Graciano López Jaena (1856–1896), regaled.<sup>329</sup>

Francisco Torrontegui and Domingo Sánchez y Sánchez also joined the team. Sánchez was a zoological assistant and formerly part of the Comisión. He and Torrontegui oversaw the live human exhibit from the Philippines, which was met with much controversy.<sup>330</sup> Scholars have studied both the public curiosity and outcry toward the live exhibit, including that from José Rizal.<sup>331</sup> According to Filomeno V. Aguilar, Rizal and his compatriots found the exhibit “distasteful and offensive” and were “stirred by the appalling accommodation and treatment of the human exhibits—mirroring the way that Spain dealt with the whole colony.”<sup>332</sup> At the same time, they complained that the delegation—comprised among others of Igorots, Moros, Negritos, and peoples of the Marianas and the Caroline Islands—was “unrepresentative of their homeland.”<sup>333</sup> Nevertheless, some *ilustrados*, including Rizal, would later claim patriotic fraternity with the individuals on display.<sup>334</sup> It is important to recognize the facilitative role functionaries of the Comisión and IGM played in mounting the controversial Exposición exhibits, which reveal the very thin disciplinary divides in the late-nineteenth century Philippines and the ways in which multiple strands of scientific and social scientific disciplines could be deployed for different political ends.<sup>335</sup>

The Exposición de Filipinas was one of Spain’s attempts to showcase its national modernity.<sup>336</sup> Exhibit administrators aimed to promote the “modern, scientific gaze” among exhibition-goers, who could essentially “witness” modernity unfurl on the Exposición grounds.<sup>337</sup> While some scholars have focused on the commercial and economic imperatives undergirding the objectives of the Exposición, the Exposición’s exhibits attempted to use science to broadcast the Spanish state’s liberal and cosmopolitan claim to be a producer of intellectual knowledge. I agree

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<sup>328</sup> Pasaporte 21195–21196, Varios Personajes, NAP.

<sup>329</sup> Graciano López Jaena, “Filipinas en la Exposición universal de Barcelona,” conference speech delivered at the Ateneo Barcelonés (Barcelona: Busquets and Vidal, 1888), 247, Rare Books, HL-UST.

<sup>330</sup> Ultramar, Leg. 524, Exp. 14, Núm. 58, AHN.

<sup>331</sup> William Henry Scott, *History on the Cordillera: Collected Writings on Mountain Province* (Baguio: Baguio Printing & Publishing Co., 1975), 13. At the turn of the century, live exhibits were a significant part of imperial expositions that included the Philippines. Their troubled and complex history is discussed in Cherubim A. Quizon and Patricia O. Afable, “Guest Editors’ Introduction: Rethinking Displays of Filipinos at St. Louis: Embracing Heartbreak and Irony,” *Philippine Studies* 52, no. 4: World’s Fair 1904 (2004): 439–444. This entire special issue raises relevant interpretive points that can be read alongside the Spain’s 1887 Exposición.

<sup>332</sup> Filomeno V. Aguilar Jr., “Tracing Origins: ‘Ilustrado’ Nationalism and the Racial Science of Migration Waves,” *Journal of Asian Studies* 64, no. 3 (2005): 614.

<sup>333</sup> Aguilar, 615.

<sup>334</sup> Aguilar, 615–616.

<sup>335</sup> For a full study of this, see Thomas, *Orientalists, Propagandists, and Ilustrados*.

<sup>336</sup> Christopher Schmidt-Nowara, *Spanish Colonialism and National Histories in the Nineteenth Century* (Pittsburgh: University of Pittsburgh Press, 2006), 167.

<sup>337</sup> Schmidt-Nowara, 167–169. Anne McClintock’s study of the 1893 World’s Columbian Exposition explores how the exposition—in its purpose, labor, spatial orientation, and content—braided ideas of evolutionary determinism alongside middle-class notions of white, male superiority. See Anne McClintock, *Imperial Leather: Race, Gender and Sexuality in the Colonial Contest* (London: Routledge, 1995).

with scholars that the Exposición displayed the exploitative potential of the archipelago to residents of the peninsula and to other international audiences.<sup>338</sup> At the same time, it was more than an agricultural fair. As much as a display of natural abundance could intimate an abundance of exportable commodities, it could also relay Spanish botanists' intellectual command of the colonial environment. In other words, botanical study was an additional avenue by which Spain could represent its grip over the tropics. Members of the Comisión—most especially Vidal—garnered much repute ahead of the Exposición for advancing Spanish science. According to one review, Vidal and the Comisión's botanical studies were conducted on behalf of “modern culture” and in the name of the Spanish state, exemplifying the pride of “scientific investigations in lands where the Spanish flag waves.”<sup>339</sup> Botany was essential to the Exposición since plants were displayed not only for utilitarian purposes but also for investigative study. Vidal and his team recreated the lush Philippine environment for both pompous presentation and investigative enthusiasm: a stroll through the tropical environment enticed layperson and learned alike. These exhibits were separate from the horticultural, agricultural, and husbandry displays overseen by Jordana—exhibits that had more expressed interests toward the economic commodification of the Philippine environment.<sup>340</sup> The Exposición, therefore, worked to announce science as one of its guiding frameworks to reveal a revived imperial state. As demonstrative as it was of Spanish excellence, it was also another avenue by which intellectual advancements could be displayed vis-à-vis the expositions of the Netherlands, United States, and France.<sup>341</sup>

### *A Scientific Self-Fashioning*

Vidal, García, and other members of their team returned to the Philippines in mid-1888. Vidal served once more as chief engineer of the IGM. But only a little more than a year later, the Governor-General of the Philippines notified the Ministerio de Ultramar of Vidal's passing.<sup>342</sup>

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<sup>338</sup> For studies of the Exposición in Madrid and the Philippine exhibits at the 1888 Barcelona Universal Exposition, see Luis Ángel Sánchez Gómez, “Indigenous art at the Philippine Exposition of 1887: Arguments for an ideological and racial battle in a colonial context,” *Journal of the History of Collections* 14, no. 2 (2002): 283–294; Filomeno V. Aguilar Jr., “Romancing Tropicality ‘Ilustrado’ Portraits of the Climate in the Late Nineteenth Century,” *Philippine Studies* 64 no. 3/4: Disasters in History (2016): 417–454; Patrick D. Flores, “Polytropic Philippine: Intimating the World in Pieces” in *Contemporary Asian Art and Exhibitions: Connectivities and World-Making*, ed. Michelle Antoinette and Caroline Turner (Canberra: Australian National University Press, 2014), 47–65; and Schmidt-Nowara's *Spanish Colonialism and National Histories*.

<sup>339</sup> “Ambos trabajos, así como la Reseña de la Flora del Archipiélago y un Catálogo de plantas leñosas de la provincia de Manila se deben á la citada comisión, y demuestra haberse dado buen fomento á los estudios botánicos en Filipinas durante el último decenio, que es muy de desear no quede interrumpido, Sacrificios, no pequeños, suponen para el Tesoro tales resultados; pero la cultura moderna, nuestro buen nombre y la propia utilidad exigen de consumo exploraciones científicas de aquellos países en que ondea el pabellón nacional.” *Exposición de Filipinas*, 46, HL-UST.

<sup>340</sup> *Crónica de la Exposición de Filipinas: estudio critico descriptivo por Antonio Flórez Hernández, redactor de El Correo y Rafael de Piquer y Martín-Cortés, redactor de La Época* (Madrid: Manuel Ginés Hernández, 1887), 63–73, HL-UST.

<sup>341</sup> For an incisive exploration of the United States' pre-1898 quests for empire, see Thomas Bender, *A Nation among Nations: America's Place in World History* (New York: Hill and Wang, 2006).

<sup>342</sup> Ultramar, Leg. 524, Exp. 14, Núm. 68, AHN.

Soon after, his wife Paulí petitioned the colonial government for passage to the peninsula.<sup>343</sup> One U.S. official noted that Vidal's death was "universally regretted" since he was an esteemed figure "wherever botanists congregate."<sup>344</sup> He was described as "a man of great learning and equal modesty, a man of strictest honor, kind-hearted and charitable in the extreme."<sup>345</sup> Decades after Vidal's death, Merrill wrote, "[T]here was a distinct renaissance in local botany due largely to the influence, energy, and botanical ability of Sebastian Vidal."<sup>346</sup>

Although he left the IGM following Vidal's death, García continued to complete publications on behalf of the IGM. For instance, García compiled and arranged the *Catálogo de las plantas del herbario recolectado por el personal de la suprimida Comisión de la Flora Forestal* (Herbarium catalog of the former Commission on Flora; hereafter *Catálogo*) for publication in 1892.<sup>347</sup> The *Catálogo* lists no author though is attributed to the Comisión. The Santo Tomas press published the *Catálogo*, which indicates García may have published the work since he was faculty at the university by the early 1890s. At the same time, García was the most equipped to complete the *Catálogo*. He had intimate knowledge of the Comisión's archipelago-wide collecting work, the JBM's herbarium, and Vidal's *Revisión*. In a 1900 report that García delivered to U.S. Insular Bureau of Forestry, he indicated that an "Assistant Forester" who oversaw the Comisión's herbarium collection completed the *Catálogo*. In the report, he also credits the same "Assistant Forester" for the plates in *Sinopsis*. García assumed credit for compiling the *Catálogo*, though its English translation only acknowledges him indirectly.<sup>348</sup>

I elaborate this point to present the extent of a scientific collaboration—one that continued posthumously—to advance Philippine botany and to develop Malesian floristic studies. García and Vidal's warm professional relationship fashioned a new scientific character for the Spanish state. Their professional partnership amplified Vidal's advancement of Philippine botany, most clearly through García's artistic and botanical acumen. Their collaboration and skill sets constituted a renovated character of Spanish colonial science that was international in orientation and inviting of intellectual exchange. Even in Vidal's passing, García continued to produce work—at times even without the benefit of direct authorship—using the material that he and Vidal likely collected together to build the former Comisión's herbarium.

These samples, as shown in Figure 7, of García's artistic process demonstrate the character of scientific self-fashioning at the end of the nineteenth century. The images demonstrate García's technical training and method toward reproducing Philippine plant life. The undated sketch on the left of *Anisoptera thurifera* likely preceded both finalized lithographs for *Flora de Filipinas* (middle) and *Sinopsis* (right). The structures in the sketch most resemble those in the colored

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<sup>343</sup> 1889-9-6\_21175-21175b, Varios Personajes, NAP. Paulí remarried a physician, Ivan E. Amilon, in Pennsylvania on March 11, 1897. See *Prominent and Progressive Pennsylvanians of the Nineteenth century: A Review of their Careers* (Philadelphia: The Record Publishing Company, 1898), 2:17–18.

<sup>344</sup> Frederic H. Sawyer, *The Inhabitants of the Philippines* (New York: Charles Scribner's Sons, 1900), 49.

<sup>345</sup> Sawyer, 49.

<sup>346</sup> Elmer D. Merrill, *A Discussion and Bibliography of Philippine Flowering Plants* (Manila: Bureau of Printing, 1926), 50.

<sup>347</sup> José G. Reyes, "¿Quién fué Don Regino García y Baza? Notas Biográficas sobre este ilustre Botánico Filipino", 31–33, Unpublished manuscript, Manila, 1940, HL-UST.

<sup>348</sup> "Brief Review of the Forestry Service."

lithograph. Since the *Sinopsis* plate features other members of the Dipterocarpaceae family, García only presents the *A. thurifera* fruit (E-1) and its longitudinal cut (E-2). Fruits of the *A. thurifera* appear in the *Flora de Filipinas* plate, but these are faint and uncolored so as not to detract from the central flowering structure.

These images side-by-side capture García's intellectual engagement with Philippine botany. His fumbling start at the JBM, as discussed in Chapter One, involved his having to learn the basics of plant classification and agriculture. Nevertheless, he would become the most significant JBM employee after the IGM's takeover because he alone carried the institutional memory to execute a more seamless transition. The *Flora de Filipinas* plate reveals his development in the science of botany. He deployed his artistic training to represent plant life with visual integrity for both artistic and scientific purposes. The painting's style also reveals the collective dynamic in the production of *Flora de Filipinas*, whose gatekeepers ensured that all the contributing artists were uniform in their presentation of Philippine flora. But by the *Sinopsis* plate, this had changed for García. By the early 1880s, García demonstrated a mastery over both artistic style and the systematic ordering of the plant world, reflecting his decades of his service to colonial Spanish botany. Not only does he demonstrate his technical skill, he also exhibits his classificatory judgment, thereby fashioning himself as both an artist and a botanist. But all three images also participate in an erasure of the surrounding environment and socio-cultural context. Even if the *Sinopsis* plate implies a wider relation with the plant world, notions of structural affinity limit the presentation of Philippine plant life. As Bleichmar would suggest, García illustrated toward efficiency by decontextualizing plant structures so that they could circulate globally.<sup>349</sup>

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<sup>349</sup> Bleichmar, *Visible Empire*, 151.





Figure 7. (Left) "*Anisoptera thurifera* Blanco" in *Dibujos de plantas por Regino Regino García,* #82, n.d. Reproduction permission courtesy of Pardo de Tavera and Special Collections, Rizal Library, Ateneo de Manila University. (Center) "*Dipterocarpus thurifer* Blanco" illustrated by García in *Flora de Filipinas* ([1837] 1877–1883) by Manuel Blanco. *Dipterocarpus thurifer* is the synonym of the currently accepted *Anisoptera thurifer*. The left sketch reflects the nomenclatural correction to that which originally appeared in Blanco's 1837 *Flora*. Image courtesy of Biblioteca Digital Hispánica, Biblioteca Nacional de España. (Right) "XIV. Dipterocarpeas" in *Sinopsis* Vol. 2, Atlas (Manila: Chofre y Compañía, 1883). The image includes (A) *Dipterocarpus grandiflorus* Blanco, (B) *Dipterocarpus vernicifluus* Blanco, (C) *Dipterocarpus turbinatus* Gaertn., (D) *Dipterocarpus pilosus* Roxb., and (E) *Anisoptera thurifera* Blume. Image courtesy of Biblioteca Digital, Real Jardín Botánico.

## *Conclusion*

The triptych of Figure 7 also reveals how the Spanish state re-fashioned itself as a scientific power relative to emerging empires and to the longstanding clerical power in the Philippines. Through Vidal's international work, his translation of Jagor's *Reisen*, the establishment of the Comisión, its publication of *Sinopsis*, and the Philippine botany exposition exhibits, Spain declared its intellectual advancements in a colonial territory. This, as I have shown, was best captured in the publication of *Sinopsis* and García's unique artistic style that gave the botany work a distinctive quality compared to other synopses published around the same time.

Until the establishment of the JBM, the Spanish colonial state in the Philippines lacked the infrastructure to execute wider botanical investigations. In the triptych, García's rough sketch encapsulates this. The sketch has not "traveled" very far from its archival home in the Rizal Library of Ateneo de Manila University in the Philippines. Unpublished, García's sketch bears similarity to the images and botanical data collected by the early Spanish Empire in the Philippines that never met wide publication or distribution. By the late nineteenth century, however, this changed. The *Flora de Filipinas* plate exemplifies the meeting of both religious and secular scientific enterprise. But this plate acknowledges that the most significant advancements made in Philippine botany until that point had been at the hands of botanizing missionaries. Even if the state and its secular art school supplied many of the artists to illustrate Blanco's *Flora*, the work was still that of the Augustinians. The *Sinopsis* plate, however, signals a shift, one that could exemplify the intellectual might of the Spanish Empire. A work completed solely by its secular colonial functionaries, the *Sinopsis* helped fashion the Spanish state as a scientific one.

Finally, the triptych captures the development of Spanish botany in the wider discourse of Malesian floristic studies. Completed alone, the rough sketch conveys García's work in tandem with a single Philippine plant specimen. The *Flora de Filipinas* plate is one of several in a compendium completed by trained artists and botanists toward a fuller understanding of flora in the Philippines. But the *Sinopsis* plate communicates to a wider network of plant specialists and relies on a scheme of plant life that recognizes structural resemblances in nature. It encourages observers to visualize plants as part of a fuller relational whole based on taxonomic families that are understood to expand beyond a single colony's borders. Even if the *Flora de Filipinas* references publications on tropical flora in nearby colonial terrain, the *Sinopsis* plate magnifies a sense of regionality: an acknowledgment that plants might bear similarity to others elsewhere and not in just one locality. *Sinopsis*, therefore, contributed to a regional thinking that persisted and developed through the first third of the twentieth century, well after the end of Spanish colonialism in the Philippines. While an ethos of internationalism would certainly come to infuse botany through the first third of the twentieth century, I argue that the seeds of this internationalism were planted in the late nineteenth century, when works like *Sinopsis* were shared with botanists claiming to specialize in floristic areas like Malesia.

By the early 1890s, García found himself in a stable teaching career. He was also the director of gardens and parks in Manila. His insights were still useful to his former IGM colleagues. But García's sense of botany and its utility would be rent asunder with the approach of the Philippine revolution. Botany would become part of an intellectual arsenal to fight new colonial incursion.

### Chapter 3: Sovereign Vernaculars toward Territorial Domain

In the mid-1890s, “*Jocelynang Baliwag*” was a popular *kundiman* or Tagalog love song performed in Manila and its environs. Regino García likely knew it well. This particular *kundiman* was dedicated to Josefa Tiongson y Lara, a Bulakeña from the town of Baliwag.<sup>350</sup> She was the subject of several *kundiman* at the time, suggesting her esteem among Manila’s learned circles.<sup>351</sup> Of the songs written in her honor, “*Jocelynang Baliwag*” would come to be praised as the “*kundiman* of the revolution” against the Spanish colonial order.<sup>352</sup> Its elegiac stanzas open:

Divine sweetheart of this soul  
you embody the fragrant *sampaga*  
unsullied in purity, exalted in beauty  
wellspring of shared felicity

Captivating Eden from which  
pleasure and delightful sweetness come,  
toward your light,  
to behold  
the aromatic flower in sudden bloom<sup>353</sup>

While scholars have studied this *kundiman* to examine the role of the woman in Philippine proto-nationalist imagination, few have explored the plant—the *sampaga*—within it.<sup>354</sup> At the turn of the century, Spanish and Tagalog writing commonly featured metaphorical use of the *sampaga*, an indigenously growing shrub in the Philippines. In “*Jocelynang Baliwag*,” Tiongson becomes the

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<sup>350</sup> Luis Camara Dery, *Awit kay Inang Bayan: Ang Larawan ng Pilipinas ayon sa mga Tula’t Kundiman na Kinatha noong Panahon ng Himagsikan* (Manila: De La Salle University Press, 2003), 91.

<sup>351</sup> Dery, 92.

<sup>352</sup> Dery cites Antonio Molina, *Ang Kundiman ng Himagsikan* (Manila: Bureau of Printing, 1940), 23.

<sup>353</sup> “*Pinopoong sinta, niring calolowa/ nacacawangis mo’y mabangong sampaga/ dalisay sa linis, dakila sa ganda/ matimyas na bucal ng madlang ligaya. // Edeng masanghayang kinalulucuan/ ng galac at towang catamistamisan / hada cang maningning na ang matunghaya’y / masamyong bulaclac agad sumisical.*” Dery, *Awit kay Inang Bayan*, 93. The *kundiman* continues by exalting Tiongson, plaintively requesting that she return her love to the singer lest he meet his own ruin. Further into the *kundiman*, another reference worthy of note is that of the *sinucuan* (*sinukuan*). *Sinucuan* likely refers to the mythical goddess of abundance of Mount Arayat in Pampanga, though the term has also historically referred to a folkloric male overseer of the forest. On the islands of Guimaras and Panay, *sinukuan* is a wood sold and used as a protective amulet. The *sinucuan* deserves much more scrutiny than I can cover in this present chapter. For more on the *sinucuan*, see Lino L. Dizon, *Amlat: Kapampangan Local History Contours in Tarlac and Pampanga* (Tarlac: Center for Tarlaqueño Studies, Tarlac State University, 2000), xxviii; Mellie Leandicho Lopez, *A Handbook of Philippine Folklore* (Quezon City: University of the Philippines Press, 2006), 7; Damiana L. Eugenio, “Philippine Folktales: An Introduction,” *Asian Folklore Studies* 44, no. 2 (1985): 162.

<sup>354</sup> Felipe Padilla de León, “Poetry, Music and Social Consciousness,” *Philippine Studies* 17, no. 2 (1969): 271–272; Christi-Anne Castro, *Musical Renderings of the Philippine Nation* (New York: Oxford University Press, 2011), 183–184. See also Bienvenido Lumbera, *Writing the Nation/Pag-akda ng bansa* (Quezon City: University of the Philippines Press, 2000), 98–99.

*sampaga*, the standard to which “beauty” and “purity” are held. Nothing short of Eden, the *sampaga* is divine and mesmeric. For a song like this, not only is the emerging nation gendered, gender and the nation are constructed with and through the *sampaga*.<sup>355</sup>

“Sudden bloom” (“*agad sumisical*”) suggests both Tiongson’s and the nation’s debut. The botanical metaphor most immediately implies Tiongson’s fecund youth. It also signifies the arrival of the Philippine nation. No longer in nascent seed-form, the nation in bloom signals its advent by stirring the visual and olfactory senses. In the science of botany and in the popular imagination, a plant’s flowering form is prized. Once in bloom, a plant reveals its most commonly appealing structure. To botanists, flowers capture the reproductive stage ahead of a plant’s fruiting. Yet, for both the popular imagination and for botanical study, timing is key. To find a flower in bloom is to catch one of the several but fleeting stages in a plant’s reproductive cycle. In this sense, described through the *sampaga*, Tiongson and the Philippine nation are in their prime.

García was at a political crossroads during the mid-1890s. Around him was mounting pressure to overthrow clerical Spanish domination and to assert political reforms. The Spanish colonial government had been imprisoning and executing those suspected of taking part in politically subversive activities. The Katipunan, an anti-colonial revolutionary society, and affiliate groups staged armed uprisings in Manila and in southern and central Luzon provinces from 1896 through 1897. Ahead of these, García’s Philippine- and peninsula-based colleagues published damning tracts against colonial ills. García likely heard rumors of José Rizal’s *Noli me tangere* (1887) and *El filibusterismo* (1891).<sup>356</sup> The two undoubtedly met during the Exposición de Filipinas (Philippine Exposition) in Madrid, if not in Manila before Rizal’s departure for Europe in 1882. Rizal thought highly of García and regarded him as a fellow countryman of great esteem.<sup>357</sup> García was also most certainly familiar with the writings of the Ilocano folklorist and journalist Isabelo de los Reyes, whose propagandist tracts spanned the shores of the Philippines and of Spain. The two were, at least in part, connected through the constellation of Manila publishing. De Los Reyes was a regular contributor to *La Ilustración filipina*, the revived Hispanophone Manila serial, which had published front-page features of García’s and Sebastián

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<sup>355</sup> I acknowledge the work of anthropologists who have problematized the entanglements of gender, plant life, and the nation form. Most immediately, Timothy Choy’s excellent study of the orchid *Spiranthes hongkongensis* is a more contemporary, Hong Kong-based case study that is germane to my present writing and to my general curiosity about the political commandeering of the plant world. Veena Das’s critical examination of the appropriation of women’s bodies toward the project of Indian nationalism inspires some of my own inquiries, to which I attend later in this chapter. See Timothy Choy, *Ecologies of Comparison: An Ethnography of Endangerment in Hong Kong* (Durham: Duke University Press, 2011); Veena Das, *Life and Words: Violence and the Descent into the Ordinary* (Berkeley: University of California Press, 2007). I thank Kara Zamora for directing me to this scholarship.

<sup>356</sup> Few copies of Rizal’s *Noli me tangere* reached the Philippines after its first publication in Germany. The colonial government’s censorship commission recommended the complete ban of the novel. Rumor, according to Carol Hau, spread both Rizal’s name and that of his novel after Rizal’s return to the Philippines in 1887. Caroline Hau, *Necessary Fictions: Philippine Literature and the Nation, 1946–1980* (Manila: Ateneo de Manila University Press, 2000), 50–51.

<sup>357</sup> José Rizal, “De Rizal a Barrantes—Réplica de Rizal a la crítica de Barrantes contra el ‘Noli’” in *Epistolario Rizalino*, Vol. 2, 1887–1890, ed. Teodoro M. Kalaw (Manila: Bureau of Printing, 1931), 301–302.

Vidal's work.<sup>358</sup> It was in this politically and militarily tense climate that García's ears became acquainted with "*Jocelynang Baliwag*," the revolutionary *kundiman* with a version speculated to have been partially written by de los Reyes.<sup>359</sup>

### *Plants to Assert the Nation*

Botany was caught in the crosshairs of Philippine reformism and revolution at the turn of the century. In this chapter, I heed Warwick Anderson and Hans Pols's call to investigate more seriously the role of scientific vision in imperial transition.<sup>360</sup> For the Philippines and the Dutch East Indies, Anderson and Pols account for "the role of the scientific imaginary in making the nation visible," and for the intellectuals, often with medical or biological training, who advanced national aspirations through scientific vocabularies.<sup>361</sup> For the present study, I examine how local plant names sat at the nexus of culture, politics, and science. I take as my focus the *sampaga* and the *sampaguíta*, a Spanish diminutive of *sampaga*. The *sampaga* refers generally to any white-flowered jasmine species, and *sampaguíta* is currently understood to refer to a jasmine species with relatively smaller flowers, the *Jasminum sambac* (L.) Sol.<sup>362</sup> I trace how the *sampaga* and *sampaguíta* became a symbol of Philippine territorial sovereignty during the political foment of the 1890s.

In the first section of the chapter, I follow the foreign intellectual path that fixed the Philippine *sampaga* and *sampaguíta* to its current Latin name. As I show, this path was not straightforward. This centuries-long process included the sensory perceptions of botanizing clerics and colonial naturalists, corrections to Linnaean botany, and locals' knowledge of plants. I suggest, instead, that we picture this path as what Daniela Bleichmar has described as a "triangulation among image, text, and specimen"<sup>363</sup> mediated by human sensory perceptions across time and geographical space in order to determine the *sampaga* and *sampaguíta*'s Linnaean identification. But even through the late nineteenth century, colonial plant specialists in the Philippines were not entirely agreed as to which species was a *sampaga* and which, the *sampaguíta*. This variability is enlightening when considering the plant in popular discourse and how vernacular names elided specificity.

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<sup>358</sup> Megan C. Thomas, "Isabelo de los Reyes and the Philippine Contemporaries of *La Solidaridad*," *Philippine Studies* 54, no. 3: The Book, II (2006): 390. García appeared on the cover of issue number 82 in 1893, and Vidal on that of issue number 31 in 1892. I share reproductions of these images in Chapters 1 and 2.

<sup>359</sup> Resil B. Mojares, *Isabelo's Archive* (Mandaluyong: Anvil Publishing, Inc., 2013), 322–324. Mojares cites Rolando E. Villacorte's short chapter on "*Jocelynang Baliwag*" in *Baliwag! Then and Now* (Caloocan City: Philippine Graphic Arts, 1970).

<sup>360</sup> Warwick Anderson and Hans Pols, "Scientific Patriotism: Medical Science and National Self-Fashioning in Southeast Asia," in *Endless Empire: Spain's Retreat, Europe's Eclipse, America's Decline*, ed. Alfred W. McCoy, Josep M. Fradera and Stephen Jacobson (Madison: University of Wisconsin Press, 2012), 274.

<sup>361</sup> Anderson and Pols, 264.

<sup>362</sup> Maria Mercedes G. Planta, *Traditional Medicine in the Colonial Philippines: Sixteenth through Nineteenth Century* (Diliman: University of the Philippines Press, 2017), 38. Planta cites José Villa Panganiban, *Diksyunaryo-tesauro Pilipino-Ingles* (Manila: Manlapaz Publishing Company, 1972).

<sup>363</sup> Daniela Bleichmar, "Visible Empire: Scientific Expeditions and Visual Culture in the Hispanic Enlightenment," *Postcolonial Studies* 12, no. 4 (2009): 450.



In the second section, I focus on how the *sampaga* and *sampaguita* emerged in elite intellectual and cultural production in the late nineteenth century. Local nomenclature or vernacular plant names often appeared in colonial botany publications, either as a list in the reference index or beside Latin binomials. García, for instance, meticulously recorded local plant names and did so with the earliest seed catalogs of the JBM.<sup>364</sup> These *nombres vulgares* (non-Latin or common plant names) were essential to colonial scientists intent on collecting and identifying species, even if such names referred more generally to an entire genus or to plants bearing morphological similarity. But local nomenclature also appeared in music, poetry, and visual art. Distinct from Latin binomial nomenclature, local plant names saturated cultural production. By studying works from this period, I demonstrate how the *sampaga* and *sampaguita* were not only gendered but also portrayed to be essentially *Philippine* and above the restrictions of scientific language.

It is from this discussion that I propose in the third section of the chapter the term *sovereign vernaculars* to capture the at once political, cultural, and scientific valences of the *sampaga* and *sampaguita* in asserting Philippine territorial domain. I argue that at the turn of the century in the Philippines, sovereign vernaculars defied the imperial, ordering logics of Latin as the *lingua franca* of a science. Some deployed these vernaculars to conjure Philippine patriotism. In addition to the institutional developments in colonial Philippine botany that I have so far covered, I shed light on the existence of another intellectual discourse on plants semi-independent of classificatory schemes or of the linguistic imperialism of Linnaean botany.<sup>365</sup> This discourse prioritized local plant nomenclature to advance a patriotism that could call upon the senses.

But the *sampaga* and *sampaguita* as proto-national symbols were not without contradictions. The species ascribed to *sampaga* and *sampaguita*, for example, are not endemic to the Philippines but rather are believed to have originated from Bengal.<sup>366</sup> The Luzon-centered vernacular name is more currently believed to derive from Arabic (*zanbaq*), though some have suggested a Sanskrit derivation (*champaka*).<sup>367</sup> The plant takes a different name in the archipelago depending on the Philippine language. Despite this, the *sampaga* and *sampaguita* would become important to the envisioned sovereignty of the land, one that could ignite the human senses in pursuit of independence well into the twentieth century.

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<sup>364</sup> The 1869 seed catalog lists rice varieties (*Oryza sativa* L.) by their local name. Zoilo Espejo and García did not include separate Latin binomials for these. The list departs from strict Candollian systematics and makes way for rice varieties that presumably do not have corresponding Latin designations. I provide a list of the names in Chapter 1. Ultramar, Legajo 527, Expediente 2, Número 7, AHN.

<sup>365</sup> Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2007), 194–225.

<sup>366</sup> T. K. Lim, *Edible Medicinal and Non-Medicinal Plants*, Vol. 8, *Flowers* (Dordrecht: Springer Science & Business, 2014), 530.

<sup>367</sup> “*Jasminum sambac*,” Missouri Botanical Garden, <http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b658>. Accessed 8 April 2020; Planta, *Traditional Medicine in the Colonial Philippines*, 38. As early as 1887, Trinidad Pardo de Tavera corrected Johan Hendrik Caspar Kern’s 1880 list of Sanskrit-derived Tagalog words, which suggested that *sampaga* derives from *champaka*, a *Michelia* species with fragrant yellow flowers. According to Pardo, Kern was not aware that the words *sampaca* and *sampaga* refer locally to two different species in the Philippines. See Trinidad Pardo de Tavera, *El sanscrito en la lengua tagalog* (Paris: Imp. de la Faculté de médecine, A. Davy, 1887), 48. See also note 76, below.

With these contradictions in mind, I close the third section by returning to García. Even though García is believed to have ignored the initial cries for Spanish reform and revolution, he participated in the anti-colonial efforts against the United States.<sup>368</sup> With the U.S. takeover of the Philippines in 1898, García joined the independent government headed by Emilio Aguinaldo (1869–1964). Members of the Aguinaldo government appointed García as Inspector General of the Inspección General de Montes (Forestry Bureau; IGM), which by then had been gutted of much of its original personnel and infrastructure. What we have from this time in García’s life are records of the Aguinaldo government from the onset of Philippine-American War (1899–1902) that give some sense of what his activities may have been. I discuss this work and point to some of the parallels between the *sampaga* and *sampaguíta* discourse and the short-lived revolutionary IGM instituted under Aguinaldo’s insurgent government and most especially, the contradictions that beset them.

García’s ambivalence is instructive when examining the role of botany in anti-colonial Philippine history. On the one hand, the science has been linked to colonial conquest, commercial profiteering, and in this dissertation, to inter-imperial intellectual consolidation. On the other hand, scores of local intellectuals from colonial contexts were trained in or engaged in the science, infusing botany conventions with aims that were not altogether at the mercy of imperial whims. As Jorge Cañizares-Esguerra shows for Spanish America, “Once the imperial science of Linnaean botany arrived in the ‘tropics,’ it took on a life of its own, and it was eventually deployed by local patriot-naturalists to undermine the very goals that Linnaean natural history had set out to accomplish...namely, to revamp and strengthen the empire.”<sup>369</sup> In late-nineteenth century Philippine history, this tension was not unique to the botany discipline. García’s very contemporaries grappled with the imperial logics of colonial ethnology, philology, and physical anthropology. According to Megan C. Thomas, *ilustrados* (enlightened intellectuals) used the Orientalist and racialist discourses of social scientific disciplines to promote anti-colonial ends.<sup>370</sup> Steeped in cosmopolitanism, these “worldly colonials” deployed such discourses to buttress calls for political reforms in the Philippines. Resil B. Mojares writes similarly of Rizal’s engagements with and substantive contributions to German anthropology.<sup>371</sup> These efforts, as Filomeno V. Aguilar has shown, were beset with contradictions as *ilustrados* attempted to trace the origins of Philippine civilization and its peoples using the very disciplinary tools that touted fundamental inequality.<sup>372</sup>

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<sup>368</sup> Luciano P. R. Santiago, “The Painters of the *Flora de Filipinas* (1877–1883),” *Philippine Quarterly of Culture and Society* 21, no. 2 (1993): 94; José G. Reyes, “¿Quién fué Don Regino García y Baza? Notas Biográficas sobre este ilustre Botánico Filipino,” Unpublished manuscript, 23–25, 1940, HL-UST.

<sup>369</sup> Jorge Cañizares-Esguerra, *Nature, Empire, and Nation: Explorations of the History of Science in the Iberian World* (Stanford: Stanford University Press, 2007), 13.

<sup>370</sup> Megan C. Thomas, *Orientalists, Propagandists, and Ilustrados: Filipino Scholarship and the End of Spanish Colonialism* (Minneapolis: University of Minnesota Press, 2012).

<sup>371</sup> Resil B. Mojares, “Jose Rizal in the World of German Anthropology,” *Philippine Quarterly of Culture and Society* 41, nos. 3–4 (2013): 163–194.

<sup>372</sup> Filomeno V. Aguilar Jr., “Tracing Origins: ‘Ilustrado’ Nationalism and the Racial Science of Migration Waves,” *Journal of Asian Studies* 64, no. 3 (2005): 605–637.

### *I. A Ubiquitous Flower? Identifying the Sampaga*

By the mid-1890s, the *sampaga* in “*Jocelynang Baliwag*” would have spoken to several of García’s scientific sensibilities. He encountered the plant professionally when organizing the first seed catalogs for the Jardín Botánico de Manila (JBM). The JBM had at least a couple of *Jasminum* species in its earliest holdings, and he and his colleagues cultivated *J. sambac* on the grounds of the garden.<sup>373</sup> He was also familiar with the Oleaceae (Oleáceas) family, to which the *Jasminum* genus currently belongs, since he illustrated some of its member species for the *Sinopsis de familias y generos de plantas leñosas de Filipinas* (*Synopsis of Families and Genera of Philippine Flowering Plants*; pub. 1883; hereafter *Sinopsis*).<sup>374</sup>

Outside of García’s botanical work, the *sampaga* and the *sampaguíta* were reportedly common on Manila’s streets. He would have seen them growing in private gardens and would have smelled their fragrance once in bloom. If not raised in cultivation, the flowers were peddled and worn. As once described by Rizal in an explanatory note in Pedro Paterno’s poetry collection *Sampaguitas*, “The *sampaguíta* is a very known and esteemed flower in Manila, known for its beauty and pleasant scent. Young Filipinas adorn themselves with whimsical necklaces of strewn *sampaguíta* or artistic coronets that embellish their hairstyles.”<sup>375</sup> The *sampaga* ornaments Rizal’s own novel *Noli me tangere*, appearing in scenes with young women, with the iconic María Clara, and allegedly on the grave of the protagonist’s slain father.<sup>376</sup> By the late nineteenth century, it would seem that residents of Manila and its environs took the *sampaga* and the *sampaguíta* as givens.

Made manifest in botanical publications and through cultural production in the late nineteenth century, the *sampaga* and the *sampaguíta* were widely understood as species of jasmine, distinguished by their white flowers and potent scent. While I do not discount early modern colonial Philippine records detailing their existence or more contemporary studies that verify the *Jasminum* in the Philippines, I want to unsettle for a moment the idea that the *sampaga* and the *sampaguíta* have “always been.” The ontology and epistemology I choose to investigate in this opening section are those entangled with the science of botany. I apply Karen Barad’s notion of agential realism to suggest that “reality is not independent of our explorations of it—both epistemologically *and* ontologically speaking.”<sup>377</sup> As Barad asserts, “knowledge projects” produce phenomena, which are themselves produced from the “intra-action” of the material and the cultural. In other words, “culture does not displace or replace nature, but neither do *things* exist

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<sup>373</sup> Ultramar, Leg. 527, Exp. 2, Núm. 60, AHN.

<sup>374</sup> Sebastián Vidal y Soler, *Sinopsis de familias y generos de plantas leñosas de Filipinas, introducción á la flora forestal del archipiélago filipino*, Vol. 2, *Atlas* (Manila: Chofre y Compañía, 1883), xxxii.

<sup>375</sup> Pedro Alejandro Paterno, *Sampaguitas* (Madrid: F. Cao and de Val, 1881), 11. In the 1917 edition of *Sampaguitas*, a footnote explains the *sampaguíta*, and this language also appears in Antonio Quilis and Celia Casado-Fresnillo’s *La lengua española en Filipinas* as having been written by Rizal. See Antonio Quilis and Celia Casado-Fresnillo, *La lengua española en Filipinas: historia, situación actual, el chabacano. Antología de textos* (Madrid: Consejo Superior de Investigaciones Científicas, 2008), 293.

<sup>376</sup> José Rizal, *Noli me tangere* (Barcelona: Maucci Hermanos, [1887] 1902).

<sup>377</sup> Karen Barad, “Meeting the Universe Halfway: Realism and Social Constructivism without Contradiction” in *Feminism, Science, and the Philosophy of Science*, ed. Lynn Hankinson Nelson and Jack Nelson (Berlin: Springer, Dordrecht, 1996), 183.



outside of culture.”<sup>378</sup> Put another way, “reality is itself material-cultural,” formed by the “between” of the classical Cartesian dualisms according to Barad.<sup>379</sup> With Barad’s approach in mind, my investigation of the *sampaga* and *sampaguita* seeks to show how a plant species became an unquestioned part of Philippine territorial reality among Luzon’s learned circles by the late nineteenth century.

### “Like the Jasmine”

Before the late nineteenth century, naturalist manuscripts and colonial dictionaries indicated the prevalence of jasmine-like species in the Philippines. In the seventeenth century, Francisco Ignacio Alcina’s *Historia natural del sitio, fertilidad y calidad de las islas e indios de Bisayas* (*Natural History of the Visayan Islands*, pub. 1668) recorded the “*marol*,” which Alcina describes as “like our jasmine, but much more fragrant.”<sup>380</sup> Alcina quotes the saying, “[E]l jazmín por el olor es el mejor” (“the jasmine, for its scent, is the best”), but he assesses the Visayan *marol* as having a more profound scent than the peninsular variety.<sup>381</sup> He further equates the *marol* with the Manila *sampaga*, which had been reportedly ancient to the islands.<sup>382</sup> In their 1754 *Vocabulario de la lengua tagala* (Tagalog vocabulary), Jesuit priests Juan José de Noceda and Pedro de Sanlucar translate “*sampaga*” as a “jasmine-like flower.” They provide verb forms for the word, including “*magsampaga*” or to adorn oneself in *sampaga*, and “*magcacasampaga*” or to have the flower once more in a garden.<sup>383</sup> The two also translate the Tagalog word *campupot* also as a white-leaved, jasmine-like plant.<sup>384</sup>

Records like these show how realities of the *sampaga* were mediated through the sensorial interactions between Catholic priests and plant life.<sup>385</sup> Foreigners brought their subjectivities to the Philippine plant world, likening local plants to those on the Iberian Peninsula to “render the unfamiliar familiar.”<sup>386</sup> “Jasmine-like,” written as “*como el jazmín*” in Alcina’s natural history and in *Vocabulario de la lengua tagala*, reflects a number of assumptions. First, Alcina’s natural history categorizes the *marol/sampaga* as a flower. He does not explain, however, what constitutes a flower, and the Hispanophone foreign reader must presume that the *marol/sampaga* fits the visual and haptic parameters that constitute such. Second, Alcina does not explicate “the jasmine,” which suggests that he may have referred to a jasmine of common knowledge among his readership, which likely consisted of Spanish-speakers predominantly hailing from peninsular Spain. Since

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<sup>378</sup> Barad, 181. Emphasis mine.

<sup>379</sup> Barad, 188.

<sup>380</sup> Francisco Ignacio Alcina, *History of the Bisayan People in the Philippine Islands: Evangelization and Culture at the Contact Period*, ed. and trans. Cantius J. Kobak and Lucio Gutiérrez (Manila: University of Santo Tomas Publishing House, [1668] 2002), 578.

<sup>381</sup> Alcina, 578.

<sup>382</sup> Alcina, 578.

<sup>383</sup> Juan José de Noceda and Pedro Sanlucar, *Vocabulario de la lengua tagala* (Valladolid: Higinio Roldan, [1754] 1832), 349.

<sup>384</sup> De Noceda and Sanlucar, 98.

<sup>385</sup> Barad, “Meeting the Universe Halfway,” 187.

<sup>386</sup> Resil B. Mojares, *Brains of the Nation: Pedro Paterno, T. H. Pardo de Tavera, Isabelo de los Reyes and the Production of Modern Knowledge* (Quezon City: Ateneo de Manila University Press, 2006), 384.

the jasmine goes without further specification, this insinuates an agreement as to what sensory stimuli constituted jasmine on the peninsula. Noceda and Sanlucar do the same to define the *sampaga*. In so doing, the botanizing missionaries onto-epistemologically tether the *sampaga* to a peninsular variety for foreign audiences. The *sampaga*'s verb forms, however, intimate a local engagement with the plant that well preceded their observations: the *sampaga* was worn, given, and grown, implying greater versatility of use and being. The plant name was even modified to indicate relation between two or more individuals: a *casampaga* was a companion to whom a flower was given.<sup>387</sup>

As Steven Shapin emphasizes, "Speech about natural reality is a means of generating knowledge about reality."<sup>388</sup> Shapin's study of Robert Boyle's linguistic practices are germane to the two texts, which also used the printed text-artifact to generate and validate "facts" on phenomena in the Philippine environment. For instance, Alcina makes several statements that communicate his olfactory sense of the *maroll/sampaga*. He does not provide his subjective parameters that gauge the intensity of a plant's aroma. But he claims that the *maroll/sampaga* fragrance is more pronounced than that on the peninsula, even though it is its very fragrance and physical features that make it most *like* the jasmine to begin with. As Barad would suggest, this recorded phenomenon is therefore the product of the "intra-action" of the object—the *maroll/sampaga*—and the "measuring agency"—Alcina's olfactory sense.<sup>389</sup> Inhabiting the descriptive natural history genre, Alcina's narrative mode and deployment of his sensory observations—visual and olfactory—establish the grounds for communicating fact while establishing authority in his account.

The *Vocabulario de la lengua tagala* does similarly. The interlingual dictionary mediates between Spanish and Tagalog, presumably translating local vocabulary for foreign audiences. Peninsular jasmine, in this case, would be a necessary referent to achieve translation. But as Vicente Rafael has noted, the mechanics of vernacular translation in the early Spanish Philippines were deeply embedded in and reflective of the politics of colonial conversion.<sup>390</sup> Clerics could not always achieve one-to-one Castilian-Tagalog translations, and it is in these uneven equivalences one could discover colonial anxieties.<sup>391</sup> The Tagalog *nono*, for example, puzzled missionaries, who translated the term as a "tutelary spirit" as understood through the theological and historical valences of paganism.<sup>392</sup> But in the local sense, *nono* "always referred to something more than could be spoken of: spirits in nature and ghosts of dead ancestors," with no fixed names or ornate mythologies.<sup>393</sup> Because of this untranslatability, Rafael asserts, "The word carried a reserve of referents that

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<sup>387</sup> Mojares, 349.

<sup>388</sup> Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology," *Social Studies of Science* 14, no. 4 (1984): 481.

<sup>389</sup> Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham: Duke University Press, 2007), 128.

<sup>390</sup> Vicente L. Rafael, *Contracting Colonialism: Translation and Christian Conversion in Tagalog Society under Early Spanish Rule* (Durham: Duke University Press, 1993).

<sup>391</sup> Rafael, 120–121.

<sup>392</sup> Rafael, 111–114.

<sup>393</sup> Rafael, 113–114.

exceeded the limits of what the Spaniards could say about it.”<sup>394</sup> That the *sampaga* was “jasmine-like” reflects this empirical uncertainty. Met with the challenge of describing, translating, and communicating local Philippine flora, Sanlucar, Noceda, and Alcina wrestled with the ambiguity of the *sampaga* and the image they had to manufacture of it for their readers.

### *A Latin Name by Way of Linnaean Triangulation*

These generalized resemblances changed in the first half of the nineteenth century, when Francisco Manuel Blanco identified the *sampaga* as the *Nyctanthes sambac* in his 1837 *Flora de Filipinas*. His identification dominated much of Philippine intellectual production in the remaining nineteenth century and drew from European botanical scholarship. For the *Flora de Filipinas*, Blanco principally applied Carl Linnaeus’s (1701–1778) *Systema vegetabilium* and Bernard de Jussieu’s (1699–1777) *Genera plantarum* to classify Philippine plant species.<sup>395</sup> To identify the *sampaga* as *N. sambac*, Blanco relied on Linnaeus’s identification of the same alleged plant in Linnaeus’s *Species plantarum* (pub. 1753).<sup>396</sup> Linnaeus described the *N. sambac* by what he designated as its sexual characteristics, categorizing it as a species of the now-obsolete taxonomic class, Monandria.<sup>397</sup> In the 1758 edition of *Systema naturae*, Linnaeus wrote of the *N. sambac* again, citing and correcting Georg Eberhard Rumphius’s posthumously published *Herbarium amboinense*, which had named the same purported species *Flos manorae*.<sup>398</sup> From the available description of the *N. sambac*, Blanco claimed the *sampaga* as such. In *Flora de Filipinas*, Blanco curiously does not identify the color of the flowers, but describes the *sampaga* by its structural shapes using Linnaean vocabulary to achieve the description.<sup>399</sup> He also declares that the *sampaga* is known among all natives for its fragrance and for its plentitude. Blanco also lists the species’ common names as *sampaga* (Tagalog), *capopot bisaya*, *manul* (Visaya), *campopot*, *sampagang pongso*, and *culatai* (Pampangan). These common names not only signal Blanco’s access to local informants or linguistic capacity but also the possible growing localities of the species. Though Blanco makes no claim regarding the plant’s spontaneous growth or cultivation,

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<sup>394</sup> Rafael, 115.

<sup>395</sup> Francisco Manuel Blanco, *Flora de Filipinas según el Sistema sexual de Linneo* (Manila: Candido Lopez, 1837), iii–iv.

<sup>396</sup> Carl Linnaeus, *Species plantarum* (Stockholm: Laurentii Salvii, 1753), 6. Linnaeus cited *Hortus Cliffortianus* (1737) and *Flora Leydensis* (1740), as well as his own *Hortus upsaliensis* (1748) and *Flora zeylanica*, which include information on the *Nyctanthes* but do not cite the species *N. sambac*.

<sup>397</sup> “*N. fol. inferioribus cordatis obtusis, superioribus ovatis acutis.*” Carl Linnaeus, *Systema naturae per regna tria naturae: secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis* (Stockholm: Laurentii Salvii, 1758), 847.

<sup>398</sup> Georg Eberhard Rumphius, *Herbarium amboinense: plurimas complectens arbores, frutices, herbas, plantas terrestres & aquaticas, quae in Amboina et adjacentibus reperiuntur insulis adcuratissime descriptas iuxta earum formas, cum diuersis denominationibus cultura, usu, ac virtutibus, quod & insuper exhibet varia insectorum animaliumque genera, plurima cum naturalibus eorum figuris depicta* (Amsterdam: Apud Franciscum Changuion, Joannem Catuffe, Hermannum Uytwerf, 1757), 5:52.

<sup>399</sup> “*Tallo tendido por tierra, cilindrico y algo comprimido. Hojas opuestas aladas sin impar en numero de tres pares. Hojuelas escotadas en la base, lanceoladas aovadas enteras y lampiñas. Peciolos Propios muy cortos. Flores terminales, en una especie de panoja de muchas florecitas monofilo. Cal. en ocho ó nueve partes muy largas y alesnadas. Cor. Hendida en siete ú ocho partes, con el tubo largo.*” Blanco, *Flora de Filipinas*, 9.

one might at least allege that the species was familiar to certain members of the Tagalog, Visaya, and Pampangan ethnolinguistic communities.

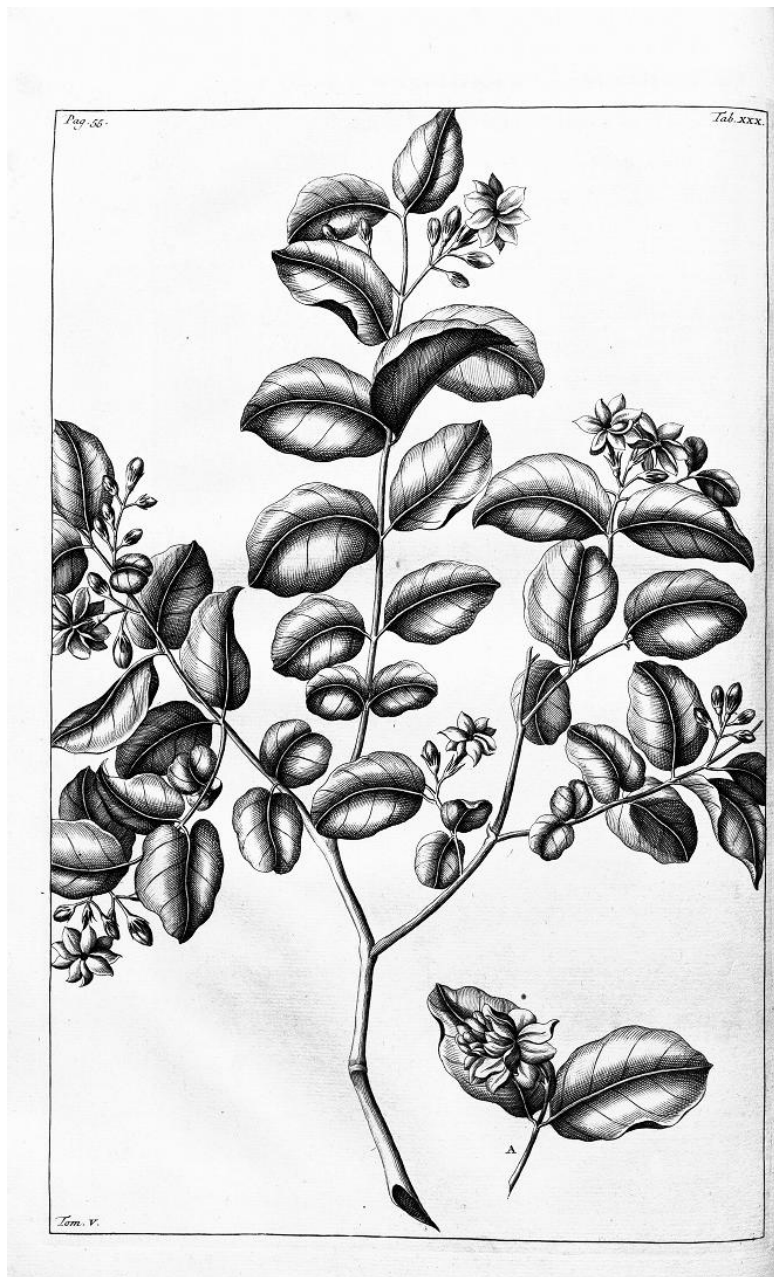


Figure 8. *Flos manorae* (*Bonga Manoôt*), Tab. XXX, *Herbarium amboinense*, Vol. 5 (Amsterdam: Apud Franciscum Changuion, Joannem Catuffe, Hermannum Uytwerf, 1757).  
Image courtesy of the Peter H. Raven Library, Missouri Botanical Garden.



Figure 9. “*Jasminum sambac* (L.) Sol.” The penciled identification on the bottom right of the specimen sheet reads, “*Nyctanthes sambac*.” On the back of the sheet, India is cited as the specimen’s habitat. Most distinctive of this specimen is the color of its flowers, which clashes with Alcina’s description of the *marol/sampaga*. Alcina wrote that potted arrangements of the *marol/sampaga* shrub appear “very ornate with the white of the flowers” (Alcina, *History of the Bisayan people*, 580). Herbarium Catalogue, Naturhistoriska riksmuseet, 30 April 2008, <http://herbarium.nrm.se/specimens/S09-18585/image/888023>. Accessed 10 July 2020.

Image and reproduction permission courtesy of the herbarium of the Naturhistoriska riksmuseet (Swedish Museum of Natural History).

But Blanco ascribed *N. sambac* to the *sampaga* decades after Scottish botanist William Aiton (1731–1793) corrected Linnaeus’s determination. Working from a description by Swedish

naturalist Daniel Carlsson Solander (1733–1782),<sup>400</sup> Aiton identified the *N. sambac* as a member of the *Jasminum* genus—not *Nyctanthes*—and the identification has been generally accepted since. In his *Hortus kewensis* (1789), Aiton alleges that that the species is native to the East Indies. Using the Kew collections, he reclassifies the species as a member of *Jasminum*.<sup>401</sup> To make the correction, he also refers to Hendrik van Rheede’s (1636–1691) *Hortus indicus malabaricus* (pub. 1678–1693), a flora from what is known today as the Western Ghats region of India. Aiton looked to van Rheede’s description and illustration of the “*kudda-mulla*” that includes classificatory notes of its being *J. sambac*.<sup>402</sup> Blanco likely did not have access to Aiton’s correction and worked only from Linnaeus. Yet, over a century ahead of Blanco’s *Flora de Filipinas*, another botanizing cleric attempted to identify the Philippine *sampaga*. This attempt, however, went largely unreferenced in international botanical discourse.

From the late seventeenth century and into the start of the eighteenth, the Bohemian Jesuit missionary Georg Joseph Kamel cataloged what he observed of the *sampaga* during his botanical fieldwork in Manila and its surroundings. Kamel maintained robust correspondence networks with European scholars, and such long-distance networks, as Šebestián Kroupa has shown, ensured a circulation of botanical findings to and from the Philippines that shaped natural knowledge in the late seventeenth century.<sup>403</sup> In 1704, Kamel published his observations of the *sampaga* in *Philosophical Transactions of the Royal Society*. In his piece on Philippine climbing plants, Kamel identifies at least six different jasmine species. Of these, he suggests that there are three local species that bear similarity to the Arabian jasmine (*zambach*), which locals referred to as *sampaga*, a possible cognate to the Arabic term.<sup>404</sup> The cognate may have developed from trade circuits of which the Arabian jasmine was a part. According to Kroupa, though Kamel may have determined *sampaga* to refer to the Arabian *zambach*-like species, Kamel made no firm identification.<sup>405</sup>

Kamel’s illustrations (fig. 10) of the Philippine jasmines were not published in *Philosophical Transactions*, nor was his publication cited in Linnaeus’s writing on the *N. sambac*, Rumphius’s on *F. manorae*, or Aiton’s on *J. sambac*. As Kroupa points out, Kamel’s work toward fixing Philippine plants to Latin designations or known species went largely unreferenced, in part because his published writings were not illustrated.<sup>406</sup> Although Kamel had corresponded with his European colleagues and remitted detailed images of plants he encountered in the Philippines, the

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<sup>400</sup> “Distribution géographique des récoltes de *Jasminum sambac* (C. Linnaeus) D. C. Solander x W. Aiton,” Les taxons, Nadeaud Database of the Herbarium of French Polynesia, <http://nadeaud.ilm.pf/details-taxon/2885>, n.d. Accessed 10 July 2020.

<sup>401</sup> William Aiton, *Hortus kewensis, or, A Catalogue of Plants Cultivated in the Royal Botanic Garden at Kew* (London: Georg Nicol, 1789), 8.

<sup>402</sup> Hendrik van Rheede, *Hortus indicus malabaricus*, Vols. 5–6 (Amsterdam: Johannis van Someren and Joannis van Dyck, 1685–1686), 88–89.

<sup>403</sup> Šebestián Kroupa, “Ex epistulis Philippinensibus: Georg Joseph Kamel SJ (1661–1706) and His Correspondence Network,” *Centaurus* 57, no. 4 (2015): 229–259.

<sup>404</sup> Georg Joseph Kamel, “Tractatus de plantis Philippinensibus scandentibus,” *Philosophical Transactions of the Royal Society* 24 (1704): 1838–1840. I thank Šebestián Kroupa for this source and his assistance with the translation.

<sup>405</sup> Šebestián Kroupa, communication with author, 10 April 2020.

<sup>406</sup> Šebestián Kroupa, “Georg Joseph Kamel (1661–1706): A Jesuit Pharmacist at the Frontiers of Colonial Empires,” (PhD Diss., Cambridge University, 2019), 143.



images saw no wider circulation. Without visual media to help mediate these observations of Philippine flora, Kamel's writings went unrecognized.<sup>407</sup>



Figure 10. "Jasminum, or Sambach." This is one of several of Kamel's unpublished illustrations of the Philippine species with purported similarity to Arabian jasmine. His illustrations accompanied his manuscript for the 1704 article in *Philosophical Transactions*. I thank Sebastián Kroupa for supplying this source.

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The intellectual history I have just outlined is typical of taxonomic botany practice. But understood through another lens, I suggest we visualize Blanco's 1837 determination of the *sampaga* as a triangulation. To ascribe a Latin name to the plant species, Blanco relied on Linnaeus's work in Sweden drawn from a specimen likely remitted from what we now consider the Indian subcontinent (fig. 9), which was used to correct Rumphius's observations of the allegedly same species growing on Ambon in the Dutch East Indies (fig. 8). Each node along this route was mediated by the sensory perceptions of the working naturalists and a shared vocabulary for classifying plant life. Yet, this vocabulary still permitted naturalists' idiosyncratic observations: the leaves of the *Flos manorae*, for example, are "like the leaves of the orange apple, but shorter and rounder" according to Rumphius.<sup>408</sup> For Rumphius and Linnaeus, this particular vocabulary proscribed a plant suspected to be the same across time and geographic space. These were the routes that brought the Philippine *sampaga* into wider formalized botany discourse—routes that Blanco relied upon to make the plant he claimed to observe legible to botanists.

I read these textual and visual materials as co-constitutive entities of discourse and botany practice that produced one of the innumerable realities of locally growing Philippine plant life. It

<sup>407</sup> Kroupa, 181.

<sup>408</sup> Rumphius, *Herbarium Amboinense*, 52.

should be remembered that before foreign naturalists' efforts to identify the *sampaga*, locals considered the plant as part of a larger socio-cultural system of relations, wherein the *sampaga* was used in social exchange, as an ornamental, for trade and commerce, or for cultural rites. As Mojares rightly articulates, "That [the Philippines] remained relatively isolated, imperfectly penetrated by Europe, meant that well into the colonial period much of local life unfolded according to its own imaginaries and historicities."<sup>409</sup> I apply Mojares's assertion to suggest that the regimenting of colonial Linnaean botany took hold unevenly across the archipelago. Ahead of and during the colonial encounter, the *sampaga* also existed onto-epistemologically outside of the nomenclatural constraints of *Nyctanthes* or *Jasminum*, which had been defined by foreign botanists relying on the texts, images, and preserved plant specimens remitted across time and geographic space. The foreign species designation of the *N. sambac* and *J. sambac* came by way of these triangulated axes and would be reiterated through the late nineteenth century among particular intellectual circles.<sup>410</sup>

### *Eliding Authority: Nombres Vulgares*

As discussed in Chapter Two, members of the Comisión de la Flora y Estadística Forestal de Filipinas (Philippine Flora and Statistics Commission; hereafter Comisión) revised Blanco's *Flora de Filipinas* in coordination with the Augustinian Order. In the fourth volume of the revised *Flora de Filipinas*, the Comisión's editors changed Blanco's original identification and re-identified the *sampaga* as *J. sambac* following Aiton's correction. This correction had not been made in the second reissue of Blanco's work in 1845. In the Comisión's revision, the *Flora de Filipinas* cites several species of *Jasminum*, and the work limits each of the species' collecting localities to Luzon, Guimaras, Pan-ay (Panay), Manila, or Mindanao. Yet, it claims the *J. sambac* to be "ubiquitous."<sup>411</sup> This claim to ubiquity, which goes without definition in the *Flora de Filipinas*, implies the far-reaching expanse of the *sampaga* across the archipelagic geography. Prior to this, writings on the *sampaga* were much more limited in geographic range. What determined ubiquity? Whose judgments were paramount in this claim? Was the *sampaga* of Manila the same species of *Jasminum* on Paragua or Cebu? Upon whose observations did this rely?

While the Comisión and the IGM had employees deployed across the colony, no surviving record suggests that each stationed employee observed the *sampaga*. Even though IGM foresters and surveyors remitted plant material to Manila, the *sampaga* was not singularly sent because it was not considered to be a significant forest product.<sup>412</sup> Furthermore, the *sampaga* and *sampaguíta* that Sebastián Vidal and Regino García reference in their *Sinopsis* grew principally in Manila. As such, there are discrepancies between *Sinopsis* and *Flora de Filipinas*. First, Vidal and García equate the *sampaguíta*—not the *sampaga*—to *J. sambac*.<sup>413</sup> Second, in their index to common plant

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<sup>409</sup> Mojares, *Brains of the Nation*, 394.

<sup>410</sup> Jean Mallat's *Les Philippines* (1847) identifies the *sampaguíta* as *N. sambac*, placing it in a class of botanical perfumes from the archipelago. See Jean Mallat, *Les Philippines: histoire, géographie, moeurs, agriculture, industrie et commerce des colonies espagnoles dan l'Océanie* (Paris: A. Bertrand, 1846). The earliest seed catalogs of the JBM listed the *N. sambac*. See Ultramar, Leg. 527, Exp. 1, Núm. 68 [listed as 58], AHN. This changes to *J. sambac* by 1868. See Ultramar, Leg. 527, Exp. 1, Núm. 70 [listed as 60], AHN.

<sup>411</sup> Francisco Manuel Blanco, *Flora de Filipinas* (Manila: Plana & Co., [1837] 1880), 127–128.

<sup>412</sup> Vidal, *Sinopsis*, 180–181.

<sup>413</sup> Vidal, 180–181.



names, *sampagas* (Tagalog) refers to the *Jasminum* genus generally, which means that “*sampagas*” among locals may have denoted any member of the *Jasminum*. The plant name “*sambac* (Manila)” also refers to *Jasminum*, though curiously, “Manila” stands alone as a language in the index.<sup>414</sup> In other words, to Vidal and García, “Manila” was a unique Philippine language. The language would have been a mixture of Spanish, Tagalog, and possibly Hokkien, distinct to the colonial capital and perhaps any one of creole languages of the marketplace.<sup>415</sup> Even the *campopot* (Pampangan) could refer to members of the *Jasminum* or the *Tabernaemontana* genus.<sup>416</sup> *Sinopsis* does not mention the Visayan *marol* but does suggest the *sampac/sampaca* (Visaya)—a linguistic “false friend” in the botanical sense—refers to the since-updated *Michelia* genus.<sup>417</sup>

Even by the late nineteenth century, inconsistency marked the two major works published by members of the same scientific institutions. This inconsistency could be attributed to the different collecting practices in the field. Possible conflicts between the authors’ varying number of informants and their knowledges of plants likely led to a number of distinct common names. The compilers of the text, too, imparted their own judgments: to suggest that “Manila” was a distinct language implies a different nomenclatural approach to plant life, centralized to the colonial capital. The expanse of their collecting work was also not well documented, and much seemed to have relied on anecdotal claims. What we have, therefore, up to the late nineteenth century, is a tapestry of writings that constitute the idea of the *sampaga* across the colony and over time to achieve an ill-defined “ubiquity.”

Across the sample of the provided local names, one can note how the botanists distinguish their knowledge of Philippine flora from the less expertly trained—or those who use the *nombres vulgares*. These differentiate the botanists from the unnamed “other.” As Vincent Crapanzano explains, constitution of the self is continuously mediated through characterization of the other. For instance, an illusion of a fixed self—and therefore, fixed alterity—may emerge. But as Crapanzano suggests, the process is in perpetual dialectical movement.<sup>418</sup> To catalog local names, I argue, was one way colonial botanists could reassert the scientific self in distinction to the informant-other. The nomenclatural inconsistencies across the sources in turn reveal the uncertainties of presumed scientific authority. For as variable as the *nombres vulgares* are, variable as well are the collecting practices, cataloging work, and nomenclatural norms of the specialists. The knowledge of informants, the judgments of specialists, and the methods of intellectual certainty disturbed the attempt to regiment knowledge of the *sampaga* and the *sampaguita*.

By the late nineteenth century, a precise and stable Latin species designation was elusive for the *sampaga* and the *sampaguita* or their purported synonyms across the archipelago. The variability of fieldwork challenged attempts to tack the “correct” Latin determination to a local

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<sup>414</sup> Vidal, 391.

<sup>415</sup> Vicente L. Rafael, “The War of Translation: Colonial Education, American English, and Tagalog Slang in the Philippines,” *Journal of Asian Studies* 74, no. 2 (2015): 297.

<sup>416</sup> Rafael, 308.

<sup>417</sup> The reference also appears in Kamel’s writings, which according to Kroupa, is a plant name derived from Sanskrit. Kroupa, “Georg Joseph Kamel,” 156. Despite their similarity—*sampaca* and *sampaga*—the two refer to different genera in *Sinopsis*.

<sup>418</sup> Vincent Crapanzano, “Self-Centering Narratives,” in *Natural Histories of Discourse*, ed. Michael Silverstein and Greg Urban (Chicago: University of Chicago Press, 1996), 112.

name. By the early twentieth century, U.S. colonial botanists reiterated Aiton's determination.<sup>419</sup> U.S. publications claimed the *J. sambac* to be "commonly cultivated throughout the Philippines for ornamental purposes but probably [grew] nowhere spontaneous."<sup>420</sup> However, the flexible character of the *sampaga* and *sampaguíta* would play to the advantage of the patriotic impulses. The claim to ubiquity would become important as popular literature and music brought the *sampaga* and the *sampaguíta* into intellectual and cultural discourse in the final decades of the nineteenth century once the flower took on new meaning for the entire archipelago.

## II. The Flower of Elite Imaginations

The *sampaga* and *sampaguíta*—at times conflated in popular understanding—were the subjects of cultural masterpieces in the late nineteenth century. Ahead of "*Jocelynang Baliwag*," Dolores Paterno y Ignacio's (1854–1881) 1879 musical composition "Flor de Manila" and the poetry of Leona Florentino (1849–1884) graced an elite section of society and popularized gendered and gendering meanings behind the flower.<sup>421</sup>

Paterno has been remembered as the first Filipina composer.<sup>422</sup> Her *danza*, a genre of ballroom dance, was an ode to the *sampaguíta*, which she denoted as the "flower of Manila." The song's nationalist undertones prefigured those that would be made of the *sampaga* in "*Jocelynang Baliwag*." These undertones appear in the *danza* lyrics, which were allegedly written by her brother Pedro, author of the *Sampaguitas* poetry collection.<sup>423</sup> As the *danza* opens, the lyrics present a flower whose charms are collectively shared: "Gentile *sampaguíta* how you flatter / with your aroma, my Filipina, / pilgrim flower *sampaguíta* / your tresses you embroider."<sup>424</sup> Paterno's word choice for the opening lines reveals both literary skill and lyrical playfulness. At first listen, "gentile"

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<sup>419</sup> Elmer D. Merrill, *A Flora of Manila* (Manila: Bureau of Printing, 1912), 365–366.

<sup>420</sup> Elmer D. Merrill, *An Enumeration of Philippine Flowering Plants* (Manila: Bureau of Printing, 1923), 3:308. Merrill lists a wider variety of local names including *hubar* (Sulu), *kulatai* (Pampangan), *lumabi* (Maguindanao), *malul* (Maguindanao), *pongso* (Pampangan).

<sup>421</sup> Leonarda Navato Camacho, *100 Taon: 100 Filipina sa digmaan at sa kapayapaan* (Quezon City: SBA Printers, Inc., 2000), 117. The vernacularization of botany terms and floral metaphors are not new to literary studies. As Amy M. King has detailed, Linnaean botanical taxonomy championed an anthropomorphized approach to plant life. Carl Linnaeus's 1753 *Species Plantarum* advanced a system of assessing plant structures not altogether different from anthropomorphic conceptions of reproduction common at the time. This "human/floral conflation" not only dominated the science but also literary portrayals of romance and courtship for the ensuing centuries. See Amy M. King, *Bloom: The Botanical Vernacular in the English Novel* (New York: Oxford University Press, 2003), 12.

I hesitate to map trends in the eighteenth and nineteenth century English literature onto Hispanophone and Tagalog writing in the late-nineteenth century Philippines. Deep lineages of folklore in the Philippines suggest that the anthropomorphized or the agentic natural world were part of the vernacular. If, indeed, some the "human/floral conflation" in Philippine literature came by way of Linnaean botany, the trend would have had to come by way of translations, principally from Latin (the primary language of botanical science and elite letters at the time) to Spanish. This would have also manifested through the writing of learned individuals, who were also exposed to the vernacularization of botany and the more explicitly gendered human/floral conflation in literatures of other languages.

<sup>422</sup> Luciano P. R. Santiago, "The Flowering Pen: Filipino Women Writers and Publishers during the Spanish Period, 1590–1898, A Preliminary Survey," *Philippine Studies* 51, no. 4: The Book (2003): 585.

<sup>423</sup> M. P. Brillantes, "La Flor de Manila," in *Cultural Center of the Philippines Encyclopedia of Philippine Art*, Vol. 6, *Philippine Music* (Manila: Cultural Center of the Philippines, 1994), 235.

<sup>424</sup> "*Sampaguíta gentil que halagas/ con tu aroma mi Filipina,/ sampaguíta flor peregrina/ que en tus trenzas bordando estás.*" Brillantes.

(*gentil*) could mean beautiful or pleasing, kind or courteous. But an older definition of the word, one that has since fallen into disuse, refers to one's belonging to clan, a people, or a nation.<sup>425</sup> The *danza* then shifts in its overt meaning if we are to take this definition. The flower is understood to be of a collective of some kind.

The stanza continues with Paterno's calling the *sampaguíta* "my Filipina." The meanings of this are doubled. The flower could be akin to a Filipina woman. This gendered presentation of the flower—and the construction of gender through it—were common at this time. This does not fall from Luciano P. R. Santiago's interpretation of Dolores Paterno's writing as "unabashedly secular" in its treatment of how men view or seemingly should view women.<sup>426</sup> Yet, another way to read the phrase is through Paterno's claiming the *sampaguíta* as Philippine or as a uniquely Philippine flower, as in "*filipina*" for the lexically feminine "*la flor*." Simultaneously then, the flower can be understood as gendered and associated with land.

Another doubled meaning comes with the word "*peregrina*." The first signification comes through the word "pilgrim," as I have translated it. Intriguingly, even if the *sampaguíta* is the flower of the Manila, one imagined to grow in a particular place, it moves, specifically on the bodies of those who adorn themselves with it as is described in the remainder of the *danza*. This "pilgrim" flower, dynamic because of its wearers' movements, is one that travels and thereby captures more collective adoration.<sup>427</sup> Its second meaning comes with another definition of "*peregrina*" as being of exceptional beauty and elegance.<sup>428</sup> Indeed, Paterno's lyricism allows for several interpretations of the *sampaguíta*, especially when one considers how the *danza* would be translated later in Tagalog and English.<sup>429</sup>

Similarly, the Ilocana poet Leona Florentino produced a number of works that placed the *sampaga* in the co-constitutive realms of romantic norms and gender. Florentino wrote in Ilocano and in Spanish, and her works were included in the *Encyclopédie internationale de oeuvres de femmes* in 1889.<sup>430</sup> Her son, Isabelo de los Reyes, published her works his *El Folk-lore filipino* (pub. 1889), though de los Reyes mentions that Florentino chose not to publish her work during

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<sup>425</sup> "gentil," Diccionario de la lengua española, Real Academia Española, <https://dle.rae.es/gentil>. Accessed 22 April 2020.

<sup>426</sup> Santiago, "The Flowering Pen," 580.

<sup>427</sup> I see this first translation of the "*peregrina*" flower of Manila in more contemporary adaptations of Paterno's *danza*. Jenifer K. Wofford's public artwork "*Flor de Manila y San Francisco*" ("Flower of Manila and San Francisco") features the experience of Flor, a Filipina nurse who has migrated from the Philippines to the U.S. "*Peregrina*" takes new meaning then if translated as "migrant" or "emigrant." As Catherine Ceniza Choy writes of the work, "Wofford brings to the fore that an immigrant's departure, arrival, settlement, and return are transnational matters." For a close reading of "*Flor de Manila y San Francisco*," see Catherine Ceniza Choy, "The Awesome and Mundane Adventures of *Flor de Manila y San Francisco*" in *Drawing New Color Lines: Transnational Asian American Graphic Narratives*, ed. Monica Chiu (Hong Kong: Hong Kong University Press, 2015), 209–224.

<sup>428</sup> "peregrina," Diccionario de la lengua española, Real Academia Española, <https://dle.rae.es/peregrino#SZLEfi>. Accessed 22 April 2020.

<sup>429</sup> Levi Celerio's Tagalog translation of the song adheres firmly to the gentile-collective notion of the *sampaguíta*. Celerio's lyrics read, "*Sampaguíta* of our clan / flower of extreme refinement / you are the chosen gem / as the symbol of our race." "*Sampaguíta ng aming lipi / bulaklak na sakdal ng yumi / Ikaw ang mutyang pinili / na sagisag ng aming lahi*" as reproduced in Mar Canonigo, et al., *Tinig ng bayan* (Manila: Tambuli Press, 1972), 54.

<sup>430</sup> Santiago, "The Flowering Pen," 580.

her lifetime.<sup>431</sup> De los Reyes's two-volume *El Folk-lore filipino* sought to catalog archipelago-wide folklore. According to Mojares, de los Reyes viewed folklore as an emergent field that could feed patriotic ends by "reconstructing a country's past and enabling a fuller, self-critical understanding on the part of his people."<sup>432</sup> In Mojares's reading, de los Reyes's project built an archive of local Philippine knowledge out of which "the 'nation' could emerge."<sup>433</sup> In line with Mojares's interpretation, I suggest that Florentino's poetic deployment of the *sampaga*—and the very inclusion of Florentino's poems in the elaborate publication—imbue in the *sampaga* a nature that is singularly Philippine.

The *sampaga* appears in two of Florentino's poems featured in *El Folk-lore filipino*. "Coronación de una soltera en sus dias" ("A Maiden's Crowning") regales a young birthday celebrant with love and joy but also issues guidance on the preservation of purity and modesty. Florentino likens the celebrant to the blooming bud of a *sampaga*: after having grown under the loving nurturance of her parents, Mellang (a nickname for Emilia, the name of the celebrant) is now in bloom, with enviable beauty to behold and treasure.<sup>434</sup> Like the opening stanzas to "Jocelynang Baliwag," the subject of the poem is in her prime as a single woman.

In de los Reyes's Spanish translation of the poem, he identifies the *sampaga* as *N. sambac*, which he likely determined from the earlier versions of Blanco's *Flora de Filipinas*.<sup>435</sup> What this gestures toward is not de los Reyes's translation of the *sampaga* for foreign audiences but also his sense of the science of botany in relation to vernacular plant names seemingly as common as the *sampaga*. Furthermore, in *El folk-lore filipino*, the jasmine (*jazmin*) is distinct from the native *sampaga*. De los Reyes does not equate the *jazmin* to the *sampaga* and allows the foreign imported word to stand independently from the Philippine one. This was reinforced by Pedro Serrano Laktaw's 1889 *Diccionario hispano-tagalog* (Spanish-Tagalog Dictionary): the "*jazmin*" is simply

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<sup>431</sup> Isabelo de los Reyes y Florentino, *El folk-lore filipino* (Manila: Chofré and Company, 1889), 1:159. I should add that the first volume includes an essay penned by de los Reyes entitled "Women and Flowers" ("*Las y las flores*"), which deals with the multi-faceted similarities between Philippine women and flora. The essay opens, "The woman is a human being and the flower a plant: the two are different creatures, but both enrich Nature; they have several similarities" ("*La mujer es un ser humano y la flor un vegetal: son dos criaturas, pero ambas enriquecen la Naturaleza; tienen entre sí muchos puntos de similitud*"). See de los Reyes, 2. "Women and Flowers" deserves its own analysis, which would be relevant to the present chapter. Along with this would be Katipunan member Lino Villanueva's (c. 1896) "*Pinipintuho'kong mga kababayan na mga babae' nacadalagahan*" ("Homage to my young women compatriots"). A rallying poem for women to join the anti-Spanish revolution, "*Sa mga babai*" (as shortened by fellow Katipunan member Emilio Jacinto) likens Philippine women to flowers and other natural phenomena. See Jim Richardson, "L.V. [Lino Villanueva] '*Sa mga babai*,'" *Katipunan: Documents and Studies*, <http://www.kasaysayan-kkk.info/kalayaan-the-katipunan-newspaper/1-v-lino-villanueva-sa-mga-babai>, 26 October 2016. Accessed 24 May 2020. I thank Johanna Gatlula for directing me to this source.

<sup>432</sup> Mojares, *Isabelo's Archive*, 12.

<sup>433</sup> Mojares, 7.

<sup>434</sup> "*Rimmang-ayca á rimmangpayay/ iti asi quen dungn̄go ti Ama quen Ina/ balasangcan Mellang, n̄ga aonan ti curangna,/ á cas agucrad á sampaga.*" De los Reyes, 194. I thank Rolando Mosqueda and Kissette Mosqueda-Kelly for their assistance with this and the succeeding Ilocano translation.

<sup>435</sup> De los Reyes, 194.

translated as “*jazmin*.”<sup>436</sup> Laktaw’s translation suggests that the Tagalog language absorbed the foreign word for jasmine as a general category; but such is still distinct from the *sampaga* and *sampaguíta*, which do not have a Spanish equivalent.<sup>437</sup>

Beyond this matter of translation, Florentino also chooses to distinguish the *sampaga* from the jasmine in her poetry. For “Coronación” the choice could have been poetic: in order to retain the rhyme scheme of the stanza, Florentino may have chosen *sampaga* to maintain the “a” sound at the end of each verse. But Florentino exalts the *sampaga*, in a breath of promise and beauty. Writing generally of the *jazmin*, like in “Felicitación satirica” (“Satirical Congratulation”), the withering *jazmin* is a running metaphor for a woman approaching spinsterhood (at the age of 28): Florentino warns of the maiden, who like the withered jasmine, limps toward the ground.<sup>438</sup> The poem advises the maiden to maintain a youthful air against the unattractive scorn of old age. But in the poem “Declaración simbólica” (“Symbolic Declaration”), Florentino presents the *sampaga* as an adornment for sex appeal. The *sampaga* embodies youth and attraction; it beautifies and makes more appealing. It can be the quintessential young female but also an attractant, one that incites “volcanic love” in men, as de los Reyes translates it.<sup>439</sup> The jasmine, on the other hand, symbolizes stages of womanhood—with an ominous warning. Florentino therefore constructs ideal, youthful femininity through the *sampaga*.

In *El Folk-lore filipino*, de los Reyes characterizes the poems as memories to honor his late mother. He admits that in a compendium of native folklore, such poems are “worth little or nothing” because of their purely Filipino or Ilocano tastes, which may not align with European artistic inclinations.<sup>440</sup> At the same time, de los Reyes’s project was not crafted to be an appendage to peninsular or European folkloristic studies; it was a “resource for nation formation and not something merely ethnological” for foreign consumption.<sup>441</sup> As such, to folklore specialists, de los Reyes insists that Florentino’s poetry contributes to an archive of varied tastes.<sup>442</sup> Because Florentino was not formally educated, de los Reyes suggests that her poetry is original to her, “not

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<sup>436</sup> Pedro Serrano Laktaw, *Diccionario Hispano-Tagalog* (Manila: La Opinion, 1889), 321. By the 1914 version of the same dictionary, Laktaw translates the *sampaguíta* as “flower” or “synonym of *bulaklak*” (flower). See Pedro Serrano Laktaw, *Diccionario Tag’alog-Hispano* (Manila: Islas Filipinas, 1914), 1148.

<sup>437</sup> Strikingly, “*jazmin*” remains un-translated until today in Philippine cultural production. For example, National Artist for Music (2018) Ryan Cayabyab keeps the Spanish loan-word in his song “*Tunay na Ligaya*” (“True Joy”): “*Di ko pansin ang bango ng jazmin pag kapiling ka, sinta*” (“I do not notice the scent of jasmine when I am with you, darling.”) I thank Lisandro Claudio for suggesting this source.

<sup>438</sup> “*Cas jazmin á nalaylay ti cayarigan / añosen ti magtenggan / quet rebbeng unay á pagdanagan / ti ngannгани á pannacaconsúmonan.*” De los Reyes, *El folk-lore filipino*, 192.

<sup>439</sup> De los Reyes. This late nineteenth-century rendering of the *sampaga* would be repeated in M. Evelina Galang’s 2005 “Deflowering the Sampaguíta,” a creative nonfiction essay written primarily, as the author describes, with the second person collective “you.” Galang writes, “When your daughter and son grow, when their bodies change and their voices drift away from childhood, you begin the practice of silent disapproval; you continue the cycle. You insist on impossible chastity. You attempt to keep the Sampaguíta in bloom, fresh, young, never acknowledging the nature of things.” See M. Evelina Galang, “Deflowering the Sampaguíta,” in *Pinay Power: Peminist Critical Theorizing the Filipina/American Experience*, ed. Melinda L. de Jesús (New York: Routledge, 2005), 201-209.

<sup>440</sup> De los Reyes, *El folk-lore filipino*, 157-158.

<sup>441</sup> Mojares, *Isabelo’s Archive*, 3.

<sup>442</sup> De los Reyes, *El folk-lore filipino*, 158.

molded by European styles” but instead informed by the “muddled and unsightly” character of Ilocano comedy libretti. Such he considers a “genuinely Filipino style.”<sup>443</sup>

As Thomas has suggested, *El Folk-lore filipino* followed a “multilocal structure” that conceived of regional folkloristic traditions as part of a “composite whole.”<sup>444</sup> Florentino’s poetry, though Ilocano in its sensibility, was still part of a totalizing “Filipino” tradition. This, as Thomas argues, was part of reformist strategy for the Philippines’ acceptance as a Spanish polity.<sup>445</sup> In this light, it is important to read Florentino’s poetry through two lenses: the first, her gendered and gendering exploration of the *sampaga*, and the second, her poetry’s presentation in *El Folk-lore filipino*. The second lens situates the poetry in an entire proto-national folklore tradition, and subsumed within this is the idea of plant life. For a flower to so generally refer to a woman—or for a woman to be equated to a flower—overlays the association onto not only an Ilocano sensibility but also a Filipino one. The *sampaga* is not presented as unique to northwestern Luzon then. It is presented generally as a symbol and metaphor for Filipina womanhood.

But Raquel A. G. Reyes has problematized the long unquestioned role of gender in late-nineteenth century patriotism. As Reyes has incisively argued, ideals of femininity and the “gendered symbol of the homeland” pervaded the writing and artistic production of *ilustrados* in Europe. When envisioned as a maternal female figure, the image of the nation could “stimulate familial and sympathetic connection.”<sup>446</sup> The *ilustrados* themselves grappled with the popular ideals of gender in elite Manila vis-à-vis notions of gender with which they were confronted in Europe. Reyes asserts that, although the *ilustrados* were on the whole proponents of women’s social advancement, the “uninhibited ‘Modern Woman’” was unsettling, “at once alluring and sordid, at once tempting and contemptible.”<sup>447</sup> “Their publicly professed feminine ideal,” Reyes adds, “posited as the model for women in the emerging Philippine nation, remained essentially conservative. Filipinas were to be virtuous, demure and subordinate; their sexuality to be rigidly limited and confined.”<sup>448</sup> Such demands were, in my reading, also applied to the *sampaga* and the *sampaguita*. As I opened the chapter and as reinforced by Florentino’s poetry, ideal elite femininity at the end of the nineteenth century was ascribed to—and proscribed by—the *sampaga* in bloom. This would come at the exclusion other gendered possibilities for the nation; for if the emerging Philippine nation were not a young woman, it was a mother—“comforting, familiar, and ever-near,” “the immutable point of reference” with which to compare other nations.<sup>449</sup>

### *Beyond the Reaches of Botany*

In literature and music, the *sampaga* and *sampaguita* came to be associated with that which could be considered essentially *Philippine*. In her review of turn-of-the-century literature in the

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<sup>443</sup> Mojares, 179.

<sup>444</sup> Thomas, *Orientalists, Propagandists, and Ilustrados*, 106.

<sup>445</sup> Thomas, 106.

<sup>446</sup> Raquel A. G. Reyes, *Love, Passion and Patriotism: Sexuality and the Philippine Propaganda Movement, 1882–1892* (Singapore: National University of Singapore Press, 2008), 178.

<sup>447</sup> Raquel A. G. Reyes, “Love, Passion and Patriotism: Sexuality and the Philippine Propaganda Movement, 1882–1892,” (PhD diss., School of Oriental and African Studies, University of London, 2004), 2.

<sup>448</sup> Reyes, 2.

<sup>449</sup> Reyes, *Love, Passion and Patriotism*, 178.

Philippines, Maria Luisa T. Reyes writes, in “the counterhegemonic literature of reform and revolution, the homeland was not just an ‘imagined’ community; it was where one lived, endured and suffered.”<sup>450</sup> In line with this, I argue that late nineteenth-century writing—creative and scientific—worked to concretize Philippine territorial space through plants: sensual objects that could anchor both the reformist and eventually proto-nationalist realities.<sup>451</sup> Plants were the location where human senses were stimulated and the visceral reaction to the imagined nation most acute.

Operating in conjunction with literature and music were publications presented as scientific in nature. These, as I earlier explained, worked in tandem with literature to espouse the uniqueness of the *sampaga* and *sampaguíta*. In 1892, Trinidad Pardo de Tavera, one of García’s colleagues, published *Plantas medicinales de Filipinas (Medicinal Plants of the Philippines)*, a compendium of plants with allopathic and palliative virtues. Published in Madrid, the book also provides botanical descriptions of Philippine plants akin to the classifying work of the Comisión. As Mojares has observed, Pardo’s *Plantas medicinales* incorporates culturally specific data on the use and application of locally growing flora.<sup>452</sup> In the publication, Pardo writes that the *J. sambac* is “perhaps the most esteemed flower of the Philippines . . . for which description is useless because of its unmistakability among natives.”<sup>453</sup> Pardo declares that *sampaga*, a Tagalog word, is the equivalent of *sampaguíta*, the Hispanicized diminutive of the original Tagalog. In the remainder of his entry on the plant, Pardo wastes no print describing the physical features of the species. After all, “the plant is so generally known.”<sup>454</sup>

According to Pardo, the *sampaga* was so recognizable it was above phenotypic description or conventional taxonomic vocabulary. He asserts once more the idea of ubiquity. For the *J. sambac*’s habitat, Pardo claims that the species “grows in all gardens.”<sup>455</sup> He further implies that for an untrained observer, any Philippine native could point out the species. There is local knowledge, therefore, of the *sampaga/sampaguíta* that the foreign observer will never fully grasp.

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<sup>450</sup> Maria Luisa T. Reyes, “The Role of Literature in Filipino Resistance to Spanish Colonialism” in *A Historical Companion to Postcolonial Literatures: Continental Europe and its Empires*, ed. Prem Poddar, et al. (Edinburgh: Edinburgh University Press, 2008), 596.

<sup>451</sup> I have suggested similarly with regard to Eduardo Quisumbing’s 1951 *Medicinal Plants of the Philippines*. Published after World War II, the medical botany publication asserts Philippine territoriality through *materia medica* particularly at a time of nationalist reconstruction. See Kathleen Cruz Gutierrez, “Rehabilitating Botany in the Postwar Moment: National Promise and the Encyclopedism of Eduardo Quisumbing’s *Medicinal Plants of the Philippines* (1951),” *Asian Review of World Histories* 6, no. 1 (2018): 53–54.

<sup>452</sup> Mojares, *Brains of the Nation*, 164.

<sup>453</sup> “*Esta planta es la más popular y quizás la más estimada en Filipinas... que no hay temor de equivocaciones al pedirla á cualquier indio; su, descripción, pues, es inútil.*” Trinidad Pardo de Tavera, *Plantas medicinales de Filipinas* (Madrid: B. Rico, 1892), 192–193. Pardo de Tavera does not distinguish *sampaga* and *sampaguíta*, which he lists as the common names—Tagalog and Spanish/Filipino—for *J. sambac*. Curiously, the 1901 English translation of Pardo’s work adds a botanical description using morphological vocabulary—a revision likely provided by Jerome B. Thomas Jr., the book’s translator. The *J. sambac* (*sampaga*, *sampaguitas*) entry opens, “The flower is the most popular and beloved of any in the Philippines (and is commonly referred to as the *national* flower.” Emphasis mine. See Trinidad Pardo de Tavera, *Medicinal Plants of the Philippines*, trans. Jerome B. Thomas, Jr. (Philadelphia: P. Blakiston’s Son & Co., 1901), 158.

<sup>454</sup> Pardo de Tavera, 192.

<sup>455</sup> Pardo de Tavera, 192.

Despite the shifting species determination of previous decades—and inconsistency within cataloged local nomenclature—the species can still be determined with absolute certainty by natives, according to Pardo. He does not imply as much for other indigenously growing or endemic species in *Plantas medicinales de Filipinas*. Instead, an assumed collective familiarity surrounds the *sampaga/sampaguita*. This writing, combined with the literature and music of its day, ushered forth a symbol alleged to be omnipresent in the colony.

This shared knowledge of the *sampaga*, therefore, made a *kundiman* like “*Jocelynang Baliwag*” especially relatable. Above scientific language, the *sampaga* drums up listeners’ shared environment. With its political valence, the *sampaga* also invokes an environmental affinity, one unique to the Philippine nation. In 1940, Antonio Molina designated “*Jocelynang Baliwag*” the *kundiman* of the revolution. He claimed the popularity of the *kundiman* among turn-of-the-century insurgents, describing it as a melody that “gave life and awoke [insurgents’] memories of joyful reflection and comfort drawn from the image of a beloved mother, a spouse, or children.” “It was music that stirred emotions,” wrote Molina, “heated their blood, gave courage and strength to fight for justice, to defend the motherland and its race.”<sup>456</sup>

I expand Molina’s reading of “*Jocelynang Baliwag*” to suggest that the *kundiman* could also be considered the rallying hymn because of its evocation of the *sampaga*. The feminine grace of “Pepita” Tiongson is constructed through the *sampaga*, a flower tied to the environment and one of an allegedly shared popular experience. The *sampaga*’s popular resonance and its intellectual development as a ubiquitous flower of the Philippines made the proto-nationalist imaginary all the more concrete. As Andrew J. Rotter explains, “The entire human sensorium was engaged in the acts of making and accommodating and resisting empire.”<sup>457</sup> The subject that could “awake memories and joyful moments” was not only tied to an individual but to a sensuous plant. Filomeno V. Aguilar offers a similar reading of *ilustrados*’ writing on the tropical environment. To counter prevalent colonial discourse on the “degeneracy” of the Philippines’ tropical environment, *ilustrados* advanced a “view of the tropics as generative of genius, creativity, vitality, and wellness.”<sup>458</sup> *Ilustrados*’ “visceral estrangement” with the peninsular climate spawned not only a romanticization of the tropics but also a critique of a more insidious climate to endure—colonial rule.<sup>459</sup> The *sampaga* was likewise deployed to incite a particular sensory experience—one claimed to be ubiquitous—that could inspire a corporeal patriotism.

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<sup>456</sup> “*Ito ang himig na nagbibigay buhay at gumigising sa kanilang mga alaala noong mga kaligaligayang sandali ng pag-uulayaw at aliwaw nito ang larawan ng inang minamahal, ang kabiyak ng puso o ang mga anak na pinagbuhusan ng paglingap. Ito ang tugtuging pumupukaw sa damdamin, nagpapasilakbo sa kanilang dugo, nagbibigay tapang at lakas, upang ipaglaban ang katwiran, ipagtanggol ang Inang Bayan at sariling lahi.*” Molina, *Ang Kundiman ng Himagsikan*, 15–29.

<sup>457</sup> Andrew J. Rotter, “Empires of the Senses: How Seeing, Hearing, Smelling, Tasting, and Touching Shaped Imperial Encounters,” *Diplomatic History* 35, no. 1 (2011): 4.

<sup>458</sup> Filomeno V. Aguilar Jr., “Romancing Tropicality [Ilustrado] Portraits of the Climate in the Late Nineteenth Century,” *Philippine Studies* 64, nos. 3–4: Disasters in History (2016): 438.

<sup>459</sup> Aguilar, 444–447.



### *III. Sovereign Vernaculars: The Polysemy of Plants*

The 1893 illustration “*¡Sampaguíta!*” by Félix Martínez (fig. 11) captures well what has been discussed herein. Martínez was a contemporary of García’s and a visual artist trained in the *costumbrista* style in Manila and on the peninsula,<sup>460</sup> an art style known for its depiction of local life and customs. He contributed roughly fifty plates to the revised *Flora de Filipinas*.<sup>461</sup> Several of his works were featured in the Exposición de Filipinas in Madrid, including his sketch of Leonor Paulí, Vidal’s wife.<sup>462</sup> Martínez regularly illustrated for *La Ilustración filipina*, which published his “*¡Sampaguíta!*” in 1893. The image features a barefoot female vendor dressed in a simple, unkempt *baro’t saya* (blouse and skirt) ensemble. The vendor’s hair is tied back loosely, with stray strands falling to her face. According to Blas Sierra de la Calle, the vendor can be assumed to come from the outskirts of urban Manila, approaching the city to sell her wares.<sup>463</sup> In the background are a single pronounced palm tree, faint sketches of two huts built from cut bamboo and palm, and beside the vendor, an outgrowth of live bamboo. The vendor looks directly at the viewer as she carries garlands of *sampaguíta* strung on what appears to be a thin bamboo shoot.<sup>464</sup> She offers a raised garland in her left hand. Intriguingly, the detail of the vendor’s left hand is much less pronounced than that of her right. The faintness of her fingers blends with the *sampaguíta* garland, making less clear where her smallest finger ends and the flowers begin. In this slight detail, the vendor and the *sampaguíta* are one.

The illustration portrays what I term *sovereign vernaculars* or common plant names used to advance territorial domain. In the late nineteenth-century Philippines, sovereign vernaculars were deployed to elide botany’s purported linguistic imperialism and ordering of the plant world. In a political sense, they were also used to advance the idea of proto-national territory. The term, therefore, comes from both botany and political theory. With regard to botany, the word “vernacular” refers to the notion of *nombres vulgares*—the names that unquestionably outnumber botany’s Latin binomials. Actors deployed these vernaculars for different intellectual and political ends. Rafael has addressed this point in his study of the work of early colonial Castilian-Tagalog translation. He suggests that we read “the vernacular as the uncanny crossroads formed

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<sup>460</sup> Santiago, “The Painters of the *Flora de Filipinas*,” 93.

<sup>461</sup> Santiago, 92.

<sup>462</sup> Blas Sierra de la Calle, “Félix Martínez y Lorenzo en la Ilustración Filipina,” *Archivo Agustiniiano* 99, no. 217 (2015): 434.

<sup>463</sup> Sierra de la Calle, 480.

<sup>464</sup> Sierra de la Calle, 480.



Figure 11. “¡Sampaguita!” by Felix Martinez, c. 1893, as published in *La Ilustración filipina*. Reprinted in Ramon Ma. Zaragoza, *La Ilustración filipina*, 1891–1894 (Manila: RAMAZA Publishing, 1992). According to Blas Sierra de la Calle, this sketch was the precursor to Martínez’s *Vendedora de sampaguitas* (*Sampaguita vendor*), a painting featured at the Exposición Regional de Filipinas (Regional Exposition of the Philippines) in 1895. See Sierra, “Félix Martínez,” 62–63. Reproduction permission courtesy of the American Historical Collection, Rizal Library, Ateneo de Manila University.

by and formative of the intersection of the local with the global” in order to identify the sites of “new social formations and shifting power relations.”<sup>465</sup> Rafael describes how vernaculars (Castilian and Tagalog) in the colonial Philippines were part of the mechanics of translation toward a “univocal [Latin] future” of Christian conversion.<sup>466</sup> The similarities between Christianizing Latin and Latin binomial nomenclature are weighty.

In the late nineteenth century, a hierarchy of languages was in place in order to sustain Latin plant names. These names, however, were not fixed, as demonstrated by the nomenclatural corrections made to the allegedly same species: *F. manorae*, *N. sambac*, and our current *J. sambac*. Yet, under the International Botanical Congress (IBC) in the second half of the nineteenth century, Latin was still the choice language of both names and plant descriptions. If the effort then

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<sup>465</sup> Rafael, *Contracting Colonialism*, xv.

<sup>466</sup> Rafael, xv.

of linguistic imperialism has been to tame Babel—or local vernaculars—in service to an omnipresent community of botanists, then sovereign vernaculars point to the impossibility of doing so.<sup>467</sup> It is within the strained relationship between the Latin binomial and the elusive vernacular—or the conflict of translation captured between the local informant and the foreign observer—that a different social formation comes into being. It is in light of this that I use the modifier “sovereign,” which I derive from Benedict Anderson’s definition of the nation as an imagined political community that is “inherently limited and sovereign.”<sup>468</sup> Indeed, even Paterno’s *danza* can be read for its “inherently limited” quality if interpreted through an older definition of “*gentil*” as I argued previously. But with respect to sovereignty, for Anderson the concept “was born in an age in which Enlightenment and Revolution were destroying the legitimacy of the divinely-ordained, hierarchical dynastic realm.”<sup>469</sup> His take is especially pertinent to the Philippines of the 1890s, when a number of political camps championed political reforms or asserted proto-nationalist claims against the Spanish and U.S. empires. For the Philippine context and in the realm of the *sampaga* and the *sampaguíta*, in particular, sovereign vernaculars were part of a reformist politics and eventually, a national one in the 1930s, to which I return in the dissertation’s conclusion.

### ***Contradictions and the Plurality of Vernaculars***

Let me remind that the terms *sampaga* and *sampaguíta* come from Luzon. In their becoming cultural and proto-national symbols, a homogenization occurred—one in which intellectuals mapped the Manila *sampaga* and *sampaguíta* across the archipelago. This mapping not only alleged phytogeographical ubiquity, it also asserted a shared olfactory and visual experience. Pardo emphasizes this in his *El sanscrito en la lengua tagalog* (Sanskrit in the Tagalog language), arguing that the *sampaga* is not “the *jazmin* mentioned in Tagalog dictionaries; it is a little flower that has a very delicate perfume and an extraordinary whiteness.”<sup>470</sup> The nose, as anthropologist Aisha M. Beliso-De Jesús has shown in her transnational study of Santería, senses both “emotional evocations and meaningful distinctions” that can comprise the “smells of nationalism.”<sup>471</sup> Calling upon—and presupposing—a shared sensuality, Luzon intellectuals used the *sampaga* and the *sampaguíta* to incite a corporeal patriotism that the novel and the newspaper alone, which for Benedict Anderson were the “technical means for re-presenting the *kind* of imagined community that is the nation,” could not do.<sup>472</sup> That is, they deployed a native Philippine species that could

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<sup>467</sup> As Lorraine Daston has written, “Botany is the science that strives to undo the mischief of Babel.” See Lorraine Daston, “Type Specimens and Scientific Memory,” *Critical Inquiry* 31 no. 1 (2004): 153. See also Schiebinger, *Plants and Empire*, 199. On botany’s “Philippine Babel” see Kroupa, “Georg Joseph Kamel,” 149-156.

<sup>468</sup> Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, [1983] 2006), 6.

<sup>469</sup> Anderson, 7.

<sup>470</sup> “*Sampaga, llamada mas comunemente sampaguíta en Filipinas, no es tampoco el jazmin como dicen los diccionarios Tag., es una florecilla que tiene un perfume muy delicado y una blancura extraordinaria.*” Emphasis mine. Pardo, *El sanscrito*, 48–49.

<sup>471</sup> Aisha M. Beliso-De Jesús, *Electric Santería: Racial and Sexual Assemblages of Transnational Religion* (New York: Columbia University Press, 2015), 37–38.

<sup>472</sup> Anderson, *Imagined Communities*, 24–25.

conjure a collective proto-national experience unrestricted by the limits of literacy. Smell and vision were enough to summon forth the Philippine nation.

But this was not without the contradictions of politics in archipelagic, territorial space. The intellectual and cultural production that I have reviewed thus far has largely been Luzon-centric. In “*¡Sampaguíta!*” the line between *sampaguíta* and female vendor are in a hinted-at association that fused flora and Philippine femininity. But this image was produced through a particular Manila elite’s vision of the everyday, hearkening back as well to the *tipos del país* style popularized by Damián Domingo y Gabor (1796–1834), director of the first Academia de Dibujo, in the early nineteenth century.<sup>473</sup> Blanco, Paterno, the Comisión, and de los Reyes composed their works in Spanish, a language that roughly 5 percent of the Philippine population could access by the turn of the century.<sup>474</sup> Even though de los Reyes did not hail from Manila, he was not free of accusations of ethno-centrism. José Rizal accused de los Reyes of “*Ilocanismo*” because of de los Reyes’s lofty historiographical aggrandizement of the Ilocano anti-colonial Diego Silang.<sup>475</sup>

I use the plural “vernaculars” to insist on a multiplicity of languages, both for plants and for reformist and anti-colonial politics that circulated at the end of the nineteenth century. While sovereign vernaculars were important, they, too, were limited by their users.<sup>476</sup> Therefore, I hesitate to suggest that the *sampaguíta* and *sampaga* functioned as an archipelago-wide, commonly shared symbol. For some, the flowers were used in a defamatory way: Pedro Paterno’s detractors cynically called him the “*sampaguitero*,” a nickname gleaned from Paterno’s *Sampaguítas* collection, after his arbitration of the Pact of Biak-na-Bato in December of 1897.<sup>477</sup> Paterno’s mediation of the peace agreement put an end to the first phase of the revolution against the Spanish. Soon thereafter, Paterno’s peculiar attempt to ennoble himself within the Spanish colonial government was met with public ridicule.<sup>478</sup> According to Mojares, much controversy overtook the promise of

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<sup>473</sup> John Clark, “The Worlding of the Asian Modern,” in *Contemporary Asian Art and Exhibitions*, ed. Michelle Antoinette and Caroline Turner (Canberra: Australian National University Press, 2011), 74. See also Luciano P. R. Santiago, “Damian Domingo and the First Philippine Art Academy (1821–1834),” *Philippine Quarterly of Culture and Society* 19, no. 4 (1991): 278.

<sup>474</sup> Rafael, “The War of Translation,” 284.

<sup>475</sup> Rizal, *Epistolario Rizalino*, 116–118.

<sup>476</sup> More recently, Philippine lawmakers have tried to declare the *waling-waling*, an orchid endemic to the island of Mindanao, another national flower. More recent efforts to change the national flower have been in place since 2012. See Mara Cepeda, “House pushes bills declaring waling-waling, balangay as national symbols,” *Rappler*, <https://www.rappler.com/nation/245304-house-bill-declaring-waling-waling-balangay-national-symbols>, 19 November 2019. Accessed 17 April 2020; Senate Bill No. 3307, “An Act Declaring the Waling-Waling Orchids as National Flower of the Philippines in addition to Sampaguíta as Declared in Proclamation No. 652 dated 01 February 1934 by Governor-General Frank Murphy,” Fifteenth Congress of the Republic of the Philippines, Third Regular Session, <https://www.senate.gov.ph/lisdata/1423611973!.pdf>. Accessed 17 April 2020.

<sup>477</sup> Teodoro A. Agoncillo, *Malolos: The Crisis of the Republic* (Quezon City: University of the Philippines, 1960), 145.

<sup>478</sup> Mojares, *Brains of the Nation*, 20–21. As quoted by Mojares, Paterno allegedly requested—“with customary flourish”—that *sampaga* be scattered on his grave for his successful execution of the negotiations. See Mojares, 20. The original reads, “In exchange I do not ask nor do I expect anything but a handful of *sampaga* for my grave, a smile from my sweet country” (“*En cambio no pido, ni espero nada; un puñado de sampagas para mi tumba, una sonrisa de mi dulce, Patria...*”). Pedro A. Paterno, *El pacto de Biyak-na-bato* (Manila: Imprenta “La República,” 1910), 77.

reforms made in the agreement and the distribution of money payments pledged by the Spanish.<sup>479</sup> Other local plant names gained political significance among the Katipunan. Members used natural phenomena and local environmental features as aliases, and *Makahia* (touch-me-not), *Santol* (cotton fruit), *Labong* (bamboo shoot), and *Baliti* (strangling ficus), for example, have been recorded as *noms de guerre* in surviving documents.<sup>480</sup>

The “polysemic” nature of vernacular plant names,<sup>481</sup> then, conjure multiple territorial possibilities for the emergent nation. As I have shown, through the nineteenth century, determining the *sampaga* and the *sampaguita* was still a challenge. Ascribing the same species to northwest and central Luzon—assuming that there was commensurability—built an impression of the flower’s vast range. But even so, a vagueness around the species’ expanse persisted. But it was precisely through the imagined latitude of the vernacular that a proto-nation could be advanced. It elided the bounds of Latin determination, only to show the inconsistency of botanical practice. Latin names posture one reality of plant life; vernacular names through their alleged generality produce even more varied, shifting, context-dependent realities. For this reason, vernacular names intrinsically interrupt the finitude of plant description in the science of botany.

### “*Lupa natin*” (“*Our land*”)

As Christine Doran has written of the Philippine Revolution of 1896, “In the space of less than two years, more than three centuries of Spanish imperial domination over the archipelago was brought to an end.”<sup>482</sup> During this time of great political rupture and violence, García was allegedly torn and refused to participate in activities against the Spanish colonial state.<sup>483</sup> Though one obituary described him as having been a fervent Catholic, his refusal was likely much more complex.<sup>484</sup> He had had nearly a three-decade career in the colonial government service. During this time, he married Rufina Roxas, a member of the wealthy and established Manila Roxas clan, with whom he had three children.<sup>485</sup> Their youngest son, Simeón, reportedly took up arms alongside Antonio Luna in 1896.<sup>486</sup> But as a functionary of the colonial state, García was awarded handsomely by the Spanish Crown for his artistic and scientific merits. Unlike other *ilustrados* (enlightened intellectuals) of the late nineteenth century, García did not spend many years training or living abroad. In contrast to his other Philippine-based politically oriented contemporaries, he was upwardly mobile in the government service. He did not publish political editorials and was not known to write pseudonymously. His career trajectory may have deterred his reformist and revolutionary sensibility.

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<sup>479</sup> Paterno, 22.

<sup>480</sup> Jim Richardson, “Table 1: Katipunan activists in Manila, 1892–96,” *Katipunan: Documents and Studies*, <http://www.kasaysayan-kkk.info/studies/notes-on-the-katipunan-in-manila-1892-96/table-1-katipunan-activists-in-manila-1892-96>, 1 April 2013. Accessed 22 May 2020; Richardson, “L.V. [Lino Villanueva], ‘*Sa mga babaii*.”

<sup>481</sup> Kroupa, “Georg Joseph Kamel,” 148.

<sup>482</sup> Christine Doran, “Women in the Philippine Revolution,” *Philippine Studies* 46, no. 3 (1998): 361.

<sup>483</sup> Santiago, “The Painters of the *Flora de Filipinas* (1877–1883),” 94.

<sup>484</sup> Reyes, “¿Quién fué Don Regino García y Baza?,” 39, HL-UST.

<sup>485</sup> Reyes, 34, HL-UST.

<sup>486</sup> Reyes, 38, HL-UST.



But following the promulgation of the Malolos Constitution in January of 1899, García joined the government of the First Philippine Republic. The carnage of the war with the U.S. was difficult to ignore: U.S. soldier-mediated civilian murder, torture tactics, rape, and calculated cruelty proliferated during the fighting between combatants.<sup>487</sup> According to Richard E. Welch, such “terror tactics” were typically enacted by junior military officials and enlistees “inspired by anger, boredom, and racial animosity and freed by the nature of the war from close supervision by their supervisors.”<sup>488</sup> Under Aguinaldo’s leadership, García was named Jefe de Flora (Chief of Flora) and in this position, he redirected the work of IGM *ayudantes* (assistants) toward the digging of military trenches.<sup>489</sup> After the founding of the republic, García was a congressional delegate for Principe y Infante (or Tayabas).<sup>490</sup> His change of heart did not go unnoticed. On the occasion of his death in 1916, one obituary memorialized García as a “good Filipino,” who did not forget “to help his homeland in distress.”<sup>491</sup>

The principal tasks of the revived IGM were to collect revenue for the government and to manage timber felling.<sup>492</sup> These tasks were not entirely new to the institution, since the colonial IGM had been carrying out such work for over three decades. But under the Malolos government, the IGM needed to strip its colonial ties. By the late 1880s, the IGM had attracted scathing critique from members of the public, who claimed that the IGM inequitably favored foreign timber magnates over smaller-scale fellers.<sup>493</sup> The IGM had been tagged as one of the worst arms of the colonial government, whose employees benefitted themselves and abused their surveillance powers over the land.<sup>494</sup> During the “*unang taon ng kalayaan*” (“the first year of freedom”), the IGM had to distance itself from this reputation of excesses and abuses. It needed to revive public faith in its system of land governance and forestry in order to assert territorial independence and to build the revolutionary coffers. Botany was not named outright as a critical science in the republic’s founding documents. But, according to Teodoro A. Agoncillo, it was listed as a curricular requirement for secondary education.<sup>495</sup>

Little exists on the personnel and institutional operations of the revolutionary IGM. But some surviving material from the Aguinaldo government suggests that some of the work of the revolutionary IGM did not depart from its earlier iteration. Extant government documents from Camarines Sur and Camarines Norte show some of the institutional mechanisms by which local governments sought to manage. Documents, such as those for civic appointments, were printed in Spanish, Tagalog, and Bikol languages with “*Don Emilio Aguinaldo y Famy, Presidente del Gobierno Revolucionario de Filipinas y General en Jefe de su Ejército*” (“Emilio Aguinaldo y

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<sup>487</sup> Richard E. Welch Jr., “Atrocities in the Philippines: The Indictment and the Response,” *Pacific Historical Review* 43, no. 2 (1974): 234.

<sup>488</sup> Welch, 237.

<sup>489</sup> Reyes, 23–24, HL-UST.

<sup>490</sup> Agoncillo, *Malolos*, 791.

<sup>491</sup> Reyes, 23–25, HL-UST.

<sup>492</sup> Nathan E. Roberts, “U.S. Forestry in the Philippines: Environment, Nationhood, and Empire, 1900–1937,” (PhD diss., University of Washington, 2013), 318.

<sup>493</sup> Ultramar, Leg. 526, Exp. 12, Núm. 2, AHN.

<sup>494</sup> Ultramar, Leg. 526, Exp. 12, Núm. 2, AHN.

<sup>495</sup> Agoncillo, *Malolos*, 252.

Family, President of the Revolutionary Government of the Philippines and Chief General of its Military”) as their header.<sup>496</sup> Among these newly printed bureaucratic documents existed colonial-era administrative forms, like birth, death, and marriage certificates. The surviving land management forms mirror some of the data collecting work that the IGM had previously doing. Revolutionary IGM employees would have been expected to catalog provincial lands, taking care to note the class of agricultural land, its measurement, boundaries, value, and associated rents.<sup>497</sup>

Rhetorically speaking, the revolutionary IGM existed to execute the sovereignty of the land. To enforce agricultural independence, for example, “*lupa natin*” (our land/soil) appeared in revolutionary missives as a direct assault on previous colonial domains once mapped by the Spanish and its scientific personnel. But this effort did not last. Nathaniel Roberts suggests that some revolutionary foresters, like Rafael Medina, would come to join the U.S. colonial Philippine Bureau of Forestry at the start of the twentieth century.<sup>498</sup> García did the same. Following what may have been the Battle of San Jacinto in Pangasinan, García allegedly left the Aguinaldo government.<sup>499</sup> At the invitation of Manuel de Iriarte, who would eventually come to serve as chief of the U.S. bureau of archives and patents, García joined the Bureau of Forestry in 1900 as its chief informant.<sup>500</sup>

According to Agoncillo, García would have been one of dozens of “fence-sitting intellectuals” who had not joined the first phase of the revolution but in whom Aguinaldo vested the management of the new government.<sup>501</sup> García could be considered one of Agoncillo’s “haves,” whose personal ambitions outweighed patriotic sentiment.<sup>502</sup> Indeed, many of García’s closest associates joined the U.S. colonial government, including Pardo. But I hesitate to paint García solely as a “have” who sold out. The demands of *ilustrados* and the local intelligentsia across both phases of the revolution and at the start of the U.S. colonial period were dynamic, responsive to the political developments in the Philippines, Spain, and the United States. Spain failed to meet the reformist demands, among them uncensored speech and representation in the Cortes, put forth by *ilustrados*.

Conversely, the United States teemed of liberal possibility. For Pardo, this included the prospect of statehood for the Philippines under the United States and U.S.-style “secular pedagogy.”<sup>503</sup> But political sentiment in the Philippines veered from the initial call of *eventual* “self-rule,” and U.S. colonial and Filipino politicians alike came to shun Pardo.<sup>504</sup> As Mojares

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<sup>496</sup> Emilio Aguinaldo Papers, 1883–1899, HL. The Huntington Library numbered individual files after I reviewed the records. Prior to this, the files did not have identifying markers.

<sup>497</sup> Emilio Aguinaldo Papers, 1883–1899, HL. See “Registro de autorizaciones expedidas a los extranjeros, españoles y chinos comerciantes de esta provincia,” n.d. and table for recording estates (*fincas*), boundaries (*linderos*), and revenue (*renta*), n.d.

<sup>498</sup> Roberts, “U.S. Forestry in the Philippines,” 318.

<sup>499</sup> Reyes, 25, HL-UST.

<sup>500</sup> Reyes, HL-UST.

<sup>501</sup> Agoncillo, *Malolos*, 636–637.

<sup>502</sup> Agoncillo, 664.

<sup>503</sup> Lisandro E. Claudio, *Liberalism and the Postcolony: Thinking the State in 20<sup>th</sup>-Century Philippines* (Singapore: National University of Singapore Press, 2017), 12.

<sup>504</sup> Mojares, *Brains of the Nation*, 149–154.

astutely argues in his study of the intellectual work of Pardo, Paterno, and de los Reyes and their engagements with Western knowledge, “The binaries of collaboration and resistance, acceptance and rejection, are reductive polarities that flatten out historical reality.”<sup>505</sup> Mojares further qualifies this to remind us that the “utility of notions of resistance and collaboration” are not without political consequence: “The discourse of rulers and rule is not an academic conversation in a parlor but a deep, asymmetrical struggle for power.”<sup>506</sup> García was most certainly part of this “tricky, complex field” Mojares describes, and García’s choices most certainly had political-material outcomes that coincided with the decisions he made at the turn of the century.

García may have joined—and left—the Aguinaldo government for a number of reasons. These remain unclear. As I shared in the chapter’s opening, many factors could have influenced García’s political routes. At the sight of the Aguinaldo military’s loss, García likely saw reason to leave. The new colonial government could offer him the status and the opportunity to continue the work he had spent decades pursuing. The enhancement of Spanish colonial science with the growth of peninsular liberalism, as I discussed in Chapter One, in part catalyzed the expansion of modern secular botany in the Philippines. Politically speaking, the U.S. could perhaps more convincingly promise a continuation—if not an enhancement—of scientific endeavor. What we do know is that at the start of the U.S. colonial period, García commenced botanical expeditions under his direction, authored his own materials, and guided U.S. operations using blueprints first established by the Spanish. These I discuss in Chapter Four. Records, however, do not show that García rejected outright the Spanish colonial order, even when under U.S. employ. No archival record found suggests García’s role ushering in a gradual liberal politics toward twentieth-century Philippine state building, as Lisandro Claudio more persuasively charts for García’s *ilustrado* peers.<sup>507</sup> But like his compatriot, Pardo, García too eventually left the U.S. service after only a handful of years.

### ***Conclusion***

Philippine patriotism was built alongside the consolidation of empires at the turn of the century. This consolidation re-entrenched the belief around a sovereign domain that could be released from the colonial yoke. Thus, as imperial science enhanced the consolidation of empires, so, too, did it provide some of the vocabulary to advance the nation. As I have shown, this appeared in intellectuals’ discursive deployment of the *sampaga* and *sampaguita*. It also manifested in a material way through the revolutionary IGM.

There were parallels in the way science and politics were enacted during the reformist and revolutionary unrest of the 1890s. Several political factions emerged in the Philippines during the 1890s and into the start of the U.S. colonial period. These were not only centralized in Manila. At times contradictory and at times in concert with their aims, anti-colonial forces across the archipelago took different forms and ideologies.<sup>508</sup> I do not claim the *sampaga* and the *sampaguita*

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<sup>505</sup> Mojares, 499–500.

<sup>506</sup> Mojares, 499–500.

<sup>507</sup> Claudio, *Liberalism and the Postcolony*, 11–13.

<sup>508</sup> Studies of anti-colonial efforts outside of Manila abound. These have been understood as part of, akin to, or separate from the well studied Propaganda Movement, Katipunan, and the First Philippine Republic. With



belonged ideologically to any one political faction from this time. The short-lived IGM demonstrates at least one approach to land and forest management with an expressed anti-colonial politics. From what exists of its operations, we have little to determine how differently the revolutionary IGM proceeded from its colonial iteration. Contradictions may have beset the revolutionary IGM, and ambiguities exist in the intellectual history of the *sampaga* and *sampaguita*. The *sampaga* and *sampaguita*'s presence in botanical tracts, in literature, in music, and more notably, in the gardens and streets of Manila, nevertheless reflect an entire ecosystem that would bring the flowers into proto-national significance.

Botany's role in the nationalist imagining was therefore an ambivalent one. While there may have been trained botanists who never conceded to the United States, what we have so far is the story of one who did. Although there existed at least one iteration of a scientific move against the colonial order—the revolutionary IGM—the effort collapsed. One might argue that this was a result of its leadership—the “internal” problems in the face of the “external” onslaught of the United States.<sup>509</sup> My aim here, though, is not to point to the collapse of the revolutionary IGM but to suggest that contradictions and evolving personal politics suffused the science and the intellectuals who practiced it. I agree with Cañizares-Esguerra that botany in the colonies took on a life of its own for anti-imperial ends.<sup>510</sup> A part of this also consisted of patriot-naturalists whose politics wavered during a time of extreme political upheaval in the Philippines.

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regard to island of Luzon, see Glenn A. May, “Filipino Resistance to American Occupation: Batangas, 1899–1902,” *Pacific Historical Review* 48, no. 4 (1979): 531–556; Daniel F. Doeppers, “The Philippine Revolution and the Geography of Schism,” *Geographical Review* 66, no. 2 (1976): 158–177; John N. Schumacher, “The Religious Character of the Revolution in Cavite, 1896–1897,” *Philippine Studies* 24, no. 4 (1976): 399–416. For studies of turn-of-the-century anti-colonial efforts in Cebu, see Resil B. Mojares, “The *Pulahan*es of Cebu: Case Study in Human Geography,” *Philippine Quarterly of Culture and Society* 4, no. 4 (1976): 233–242 and *The War against the Americans, Resistance and Collaboration in Cebu: 1899–1906* (Quezon City: Ateneo de Manila University Press, 1999); Junald Dawa Ango, “Anti-American Resistance and the Beginnings of the Public Schools in Cebu, 1899–1906,” *Philippine Quarterly of Culture and Society* 40, nos. 1–2 (2012): 34–57. For an extended examination of the *pulahan*es, see George Emmanuel R. Borinaga, “Seven Churches: The *Pulahan* Movement in Leyte, 1902–1907,” *Philippine Quarterly of Culture and Society* 43, nos. 1–2 (2015): 1–139. Brian McAllister Linn identifies political factions that developed in the Visayas, among other regions, during the Philippine–American War in *The Philippine War, 1899–1902* (Lawrence: University Press of Kansas, 2019). Henry F. Funtecha looks at the Ilonggo forces that worked in concert with the Aguinaldo government to delay U.S. incursion in “The ‘Iloilo Fiasco,’” *Philippine Quarterly of Culture and Society* 14, no. 2 (1986): 75–85, and Peter Schreurs, late nineteenth-century revolutionary unrest in eastern Mindanao in “The Philippine Revolution at Caraga and Baganga, Davao Oriental,” *Philippine Quarterly of Culture and Society* 10, no. 4 (1982): 269–281.

<sup>509</sup> Rene Escalante, “Collapse of the Malolos Republic,” *Philippine Studies* 46, no. 4 (1998): 452–476.

<sup>510</sup> Cañizares-Esguerra, *Nature, Empire, and Nation*, 13.

## Chapter 4: The “Undeveloped Empire of Possibility”

Twenty-six-year-old Elmer D. Merrill came to the Philippines in April of 1902 at the ostensible end of the Philippine–American War (1899–1902) and spent the next two decades there. The Maine native had worked as an agrostologist for the U.S. Department of Agriculture prior to his colonial appointment. Ready to apply his expertise in a Pacific colony, he arrived to shambles in Manila: the Jardín Botánico de Manila (Botanical Garden of Manila; JBM), its herbarium, and its library had been destroyed by fire in 1897, including nearly all of the records of the Inspección General de Montes (Forestry Bureau; IGM).<sup>511</sup> He offered a bleak assessment of the botanical work completed on the archipelago prior to the U.S. arrival. The Spanish colonial government “gave little encouragement to the study of the flora of the islands.”<sup>512</sup> Beyond crediting Sebastián Vidal for his publications and leadership, Merrill wrote, aghast, “It is doubtful if any country in the world of a similar size has such a high per cent of ‘unknown’ described species as has the Philippine islands.”<sup>513</sup>

But Merrill lauded Regino García, who he met early into his stay. Beginning in 1900, García had assisted the U.S. colonial government to establish its botany and forestry operations. In lieu of extensive documentation detailing Spanish operations, García shared his institutional memory with the new corps of U.S. plant researchers. Not unlike the work he performed during the IGM takeover of the JBM in the early 1870s, García’s efforts assisted the institutional—and imperial—transition. In the first years of their professional relationship, Merrill wrote of Garcia, “[He] is one of the very few natives of the Islands who has accomplished any work of a botanical nature; and, although, much of his work might be criticised, still, considering the training—or rather, lack of training—he has had it is better to suspend judgment.”<sup>514</sup> Even with García’s vast knowledge of Philippine plants and of the scientific terrain up through the end of the nineteenth century, however, Merrill and his colleagues found themselves poorly prepared to make sense of the Philippine environment for intellectual and commercial ends. The U.S. lacked the facilities, literature, and most importantly in their opinion, trained specialists to begin to bring order to Philippine flora.

### *Starting from Nothing?*

With the United States’ takeover of the Philippine colony in 1898 came the establishment of institutions of scientific research to help colonists begin to make sense of their new tropical holding. U.S. colonial botanists were aghast by how little the Spanish government prosecuted scientific work throughout the archipelago. To Merrill (1876–1956), who became the foremost authority on Philippine plants in the early twentieth century, Spain had little to show for its botanical systematization of Philippine plants. His claims, however, contradicted the extent to

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<sup>511</sup> Elmer D. Merrill, *Botanical Work in the Philippines* (Manila: Bureau of Public Printing, 1903), 50.

<sup>512</sup> Merrill, 5. See also Kathleen Cruz Gutierrez, “*Cycas wadei* and Enduring White Space,” in *Empire and Environment: Confronting Ecological Ruination in the Asia–Pacific and the Americas*, ed. Rina Garcia Chua et al. (Ann Arbor: University of Michigan Press, forthcoming).

<sup>513</sup> Merrill, *Botanical Work*, 5.

<sup>514</sup> Merrill, 21.

which U.S. colonial botany relied on Spanish intellectual production, the blueprints of Spanish colonial scientific operations, and the work of García, who continued to publish on Philippine flora through the early U.S. colonial period.

In this chapter, I examine how U.S. colonial botanists discursively asserted their professional acumen over their Spanish predecessors and the native intelligentsia. I begin with a brief overview of the development of professional botany in the United States at the turn of the century. Professionalization swept through U.S. botanical laboratories, changing the foci and practice of those who considered themselves professionals vis-à-vis amateurs in the science. The wave of professionalization reached the Philippines, where U.S. botanists found professional standards nonexistent or at the very least, minimally executed. With the importance of laboratory work on U.S. colonial scientists' minds, members of the Philippine Commission initiated the founding of the Bureau of Government Laboratories (later renamed the Bureau of Science), where botany was centralized for the remainder of the U.S. colonial period.

From there, I focus on García's contributions to U.S. colonial botany and forestry operations. García not only provided data and institutional information to scientists stationed in Manila; he also authored and published pieces on Philippine timber and commercial plants. Despite his work, U.S. officials critiqued his knowledge of the Philippine environment and the workings of the IGM. In this section, I interrogate U.S. institutional critiques of the IGM. While Nathaniel Roberts has also examined the incomplete and cherry-picked character of these critiques,<sup>515</sup> and Greg Bankoff critiques Spanish-era forestry practices like felling and timber waste,<sup>516</sup> I provide IGM personnel data and records to identify where exactly U.S. operational critiques were focused. Akin to Roberts' and Bankoff's work, doing so disrupts the historiographical repetition that has simplified secular Spanish colonial botany without full qualification.

In the next section, I turn to how the United States constructed a set of standards and training that met their professionalization needs. I look to the establishment of the College of Agriculture (f. 1909), a specialized campus of the University of the Philippines (f. 1908), where U.S. instructors trained local botanists in the early twentieth century. Roberts has done generative work to examine the foresters associated with the College of Agriculture's Forest School (f. 1910), which fostered an "esprit de corps" that young Filipino foresters carried into the colonial service.<sup>517</sup> I take as my focus the botany training offered by the College of Agriculture and how students were envisioned to meet the professional standards that the U.S. set forth.

From these explorations, I argue that a botanical nationalism, which Peter Mickulas locates in the United States at the turn of the century,<sup>518</sup> also extended to the Philippines. In the Philippines, colonial botanists emboldened the U.S. overseas empire to flex their intellectual might

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<sup>515</sup> Nathaniel E. Roberts, "U.S. Forestry in the Philippines: Environment, Nationhood, and Empire, 1900–1937," (PhD diss., University of Washington, 2013), 76–81.

<sup>516</sup> Greg Bankoff, "Breaking New Ground? Gifford Pinchot and the Birth of 'Empire Forestry' in the Philippines, 1900–1905," *Environment and History* 15, no. 3 (2009): 375–377.

<sup>517</sup> Roberts, "U.S. Forestry in the Philippines," 339–340.

<sup>518</sup> Peter Mickulas, *Britton's Botanical Empire: The New York Botanical Garden and American Botany, 1888–1929* (The Bronx: New York Botanical Garden, 2007), 155–159.

over a once imperial rival in order to assert U.S. competitiveness in international botany. This primed U.S. colonial botanists like Merrill for the influential role they would bring to the International Botanical Congress (IBC). In line with Warwick Anderson's early observation of U.S. colonial discourse in the field of tropical medicine, we must recognize "that even the most formally structured technical knowledge may be implicated in colonial appropriation and acquisition."<sup>519</sup> For the colonial Philippine context, Anderson's observations have been extended to the disciplines of public health, nursing science, and forestry.<sup>520</sup> I contribute to this growing body of literature through my examination of botany.

### *Professional U.S. Botany Arrives in the Philippines*

In the final decades of the nineteenth century, a "new botany" emerged in the U.S. that departed from pure botanical description and plant collecting. Instead, botany practitioners prioritized plant morphology, ecology, and evolutionary systematics in order to push the discipline toward more experimental science.<sup>521</sup> According to Vassiliki Betty Smocovitis, advancements in instrumentation and laboratory methods motivated U.S. botanists to move the discipline from fieldwork to the "technical laboratory setting, rendering it the domain of an elite set of researchers whose goals included experimental rigor combined with technical know-how."<sup>522</sup> This coincided with what Mickulas has coined a "botanical Monroe Doctrine" in turn-of-the-century U.S. botany. To rival the dominance of their British and German contemporaries, U.S. botanists sought to make the United States the leader of botany in the Western hemisphere.<sup>523</sup> This included a disavowal of European nomenclatural norms and the growth of domestic herbaria to dislodge complete dependence on European plant collections.<sup>524</sup> With the founding of the Botanical Society of America in 1893, U.S. botanists aimed to professionalize the science of botany and to distance the discipline from the "more amateurish efforts of their predecessors as well as many of their contemporaries."<sup>525</sup>

Merrill's first critiques of botany in the Philippines were shaped by these disciplinary developments in the U.S. Locals like García were knowledgeable but untrained. García was

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<sup>519</sup> Warwick Anderson, "Where Every Prospect Pleases and Only Many is Vile': Laboratory Medicine as Colonial Discourse," *Critical Inquiry* 18, no. 3 (1992): 508.

<sup>520</sup> Some essential studies in this line of investigation in colonial medicine and nursing include Warwick Anderson, "Modern Sentinel and Colonial Microcosm: Science, Discipline, and Distress at the Philippine General Hospital," *Philippine Studies* 57, no. 2 (2009): 153–177; Catherine Ceniza Choy, *Empire of Care: Nursing and Migration in Filipino American History* (Durham: Duke University Press, 2003), most especially the book's first section, "Nurturing Empire,"; and Christine Noelle Peralta, "Medical Modernity: Rethinking the Health Work of Filipina Women under Spanish and U.S. Colonial Rule, 1870–1948" (PhD diss., University of Illinois, Urbana-Champaign, 2019). For U.S. colonial forestry in imperial discourse, see Greg Bankoff, "Empire Forestry," and Roberts, "U.S. Forestry in the Philippines."

<sup>521</sup> Richard A. Overfield, *Science with Practice: Charles E. Bessey and the Maturing of American Botany* (Iowa City: Iowa State University Press, 1993), 74.

<sup>522</sup> Vassiliki Betty Smocovitis, "One Hundred Years of American Botany: A Short History of the Botanical Society of America," *American Journal of Botany* 93, no. 7 (2006): 942.

<sup>523</sup> Mickulas, *Britton's Botanical Empire*, 158.

<sup>524</sup> Mickulas, 208.

<sup>525</sup> Smocovitis, "One Hundred Years of American Botany," 942.

described as “associated with botanical work in the city of Manila” since 1858; yet, he was not considered a botanist despite the fact that he titled himself as such.<sup>526</sup> According to Merrill, only with Vidal came a “distinct renaissance in local botany” because of Vidal’s publication record and his comparing Philippine plant material to the master herbarium collections of Europe.<sup>527</sup> To Merrill, formal botany training, publications, and herbarium work abroad circumscribed professional expertise in the Philippines. Given the assumptions that he brought with him to the archipelago, there were no professional botanists in the Philippines at the start of the twentieth century.

Following the Treaty of Paris in 1898 that ceded the Philippines from Spain to the United States, U.S. colonists assessed the environmental, demographic, economic, and political conditions of their new overseas territory. As Warwick Anderson has written, the United States sought to represent itself “as more reforming, progressive, and scientific than other colonialists,”<sup>528</sup> and this aspiration was represented by the body of institutions established at the start of the twentieth century. Among U.S. colonists’ initiatives in education, defense, and governance, secretary of the interior of the Philippine Commission, Dean C. Worcester (1866–1924), backed the establishment of the Bureau of Government Laboratories in 1901.<sup>529</sup> Mercedes Planta has rightly stated that “Worcester had high hopes for the laboratory and planned it on a grand scale, hoping that scientific research and services would underpin American administration in the Philippines.”<sup>530</sup> After its founding, lack of personnel delayed the full construction of the institution. According to Paul C. Freer (1862–1912), the bureau’s first director, “Plans for a new building were under way, and an attempt was being made to obtain a large corps of scientific workers to carry on the necessary research work for the government, but only a few men were actually on the ground.”<sup>531</sup> Under the direction of the Second Philippine Commission, Freer allegedly “visited many laboratories” in the U.S. to identify candidates for positions in the Philippine colonial service.<sup>532</sup> His search was not entirely successful, and a lack of U.S. personnel plagued departments of the bureau for the decades following.

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<sup>526</sup> Merrill, *Botanical Work in the Philippines*, 7.

<sup>527</sup> Elmer D. Merrill, *A Discussion and Bibliography of Flowering Plants* (Manila: Bureau of Printing, 1926), 50–52.

<sup>528</sup> Warwick Anderson, “Science in the Philippines,” *Philippine Studies* 55, no. 3 (2007): 299. Anderson cites Peter W. Stanley, *A Nation in the Making: The Philippines and the United States, 1899–1921* (Cambridge: Harvard University Press, 1974) and Norman G. Owen, ed., *Compadre Colonialism: Studies on the Philippines under American Rule* (Ann Arbor: University of Michigan Papers on South and Southeast Asia, 1971).

<sup>529</sup> For the full law, see United States Philippine Commission, “No. 156: An Act Providing for the Establishment of Government Laboratories for the Philippine Islands,” (Washington D.C.: Bureau of Government Printing, 1901). See also, Anderson, “Science in the Philippines,” 209.

<sup>530</sup> Maria Mercedes G. Planta, *Traditional Medicine in the Colonial Philippines: 16th through 19th Century* (Quezon City: University of the Philippines Press, 2017), 106.

<sup>531</sup> Paul C. Freer, “The Work of the Bureau of Government Laboratories, of the Philippine Islands,” *Science* 20, no. 499 (1904): 105.

<sup>532</sup> Dean C. Worcester, “Report of the Secretary of the Interior to the Philippine Commission for the Year Ending August 31, 1902,” in *Annual Reports of the War Department for the Fiscal Year Ended June 30, 1902*, Volume 10, Part 1 (Washington, D.C.: Government Printing Office, 1903), 289–290.

But by 1904, Freer boasted a more robust running institution with the completion of the bureau's principal building, as shown in Figure 12. The colonial government decided to establish "one central laboratory system" and to place them under "a central direction" through the bureau, which was built between Calle Herran and Calle Padre Faura in Manila.<sup>533</sup> Lauding the first years of the bureau's operation, Freer explained, "In the place of a number of poorly provided laboratories, we have a bureau which is well equipped and prepared for its work. The individual scientific worker need not be isolated at some point where intercourse with his fellows is difficult or impossible, but he finds himself in a scientific atmosphere and in contact with students of all branches, giving him a broader and more satisfactory career and bringing the government better results."<sup>534</sup> For Freer and other bureau officials, a centralized system of scientific research could facilitate more collaborative work across various disciplines. The bureau housed foresters, agriculture specialists, entomologists, botanists, pathologists, and chemists in the same structure. Laboratory work for the disciplines was preeminent, and this reflected the currents of professionalization that had moved through U.S. botany in the late nineteenth century. Yet, as Anderson has also observed, even if the "government favored laboratory work, especially if it had an experimental tone, the old descriptive and classificatory projects also received support."<sup>535</sup> This included work in Philippine botany, which was still characterized by taxonomic botany and herbarium development.

Even with the physical infrastructure in place to begin scientific investigations, U.S. officials bemoaned their arrival to what they considered a scientific backwater. Worcester reported, "Except for some investigation in systematic botany, and the meteorological, astronomical, and magnetic work of the Manila Observatory, no scientific research worthy of the name was carried under Spanish rule, and we found ourselves practically without equipment and entirely without laboratory facilities for such work."<sup>536</sup> Thus, as Anderson has pointed out of U.S. colonial opinion of Spain's scientific legacy, "if the Spanish had regarded the archipelago as one big confessional, the Americans hoped to transform it into a vast laboratory."<sup>537</sup> But, as Anderson recognizes, the rhetoric of the U.S. laboratory and religious doctrine shared similar goals, albeit through different methods since "medical salvation," for instance, "would always be somatic, not spiritual."<sup>538</sup> Though broad in its research endeavors, the Bureau of Science, as it was later renamed, was intended to turn research results into practical solutions principally in the areas of sanitation and agriculture. Since the Philippines presented U.S. colonists with a novel terrain, climate, and bevy of unfamiliar illnesses, the work of the bureau to safeguard the health of U.S. colonists was paramount among other duties, as was the research to make sense of tropical disease, fauna, and flora. The colonial government voiced hope that as the infrastructure for scientific work had been laid, the research would "certainly lead to results even more important and far-reaching" than those

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<sup>533</sup> "Laboratories of the Bureau of Science, Philippine Government," *The Far-Eastern Review* 2, no. 6 (1905), p. 148, Periodicals, AHC.

<sup>534</sup> Freer, "The Work of the Bureau," 108.

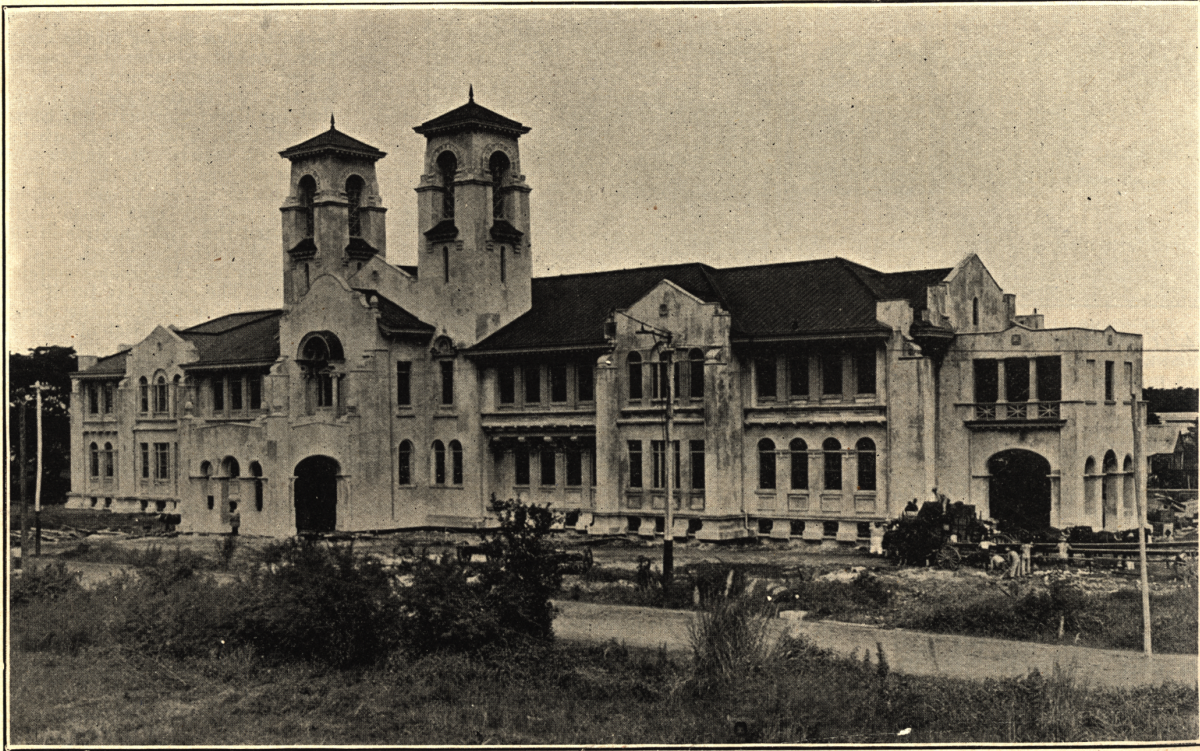
<sup>535</sup> Anderson, "Science in the Philippines," 300.

<sup>536</sup> Worcester, "Report of the Secretary of the Interior," 289.

<sup>537</sup> Anderson, "Science in the Philippines," 299.

<sup>538</sup> Anderson, 303.





FRONT ELEVATION OF THE LABORATORY BUILDING.

Figure 12. A photograph of the Bureau of Science published in *The Far-Eastern Review* in 1905. The caption reads, "Front elevation of the laboratory building."

Image and reproduction permission courtesy of the American Historical Collection, Rizal Library, Ateneo de Manila University.

obtained by the Dutch in Java,<sup>539</sup> a more impressive colonial counterpart than the Spanish, in the eyes of U.S. officials.

Freer remarked openly on the vast potential of Philippine flora, which, in his estimation, had not been exploited to the fullest by natives or the Spanish. Upon the completion of the bureau's laboratories, Freer opined, "As the people depend upon products of the field and of the forests for so large a proportion of their sustenance and barter, a knowledge of the flora of the Tropics is essential, from both a scientific and a material standpoint."<sup>540</sup> "It is necessary to be able to identify plants," he emphasized, "which have once been encountered in order to understand something of their distribution and general importance, the conditions for their best development, and their diseases."<sup>541</sup> "For these reasons," like the pathology, chemistry, and agriculture units of the bureau, "botanical work becomes as essential as that in any other laboratory field," Freer clarified.<sup>542</sup>

<sup>539</sup> Worcester, "Report of the Secretary of the Interior," 289.

<sup>540</sup> "Laboratories of the Bureau of Science, Philippine Government," *Far-Eastern Review* 2, no. 6 (November 1905), Periodicals, AHC.

<sup>541</sup> "Laboratories of the Bureau of Science."

<sup>542</sup> "Laboratories of the Bureau of Science."

### *Starting with García and Critiquing the IGM*

According to Roberts, García (see fig. 13) was one of the greatest assets to U.S. colonial forestry operations in the Philippines at the start of the twentieth century.<sup>543</sup> But in 1900, it seemed that Zoilo Espejo's tepid 1871 evaluation of García's work had reemerged. García's U.S. colleagues doubted his acumen. He entered the government forest and botanical service in May of 1900, ahead of General Arthur MacArthur's June 1900 amnesty proclamation for all who renounced the First Philippine Republic and pledged allegiance to the United States.<sup>544</sup> The war had still been raging across the archipelago with a still incalculable number of local civilian casualties. García began to supply U.S. colonial administrators with information on Spanish science operations of the previous century and on Philippine flora generally. As Anderson has observed of the outset of U.S. colonialism in the Philippines, "many *ilustrados* [enlightened intellectuals] welcomed a more progressive and scientific colonial government, even if it required them to pretend to need further supervision and tutoring."<sup>545</sup> For García, we have no evidence that points to how he viewed the start of the U.S. colonial administration or U.S. supervision of his capacity. We also have no record of his sense of the military fighting and widespread violence in the Philippines as he joined the U.S. colonial service. We do know, however, that his work appeared to be unfettered, and his publishing record advanced while enlisted by the U.S. Despite the critiques he received from his U.S. colonial colleagues, it would seem, akin to what Anderson has suggested, that García continued his productivity and deployed his knowledge beyond the negative appraisals of his work and in spite of the ongoing combat.

In his first years in the U.S. colonial service, García collaborated closely with George P. Ahern (1859–1942), a U.S. forester tasked to inspect and assess the state of Philippine forests. Ahern arrived in 1899 and became the founding director of the Philippine Bureau of Forestry the year following.<sup>546</sup> In Ahern's view, the Spanish failed to develop and implement scientific forestry practices in the Philippines. But as Bankoff has clarified, the Spanish colonial forestry service in the Philippines predated that of the United States by roughly two decades.<sup>547</sup> According to Roberts, Ahern did not completely cast aside the previous work of the IGM since Ahern needed whatever information he could gather on Philippine forests.<sup>548</sup> Yet, the same personnel problem that confronted the establishment of the Bureau of Science confronted the foresters: labor was scarce.<sup>549</sup> Few trained U.S. men sought to join the insular service.<sup>550</sup> García was one of a handful

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<sup>543</sup> Roberts, "U.S. Forestry in the Philippines," 316–317.

<sup>544</sup> Resil B. Mojares, *Brains of the Nation: Pedro Paterno, T. H. Pardo de Tavera, Isabelo de los Reyes and the Production of Modern Knowledge* (Quezon City: Ateneo de Manila University Press, 2006), 31.

<sup>545</sup> Anderson, "Science in the Philippines," 304.

<sup>546</sup> Lawrence Rakestraw, "George Patrick Ahern and the Philippine Bureau of Forestry, 1900–1914," *The Pacific Northwest Quarterly* 58, no. 3 (1967): 143.

<sup>547</sup> Greg Bankoff, "A Month in the Life of José Salud, Forester in the Spanish Philippines, July 1882," *Global Environment* 2, no. 3 (2009): 19.

<sup>548</sup> Roberts, "U.S. Forestry in the Philippines," 77.

<sup>549</sup> George P. Ahern, *Important Philippine Woods: Compilation of Notes on the Most Important Timber Tree Species of the Philippine Islands* (Manila: Bureau of Forestry, 1903), 13.

<sup>550</sup> Roberts, "U.S. Forestry in the Philippines," 81; Bankoff, "Breaking New Ground?," 378.



of remaining Spanish colonial IGM and revolutionary IGM employees willing to offer their expertise.<sup>551</sup>



Figure 13. "Regino Basa Garcia," pen drawing by Augusto Fuster, 1916.

Image and reproduction permission courtesy of the Photo Archive of the Filipinas Heritage Library, Ayala Museum.

Ahern critiqued the personnel training and hiring under the colonial IGM. He echoed some of the criticisms that emerged during the First Philippine Commission in 1899 to investigate the state of the archipelago. The commission, for example, declared "the instruction in practical agriculture" at the Escuela de Agricultura (School of Agriculture) "a sorry farce."<sup>552</sup> Revived in 1887, the Escuela de Agricultura prepared forestry surveyors and provided theoretical and practical

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<sup>551</sup> Roberts, "U.S. Forestry in the Philippines," 318. Roberts names Rafael Medina, an official of the revolutionary service and veteran of the Philippine-American War, who joined the Bureau of Forestry as a ranger in 1901. Bankoff mentions that Filipino and Spanish personnel occupied the lowest ranks of the U.S. Bureau of Forestry, and I suspect a portion of these individuals came from the previous IGMs, Spanish colonial and revolutionary. Bankoff, "Breaking New Ground?," 379.

<sup>552</sup> William McKinley, *Report of a Commission Appointed to Investigate Affairs in the Philippine Islands* (Washington D.C.: Government Printing Office, 1900), 32.

education in agriculture. The Commission's assessment drew partly from the opinions of Felipe G. Calderón y Roca (1868–1908), a lawyer and one of the political architects of the Malolos Constitution promulgated under the First Philippine Republic. Calderón scoffed, "The people who have graduated from the school of agriculture have not put their knowledge of agriculture into practical application, but have got employment on the spot. The reason they did not put their knowledge into practical application was that it was not practical knowledge."<sup>553</sup> Calderón indicated that he had taken courses at the Escuela de Agricultura when it reopened. His evaluation of the school was biting, even if other students considered themselves adequately prepared compared to their peninsular colleagues.<sup>554</sup>

Ahern claimed that the IGM did not permit Philippine natives to study forestry on the peninsula and that Filipinos, in particular, were prevented from populating the highest ranks of the service.<sup>555</sup> Indeed, no record has yet been found that suggests that Filipinos received targeted forestry or botany training on the peninsula, even among the *ilustrados* abroad. I hesitate, however, to confirm Ahern's second critique without concrete qualification. Doing so would reiterate the crude generalization claimed by U.S. colonial scientists.

Forestry engineers (*ingenieros*) comprised the highest ranks of the IGM. Beneath them, forestry assistants (*ayudantes*) were categorized from fourth to first class. Forestry assistants had greater surveillance duties and pay compared to rangers (*monteros*), who typically functioned as forest guards. *Ingenieros* oversaw colonial forest districts, which were at the time divided as Southern Luzon, Northern Luzon, and the Visayas. The IGM tasked *ayudantes* to oversee sub-districts within these three main regions. These *ayudantes* managed the work of *monteros* and other lower-ranking *ayudantes*. Promotion in the IGM usually followed an opening in the ranks, often due to the death, medical leave, or retirement of an employee. García, for instance, was promoted to *Ayudante Primero* (First Assistant) from *Ayudante Segundo* (Second Assistant) on March 9, 1891 after the *peninsular* (peninsula-born Spaniard) Felipe Díaz y López took medical leave to Spain.<sup>556</sup> An *ayudante* stationed in Albay, Díaz had overseen the forest sub-districts of Albay, Camarines Norte, Camarines Sur, Masbate, and Burias (Burias).<sup>557</sup> With the notable exception of García, *peninsulares* almost entirely assumed the posts of *Ayudante Primero* as well as the sub-district management positions.

According to a review of the IGM archive in the Archivo Histórico Nacional (AHN), Philippine-born Spaniards (*insulares*) and local men, most likely *mestizos* (mixed-race individuals typically of Chinese parentage), also joined the ranks. The AHN maintains personnel files on peninsula-born employees of the Philippine IGM, and the vast majority of these files represent *ayudantes*. Files on Philippine-born employees were likely kept in Manila. As mentioned in Chapter One, chance misplacements of files alongside existing IGM ledgers provide more information on the Philippine-born personnel. This facilitated Bankoff's writing on José Salud, a

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<sup>553</sup> *Report of the Philippine Commission to the President*, vol. 2, *Testimony and Exhibits* (Washington D.C.: Government Printing Office, 1900), 265.

<sup>554</sup> Ultramar, Legajo 526, Expediente 14, Número 3, AHN.

<sup>555</sup> Roberts, "U.S. Forestry in the Philippines," 80–81.

<sup>556</sup> Ultramar, Leg. 524, Exp. 5, Núm. 20, AHN.

<sup>557</sup> Ultramar, Leg. 528, Exp. 13, Núm. 69, AHN.

Philippine-born *ayudante* stationed in Capiz in 1882.<sup>558</sup> Bankoff reasonably surmises that Salud was Filipino,<sup>559</sup> and without a personnel file in the AHN, Salud was probably born in the Philippines.

In 1881, the IGM reported the employment of two draftsmen, fourteen clerks, two messengers, and a porter. Thirty-five men worked as *monteros*.<sup>560</sup> According to García, the IGM had an even higher number of personnel with a total of sixty-five *monteros*, fifteen clerks, and seven messengers,<sup>561</sup> probably at the height of its operations. The Comisión de la Flora y Estadística Forestal de Filipinas (Philippine Flora and Statistics Commission; hereafter Comisión) also had its own natural-history conservator, draftsman, and clerk on staff.<sup>562</sup> García reported that there were a total of thirty student-assistants, ten in the JBM and twenty on a special land survey commission.<sup>563</sup> An 1882 log of IGM employees names *monteros*, clerks, illustrators, and porters who are without AHN personnel files (see Appendix 1). These positions, I infer, were held by Philippine-born men, which was likely comprised of an uneven mix of *insulares*, *mestizos*, and possibly *indios* (indigenous person with no European or Chinese parentage).

These men did not necessarily train on the peninsula but were probably educated in Manila. Born in San Miguel, Gregorio Basa y Lopez, for example, appealed to become *Ayudante Cuarto* (Fourth Assistant) on November 15, 1893 after attaining the proper qualifications for IGM service. The IGM granted the position after Seville-native Rafael Janin Mateos de Santillan, *Ayudante Tercero* (Third Assistant), died suddenly in Dumaguete.<sup>564</sup> García's son, Simeón, who was also born in Manila, reportedly served the IGM for at least three years.<sup>565</sup> One obituary of García's reports that Simeón was born on the grounds of the JBM, where Simeón also eventually worked for a short period.<sup>566</sup> Manila's Escuela de Agricultura prepared IGM hopefuls through the 1890s. These men probably came from the provinces'—and mostly Manila's—well-to-do families. But, consistent with Ahern's critique, the Spanish colonial service was alleged to have hired *peninsulares* preferentially. If this preferential hiring were not conducted outright, it happened by way of the qualifications that purportedly stipulated employment. In other words, even if the students in Manila were trained to be IGM-ready, professional titles could be used to discriminate against would-be employees.

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<sup>558</sup> Bankoff, "A Month in the Life of José Salud."

<sup>559</sup> Bankoff, 18.

<sup>560</sup> Ultramar, Leg. 528, Exp. 26, Núm. 24, AHN.

<sup>561</sup> "Brief Review of the Forestry Service during the Spanish Government. From 1863 to 1898. By Regino García, an official of the Philippine Botanical and Forest Service from 1866 to 1898. Entered Forestry Bureau May, 1900," File: Forests Philippine Islands, Insular Bureau of Forestry, General Organization, Box 586, Gifford Pinchot Papers, LOC.

<sup>562</sup> Ultramar, Leg. 528, Exp. 26, Núm. 24, AHN.

<sup>563</sup> "Brief Review of the Forestry Service during the Spanish Government," LOC.

<sup>564</sup> Ultramar, Leg. 524, Exp. 14, Núm. 4, AHN. Fortunately, some of Basa's personnel record exists but only as a part of Janin's.

<sup>565</sup> Cornelis G. G. J. van Steenis, *Flora Malesiana*, Series 1, Spermatophyta, Volume 1 (Jakarta: Noordhoff-Kolff N. V., 1950), 185; Roberts, "U.S. Forestry in the Philippines," 317.

<sup>566</sup> José G. Reyes, "¿Quién fué Don Regino García y Basa? Notas Biográficas sobre este ilustre Botánico Filipino," Unpublished manuscript, 35-36, Manila, 1940, HL-UST.

In 1892, Ygnacio Tobar y Abreú, a third-year student of the Escuela de Agricultura, filed a complaint alleging that the IGM favored specialists from Spain.<sup>567</sup> Joined by fellow students at the Escuela de Agricultura, Tobar claimed the promise of government service for Manila graduates was unfulfilled. “The reality of the matter,” he suggested, “has unfortunately failed to confirm [those] well-founded hopes or rather, assurances, which the [complaint signatories] and other students believed in the spirit of fostering agricultural studies on the islands.”<sup>568</sup> Tobar insisted that no clause of the IGM stipulated the privileged hiring of peninsular specialists: as long as candidates—peninsular and insular—were trained as agricultural experts (*péritos agrícolas*) or surveyors (*agrimensores*) they could vie for IGM positions. He outlined courses required of a three-year program at the Escuela de Agricultura, which included classes on rectilinear geometry, physics, chemistry, plant illustration, and rural economy. These could compete with the other training programs at the Colegio de San Juan de Letrán or Ateneo Municipal. According to him, the title of “*agrimensor*” no longer existed in the peninsula, and students only held “*périto agrícola*” titles. Because of this, there would theoretically be no competition between the two positions. He remarked that “the *péritos agrícolas* had a preferential right over *agrimensores* to fill *ayudante* vacancies” in the IGM.<sup>569</sup> Unfortunately, to Tobar and his colleagues it was unclear if this would be fulfilled and if there would be a clear path of employment for Escuela de Agricultura graduates, especially after their commitment of time and resources. Tobar’s complaints not only point to an instance of unfair hiring in the IGM but also the perceived readiness of Escuela de Agricultura graduates—on the part of the IGM and the graduates themselves—to join the ranks of the Spanish colonial service.

### *García, Authoring under the U.S.*

In spite of Ahern’s and Merrill’s critiques, the U.S. colonial period facilitated García’s authorship and increased his single-authored publication record. He wrote his own work in 1902—a booklet on major resin- and rubber-producing trees of Mindanao. The publication opens with details on García’s southern expedition:

In May 1901, I embarked for Mindanao and Jolo with the goal of learning about the forest products in the markets of Cottabato [Cotabato], Zamboanga, and Jolo, and acquiring data on the trees from which such products come. I traveled to the mountains of Tamontaca [Tamontaka], Paran-paran, Tucuran [Tukuran], Zamboanga, and Davao, studying all the trees of the distinct species that natives extract rubber from and offer in the market, as well as the resinous trees and other important species from Mindanao’s rich flora, like teak, *Tectona grandis*, and another

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<sup>567</sup> Ultramar, Leg. 526, Exp. 14, Núm. 2, AHN.

<sup>568</sup> “*La realidad de los hechos no ha venido, por desgracia, a confirmar tan fundadas esperanzas; o por mejor decir seguridades, pues ninguna duda abrigaba el que subscribe, ni los demas alumnos de la Escuela acerca de tan explícitas y terminantes declaraciones informadas, todas, en el espíritu de fomentar los estudios agrícolas en estas Yslas.*” Ultramar, Leg. 526, Exp. 14, Núm. 3, AHN.

<sup>569</sup> Ultramar, Leg. 526, Exp. 14, Núm. 3, AHN.

indeterminable species of the *Tectonia* genus; a *Meliaceae* very similar to sandalwood in scent and color found on Culion; and a *Cinnamomum*, with the scent of camphor and many other species that have not been determined.<sup>570</sup>

Unlike the other publications he prepared on behalf of the IGM and the Comisión, this work begins in the first person. Like Vidal and Ramón Jordana had done in the previous century, García now too narrated his personal experience in Philippine forests. His personal expertise was no longer hidden from view by ghost authorship; similar to other colonial officials, he wrote with apparent authority—and not simply as an omniscient observer. His prologue—a brief travelogue of the southern Philippine tropics—regales readers with an expeditionary tone. But in the booklet, García does not set out to simply exaggerate the lushness of the environment; he catalogs commercial species, weaving Latin nomenclature with Spanish *nombres vulgares* (common names) to evoke his scientific expertise. There is a colonial naturalist air to the publication that gestures toward García's particular intellectual heritage.

In the fifty-page booklet, García critiqued what he identified as the Moro practice of complete tree felling to extract latex. He warned that such a method may irreversibly denude Mindanaoan forests and instead recommended a method of rubber tapping comprised of marginal cuts along a tree's trunk that permit latex collection without permanent injury to a tree. His appraisal was not unlike the warning Vidal issued in his *Memoria sobre el ramo de montes en las islas Filipinas* (Report on Philippine forests; pub. 1874), which cautioned against any “exaggeration” that would suggest that Philippine forests were “inexhaustible.”<sup>571</sup>

García had not been a stranger to Mindanao, having completed previous trips on behalf of the IGM and the Comisión. According to García, a forestry installation in Mindanao would struggle to impose these guidelines since any threat of strong-armed enforcement could incite local reprisal. This could have taken the form of violent conflict and refusal of access to forested terrain. During the Philippine-American War, U.S. scientists wasted no time surveying their new Pacific colonial holding. Even at the height of fighting, they began to scout for research stations and encouraged botanical collections on Samar, Culion, and Mindanao.<sup>572</sup> This hunt for the research

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<sup>570</sup> “En Mayo de 1901 me embarqué para Mindanao y Joló con el objeto de conocer dichos productos en los mercados de Cottabato, Zamboanga y Joló; adquiriendo al mismo tiempo todos los datos para el conocimiento de los árboles, de su procedencia. Recorrí los montes de Tamontaca, Paran-paran, Tucuran, Zamboanga y Davao; estudiando todos los árboles de las distintas especies, de donde extraían los naturales las gomas que se presentaban en los mercados; como también los árboles resinosos y otras especies de importancia de la rica flora de Mindanao, como la Teca, *Tectona Grandis* y otra especie de *Tectona* que no se pudo determinar por ser ejemplar incompleto; una *Meliaceae*, de madera muy parecida al Sándalo en olor y color, hallada también en Culion; y un *Cinnamomum*, con olor de alcanfor y otras muchas especies que no se han podido determinar.” Regino García y Baza, *Los arboles de goma, resinas y frutos oloesos de Filipinas* (Manila: Imprenta del Colegio de Santo Tomás, 1902), i, PDTSC.

<sup>571</sup> Sebastián Vidal, *Memoria sobre el ramo de montes en las Filipinas* (Madrid: Aribau and Company, 1874), 20.

<sup>572</sup> For information on the early U.S. colonial botanical surveying of Culion during the Philippine-American War, see Gutierrez, “*Cycas wadei* and Enduring White Space.” Inspired by Daniela Bleichmar’s notion of “white space,” the chapter investigates the conceptual white space of a herbarium sheet that, I argue, removes a fuller sense of the past behind many specimen discoveries. The land for what would become the Culion leper colony was

and commercial potential of the Philippine environment occurred alongside the armed violence that seized the archipelago. While reviewing botanical reports and publications from this period, it would seem that the punitive barbarism in Samar's Balangiga and the Moro resistance to U.S. incursion in the south were but white noise to scientific enterprise. Such was also the case for García's publication, which side-stepped the historical political resistance on the island and simply warned it "necessary to prevent determinedly" unfettered tree felling lest they "destroy all the product-bearing trees in Mindanao."<sup>573</sup>

García's upward mobility at the JBM and in the IGM was unique. In Chapter One, I suggested that his longstanding presence in the Spanish colonial service—one that outlasted every high-ranking peninsular employee—gave him a specific advantage over the tropical botany and forestry expertise of newly arrived colonial personnel. But even though García was an asset now to U.S. operations, Ahern was skeptical of his authority. In 1901, Ahern published notes on Philippine woods for which he compiled direct quotations from previous Spanish-era publications, comments from García, and illustrated plates, including those by García specially prepared for the compilation, from *Sinopsis*, and from the illustrated *Flora de Filipinas*. At the end of the compilation, Ahern provides biographical sketches for the authorities cited, like Vidal, Domingo Vidal, Francisco Manuel Blanco, and Henry Brown, an English timber magnate.<sup>574</sup> García has no biographical sketch, even though his knowledge and flora illustrations permeate the publication.

To Ahern, García may have been competent but he was not an adequate botanist; he allegedly made guesswork,<sup>575</sup> possibly with respect to plant identification. As Roberts has suggested, Ahern envisioned himself as more proficient and corrected García's mistakes.<sup>576</sup> Separately, another U.S. forester referred to García as "only an old Spanish botanist" with no facility in the English language.<sup>577</sup> In 1903, Merrill recognized that García had established an herbarium at Ateneo Municipal in 1894 that contained roughly 1,000 specimens. But without labels indicating the growing localities or dates of collection, García's herbarium was "of no historical and little scientific value."<sup>578</sup> In light of such criticisms, Roberts determines that García "bore the dual taints of 'Filipino capacity' and experience in the [IGM] and therefore did not fit Americans' idealized model of a competent Philippine Bureau of Forestry official."<sup>579</sup> Ahern's 1901 compilation, however, suggests that the work of certain Europeans was useful, even that of botanizing clerics and IGM functionaries. Local authority for Ahern, it would seem, was not determined by training or practical experience but by race.

It is unclear if these judgments were ever conveyed to García directly. In spite of them, he continued to write on behalf of the U.S. government. In 1901, García published a sixteen-page

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also scouted during the Philippine-American War. For a comprehensive review of the "colony within a colony," see Maria Serena Diokno, ed., *Hidden Lives, Concealed Narratives: A History of Leprosy in the Philippines* (Manila: National Historical Commission, 2016).

<sup>573</sup> García, 8–9, PDTSC.

<sup>574</sup> Ahern, *Important Philippine Woods*, 100–102.

<sup>575</sup> Roberts, "U.S. Forestry in the Philippines," 318.

<sup>576</sup> Roberts, 318.

<sup>577</sup> As footnoted and quoted in Bankoff, "Breaking New Ground?," 390.

<sup>578</sup> Merrill, *Botanical Work in the Philippines*, 35.

<sup>579</sup> Roberts, "U.S. Forestry in the Philippines," 318.

guide titled *List of Tree Species of the Philippine Islands*, although not directly attributed to him, an obituary claims García to have been the principal author.<sup>580</sup> The following year, he published his booklet on Mindanaoan forest products. An article he contributed to the 1903 census of the Philippines followed. García was one of several men, like Trinidad Pardo de Tavera, credited for their significant contributions to the four-volume undertaking.<sup>581</sup> U.S. officials similarly perceived Pardo as competent enough notwithstanding his Spanish-era training. The census's fourth volume covers Philippine agriculture, and García's article, "Cultivation of Rice," provides a survey of rice varieties, cultivation methods, pests, and export figures for the Philippines. It also includes province-specific information as well as common names for what he considered the most noteworthy rice varieties.

In the article, García references the research work of the previous century: "Repeated experiments made between 1867 and 1873, in the botanical gardens, Manila, threw much light on the various species, varieties, and subvarieties of rice in the Philippines, and the names by which they are known in the different provinces."<sup>582</sup> This statement mirrors the seed cataloging work he and Espejo undertook at the JBM, which I covered in Chapter One and alluded to in Chapter Three. Joseph P. Sanger, director of the census, described García's article as the "most voluminous," and necessarily abbreviated to fit the parameters of the publication.<sup>583</sup> García's was one of at least ten single-authored essays on Philippine agriculture, the majority of which were written by local officials. Their writing coincided with the publication of Merrill's general assessment of Philippine botany and agriculture delivered to the Philippine Commission. In his report, Merrill emphasized a lack of trained personnel and stressed it "desirable" for the U.S. colonial administration "to have someone more or less familiar with tropical products and economic plants."<sup>584</sup>

In 1903, García likewise furnished a report to the U.S. colonial government on the state of forestry and botany operations under the Spanish from 1863 through 1898. He explained that the unregulated export of timber from the Philippines to China and destructive logging methods prompted the founding of the IGM.<sup>585</sup> He recounted the IGM's principal engineers: Juan González de Valdés, the Vidal brothers, Jordana, Luis de la Escosura and José Sáinz de Baranda, the last two of which were Philippine born.<sup>586</sup> Following the expansion of IGM personnel in the 1880s, García explained that employees "were sent to the most important timbered provinces" and shared a table relaying the IGM revenue gleaned from forest products.<sup>587</sup> His enumeration of the botany and forestry personnel outnumbered those recorded in the existing Spanish ledgers held in

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<sup>580</sup> Reyes, "¿Quién fué Don Regino García y Baza?" 12, HL-UST.

<sup>581</sup> *Census of the Philippine Islands: Taken under the Direction of the Philippine Commission in the Year 1903, in Four Volumes* (Washington D.C.: Government Printing Office, 1905), 1:36.

<sup>582</sup> *Census of the Philippine Islands*, 88. During his career, García most likely did not write in English. The article was probably translated from Spanish.

<sup>583</sup> *Census of the Philippine Islands*.

<sup>584</sup> Elmer D. Merrill, "Report of the Botanist" in *Report to the Philippine Commission, Part 2* (Washington, D.C.: Bureau of Government Printing, 1902-1903), 645.

<sup>585</sup> "Brief Review of the Forestry Service during the Spanish Government," LOC.

<sup>586</sup> "Brief Review of the Forestry Service during the Spanish Government," LOC.

<sup>587</sup> "Brief Review of the Forestry Service during the Spanish Government," LOC.



the AHN. It included, in extensive detail, the responsibilities of various ranking members of the IGM, from the chiefs to the *monteros*.

García bemoaned the items lost in the destructive 1897 fire, which took with it “a valuable library, containing works on forestry, administration, botany, natural history, and many other miscellaneous works. Two large maps of the Archipelago; one a forest map with the forest zone demarcated, and the other an itinerary map of the [Comisión]. . . . The large accumulation of archives containing the records of the sale and adjustment of lands . . . also all interesting data of the forest zone of each province in the Archipelago.”<sup>588</sup> On this, Bankoff correctly points out that the fire “has ensured that the achievements of the successes of the IGM have largely gone unrecorded and its effectiveness been greatly underestimated.”<sup>589</sup> I would add that the greater damage suffered was not only the loss of IGM records but the disappearance of data on and work completed by native personnel, their collaborators, and their unpublished records of the Philippine environment. In his report, García concluded with the IGM’s turnover to the United States at the close of the century, and after settling the liquidation of personnel salaries, all IGM personnel embarked for Spain.<sup>590</sup> One of García’s obituaries suggests that García had also wanted to leave to the peninsula, but for reasons unclear was unable.<sup>591</sup> He joined the Aguinaldo government soon after.

Curiously, García’s report clarifies that *ayudantes* came from the Escuela de Agricultura with a hiring preference for those who had served on the peninsula. A penciled addendum to “Assistant Foresters” (*ayudantes*) reads “natives as a rule.”<sup>592</sup> It is unclear if García, Ahern, or García’s translator, Joseph T. O’Connor, added this parenthetical note. It is also unclear what Spanish word García would have used to suggest “native” and to whom he referred, given the distinct racial categories of the nineteenth century. Bankoff reads this as “the intriguing possibility of a group of indigenous foresters trained and working in Spain before returning to the islands.”<sup>593</sup> Once more, nothing yet reveals that Philippine-born men acquired IGM credentials on the peninsula, and certainly most of the highest-ranking *ayudantes* were *peninsulares* in IGM records. As Luciano P. R. Santiago has written, the only peninsular *pensionado* (boarding school) program afforded to Philippine-born students was in the field of fine arts.<sup>594</sup> This disciplinarily narrow opportunity, Santiago suggests, “reflected the colonizers’ view that this field was completely apolitical and therefore, non-threatening and could be encouraged by the state.”<sup>595</sup> Given Santiago’s statement, we might surmise that Spanish colonists could have perceived botany and forestry as having a political—and potentially, anti-colonial—edge. But in line with Bankoff’s conjecture is the greater possibility that a wider section of Philippine-born *ayudantes* existed. Contrary to Calderón’s evaluation of the Escuela de Agricultura and Ahern’s blanket criticism of

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<sup>588</sup> “Brief Review of the Forestry Service during the Spanish Government,” LOC.

<sup>589</sup> Bankoff, “A Month in the Life of José Salud,” 28.

<sup>590</sup> “Brief Review of the Forestry Service during the Spanish Government,” LOC.

<sup>591</sup> Reyes, “¿Quién fué Don Regino García y Baza?,” 23, HL-UST.

<sup>592</sup> “Brief Review of the Forestry Service during the Spanish Government,” LOC.

<sup>593</sup> Bankoff, “A Month in the Life of José Salud,” 26.

<sup>594</sup> Luciano P. R. Santiago, “Philippine Academic Art: The Second Phase (1845–98),” *Philippine Quarterly of Culture and Society* 17, no. 1 (1989): 79.

<sup>595</sup> Santiago, 79.



the IGM's hiring practices, Philippine-born personnel possibly occupied the coveted *ayudante* positions at a higher number than existing peninsular records reveal.

Ahern's scantily elaborated critiques left a lasting unsavory assessment of the IGM and colonial Spanish scientific outfit. Upon reading García's report of the IGM, one does not get a sense of García's discontent with the extent and expanse of the operations. García was, after all, a high-ranking colonial functionary in the final years of the IGM's operations. But as Roberts points out, U.S. imperialists—like Ahern—exploited García's observations “to further their accusations of a restrictive and ineffectual Spanish administration in need of reform.”<sup>596</sup> These accusations contradicted early U.S. colonial operations in the archipelago since the U.S. “inherited” the remains of the IGM, “whose employees were already well versed in French and German” forestry.<sup>597</sup> Indeed, Anderson has also named the U.S. Bureau of Forestry “a successor” of the Spanish IGM.<sup>598</sup> As Ahern said of the Spanish IGM, “They had enacted some good forest laws and I practically continued the forest law after 1900, with but few modifications.”<sup>599</sup> But as I observed earlier, the U.S. colonial Bureau of Forestry initially struggled to attract a corps of foresters hailing from the continent. This was in contrast to the IGM, whose peninsular personnel vied for the greater salary and civil service promotions afforded by work in the Philippines.

With the imperial transition, García's intellectual work blossomed. Outside of the colonial government, he purportedly authored essays on botany, agriculture, and forestry in the periodicals *Libertas*, *Mercantil*, and *Revista de la Cámara de Comercio de Filipinas*.<sup>600</sup> In 1906, *Libertas* printed a series of short articles on tree species. These included pieces on a “soap tree” promised to change the Algerian soap market and on a “true monster” of a tree species growing in Pretoria.<sup>601</sup> These snippets on plant life also offered cultivation and pest abatement advice drawn from U.S. sources.<sup>602</sup> That same year, *Mercantil* published “*Una nación sin agricultura*” (A nation without agriculture), a piece portending the twentieth-century disappearance of the English farmer (“*labrador*”) and country man (“*hombre de campo*”) and the attendant conversion of England into a city.<sup>603</sup> Cosmopolitan in topic and location, these articles are, however, without bylines. One might attribute them to García, but I hesitate to do so without further evidence. Still, they convey a type of local intellectual scene during García's time—one worldly in orientation and attuned to international questions of science.<sup>604</sup>

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<sup>596</sup> Roberts, “U.S. Forestry in the Philippines,” 81.

<sup>597</sup> Bankoff, “Breaking New Ground?,” 370.

<sup>598</sup> Anderson, “Science in the Philippines,” 300.

<sup>599</sup> *Committee Reports, Hearings, and Acts of Congress Corresponding Thereto, Sixtieth Congress, 1907–1909*, compiled by R. B. Horton (Washington: Government Printing Office, 1909), 210.

<sup>600</sup> Reyes, “¿Quién fue Don Regino García y Baza?,” 13, HL-UST.

<sup>601</sup> “Árbol de jabón,” *Libertas* Año 8, No. 1912, 24 January 1906, HL-UST; “Un árbol fenomeno,” *Libertas* Año 8, No. 1896, 4 January 1906, HL-UST. I thank Johanna Lyn Gatdula for locating these periodical sources.

<sup>602</sup> “El cultivo de los árboles frutales,” *Libertas* Año 8, No. 1909, 20 January 1906, HL-UST. This ran alongside another piece, “*La poda de los árboles*” (“Pruning Trees”) in the same issue.

<sup>603</sup> “Una nación sin agricultura,” *Mercantil* Año 4, Núm 1077, 2 March 1906, HL-UST.

<sup>604</sup> I consider Trinidad Pardo de Tavera and León María Guerrero as García's most proximate counterparts. Like Pardo and Guerrero, García was an intellectual who participated in the political unrest and transition at the turn of the century. They all produced what Mojares phrases as both “pre-American scientific studies” and “U.S.-sponsored” projects. See Mojares, *Brains of the Nation*, 161. Pardo and García were especially close associates and

### *Training Filipino Men in Botany*

Groups of individuals supported the U.S. colonial botany at the start of U.S. colonization of the Philippines. This not only included the native intelligentsia but also local guides, translators, field assistants, and natural history collectors. But U.S. professionalization functioned to negatively characterize their labor as poorly developed, ill-informed, and distracted by local beliefs. Such derision coincided with U.S. expressions of imperial might vis-à-vis the decline of the Spanish empire. Still, the Philippine environment challenged U.S. specialists. Forced out of the confines of the Bureau of Science laboratories and tasked with cataloging a vast terrain of foreign and unknown (to them) flora, fieldwork was nevertheless an important aspect of botany they were obliged to undertake.

Foreign colonial botanists and plant collectors alone could not complete the labor of trekking and identifying plant material. On one of Ahern's river expeditions, Ahern hired "Filipino workmen," as he termed them, to draw and row his boat "for seven hours in the blazing sun"—a task that, Ahern expressed, "would have killed a white man."<sup>605</sup> The Philippine environment overwhelmed U.S. botanists, particularly because of the local contagions, climate, and peoples who posed threats to the officials' welfare. As Freer declared of the dangers of the tropics: "Tropical countries which are subject to colonization by the white races present conditions which are such that the settlers are continually exposed to infectious diseases, differing from those prevalent in colder regions, and, owing to the fact that the European races in these countries have been moved from their native soil they are exposed to greater dangers than the native population, which have become accustomed to their surroundings."<sup>606</sup> By enlisting the help of local residents, Bureau of Science personnel could ensure safer and more productive collecting excursions. Even under the best circumstances, however, bureau staff could not always prevent accidents or deaths in the field.<sup>607</sup>

When employees of the Bureau of Science participated in expeditions to outlying provinces, they recruited local labor. Almost always men, field assistants were hired in the expedition's locality, sometimes with the assistance of the local government or municipal official.

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following García's death, García's son, Simeón, gifted a bound volume of García's rough sketches to Pardo in 1920. I return to this volume in the dissertation's conclusion.

<sup>605</sup> *Committee on Insular Affairs*, 217–218.

<sup>606</sup> "Laboratories of the Bureau of Science, Philippine Government," *Far-Eastern Review* 2, no. 6 (November 1905), 144, Periodicals, AHC.

<sup>607</sup> Roberts covers in detail the murders of H. D. Everett, T. R. Wakeley, and their unnamed Filipino assistants on the island of Negros. The research party was allegedly murdered in a plot designed by a field assistant, Ayhao. As Roberts interprets the episode, "The power of local environmental knowledge betrayed the Americans' belief that their knowledge was the best, truest, or most significant knowledge to be had in the forest." See Roberts, "U.S. Forestry in the Philippines," 322–323. Elmer D. Merrill also tried to memorialize Everett's murder on Negros. When invited by Dutch botanist Cornelis A. Backer to contribute the names of U.S. individuals and Filipinos after whom Philippine plants had been named toward an explanatory dictionary of Malesian flora, Merrill requested more data from the director of the Philippine civil service on various colonial government employees, including Everett. Merrill asked that he be supplied the exact date of Everett's murder, which Merrill sought to remit to Backer. See Letter from E. D. Merrill to Director of Civil Service, 29 November 1932, Folder 14–Philippines B-M, Box 3, Series 2 (Correspondence), Elmer Drew Merrill Records, NYBG.

It is inconsistently clear how field assistants were remunerated or compensated, even though bureau employees and botanical collectors often had research budgets heading into expeditions. But even field assistants—many of whom engaged in botanical collecting—were not always viewed favorably. Merrill, for instance, claimed that field assistants’ belief systems were one of the largest barriers to adequately collecting plant specimens in remote climes of the archipelago. “Previously unexplored regions,” Merrill elaborated, were crucial because every collection executed “always presents a high percentage of [plant] forms previously entirely unknown or unknown in the Philippines.” But he bemoaned, “Most [Filipino collectors] are timid or superstitious and will not, unaccompanied, visit the remote regions or explore the higher mountains.”<sup>608</sup>

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<sup>608</sup> Letter from E. D. Merrill to Secretary of Agriculture, Folder 15: Philippines, Q–W, Box 3, Series 2 (Correspondence), Elmer Drew Merrill Records, NYBG.

Local and colonial publications from the turn of the century cataloged popular superstitions from across the archipelago. Several of these dealt with forests, trees, and the floral and faunal environment. Pardo, for instance, noted how locals feared the *patianac* [tiyanak], a vampiric creature that takes the form of an infant under trees in order to attract unsuspecting adults. See Raquel A. G. Reyes, “Science, Sex, and Superstition: Midwifery in 19<sup>th</sup>-Century Philippines” in *Global Movements, Local Concerns: Medicine and Health in Southeast Asia*, ed. Laurence Monnais and Harold J. Cook (Singapore: National University of Singapore Press, 2012), 92–93. Isabelo de los Reyes did the same for *El Folk-lore filipino*, abbreviating several Ilocano superstitions. Among them, de los Reyes shares, “It’s bad to throw stones or other objects or to point at trees in remote locations because maleficent spirits may punish us by keeping the throwing or pointing arm stiff and unable to bend.” [*También es malo tirar piedras ú otro objeto ó señalar con el dedo á los árboles en lugares retirados, porque á veces los espíritus malos nos castigan teniendo el brazo extendido que señale ó arroje, sin poderse doblar.*] See Isabelo de los Reyes y Florentino, *El Folk-lore filipino* (Manila: Chofré and Company, 1889), 1:65. *Balete* trees, in particular, were reported to elicit a certain amount of trepidation in passersby. In one U.S. colonial catalog, “Tagalog companions” on a foreigner’s hunting expedition refused to sleep beside a *balete*. If passing one, the companions would address the tree as though “requesting permission of a superior to pass.” See Fletcher Gardner, “Philippine (Tagalog) Superstitions,” *The Journal of American Folklore* 19, no. 74 (1906): 201. With respect to *nono*, to which I briefly refer in Chapter Three, Gardner further details, “When [locals] wish to take a flower, or fruit of a tree, they ask permission of the *nono* or genius to be allowed to take it. When they pass by any field, stream, slough or creek, great trees, thickets, or other parts, they ask passage and license from the *nonos*. When they are obliged to cut a tree, or to disregard the things or ceremonies which they imagine are agreeable to the *nonos*, they beg pardon of them, and excuse themselves by saying the priest ordered it, and that it is not voluntary with them to want in respect, or to go against the wishes of the *nonos*.” Gardner, 191.

The concern with superstitions—among colonial officials, intellectuals, and allegedly by the bulk of the Philippine populace—forces us to consider how collectors perceived a different landscape that professional U.S. botanists had set out to discover. On the one hand, based on colonial officials’ observations, field assistants perceived local environments with a belief system that dictated how they chose to interact with flora. These interactions could have looked different depending on the collecting locality. As Erik Mueggler beautifully describes of Nvlvk’ö collectors who assisted Scottish botanist George Forrest, the collectors “were working through strata of the landscape invisible” to foreign botanists.<sup>608</sup> See Erik Mueggler, *The Paper Road: Archive and Experience in the Botanical Exploration of West China and Tibet* (Berkeley: University of California Press, 2011), 85. For the Nvlvk’ö collectors, these were ancient paths chartered in local history, distinct from “a new botanical geography of Yunan” established by Forrest. “Two archival regimes” emerged at this time: one tied to Forrest’s botanical investigations of the region, and the other to local historical narratives of the ancient landscape. See Mueggler, 86 (I thank Gail Hershatler for this source). We might also interpret field assistants’ belief systems as a way to interrupt the unfettered surveying and collecting work of the Philippine environment. Superstitions were but one of several reasons U.S. colonial botanists struggled to systematize Philippine flora. But read differently, superstitions could have also functioned as a way to cast off further exploitation of—and to maintain a reverence for—the environment

To attend to the problems of seemingly ill-trained personnel and unfit botanical collectors, U.S. colonists began a specialized training program to prepare Filipino men in theoretical and practical botany. The U.S. established in Los Baños, Laguna, the College of Agriculture, a specialized campus of the University of the Philippines located forty-three miles outside of the colonial capital.<sup>609</sup> Opened on June 14, 1909, the campus was dedicated to training in botany, agriculture, and forestry. U.S. botanist Edwin B. Copeland (1873–1964) was a primary architect of the institution and while in Los Baños, he conducted field work, initiated an herbarium, and motivated his students to enter the discipline of botany.<sup>610</sup> Many of the college’s earliest instructors were recruited from U.S. institutions. One such instructor was Frank Caleb Gates (1887–1955), a doctoral graduate of the University of Michigan. Gates was a student of Henry Allan Gleason (1882–1975), who Gates’s biographer describes as “a man whose name is synonymous with systematic botany in North America.”<sup>611</sup> Gates specialized in botany and was stationed in the Philippines from 1912 to 1915 to teach, among other courses, beginning botany and plant physiology. He documented his years in the Philippines by photographing and recording his teaching in the field and at the campus.

Fieldwork, completed at least once a month, was important to students’ training (see fig. 14). Since the college was established at the base of Mount Makiling, the mountain became one of the more extensively collected and investigated mountains in the colony,<sup>612</sup> where students conducted expeditions regularly. On students’ fieldwork, Gates reported to the University of the Philippines president, “These trips are personally conducted with definite objects in view. The notes obtained by the students are written up by them and graded by me. To give the students an idea of how to take care of themselves in the woods, I take each class upon at least three mountain trips each year, one such trip keeping the student out of civilization for three days.”<sup>613</sup> In addition to trips, students needed to produce original research (see fig. 15) that went toward their certification as botanists and foresters. Aptitude in a combination of fieldwork, laboratory methods, and the theoretical principles of botany and forestry was the standard to which U.S. instructors held their students.

A collection of images taken by Gates includes shots of his students in forested and provincial settings. Men—typically dressed in shoes, collared shirts, ties, and hats, which mirrored the dress of Bureau of Science employees—participated in trips to gain collecting expertise. Their garments distinguished them from field assistants hired *in situ*, who in colonial-era photographs

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at the laboring expense of the local people. This deserves greater investigation than I can adequately cover in the scope of this chapter.

<sup>609</sup> Lyle E. Nelson, “A Philippine College of Agriculture: Destruction and Rehabilitation,” *The Mississippi Quarterly* 11, no. 2 (1958): 55.

<sup>610</sup> Juan V. Pancho, “Introduction,” *Kalikasan, The Philippine Journal of Biology*, Supplement no. 1: Vascular Flora of Mount Makiling and Vicinity (Luzon: Philippines), Part 1 (1983): 10.

<sup>611</sup> David Murray Gates, “Frank Caleb Gates, Botanist and Ecologist, and His Companion, Margaret Thompson Gates,” Preface, Manuscript, 2000, Box 1, Frank C. Gates Papers, BHL.

<sup>612</sup> Pancho, “Introduction,” 10.

<sup>613</sup> Letter from Frank Caleb Gates to The President of the University of the Philippines from Frank C. Gates, August 26, 1913, Frank C. Gates Papers, BHL.

were barefoot, without collecting tools or collared shirts, as shown in Figure 16.<sup>614</sup> Filipino students were regimented—intellectually and in dress—to fit the ideals of U.S. botany in the Philippines, both in the laboratory setting and in the field. Among the students photographed in Gates’s collection is Eduardo Quisumbing (1895–1986; see fig. 16), who Gates considered “one of the few really worth while” students.<sup>615</sup> After graduating from the College of Agriculture, Quisumbing continued his doctoral work in botany at the University of Chicago and held a lengthy post at the Bureau of Science and within many of its departments after future institutional splits throughout the twentieth century.



Figure 14. “Time out for botany students,” September 28, 1913, Paete, Laguna, Frank C. Gates Papers, Bentley Historical Library, University of Michigan. Reproduction permission courtesy of the Bentley Historical Library, University of Michigan.

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<sup>614</sup> For a visual collection featuring images of what we can likely assume were Philippine botanical field assistants, see the Elmer Drew Merrill lanternslides collection, NYBG.

<sup>615</sup> Gates, “Frank Caleb Gates,” 126.





Figure 15. "3037. Student activity: thesis sign-making," July 29, 1914, Los Baños, Frank C. Gates Papers, Bentley Historical Library, University of Michigan. The sign reads, "Keep away from the rubber trees – Thesis work of R. O. Sarmiento."  
Reproduction permission courtesy of the Bentley Historical Library, University of Michigan.



Figure 16. "2559. Cargadores," April 9 1914, Sariaya, Frank C. Gates Papers, Bentley Historical Library, University of Michigan. Field assistants often served as *cardagores* (stevedores) during field expeditions. The three College of Agriculture students on the left (from left, N. Catalan, E. Quisumbing, and V. Sulit) can be distinguished from the field assistant, likely hired in the municipality, on the right. In the colonial Philippines, *cargadores* carried essential botanical collecting supplies and tools, like plant presses, papers, and specimen driers, during expeditions. In this photo, Gates may have assigned the students to function as *cargadores* for the trip to Sariaya or else captioned the photo drolly. Reproduction permission courtesy of the Bentley Historical Library, University of Michigan.

To Gates, Quisumbing was a remarkable worker and student compared to his peers. Writing to his sister, Gates disclosed,

The fellows work very hard at their school work and the reason that they dont get farther is simply that intellectually they are still infants. The classes are uneven – some are very good and many are very poor they do not tend to be midway. They hav an artistic sence and make superb drawings of what they are told to draw but they do not understand what they are drawing. They will remember anything that they can learn by rote but if they hav to do any thinking or if you ask the question a little differently from what they heard befor, they are up in the air.<sup>616</sup>

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<sup>616</sup> Letter from Frank C. Gates to Elizabeth Gates, 1 October 1912, Correspondence – Personal, September 1912 – December 1912, Box 1, Frank C. Gates Papers, BHL. Transcription from the original.

Gates's assessments were not unique and mirrored other early U.S. colonialists' appraisals of Filipino intellectual capacity. When the U.S. first arrived to the archipelago, U.S. functionaries took stock of the "remarkable patience and great manual dexterity" of the Filipino worker. Yet, descriptions of native capacities for science were admonishing, suggesting that though the Filipino man was "a natural musician" with an "imaginative character" and "a liking for art," he could only demonstrate himself "to be an imitator rather than a creator."<sup>617</sup> Those who were the exception, according to earliest accounts, were *mestizos*. Many of these men had trained at local schools like the University of Santo Tomas, but very few were afforded the opportunity to train abroad. Even with the educational institutions in Manila, some U.S. colonists found that such opportunities for training were "not altogether safe for a native to avail himself."<sup>618</sup>

But I agree with Bankoff when he writes that "the notion of a passive *tao*, or peasant, dependent for advancement on either the altruism of elite patrons or the benevolence of colonial administrators, needs to be fully relegated to the narratives of neo-imperial historiography."<sup>619</sup> I would rather not read the creation of these programs at the College of Agriculture as white paternalism to create a cadre of men fit for botanical service. These were aims to advance professionalization in the colony that benefitted—and benefitted from—their local Philippine students and the narrative of U.S. inter-imperial clout. As much as U.S. botanists attempted to map the parameters of professionalization beyond North America, they were continually met with a surfeit of un-described flora and the lack of personnel familiar with the tropics. Thus, even if a professionalization program was unraveled, there were scores of individuals that U.S. scientists needed to concede to. Roberts suggests that there was still a hierarchy of thinking in terms of who was a specialist and who was not.<sup>620</sup> But I suggest we flip this to recognize that the earlier terms of professional and amateur—seemingly reified in the United States by the start of the twentieth century, according to Keeney—were not materially carried out in the Philippines. In other words, even if a discursive professionalization seemed key, the work of different groups of people—formally trained, untrained, and holdovers from the Spanish service—brought U.S. colonial botany into being.

The same holds for the history of Filipinization. If we consider the labor of various actors in the development of U.S. colonial botany, our understanding of Filipinization shifts. Particularly during the administration of President Woodrow Wilson, Filipinization was an effort to populate the ranks of the government service with Filipino personnel. These personnel were trained in the U.S. or in the newly developed professional programs of the colony. But as Roberts brightly clarifies, forestry in the U.S. colonial Philippines had been "Filipinized" from the outset: "Filipinization within the Bureau of Forestry had been a fact since the Bureau's establishment, even if not by Americans' design. That is, the organization had always depended upon Filipino/a

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<sup>617</sup> Philippine Commission, *Report of a Commission Appointed to Investigate Affairs in the Philippine Islands* (Washington D.C.: Bureau of Government Printing, 1900), 40–41.

<sup>618</sup> Philippine Commission, 41.

<sup>619</sup> Greg Bankoff, "Wants, Wages, and Workers: Laboring in the American Philippines, 1899–1908," *Pacific Historical Review* 74, no. 1 (2005): 61.

<sup>620</sup> Roberts, "U.S. Forestry in the Philippines," 299–300.



inclusion and labor.”<sup>621</sup> The same was true of botany, which required the skills of local intelligentsia like García.<sup>622</sup> The same can be said of untrained field assistants, who sustained fieldwork and botanical expeditions from the outset. Nonetheless, Anderson rightly observes that the earliest U.S. colonial scientists found that premature Filipinization “would lead to the degeneration, or contamination, of scientific work in the archipelago.”<sup>623</sup> But Filipinization at the Bureau of Science, according to its detractors, did not only portend a decrease in the quality of science performed by the institution. As I have written elsewhere, it also stoked retaliatory sentiment among Filipino employees, who came to disparage U.S. colonial officials. This came with the onset of the establishment of the Philippines as a Commonwealth in 1935. As one bureau researcher shared with Merrill when he was the director of the New York Botanical Garden (NYBG), “The independence agitation... increased the Anti-American feeling, and a feeling of self-sufficiency on the part of the natives, which is strongly antagonistic to any Americans in government employ.”<sup>624</sup> Even if critics of Filipinization argued against the “contamination” of colonial scientific practice, there, too, were political stakes involved that threatened to undercut the livelihood and colonial authority of U.S. bureau employees.

### ***U.S. Botanical Nationalism and the Undeveloped Empire***

According to María Dolores Elizalde, U.S. propagandists on behalf of the U.S. overseas empire “portrayed Spain as a decadent power” and often cited “so-called empirical information contained in reports and accounts written by critics of Spanish rule in the decades before 1898.”<sup>625</sup> Indeed, critiques of Spanish colonialism did not only begin with the arrival of U.S. colonization. As Megan C. Thomas has shown, *ilustrados* critiqued Spanish colonialism regularly in the form of their cosmopolitan tracts, calling on their European Enlightenment-inspired sensibilities to position

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<sup>621</sup> Roberts, 342.

<sup>622</sup> Mercedes Planta has written similarly of León María Guerrero, deemed by some as the “Father of the Philippine Botany” at the turn of the century, who provided information on medicinal plants to the U.S. colonial botany outfit. See Planta, *Traditional Medicine in the Colonial Philippines*, 108. I raise some objections to deeming Guerrero the “Father of Philippine Botany.” During the late Spanish colonial period, disciplinary boundaries in the natural sciences were blurred. As I explained in Chapter Two, it was not uncommon to have an employee of the IGM conduct zoological work, nor was it uncommon to have agriculture specialists engage in plant taxonomy. Guerrero excelled in the natural sciences and is perhaps most well-known for his studies on medicinal plants and pharmacology. By investigating late Spanish secular botany operations in the Philippines, I have endeavored to show a wider variety of individuals who brought modern Philippine botany into being. This included those, like García, who worked in Spanish institutions dedicated to botany and botanical research. We currently do not have record (in peninsular archives or surviving Philippine files) of Guerrero’s service in the JBM, IGM, or the Comisión. While I do not discount the value of the botany Guerrero performed before and during the U.S. colonial period, the appellation—while grand—has not been adequately defined in comparison to other locals working in Philippine botany at the turn of the century.

<sup>623</sup> Anderson, “Science in the Philippines,” 304.

<sup>624</sup> Letter from C. J. Humphrey to Elmer D. Merrill, 24 January 1934, Folder 14, Box 3, Series 2, Elmer Drew Merrill Records, NYBG, also cited in Kathleen Cruz Gutierrez, “What’s in a Latin Name?: *Cycas wadei* and the Politics of Nomenclature,” *Philippine Journal of Systematic Biology* 12, no. 2 (2018): 31.

<sup>625</sup> María Dolores Elizalde, “Imperial Transition in the Philippines: The Making of a Colonial Discourse about Spanish Rule,” in *Endless Empire: Spain’s Retreat, Europe’s Eclipse, America’s Decline*, ed. Alfred W. McCoy, Josep M. Fradera, and Stephen Jacobson (Madison: The University of Wisconsin Press, 2012), 148.

“themselves as modern scholars and intellectuals in a broader field in which their colonizers, the Spanish, often lagged behind.”<sup>626</sup> *Ilustrados* took, according to Resil B. Mojares, Western discourse to “provincialize” Spain to show that “they, and not the Spanish, were the moderns.”<sup>627</sup> Thomas’s and Mojares’s studies complement Elizalde’s work, which cites non-Spanish foreign residents and visitors, many of whom were interested in the commercial and extractive potential of the Philippines, who issued critiques that framed Spanish rule as “an obstacle rather than a catalyst for the economic development of the islands.”<sup>628</sup> These critiques, Elizalde explains, often suggested that Spain had not progressed from its early sixteenth-century model of colonization and that Spanish colonial governance was in fact “obsolete.”<sup>629</sup>

Ahead of this, “Prescott’s paradigm,” the historiographical trope first developed in William H. Prescott’s 1837 history of fifteenth-century Spain, contrasted the U.S. and Spanish imperial projects and emphasized Spanish civil and scientific decay.<sup>630</sup> With regard to the early twentieth century, Bankoff has cited some U.S. writing on the Philippines that mocked Spain and celebrated the scientific rigor and empiricism of the U.S., a new era of U.S. empire vis-à-vis Spanish decline. In his 1903 work *The New Era in the Philippines*, Arthur Judson Brown recounted the Spanish-American War (1898) as that between Spain and “the new world power of the West.”<sup>631</sup> In 1910, colonial official Gabriel O’Reilly cautioned against the outright discrediting of the Spanish Empire, insisting that “we seem to have forgotten that the foundation of every one of the institutions of which we are so proud and upon which we are expending such splendid efforts, were constructed, as were the walls of old Manila, by other men who built for all time.”<sup>632</sup> However, O’Reilly made clear, “Nations are built upon the ruins of nations.”<sup>633</sup> As such, “Nowhere else in all history is found such a striking example of this inevitable disintegration of nations, regardless of merit, as in the story of Spain and Portugal.”<sup>634</sup>

As Christopher Schmidt-Nowara has written of nineteenth-century historians like Prescott, “imperial Spain was the antithesis of the United States: “it was a global empire quickly undone by religious bigotry, monopoly, and despotism.”<sup>635</sup> But Schmidt-Nowara continues by suggesting that to some North Americans in the twentieth century, Spain was acknowledged as a

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<sup>626</sup> Megan C. Thomas, *Orientalists, Propagandists, and Ilustrados: Filipino Scholarship and the End of Spanish Colonialism* (Minneapolis: University of Minnesota Press, 2012), 4.

<sup>627</sup> Mojares, *Brains of the Nation*, 501–502.

<sup>628</sup> Elizalde, “Imperial Transition in the Philippines,” 152.

<sup>629</sup> Elizalde, 153.

<sup>630</sup> Greg Bankoff, “The Science of Nature and the Nature of Science in the Spanish and American Philippines” in *Cultivating the Colonies: Colonial States and their Environmental Legacies*, ed. Christina Folke Ax et al. (Athens: Ohio University Press), 78–79.

<sup>631</sup> Arthur Judson Brown, *The New Era in the Philippines* (Nashville: Methodist Episcopal Church, South, 1903), 15–16.

<sup>632</sup> Gabriel A. O’Reilly, “The Philippine Islands Connected with the Past,” *The Manila Times*, February 1910, Periodicals, AHC.

<sup>633</sup> O’Reilly, “Philippine Islands Connected with the Past.”

<sup>634</sup> O’Reilly, “Philippine Islands Connected with the Past.”

<sup>635</sup> Christopher Schmidt-Nowara, “The Broken Image: The Spanish Empire in the United States after 1898,” *Endless Empire*, 160.

“predecessor and model for a new breed of conquistadores, entrepreneurs, and missionaries.”<sup>636</sup> Schmidt-Nowara takes as his subject the municipal governments, civic groups, and historians that crafted the historical Spanish lineage in the U.S. southwest for tourism purposes and for framing particular cities as cosmopolitan in heritage. In light of this acknowledgement of the legacy of the Spanish Empire, he argues that such an “imperial metamorphosis” is better characterized by continuity and not rupture.<sup>637</sup> While I do not doubt that particular U.S. actors claimed historical continuity for commercial ends and local politicking, in the field of botany, the most prominent overseas U.S. botanists were not invested in the rhetoric of continuity. Instead, U.S. colonial botanists emphasized intellectual “rupture” in Philippine terrain. This sense of rupture assisted them on an international stage where they sought to flex their intellectual dominance. I add to Bankoff’s and Roberts’s astute points on the unqualified smearing of Spanish science to suggest that such was part of a discursive project to shore up U.S. inter-imperial might.

In an effort to establish themselves in what U.S. colonial journalist Martin Egan (1872–1938) called the “undeveloped empire of possibility” that was the Philippines,<sup>638</sup> U.S. colonists needed to legitimate their professional acumen over their Spanish predecessors, the native intelligentsia, and the local labor force. In this sense, professionalization combined with nationalism, and this combination was catalyzed by the new colonial terrain. Mickulas’s notion of turn-of-the-century U.S. botanical nationalism is most salient in this discussion. As Mickulas argues, toward the end of the nineteenth century, U.S. scientists sought to raise U.S. science “to rival European standards.”<sup>639</sup> Botanist Nathaniel Lord Britton, for example, shored up the herbarium collections of the NYBG to displace reliance on European herbaria. In Mickulas’s reading, this coincided with Britton’s four-volume publication on the Cactaceae family, which claimed the saguaro cactus (*Carnegiea gigantea*) as a charismatic botanical example of Americana.<sup>640</sup> I argue that this botanical nationalism extended to the Philippines, where U.S. colonial scientists attempted to insist intellectual might over their once imperial rival, Spain, and over native Philippine capacity. This was rhetorically powerful, both politically and historiographically, and in turn enhanced what U.S. colonists projected the Philippines to be: “Rich in agricultural and forest products, as well as in mineral wealth, commanding in geographical position, the Philippine Islands should soon become one of the great trade centers of the East.”<sup>641</sup>

Ahern’s and Merrill’s first impressions of Spanish botany, forestry, and native expertise reflect these nationalist impulses at the turn of the century. Merrill, in particular, re-entrenched the notion of U.S. professional expertise. The Philippines offered ripe opportunity for both undiscovered flora but also a professional platform. As Merrill wrote, “There has been so little done on the flora of the Philippines by botanists that there is at first a great deal to do in identifying and classifying the hosts of little known or undetermined species. The systematic botanist has here

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<sup>636</sup> Schmidt-Nowara, 166.

<sup>637</sup> Schmidt-Nowara, 161–165.

<sup>638</sup> Foreword to *The Manila Times*, First Annual Edition, by Martin Egan, February 1910, 13, Periodicals, AHC.

<sup>639</sup> Mickulas, *Britton’s Botanical Empire*, 208.

<sup>640</sup> Mickulas, 159.

<sup>641</sup> Mickulas, 134.

an almost unexplored field of labor, and while the ground has been broken by Spanish botanists, there remains a rich harvest for the systematist of to-day.”<sup>642</sup> But this, as I have also shown, could only be effectively completed with the enlisted work of García, field assistants, and trained Filipino personnel, who were to assume service toward the expansion of U.S. colonial science.

While U.S. botanical nationalist might took hold of the Philippines, a similar process had already begun to play out in Puerto Rico, where Britton initiated a three-decade project to “botanize” the new colonial territory.<sup>643</sup> In the Philippines, this took the form not only in the systematization of Philippine flora but also in the defamation of Spanish colonial science and the regimenting of students under the ambit of U.S. professional botany. This emerged through critiques of the IGM and García’s work. In Merrill’s opinion “able botanists” were not around, but “in spite of this and the lack of all trained assistance, [García] has accomplished along several lines an unusual amount of excellent work of more than local interest.”<sup>644</sup> Indeed, these expectations of breaking through provincial interest in local flora would become significant to the U.S. imperial project. As I discuss in Chapter Five, the United States ascended to become a major player in deliberations of the IBC. Merrill would come to be a most influential personality. It was his career in the Philippines—and the regional floristic work he did during and after—that catapulted both him and U.S. botany onto an inter-imperial scientific stage.

### *Conclusion*

In the dissertation’s introduction, I opened with a speech delivered by U.S. botanist Harley H. Bartlett to the Third Philippine Science Convention in Los Baños, twenty-six years after the College of Agriculture’s founding. Speaking on the unpublished records of early modern Spanish science, on which I remarked in Chapter Two, Bartlett suggested that such was “quite typical of other abortive Spanish efforts in the field of science.”<sup>645</sup> He continued, “Spain failed to grow intellectually. She transmitted to her colonies the culture that she had at the time she made her conquests, but did not keep in the forefront of progress. Spain’s decadence, presaged by her failure to participate in intellectual progress, might have been predicted even during the period of her greatest success.”<sup>646</sup> Consequently, the Philippines, found in a “relatively primitive state of culture” before European contact, had only made scientific contributions “through the mouths of Spaniards.”<sup>647</sup> José Rizal, according to Bartlett, “was an isolated phenomenon.”<sup>648</sup>

I close this chapter with Bartlett’s comments on the intellectual history of Spain and the Philippines not only because they summarize well what I have covered herein. Bartlett’s phrasing rehearses a rhetoric that was common in U.S. colonial discourse and that would be repeated in Philippine historiography. But I also share his comments in order to point to his skewed appraisal

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<sup>642</sup> Merrill, “Report of the Botanist,” 645.

<sup>643</sup> Mickulas, *Britton’s Botanical Empire*, 158–159.

<sup>644</sup> Merrill, “Report of the Botanist,” 645.

<sup>645</sup> Harley Harris Bartlett, “Nationalism, Imperialism, and Spheres of Influence in Natural Science,” Manuscript, 4, Folder 3–Nationalism and Science–Bartlett, Box 7–Correspondence, Harley H. Bartlett Papers, BHL.

<sup>646</sup> Bartlett, 4–5.

<sup>647</sup> Bartlett, 43.

<sup>648</sup> Bartlett, 43.

of the native intelligentsia. In Bartlett's estimation, Rizal was the only non-Spanish contributor to Philippine scientific thought. His opinion both disparages and avoids consideration of any other intellectual production executed by local individuals. In Philippine history, we most certainly know his assessment is incorrect, especially as historians have investigated the oeuvres of local visual artists, journalists, naturalists, and polymaths, especially those produced in the late nineteenth century.

I include Bartlett's opinion on local intellectual production to bring light to the other disparaging edge of *la leyenda negra* (the black legend) as it appeared in U.S. colonial discourse on the Philippines. What historians, who have repeated U.S. colonial assessments of science in the historiography, have failed to recognize is how disparagements of the Spanish Empire paired with a near complete disavowal of local Philippine capacity. In other words, the idea of the "howling wilderness of science" that was the Spanish colonial period also denied the intellectual work completed by native individuals.<sup>649</sup> In primary source material from the field of botany, as I explained in this chapter, critiques of Spain and native intellectuals went hand in hand. By repeating the crude generalizations U.S. colonial scientists made of the Spanish, I fear we not only reiterate unnuanced accounts. We also cherry-pick U.S. critiques in service to a simplified idea of comparative colonial history at the ongoing expense of local intellectual labor, especially that which was completed during the imperial transition.

For Bartlett, Spain's legacy differed from that of the United States, wherein "botanical progress became very largely a nationalistic enterprize [sic]," especially as botanical studies expanded westward on the continent.<sup>650</sup> On this, Bartlett asked the convention audience, "What, therefore, could have been more in accordance with national tradition than to set down in Manila at the beginning of the American period, and indefatigable and capable botany – Dr. E. D. Merrill?"<sup>651</sup> Indeed, Merrill played a key role in the proliferation of U.S. botanical nationalism in the Philippines. This botanical nationalism took shape through the theoretical and practical standards that U.S. professional botanists espoused as empirically rigorous, especially compared to the operations—or lack thereof—of the Spanish. But I insist we remember that Spanish colonial science was not the only target of U.S. botanical nationalism. It was local Philippine individuals—the educated elite, field assistants, and students—at which U.S. botanical nationalism also aimed.

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<sup>649</sup> Anderson, "Science in the Philippines," 288.

<sup>650</sup> Bartlett, 38.

<sup>651</sup> Bartlett, 39.

## Chapter 5: Maximo Ramos and the Making of a Botanical Emissary

Mary Clemens was fond of Maximo Ramos. The two were botanical collecting partners in the Philippines, and she envied his familiarity with Philippine terrain. Although Ramos was fully employed by the U.S. colonial Bureau of Science in Manila, he assisted Clemens with her independent collecting work. Both informally trained in botany and botanical collecting, the two likely first crossed paths sometime during Clemens's first tour of the Philippines in the early 1900s. In her Philippines correspondence, Clemens mentions Ramos regularly, their herbarium hijinks, and the periodic collecting trips they took together. She especially adored Ramos's wife, with whom she holidayed occasionally. Ramos and Clemens maintained a decades-long collaborative professional relationship until Ramos's tragic death in 1932.

In 1926, en route to a research trip at Mount Moises in Ilagan, Isabela, Clemens met Ramos, who had just finished collecting on behalf of the bureau in the locality. Clemens's self-funded trip was not altogether easy, since she and her husband contracted dengue on the way. She endeavored to paint "the best mental picture possible of the flora" with her collected specimens, but unfortunately came across poor samples when she arrived. She instead collected fallen fruits and flowers in hopes that they would complement Ramos's doubtlessly robust collection. Tinged with a small measure of jealousy, she thought it presumptuous of her to follow a collector like Ramos to any locality, knowing that he had already meticulously scoured it. But, in her words, she assumed that the "best of collectors" would leave handsome plant material "for any wayfaring old lady to add at least a species or two" to an herbarium set.<sup>652</sup>

### *The Making of a Botanical Emissary*

A native of New York, Clemens (1873–1968) collected extensively from 1902 through 1936 in the continental United States, the Philippine archipelago, China, northern Borneo, Sarawak, Indochina, and Java. She first arrived in the Philippines in 1902, and the Bureau of Science served as her research base from 1922 through 1936. She worked independently, fulfilling collecting contracts with U.S. and European patrons and institutions as opportunities arose. Clemens often collaborated with other plant collectors in the Philippines, including Ramos. Born in the province of Rizal, Ramos (1882–1932) began his collecting career at the start of the twentieth century. Formally employed by the Bureau of Science in 1907, Ramos rose to become Chief Botanical Explorer of the bureau's botany division by the time of his death. As I show in this chapter, a comparison of the two figures is essential to how we might understand the developments in international botany and the workings of colonial botany in the first third of the twentieth century. This comparison is made uneven not only by the inequalities present in their professional careers but also by the near archival absence of Ramos, whose career and untimely death appear in the records of other better-documented inter-colonial and imperial plant specialists like Clemens (see fig. 17).

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<sup>652</sup> Letter from M. Clemens to E. D. Merrill, 3 May 1926, Clemens Correspondence–1920–1929, Box 5, University Herbarium, BHL.



Figure 17. Mary Strong Clemens, n.d., 1744–1755, Bartlett-Clemens 1930–1939, Box 5, University Herbarium, Bentley Historical Library, University of Michigan Image and reproduction permission courtesy of the Bentley Historical Library, University of Michigan.

While based in the Philippines, Clemens collected in nearby colonies that would come to comprise what we consider today Southeast Asia. For this chapter, I prioritize her Indochina plant collection and its contributions to the publication of Elmer D. Merrill’s 1935 commentary on Portuguese Jesuit and botanist João de Loureiro’s *Flora cochinchinensis* (1790).<sup>653</sup> By the mid-1930s, Merrill became one of the chief experts of Indo-Malayan flora through his published interpretations of pioneer botany tracts.<sup>654</sup> He also became one of the most formidable leaders of the International Botanical Congress (IBC). Merrill’s publication on the flora of a French colony advanced U.S. intellectual claims internationally—claims made more substantial because of

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<sup>653</sup> The full title of the Loureiro work is *Flora cochinchinensis: sistens plantas in regno Cochinchina nascentes: quibus accedunt aliae observatae in Sinensi imperio, Africa orientali, Indiaeque locis variis: omnes dispositae secundum systema sexuale Linnaeanum*.

<sup>654</sup> These included *An Interpretation of Rumphius’s Herbarium Amboinense* (1917), *Species Blancoanae* (1918), *A Review of the New Species of Plants Proposed by N.L. Burman in His Flora Indica* (1921), *A Commentary on Loureiro’s Flora cochinchinensis* (1935). Merrill later published *A Critical Consideration of Houttuyn’s New Genera and Species* (1938) and *Additional Notes on Houttuyn’s Binomials* (1939). In Dutch botanist Cornelis G. G. J. van Steenis’s usage, “pioneer botany” was comprised of the first voluminous and authoritative works on Indo-Malayan and Malesian flora produced by colonial naturalists like Rumphius, Blanco, and Loureiro.

Clemens's specimens and those amassed by other botanical collectors.<sup>655</sup> These claims, moreover, contributed to a floristic regional coherence of both the Indo-Malayan zone and the Malesian subregion.

Based on scholarship that we have on U.S. botanical field collectors of the early twentieth century, Clemens would be considered a “botanizing amateur,” as termed by Elizabeth Keeney. Indeed, Clemens often referred to her amateurism in her professional correspondence. According to Keeney, botanizing amateurs were not invested in the advancement of the science.<sup>656</sup> Following the rise of professionalization of the sciences in the U.S., by the start of the twentieth century Keeney argues, “As professionals took to the laboratory, the agendas of professionals and amateurs diverged so much that cooperation became less important and less profitable.”<sup>657</sup> While this rift emerged at the turn of the century, I argue that in the colonial context—and not solely in the U.S., where Keeney bases her study—botanizing amateurs were still of extreme necessity to the understaffed U.S. colonial botany operations in the Philippines. Mary Clemens, in particular, complicates what we know of amateurs and how they participated in the imperial scientific community well into the twentieth century. It is from her body of collecting work that I propose her role as a botanical emissary who advanced the aims of an imperial botany as it was consolidated through the IBC in the first third of the twentieth century. I hold, however, that the only way to understand the role of the botanical emissary is by comparing Clemens's work to that of Ramos.

A comparison of the two reveals differences of mobility, remuneration, and phytogeographic specialization afforded to them during this time, particularly as Clemens would add to a regional knowledge of flora and Ramos, to a proto-national one. The details of Ramos's life and death in the field and his tenuous archival presence, accessed primarily through herbarium specimens collected by him and through archive-rich U.S. individuals like Clemens, lay bare the simultaneous acknowledgement and erasure that came with scientific collaboration in colonial Philippine botany in the first third of the twentieth century. It was this very kind of collaboration, however, that contributed to the acceleration of an inter-imperial botany propelled by IBC.

The chapter begins with Clemens's Indochina expedition, which I narrate with extant correspondence and references made to her 1927 trip. I spotlight this expedition because of its direct ties to Merrill's 1935 “A Commentary on Loureiro's ‘*Flora cochinchinensis*’”—a 444-page publication that would cement his place internationally as a specialist of Indo-Malayan flora. I account for Clemens's contributions by comparing Merrill's 1919 and 1934 manuscripts of “Commentary.” For Clemens's Indochina work, I also look to her herbarium specimens,<sup>658</sup> which include some of Clemens's richest annotations of her Indochina material.

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<sup>655</sup> Van Steenis dedicates the sixth volume of *Flora Malesiana* to Merrill and credits the botanical collecting of independent and Filipino collectors. He also references Clemens's Indochina collection as that available to Merrill's disposal behind the 1935 *Commentary*. See C. G. G. Jan van Steenis, *Flora Malesiana*, Series 1 Spermatophyta, Volume 6 (Jakarta: Noordhoff-Kolff, 1972), 10–11.

<sup>656</sup> Elizabeth Keeney, *The Botanizers: Amateur Scientists in Nineteenth-Century America* (Chapel Hill: University of North Carolina Press, 1992), 4.

<sup>657</sup> Keeney, 149.

<sup>658</sup> These can be found in the databases of the Lynda and William Steere Herbarium of the New York Botanical Garden, of the Muséum national d'histoire naturelle (National Museum of Natural History; MNHN), and of JSTOR Global Plants.



Though Clemens's archive is extensive by comparison with other botanical collectors from this period, her notes and correspondence from her Tourane (modern day Đà Nẵng) region expedition (May–July 1927) were thought to be lost.<sup>659</sup> Clemens's biographer Nelda Ikenberry writes that while many of the Tourane specimens are held in France, little documentation on the collecting trip has been locatable.<sup>660</sup> However, the University Herbarium archives at the Bentley Historical Library and the Jepson Herbarium of the University of California, Berkeley, fortunately contain several letters penned by Clemens and her husband from Tourane.<sup>661</sup> This file is not as extensive as those from her other expeditions. For most of Clemens's collecting career in the Philippines and abroad there exists a bounty of correspondence, not to mention a purported 20,000 field numbers collected by her and her husband, Joseph, held in herbaria internationally.<sup>662</sup>

With these sources this paper follows the process of knowledge production behind the publication of Merrill's "Commentary" between plant specimen and collector, collector to publishing botanist, and publishing botanist to the international body that codified botanical nomenclatural standards. In doing so, I demonstrate the significance of scientific collaboration in the global imperial field of the early twentieth century.<sup>663</sup> The IBC solidified its aims and objectives as international bodies "contributed to such inter-imperial isomorphism in ideology and institutional form."<sup>664</sup>

From there, I return to Ramos, whose twenty-five-year career with the U.S. colonial Bureau of Science led to the amassing of thousands of specimen numbers for its Manila herbarium. Ramos's career as a Philippine collector contrasted that of Clemens. Inter-colonial travel was not as available to him, and his ties to the bureau prevented him from completing independent contractual work for other patrons. At the same time, his movements in the Philippines were less restricted, and he had access to terrain that for Clemens required local company. But the ambiguous details behind Ramos's death in 1932 and the effort to eventually exhume his remains from their temporary grave in Cotabato, Mindanao, underscore the inequities of colonial botany operations in the Philippines. Archived correspondence regarding Ramos's death conflicts with an

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<sup>659</sup> Herbarium accessions date Clemens's Indochina expedition from May to July 1927. Nelda Ikenberry dates the Indochina trip from May to September 1927. See Nelda Ikenberry, "Author's Introduction," 1999, Archives of the Susquehanna Conference of the United Methodist Church, <https://www.lycoming.edu/umarch/chronicles/2000/2.INTRO.pdf>. Accessed 3 June 2019.

<sup>660</sup> Ikenberry, "Author's Introduction."

<sup>661</sup> The archives at the Jepson Herbarium of the University of California, Berkeley, also contain copies of the correspondence from the Tourane expedition.

<sup>662</sup> Marshall A. Howe, "Chaplain Joseph Clemens," *Journal of the New York Botanical Garden* 37, no. 37 (1936): 118.

<sup>663</sup> Julian Go, "Introduction: Global Perspectives on the U.S. Colonial State in the Philippines," in *The American State in the Philippines: Global Perspectives*, eds. Julian Go and Ann L. Foster (Durham: Duke University Press, 2003), 20.

<sup>664</sup> Go, "Introduction," 21–22. For the natural sciences, I should add that 1884 marked the first meeting of the International Ornithologists' Union and in 1889, the Société zoologique de France (f. 1876; Zoological Society of France) initiated the first international zoological conference in Paris, which laid the foundation for the International Society of Zoological Sciences. The International Meteorological Organization (IMO) was founded in 1873 at the International Meteorological Congress in Vienna. The World Meteorological Organization succeeded the IMO in 1951.

oral anecdotal recollection of Ramos's final hours, which had been allegedly kept secret so as not to disrupt the steady supply of Filipino collectors for U.S. colonial botany operations. Indeed, even the work to historiographically exhume Ramos comes with the interpretive power of the historian and her decision to do so for analytical purposes. But in her reading of Suzan Lori-Parks's essay "Possession," Angenette Spalnik writes, "To exhume the 'un-remembered,' 'dis-membered' bones is to begin to 're-member,' creating 'memory' and, in doing so, beginning to put the body of history back together."<sup>665</sup> In my effort to exhume Ramos, I acknowledge the weight of one man's life to tell a particular history of a science—one that reveals the active acknowledgements and erasures in intellectual production.

### *Botanical Collectors Bound for Indochina*

On May 7, 1927, Clemens and her husband, Joseph, departed Manila for Hué, a city on Indochina's central coast.<sup>666</sup> Ahead of the trip, Clemens had little time to prepare her necessary travel documents, which included passport photos and letters of introduction to facilitate her travel through the French colony. The letters were endorsed by Governor-General of the Philippines Leonard Wood, Director of the Bureau of Science William Henry Brown, and one written by a colleague to initiate a contact with a "veterinarian and 'botanist'" near Hué who could assist Clemens with native plant names.<sup>667</sup> Clemens corresponded with Merrill, her "botanical father," as she and Joseph referred to him, to assure him of their departure and arrival. By the late 1920s, Merrill had left the Philippines for work at the University of California at Berkeley (UC), where he assumed a deanship in the College of Agriculture.

Merrill had been supportive of Clemens's trip to Indochina and secured a one hundred dollar grant from the Robinson Memorial Fund supplied by the New York Botanical Garden (NYBG) toward the trip.<sup>668</sup> He also obtained three hundred dollars in discretionary funds from James B. Smith of San Francisco, and he clarified to Clemens that her trip was to be conducted under the auspices of the UC.<sup>669</sup> The money he secured for Clemens had "no financial obligations involved," with only an accounting of the major expenditures of the expedition as a "sort of guide for [Merrill] to make estimates on future similar adventures."<sup>670</sup> For the funding, Merrill requested that a set of specimens be submitted to the NYBG, to the UC, and to Manila's Bureau of Science

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<sup>665</sup> Angenette Spalnik, "Taphonomic Historiography: Excavating and Exhuming the Past in Suzan-Lori Parks's 'The America Play,'" *Modern Drama* 60, no. 1 (2017): 86.

<sup>666</sup> Letter from Mary S. Clemens to Elmer D. Merrill, 9 May 1927, Clemens–E. D. Merrill, 1925–1929, Box 5, University Herbarium, BHL. Following the correspondence, I do not include diacritics most commonly found in Vietnamese orthography. Most correspondence from this period does not include Annamese/Vietnamese diacritics, though I use in them in my text.

<sup>667</sup> Letter from Mary S. Clemens to Elmer D. Merrill, 9 May 1927.

<sup>668</sup> Letter from Elmer D. Merrill to Mary S. Clemens, 2 May 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL. Adjusting for inflation, this sum is equivalent to \$1,473.00 as of 2020.

<sup>669</sup> Letter from Elmer D. Merrill to Mary S. Clemens, 1 June 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>670</sup> Letter from Elmer D. Merrill to Mary S. Clemens, 28 May 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

for granting her research space and facilities.<sup>671</sup> The bureau's infrastructure had been built with a steady influx of researchers—employed by and independent from the bureau—inclined to provide their expertise to U.S. colonial scientific operations. Immediately following the bureau's establishment, its first director announced that there was dedicated space “for visitors of scientific training, where they may learn what has been going on, and may, if they desire, carry on investigations of their own.”<sup>672</sup> Clemens and her husband used the bureau's herbarium and library liberally.

### *Merrill's “Commentary” and Local Nomenclature*

Before their departure, Merrill also requested that Clemens give particular attention to bamboos “with notes as to size and habitat and especially their native names.”<sup>673</sup> He added that he wanted all types of grasses, if possible, particularly those with unique local nomenclature. For his work on Loureiro's publication, he could not insist enough that “specimens from Hue with notes and local names are absolutely essential.”<sup>674</sup> Local plant names were indispensable to how Merrill planned to correct the work of João de Loureiro (b. Lisbon; 1710–1791). Loureiro had spent decades conducting natural history work in Cochinchina and China in the mid-eighteenth century. Originally deployed to Cochinchina in 1742 to undertake missionary activities as part of the Jesuit order, Loureiro eventually served as a naturalist for the Nguyễn lords and took up residence in Huế.<sup>675</sup> Like his Augustinian counterpart Francisco Manuel Blanco in the Philippines, he had taken an interest in local *materia medica*.<sup>676</sup> According to Merrill, Loureiro completed his manuscript in 1788, and the Academia das Ciências de Lisboa (Lisbon Academy of Sciences; f. 1779) published his 744-page work in 1790. *Flora cochinchinensis* was reviewed approvingly for

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<sup>671</sup> Letter from Elmer D. Merrill to Mary S. Clemens, 28 May 1927. Clemens's husband later explained to Merrill that Merrill should find no debt to the Bureau of Science as the couple purchased their field equipment instead of being outfitted by the Bureau of Science. The couple found the Bureau of Science staff at times disagreeable to their research requests and quipped, “They don't want U[S] Americans.” See Letter from Joseph Clemens to Elmer D. Merrill, 11 July 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>672</sup> Paul C. Freer, “The Work of the Bureau of Government Laboratories, of the Philippine Islands,” *Science* 20, no. 499 (1904): 108.

<sup>673</sup> Letter from Elmer D. Merrill to Mary S. Clemens, 13 June 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>674</sup> Letter from Elmer D. Merrill to Mary S. Clemens, 13 June 1927.

<sup>675</sup> Elmer D. Merrill, “A Commentary on Loureiro's ‘Flora cochinchinensis,’” *Transactions of the American Philosophical Society* 24, no. 2 (1935): 7. Merrill writes, “Finding that missionary activities as such were not in favor there, he entered the service of the King of Cochinchina as mathematician and naturalist.” Merrill does not clarify in which lord's court Loureiro would have served, but during Loureiro's thirty-six-year station in Cochinchina he may have been in service to Nguyễn Phúc Khoát (r. 1738–1765), Nguyễn Phúc Thuần (r. 1765–1777), and/or Nguyễn Phúc Dương (r. 1776–1777).

<sup>676</sup> Merrill, 8–9. On Francisco Manuel Blanco's preoccupation with Philippine *materia medica*, see Ma Mercedes G. Planta, *Traditional Medicine in the Colonial Philippines: 16<sup>th</sup> to the 19<sup>th</sup> Century* (Diliman: University of the Philippines Press, 2017), 79–89. Blanco's interest in Philippine medicinal plants are especially evident in his 1831 work, *Ang mahusay na paraan nang pag-gamot sa manga may saquit ayon sa aral ni Tissot* (Efficient remedies to treat the sick according to the teachings of Tissot); published in Sampaloc, Manila by Cayetano J. Enriquez). Blanco's text translates some of the writings of Swiss physician Samuel Auguste André David Tissot (1728–1797) and includes many references to local Philippine *materia medica*.

adding “considerably to the general flock of knowledge of Chinese botany” and for being “of great service to the curious cultivator, particularly, should he have the fortunate means of being able to accommodate the inhabitants of those warmer regions.”<sup>677</sup> But for botanists of the twentieth century, like Merrill who was systematizing the flora of an entire phytogeographic region, *Flora cochinchinensis* posed several problems.

In order to produce a more comprehensive flora of Indo-Malaya, Merrill needed to account for all the species and their Latin binomials that had been historically reported. Publications like Loureiro’s were problematic for Merrill because of the “chiefly inaccurate, inadequate, or indefinite original descriptions of genera and species included in them” and for the “absence or inaccessibility of authentically named specimens for purposes of study and comparison.”<sup>678</sup> Merrill wrote similarly of Blanco’s *Flora de Filipinas* (Flora of the Philippines; originally pub. 1837), describing it as “detrimental to the advancement of the science of botany” for the archipelago. “When one attempts to work with the publications of [Blanco and other friar–botanists],” Merrill lamented, “he will soon learn to appreciate their failings, from a scientific standpoint.”<sup>679</sup> As I mentioned in Chapter Two, a disdain for the Catholic friars in the Philippines appeared as a central theme in *ilustrado* (enlightened intellectual) tracts. Notably, by the late nineteenth century, the Spanish state distinguished its own botany work from that of the Augustinian Order, which had funded the illustrated edition of Blanco’s *Flora de Filipinas*. Based on Merrill’s comments, clerical botanical work lacked the systematic rigor he needed to index regional flora. But even secular Spanish colonial botany, according to Merrill, failed to complete a wide systematization of archipelagic flora as discussed in Chapter Four.

Loureiro’s imperfect descriptions—from which succeeding botanists also worked and published—presented Merrill with a challenge to correct misidentifications. The way to do so was to investigate Loureiro’s plant binomials alongside knowledge gained of Indochinese flora through the early twentieth century together with any binomials proposed by other botanists who had worked from *Flora cochinchinensis*. Merrill had done so previously with his *An Interpretation of Rumphius’s Herbarium Amboinense* (pub. 1917), in which he offered systematic corrections to the 1741 work of naturalist Georg Eberhard Rumphius and his *Species Blancoanae: A Critical Revision of the Philippine Species of Plants Described by Blanco and by Llanos* (pub. 1919). Both had been forerunners to dozens of botany publications on Indo-Malayan plants.

For *Interpretation* and *Species Blancoanae*, Merrill explained that working from Rumphius’s and Blanco’s Latin descriptions alone would lead to uncertain identifications. Despite the centuries-long disciplinary investment in a shared Latin nomenclatural standard, Merrill admitted the indispensability of vernacular names in historical botany. In the 1919 manuscript for “Commentary,” he shared that his *Interpretation* “was based primarily on botanical collections made in Amboina with special attention to the local names, occurrence, and uses of the various species, combined with an intensive study of Rumphius’s descriptions and illustrations and the

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<sup>677</sup> Art. VIII, Review of *Flora cochinchinensis*, *The Monthly Review* XII (1792), 509.

<sup>678</sup> Merrill, “Commentary,” 1.

<sup>679</sup> Elmer D. Merrill, *Botanical Work in the Philippines* (Manila: Bureau of Public Printing, 1903), 5.

suggested disposition of the numerous species under the binomial system by all later authors.”<sup>680</sup> In other words, Merrill deployed a two-part method when producing these three works. The first included a thorough study of the original publication, its plant descriptions, its illustrations, successor publications referencing its binomials, and any extant collected material. The second relied on field-work: newly collected species with information on their local names, uses, and time of flowering helped to verify species growing in a particular phytogeographic realm.

Merrill expanded further on the importance of local nomenclature:

While local names must be used with caution, and while the specimens bearing them must of necessity be critically compared with the original descriptions of the species it is suspected the specimen may represent, still in a very high percentage of cases the local name will give the clue to a large number of imperfectly described species of the early authors when all other attempts to locate them have failed.<sup>681</sup>

He bemoaned large herbaria for not including local nomenclature—data that he insisted could be of use to the modern systematist. More notably, he expressed the mutability of Latin binomials and the immutability of local plant names. “We pride ourselves on the assumption that the Latin binomial or technical name of a species is theoretically fixed,” he explained, “but in this case theory and fact are not in agreement, for, due to one cause or another, changes in binomials are exceedingly frequent in modern taxonomic work.”<sup>682</sup> Sovereign vernaculars as a concept resonates with Merrill’s engagement with local plant names. But to him, these names defied Linnaean Latin nomenclature because of their *fixity*. In Chapter Three, I argued that sovereign vernaculars not only elided botanical specificity and authoritative certainty but also the linguistic imperialism of Linnaean botany. Merrill’s concessions then on the mutability of Latin names sheds different yet still complementary light on sovereign vernaculars: the “local colloquial name of a species,” particularly one with economic importance, had a stability of nomenclature that spanned centuries and would “continue to be used for centuries to come.”<sup>683</sup> Vernacular plant names, in other words, remained untainted by time, in common parlance among users, and sovereign to nomenclatural squabbles among taxonomists. Local names, Merrill found, could be applied to the plants of Ambon in Rumphius’s work, Blanco’s plants collected in Manila and its environs, and in the Annamese material recorded by Loureiro.<sup>684</sup>

Although Merrill asserted the importance of local nomenclature in the 1934 manuscript

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<sup>680</sup> Elmer D. Merrill, “A Commentary on Loureiro’s *Flora cochinchinensis*,” xii, Manuscript, 1919, [hereafter 1919 “Commentary”], Series 3, Elmer Drew Merrill Records, NYBG.

<sup>681</sup> Merrill, xxxvi–xxxvii.

<sup>682</sup> Merrill, xxxv–xxxvi. Londa Schiebinger writes on the eighteenth-century opponents of the Linnaean system of botanical nomenclature. Michel Andanson (1727–1806), for example, advocated for “a pragmatic populist approach to naming” that defied Latin as botany’s lingua franca. See Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2007), 220–222.

<sup>683</sup> Merrill, xxxv–xxxvi.

<sup>684</sup> Merrill, xxxvi.

and 1935 publication, his own editorial interventions betrayed a still-unsettled perspective.<sup>685</sup> In the 1934 manuscript, he nixed his statements on the “very definitely fixed” name for species of local importance and their fixity for centuries to come. Also crossed through in the 1934 manuscript was the following assertion: “In many cases such names are more constant than our supposedly ‘permanent’ Latin binomials.”<sup>686</sup> This sentence did not appear in the 1919 manuscript, and yet Merrill added it to the 1934 manuscript only for it to be removed before publication. I interpret this in two ways. First, I see this as indicative of Merrill’s opinion on the importance of local nomenclature and his own doubts regarding the stability of Latin names. Accepted Latin synonyms, for instance, can add several binomials to the one accepted Latin binomial for a single species, whereas some local plant names have been documented to persist for several centuries.<sup>687</sup> Second, I view Merrill’s scrapped statement as reflective of the major developments in international botany in the first third of the twentieth century. Even though he was skeptical of the international intellectual current that believed in the immutability of Latin nomenclature, he published in congruence with it as his influence in the IBC grew.

### *Codifying Standards at the International Botanical Congress*

The IBC ratified the “International Rules of Botanical Nomenclature” when it convened in Vienna in 1905, which required a Latin description of any accepted taxon and the establishment. From this meeting emerged a dissenting number of U.S. botanists who developed the “American code” that, among other issues, opposed Latin as the *lingua franca* of the discipline. In 1926, the IBC assembled for the first time across the Atlantic in New York, though no major nomenclatural rule had been adopted.<sup>688</sup> At the Fifth International Botanical Congress of 1930 in Cambridge, Merrill served as the Vice President and Chairman of the Section on Nomenclature. Proceedings of the IBC noted that Merrill “very ably” led the Section on Nomenclature, despite having “undoubtedly the most difficult position in the entire congress.”<sup>689</sup> The 1930 meeting affirmed the “principle of priority” that required that even if an antiquated name were discovered that had been applied to the same taxon, the name in current use would be preserved in the *nomina generica conservanda* (conserved generic name) list. The *nomina generica conservanda* (also known simply as *nomina conservanda*) helped establish the priority of names for botanical species. In other words, a plant’s Latin binomial was protected if the plant were listed *nomina generica conservanda* even if disputes

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<sup>685</sup> Elmer D. Merrill, “A Commentary on Loureiro’s *Flora cochinchinensis*,” 130–141, Manuscript, 1934, [hereafter 1934 “Commentary”], Series 3, Elmer Drew Merrill Records, NYBG; Merrill, “Commentary,” 43–45.

<sup>686</sup> Merrill, 1934 “Commentary,” 137, Series 3, Elmer Drew Merrill Records, NYBG.

<sup>687</sup> Planta’s 2017 compendium of Philippine medicinal plants, for example, lists local *materia medica* documented between the seventeenth and twentieth centuries to argue the endurance of Philippine traditional healing. Although it is challenging to date the emergence of local plant names, one could speculate the enduring character of some plants’ local names (even with the linguistic variety of the archipelago) despite changes to the plants’ Latin names among debating systematists. For example, *kalingag* (Tagalog; clove cinnamon, wild cinnamon) was documented in a 1668 Jesuit publication and in Blanco’s *Flora de Filipinas* (1837) before its late nineteenth-century Latin determination, *Cinnamomum mercadoi*, by Sebastián Vidal y Soler. For the compendium, see Planta, *Traditional Medicine*, 143–203.

<sup>688</sup> Planta, 62.

<sup>689</sup> Truman G. Yuncker, “The Fifth International Botanical Congress,” *Proceedings of the Indiana Academy of Science* 40 (1931): 65.

arose as to the new designation of the plant material or the discovery of an older name.

In Merrill's estimation, such standards could manage the impermanence of Latin names but were by no means perfect. Because of his leadership role in the IBC, Merrill needed to evince more faith in the nomenclatural standards set forth by the international body. Under the established policies of the IBC, even if Merrill disagreed with the *nomina conservanda* (as seems likely based on his corrections of *Flora cochinchinensis*), he needed to concede to the international body.<sup>690</sup> In "Commentary," Merrill acceded, "As this study has been consummated under the general provisions of the International Code of Botanical Nomenclature, I have accepted the conserved names approved by the Vienna, Brussels, and Cambridge Botanical Congresses, even where, in my personal opinion, some of these should not have been included."

The Fifth Congress is significant to the history of international taxonomy because competing schools merged nomenclatural conventions that produced a more trans-Atlantic system. For example, the "American code" that espoused the significance of a type concept—that is, the identification of the specimen that is representative of a taxon—became a considered part of international practice. The type concept became critical to the 1935 "Commentary" because Clemens collected plants that were eventually considered the type specimen for several of Loureiro's species. Although Loureiro had collected some plant material behind his publication, little was extant by the time Merrill began to review Loureiro's work. With only the specimens held at the British Museum and in Paris, Merrill used Clemens's specimens, several of which served as the neotypes.<sup>691</sup>

With the approach of the sixth IBC held in Amsterdam in 1935, Dutch botanist Marius Jacob Sirks wrote, "[T]he need of an international cooperation is becoming more and more sensible," remarking that the previous meetings demonstrated "a strong feeling for international affinities."<sup>692</sup> In 1934, the majority of member-nations that comprised the Union of Biological Sciences and its Botanical Section were in Europe, with the exception of Japan and South Africa.<sup>693</sup> By the sixth IBC, about nine hundred members from more than fifty countries were estimated to have attended.<sup>694</sup> For the convening, Merrill was invited to preside as the President of the Subsection on Nomenclature.<sup>695</sup>

Merrill held strong ideals regarding the notion of international botanical cooperation. In the field of taxonomy, he called for a "greater consideration" discipline-wide for the following: "the durability of the formation" of an international body to oversee plant taxonomy; the founding of a publication dedicated to the field; the end to research duplication and specialization in order to dedicate more study to lesser known plant groups; effective distribution of duplicate material to

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<sup>690</sup> Merrill, "Commentary," 34.

<sup>691</sup> Neotypes are specimens selected to serve as the single type specimen when an original, a holotype, has been lost, destroyed, or never selected by an original author.

<sup>692</sup> Memorandum from M. J. Sirks to the National Research Council, 20 August 1934, Elmer Drew Merrill Records, NYBG.

<sup>693</sup> Memorandum from M. J. Sirks to the National Research Council, 20 August 1934, Elmer Drew Merrill Records, NYBG.

<sup>694</sup> A. B. Rendle, "Sixth International Botanical Congress: Amsterdam Meeting," *Nature* 136 (1935): 612.

<sup>695</sup> Letter from August Adriaan Pulle to Elmer D. Merrill, 25 May 1934, Netherlands – Folder 9, Series 2 (Correspondence), Elmer Drew Merrill Records, NYBG.

herbaria; advancement of inter-institutional loans; “mutual assistance” in the identification of material, photographing types, and cross-referencing publications; and “the development of inter-institutional cooperation in the botanical exploration of those parts of the world as yet inadequately known from a botanical standpoint, the cooperating institutions to share in the material collected.”<sup>696</sup> After what was essentially a victory for nomenclatural standards at the fifth IBC, Merrill moved to enhance the institutional workings of taxonomy through more international cooperation among institutions and herbaria. *Transactions of the American Philosophical Society* published Merrill’s “Commentary” under the environment of some of the largest environments in nomenclatural standardization of the IBC, and Merrill’s work reflect the nomenclatural rules that he co-developed during this time.

### *Clemens’s Indochina Material*

In the 1934 manuscript and in the finalized publication, Merrill stressed that his work could not have been completed were it not for the botanical collecting work of Clemens and her husband.<sup>697</sup> Though the 1919 manuscript had not been published, he had only shared it with colleagues at the British Museum, the Museum d’histoire naturelle in Paris, the Institut Scientifique d’Indochine in Saigon, the U.S. Department of Agriculture in Washington, D.C., and Canton Christian College in Canton in order “to stimulate further work on the numerous unsolved problems.”<sup>698</sup> He explained that his original 1919 manuscript had not been published because “what was most needed in reference to the solution of many problems raised by Loureiro was intensive and extensive botanical collections from Hue and vicinity with notes as to habitats, relative abundance of the various species, economic uses, and local names.”<sup>699</sup> For this, he credited Clemens and her husband, who, “on [his] recommendation,” collected extensively in Hué from May to July of 1927. Their collection was of “greatest value” to him since the plants, when studied alongside Loureiro’s descriptions, facilitated a more certain interpretation of originally doubtful species.<sup>700</sup> In the final publication, Merrill remarked that had all the local names been consistently recorded even the plants with doubtful status would have been resolved.<sup>701</sup>

Clemens and her husband had tried to gather as many local plant names as possible, but the task proved challenging. In some respects, luxuries made their work easier. The couple enjoyed special clearances from the local mayor, who equipped them with a “card of permission” that enabled them “to collect anything.”<sup>702</sup> They had an automobile at their disposal, and at least two remunerated Annamese field assistants aided them during the first half of the collecting trip.<sup>703</sup>

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<sup>696</sup> “Botanical Collaboration Elmer D. Merrill,” Series 2, Box 3, Netherlands – Folder 9, Elmer Drew Merrill Records, NYBG.

<sup>697</sup> Merrill, “Commentary,” 45.

<sup>698</sup> Merrill, 4.

<sup>699</sup> Merrill, 45.

<sup>700</sup> Merrill, 45.

<sup>701</sup> Merrill, 45.

<sup>702</sup> Letter from Joseph Clemens to Elmer D. Merrill, 16 June 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>703</sup> Letter from Mary S. Clemens to Elmer D. Merrill, 11 July 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.



The field assistants helped them dry specimens as they were collected in the field. “One of our boys walks six Ks to his home,” Joseph recounted, “and just brought back with him half a dozen things not before found by us.”<sup>704</sup> Yet, their efforts were hampered in other ways. They were inundated by rain in June, overcome by leeches, and vigilant of ants, which threatened to consume their collections. More importantly, untrained in French or Annamese, the couple could only uncover so much regarding local nomenclature. As Joseph admitted, “Lady is labeling, but not much doing with Annamese names. The old French medico who is studying plants of his profession, declares it to be a meaningless thing, as each village has a different name and no one is wise on plants.”<sup>705</sup>

By the second half of June, the couple had packed and shipped the first box of Indochina material to Merrill. He wrote that the two had been “handicapped at present” since their two assistants had taken ill with a bad fever. The heavy rains had also proved a challenge: “When you send collectors to this part of the world, tell them to pass Hue until the rainy season, perhaps.”<sup>706</sup> In their field assistants’ stead, the couple began to train others while “praying for their recovery.” They had started to pack and ship a considerable number of sets of plants, some with as many as a dozen samples of a single collected species. Joseph insisted that they were being as thorough as possible and that Clemens had emphasized collecting all plants in the locality. Clemens was at times critical of Joseph’s work or what he detailed as scolding for putting too much of one specimen on a sheet of paper or for not selecting large enough stems worthy of an appropriate sample.<sup>707</sup> She labeled the majority of the material, but Joseph also completed some labels in his “desire to save her from too many midnight revels.”<sup>708</sup>

But the worrying conditions of their field assistants had put their trip at a disadvantage. They struggled to find enough assistance, especially from those who could help them navigate the area, dry specimens, and perhaps assist with local names. The couple found themselves “getting healthier all the time, while others [were] getting sick.”<sup>709</sup> Joseph described, “Our two trained trusties are near death from fever. We have now three boys and a few raps on the head are helping a lot. One wanted to go home at the usual time to eat, and I frightened him so much that it made him into a new fellow. . . . We are doing the hardest work of our lives, and hope we shall not kill off too many of the natives who try to take the pace.”<sup>710</sup> Well into July, the assistants were still sick, with one having been taken to the hospital. The couple felt “more or less responsible” for having taken them on such a distant expedition.<sup>711</sup>

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<sup>704</sup> Letter from Joseph Clemens to Elmer D. Merrill, 16 June 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>705</sup> Letter from Joseph Clemens to Elmer D. Merrill, 16 June 1927.

<sup>706</sup> Letter from Joseph Clemens and Mary S. Clemens to Elmer D. Merrill, 25 June 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>707</sup> Letter from Joseph Clemens and Mary S. Clemens to Elmer D. Merrill, 25 June 1927.

<sup>708</sup> Letter from Joseph Clemens and Mary S. Clemens to Elmer D. Merrill, 25 June 1927.

<sup>709</sup> Letter from Joseph Clemens and Mary S. Clemens to Elmer D. Merrill, 25 June 1927.

<sup>710</sup> Letter from Joseph Clemens and Mary S. Clemens to Elmer D. Merrill, 29 June 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL. This study set likely comprises the collection currently held in and digitized by the MNHN.

<sup>711</sup> Letter from M.S. Clemens to E. D. Merrill, 11 July 1927, BHL.

Despite the setbacks, by early August the couple had arranged to send ten boxes of plants to Merrill that contained roughly 1,200 to 1,400 specimens.<sup>712</sup> They had collected in some areas twice, careful to maximize the comprehensiveness of their collections. They covered the vicinity of the Y Pha Nho colonial cemetery, An Bằng cemetery, and what is likely Sơn Trà mountain. Most stunning by that point had been their trek to the hills of Bà Nà. Their travels had entranced Clemens, leaving Joseph to jest, “I may have to bind and gag her to draw her from the wonders yet undiscovered.”<sup>713</sup> They did not write of their previous two assistants, but informed Merrill that they had hired two “coolies,” or ethnic Chinese laborers, who were remunerated for their carrying and collecting of material.<sup>714</sup> In their correspondence with Merrill, the couple did not indicate when they may have hired other laborers in the field to assist with their collecting work. They account for their two Annamese assistants, who took ill, and the two Chinese laborers who had joined their collecting team at least by early August. On one of their collected specimens, *Sauropus androgynous* (L.) Merr., an annotation remarks, “Brought by coolie.” No local name is included on the specimen, though based on the determination, Merrill had described this plant in 1903 in the publication of the U.S. Bureau of Forestry in the Philippines.<sup>715</sup>

The couple assured Merrill that they “did their best” with the bamboo collections to acquire native names.<sup>716</sup> Finding the best authority was a challenge. Joseph explained that he had taken the numbers to the office of Rene Carpentier, an assistant forester, who labeled each package with the Annamese local name for the species.<sup>717</sup> On his labeling work, Joseph advised, “Perhaps you can judge the worth of his work, but sprinkle it with salt.”<sup>718</sup> Indeed, the local names were likely affixed to the specimens, perhaps as an appended paper. These annotations do not join the digitized specimens from Clemens’s Indochina expedition.

### ***Reviewing the Indochina Material***

Merrill asked that the material be sent by freight to Berkeley, where he undertook the identification of the material. He had established an agreement with French botanist François Gagnepain (1866–1952) to assist with the determinations on the condition that a study set of the material remain in Paris.<sup>719</sup> He cautioned Clemens’s selling the material to herbaria at too high of a price. Clemens had suggested each specimen be sold for twenty cents, though Merrill had already viewed the price as steep. He offered to have the specimen material housed, packed, and shipped

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<sup>712</sup> Letter from Joseph Clemens to Elmer D. Merrill, 3 August 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL. M. Clemens estimated 1,200 specimens in her August 5, 1927 correspondence.

<sup>713</sup> Letter from Joseph Clemens to Elmer D. Merrill, 3 August 1927, BHL.

<sup>714</sup> Letter from Joseph Clemens to E. D. Merrill, 5 August 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL. I deduce that “coolie” referred to ethnic Chinese field hands since the couple referred identified their other assistants as ethnically “Annamese.”

<sup>715</sup> Elmer D. Merrill, “*Sauropus androgynous* (Linnaeus) Merrill,” *Bulletin of the Bureau of Forestry in the Philippine Islands* 1 (1903): 30.

<sup>716</sup> Letter from J. Clemens to E. D. Merrill, 3 August 1927, BHL.

<sup>717</sup> Letter from J. Clemens to E. D. Merrill, 3 August 1927, BHL.

<sup>718</sup> Letter from J. Clemens to Merrill, 3 August 1927, BHL.

<sup>719</sup> Letter from E. D. Merrill to Mary S. Clemens, 31 July 1927, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

from the UC, thereby absorbing the cost of clerical help and his own time. He admitted that the labor in California alone would cost several hundred dollars “because we have to pay for one hour’s work what one pays for similar service in Manila for a whole day’s work!”<sup>720</sup> Merrill acknowledged that hiring labor for the task in Manila would be much more affordable for the couple and for a determined botanist. Still, he found the higher costs California-side and the devotion of his time worthwhile. His own time was “free” because of his “long desired Hue material to work in connection with Liureiro’s [sic] enigmas.”<sup>721</sup>

Back in Manila in September 1927, Clemens was anxious to find out the determinations of her material. Well into 1928, Merrill worked on the study set that would be collaboratively determined with Gagnepain.<sup>722</sup> Both she and Joseph were disappointed to discover that Merrill had decided to sell the specimens for twelve and a half cents per sheet—down from the original twenty cents they had discussed while the couple was in Indochina. The matter was not only one of cost but of expeditious determining of the collection: a cheaper price could mean quicker sales to herbaria and the more immediate study of the Indochina material.<sup>723</sup> The couple eventually received a check for \$118.00 (or for 944 specimens).<sup>724</sup> Merrill conceded that even if she had completed most of the determinations of the plant material the cost was a fair one since herbaria did not typically have surplus budget to spare.

But for Clemens, Merrill’s finalizing of “Commentary” was equally important: “The end in view is to publish your manuscript on Loureiro’s plants and I hope to see it in my day!”<sup>725</sup> The collections arrived in California in “excellent” condition, as Clemens quoted Merrill, but apparently the labels created by the couple, as Merrill had intimated, were “so worthless the writing would soon be effaced.”<sup>726</sup> Merrill’s appraisal of the set’s labels distressed Clemens considerably. She defended herself, noting that “With scrupulous care I put labels in every species and would consider it no less than dishonest had I done otherwise.”<sup>727</sup>

But Clemens’s labels were not entirely rubbish. In fact, Merrill relied on her plant descriptions and field notes when determining species in “Commentary.”<sup>728</sup> In “Commentary,”

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<sup>720</sup> Letter from E. D. Merrill to Mary S. Clemens, 31 July 1927, BHL.

<sup>721</sup> Letter from E. D. Merrill to Mary S. Clemens, 31 July 1927, BHL.

<sup>722</sup> Letter from Mary S. Clemens to Eugenio Fenix, 18 April 1928. Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>723</sup> Ahead of Merrill’s 1935 “Commentary,” other publishing botanists had access to the Clemens Indochina material. This included Italian botanist Ugolino Martelli (1860–1934). See Ugolino Martelli, “*Pandanus odoratissimus* var. *loureirii* Gaud.,” *University of California Publications in Botany* 12 (1930): 373–374.

<sup>724</sup> Letter from Elmer D. Merrill to Mary Strong Clemens, 13 December 1929, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>725</sup> Letter from Mary S. Clemens to Elmer D. Merrill, 25 February 1928, Clemens–E. D. Merrill 1925–1929, Box 5, University Herbarium, BHL.

<sup>726</sup> Letter from Mary S. Clemens to Elmer D. Merrill, 25 February 1928.

<sup>727</sup> Letter from Mary S. Clemens to Elmer D. Merrill, 2 March 1928, Clemens – E. D. Merrill 1925 – 1929, Box 5, University Herbarium, BHL. Emphasis original.

<sup>728</sup> Not all of Clemens’s duplicates had her field notes affixed to specimen sheets. Her study set, held principally at the MNHN, has her original plant descriptions, collecting notes, and labels. Other herbaria duplicates do not have the same annotations or at times, visual sketches, that Clemens included with the material for Merrill and Gagnepain’s determination.

Merrill confronted Loureiro's application of the Linnaean sexual system of classification: Loureiro at times described the same species as different genera, unaware that the number of stamens and carpels of a species might vary from sample to sample. Loureiro also often separated the flowering specimen and the fruiting specimen of the same taxon into different genera.

In spite of these errors, Merrill determined, for instance, *Wrightia annamensis*, a species of tree from the Apocynaceae family. According to Merrill, Loureiro's original description of the species had applied to the *Wrightia* genus but not definitively to *W. annamensis*. The flowers of *Wrightia annamensis* (*cây móc hoa trắng*), for example, were described by Loureiro as "*albo-  
viridis*" or white-green.<sup>729</sup> Although of the same species, Clemens noted that the specimen's flowers were red. This difference led Merrill to believe that Loureiro had misidentified the original species. Merrill agreed with Clemens's visual judgment in her field work, allowing him to conclude that Loureiro described the flowers of *Nerium divaricatum*. Moreover, when describing the corolla, which consists of the inner whorl of the flower's perianth, Loureiro had seemingly been looking at a *W. annamensis*. Loureiro's original claims that the species was represented by *Nerium indicum* in Johannes Burman's *Thesaurus zeylanicus* (pub. 1737) and *Cadaga pala* in Hendrik van Rheedee's *Hortus malabaricus* (pub. 1678–1693) were discounted by Merrill. Based on Merrill's judgment, Clemens's specimens (no. 3367 and no. 4124) best represented *W. annamensis*.<sup>730</sup>

Similar plant descriptions on Clemens's labels aided Merrill's determination of *Gmelina racemosa* (*cây tlai*) of the Lamiaceae or sage family of plants. Loureiro had originally identified the plant as *Lantana racemosa* but corrections to Loureiro's species determined the plant as *Gmelina hainanensis* (1889) by English botanist Francis Wall Oliver (1864–1951) and *Gmelina balansac* (1915) by French botanist Paul Louis Amans Dop (1876–1954). Merrill and his predecessors determined that Loureiro had described the *Gmelina* genus and not the *Lantana* genus. Because of this, the taxon was transferred to the *Gmelina* genus that led to the species' renaming to *Gmelina racemosa*, a new combination representative of the new genus and the original pre-existing species name established by Loureiro. Merrill took issue with Oliver's inadequate description of the plant and more recent descriptions of the flower. He worked from Clemens's specimen description—"flowers yellow with purple" (no. 3980)—on her label to determine it as representative of Loureiro's species.<sup>731</sup>

In total, Merrill references 135 specimen sheets collected by Clemens and her husband in "Commentary." Of the 135 referenced specimen sheets that included 17 duplicate references, 110 are individual taxa. In Loureiro's *Flora*, Loureiro described 1292 species but Merrill made 135 reductions because of wrongful duplication. In sum, the number of distinct species in *Flora* was 1157, as determined in Merrill's "Commentary," for which at least 10 percent of the specimens were cross-referenced with Clemens's material.<sup>732</sup> Merrill worked diligently on the revised manuscript even after his transfer to the New York Botanical Garden in 1930. Acknowledging his

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<sup>729</sup> The local name is indicated in Merrill's entries and follows the original orthography. Other currently accepted local names for the species exist. Merrill, "Commentary," 315.

<sup>730</sup> Merrill, 315.

<sup>731</sup> Merrill, 336.

<sup>732</sup> This 10 percent only covers acknowledgements printed in "Commentary." There could be more representative material from the Clemens collection in Loureiro's *Flora*.

collaborators internationally, the specimen collections of London and Paris, and the work of Clemens and her husband, Merrill completed the work at the end of 1934, and it was printed in 1935.

### *The Botanical Emissary in the Advancement of International Botany*

As Elizabeth Keeney has concluded of the U.S. botanizing amateurs of the nineteenth century, self-improvement motivated botanizers' pursuit of plant collecting.<sup>733</sup> Indeed, Clemens and her husband also cultivated significant religious objectives. She and her husband diligently recorded the numbers of "souls saved" on their travels: preaching, praying, and missionary work were vital to their careers. They had the benefit of a broad network of missionaries that housed, fed, and hosted them on their expeditions. To a fellow missionary Clemens once effused, "Botany is a long, long, road but having put your hand to the plow you must press onward forever and more and more you will worship and adore the marvelous Creator of all things beautiful, - O, the depth of riches of the wisdom and knowledge of our God!"<sup>734</sup> But on Merrill's correction of Blanco's *Flora de Filipinas*, Clemens could not "express how hungry and thirsty" she was to "know the last word of progress" on his commentary.<sup>735</sup> By the early twentieth century and in colonial botany, the botanizing amateur also necessarily took on other specialized tasks when visiting other colonies. This included cooperating with the local consul or government, hiring local field assistants, and living in precarious conditions, often determined by botanical emissaries' professional networks.

I propose that botanical emissary best describes the role that Clemens embodied when conducting inter-colonial plant collecting. Botanical emissaries of the early twentieth century were collectors in a particular position to complete these tasks through travel but were still confronted by the uncertainty of a foreign environment. They had to discover information and gather plant material for publishing botanists and assist their claims made to flora within neighboring colonial domains. Botanical emissaries did not always work under the auspices of the colonial governments for which they were at times contracted, but also for botanists located in metropolitan governments.

With respect to Southeast Asia in particular, collectors corresponded with one another, remitted material to North American and European institutions, and received various sources of funding for their work. Clemens in particular assisted Merrill when he left the Philippines for his deanship at the University of California. He sought to build the Philippine collections in the university herbarium, which had been lacking.<sup>736</sup> She was eager to send material from Mount Apo, the highest peak in the colony, to assist him with this endeavor.<sup>737</sup> Clemens was well aware of her value to colonial and metropolitan botanists and once quoted U.S. plant pathologist Joseph Charles

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<sup>733</sup> Keeney, *The Botanizers*, 4.

<sup>734</sup> Letter from Mary Strong Clemens to Landis, 11 March 1927, Mary Stuart [sic] Clemens-1920-1929, H.H. Bartlett Correspondence, Box 5, University Herbarium, BHL.

<sup>735</sup> Letter from Mary Strong Clemens to Elmer D. Merrill, 5 March 1927, Clemens - E. D. Merrill, Clemens-E. D. Merrill 1925-1929, Box 5, University Herbarium, BHL.

<sup>736</sup> Letter from Elmer D. Merrill to Mary Strong Clemens, 26 May 1924, Clemens-E. D. Merrill, 1918-1924, Box 5, University Herbarium, BHL.

<sup>737</sup> Letter from Mary Strong Clemens to Elmer D. Merrill, 2 October 1924, Clemens-E. D. Merrill, 1918-1924, Box 5, University Herbarium, BHL.

Arthur (1850–1942) in one of her missives to Merrill, “I believe you can find rusts anywhere, and certainly you are doing marvelous work in making known Philippine flora. Have patience a little longer and I will provide this to the world.”<sup>738</sup> With the IBC’s ratification of the type concept, herbaria and botanists came to covet type material to raise the status of their collections and descriptions. As a botanical emissary, Clemens could fulfill the needs of these botanists, who like Merrill made readily clear to her that “what I need is material and then more material.”<sup>739</sup>

The botanical emissary emerged in the early twentieth century and is distinct from the botanical collectors of the early modern period into the late nineteenth century. In his studies of the early modern natural history collectors who worked for Sir Joseph Banks and the Botanical Gardens at Kew, David Mackay argues that collectors engaged in “covert operations: attempting to filch commercially valuable species from India and other overseas dominions of Spain, Portugal, and of the Netherlands.”<sup>740</sup> As “agents of empire,” Banksian collectors could “streamline the process of exploitation” in colonial lands.<sup>741</sup> Some even participated in “commercial espionage” for potentially profitable items like tea and hemp from China, cochineal from Central America, and spices from the Dutch East Indies.<sup>742</sup> Londa Schiebinger has made similar conclusions regarding bioprospecting naturalists engaged in imperial competitions for profitable *materia medica*, *materia alimentaria*, and *materia luxuria*—or material of medicine, food, and luxury.<sup>743</sup> In the long eighteenth century, Schiebinger observes that the Spanish, Portuguese, Dutch, English, and French empires guarded their own natural resources, especially under the threat of bioespionage and piracy on the part of other competing empires.<sup>744</sup> She covers the mission of French botanist Nicolas-Joseph Thiery de Menonville and his attempt to steal cochineal beetles from New Spain for cultivation on the French Caribbean colony of Saint Domingue. Thiery’s biopiracy, as Schiebinger calls it, was almost successful: he smuggled cochineal back to Saint Domingue, but the cochineal failed to produce the maroon dye for which it had been pilfered.<sup>745</sup>

The botanical emissary from the early twentieth century existed within and advanced the intellectual cooperation that emerged within a new global imperial field. Seeking more than profitable ends, botanical emissaries recognized their roles in international botany and were invested in the furtherance of intellectual claims to regional flora. This is not to suggest that the desire for potentially profitable medicine-yielding plants did not exist or that commercially profitable crops, like tobacco, sugar cane, or Manila hemp (*abacá*) did not incite imperial attention or jealousy. Indeed, these types of plants did, especially because of their significance to global

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<sup>738</sup> Letter from Mary Strong Clemens to Elmer D. Merrill, 20 October 1924, Clemens–E. D. Merrill, 1918–1924, Box 5, University Herbarium, BHL.

<sup>739</sup> Letter from Elmer D. Merrill to Mary Strong Clemens, 27 December 1924, Clemens–E. D. Merrill, 1918–1924, Box 5, University Herbarium, BHL.

<sup>740</sup> David Mackay, “Agents of Empire: The Banksian Collectors and Evaluation of New Lands” in *Visions of Empire: Voyages, Botany, and Representations of Nature*, ed. David Philip Miller and Peter Hanns Reill (New York: Cambridge University Press, 2010), 38–39.

<sup>741</sup> Mackay, 39.

<sup>742</sup> Mackay, 47–48.

<sup>743</sup> Schiebinger, *Plants and Empire*, 15–16.

<sup>744</sup> Schiebinger, 38–39.

<sup>745</sup> Schiebinger, 44.

commercial trade. But as I have argued, international agreements emerged that attempted to facilitate liberal cooperation among empires.<sup>746</sup> After Napoleon's defeat in the early nineteenth century, as Mark Mazower has suggested, European powers began to increasingly "intervene in the affairs of other states in the name of humanitarian ideals and civilization."<sup>747</sup> The First World War accelerated these interventions.<sup>748</sup> Mazower writes that the League of Nations, established after the war, "transformed the idea of international civilization," wherein the notion of sovereignty was "shaped by the doctrine of national self-determination in its most anti-autocratic and optimistic guise."<sup>749</sup> As such, international mandates became "something entirely different from prewar empire-building."<sup>750</sup> Indeed, natural scientific bodies also developed under the banner of diplomatic relations, with a logic of rationality and a virtue of collaboration. Unlike before, botanical emissaries did not have to skirt colonial laws or imperial bureaucracies to execute their collections: they actively worked with different metropolitan and colonial governments to accomplish their missions.

### *Exhuming Maximo Ramos*

But the role of the botanical emissary can only be understood through the effacing hierarchies of colonial botany. I turn here to Maximo Ramos, as seen in Figure 18, whose scientific life is recorded in fragments in Clemens's and Merrill's archives. Ramos was born in Antipolo in the province of Rizal in May of 1882. He caught the attention of U.S. Bureau of Science officials after conducting informal botanical work on behalf of U.S. forester George P. Ahern in 1904. The specimens he collected for Ahern evidenced his collecting potential, and the bureau officially hired him in 1907.

After thirteen years of Ramos's uninterrupted service, Merrill wrote to the Secretary of Agriculture and Natural Resources of the Philippine colonial administration to recommend him for a promotion. Though initially inexperienced, Ramos was described as "having great natural ability and having a magnificent training as a field man in botany" and had become a "most efficient botanical collector."<sup>751</sup> Merrill noted that Ramos was "absolutely fearless in visiting remote and sparsely inhabited regions."<sup>752</sup> Not "troubled by superstitions" of mountains and forests, Ramos conducted fieldwork that other natives were incapable of completing. Though Merrill emphasized that Ramos was "but slightly educated" and that it would be "of course impossible for him to define a natural family of plants," Ramos's skills as a collector of material in the field were unmatched. In Merrill's own 1926 publication, *A Discussion and Bibliography of Flowering Plants*, Ramos was

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<sup>746</sup> Go, "Introduction," 20–23.

<sup>747</sup> Mark Mazower, "The Strange Triumph of Human Rights, 1933–1950," *The Historical Journal* 47, no. 2 (2004): 381.

<sup>748</sup> Mazower, 381.

<sup>749</sup> Mark Mazower, "An International Civilization? Empire, Internationalism and the Crisis of the Mid-Twentieth Century," *International Affairs (Royal Institute of International Affairs 1944 -)* 82, no. 3 (2006): 559.

<sup>750</sup> Mazower, 559.

<sup>751</sup> Letter from E. D. Merrill to Secretary of Agriculture and Natural Resources, April 26, 1920, Series 2, Box 3, Folder 14, Elmer Drew Merrill Records, NYBG.

<sup>752</sup> Merrill to Secretary of Agriculture and Natural Resources, April 26, 1920, NYBG.



one of two Filipino collectors with the Bureau of Science named for contributing to its extensive collection.<sup>753</sup>



Figure 18. Detail of “No. 171 Narra trees” with a young Maximo Ramos employed by the Bureau of Science, c. 1910s. Elmer D. Merrill lanternslides, Archives of the New York Botanical Garden. Reproduction permission courtesy of the Archives of the New York Botanical Garden.

As mentioned earlier, Merrill was committed to correcting pioneer botany tracts, including the original *Flora de Filipinas* by Manuel Blanco that had been published in 1837. Ramos was primary collector for Merrill’s revision, and *Flora de Filipinas*. Along with Merrill’s corrections of *Flora cochinchinensis*, *Herbarium amboinense*, and Nicolaas Burman’s *Flora indica*, the work cemented Merrill’s place as a regional specialist.

On herbarium sheets, Ramos’s material was attributed to him in three ways: first, by his name (signified by Ramos or “M. Ramos” in the herbarium); second, as “Ahern’s collector,” after the forester George Patrick Ahern, who was stationed in the Philippines. Unlike Clemens, whose name and that of her husband’s marked each of the specimens attributed to her, Ramos was instead called “Ahern’s collector” for his unofficial collecting work in 1904.<sup>754</sup> Finally, Ramos was also

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<sup>753</sup> Elmer D. Merrill, “A Discussion and Bibliography of Philippine Flowering Plants,” *P.I. Dept. Agric. Bur. Sci. Pop. Bull.* 2 (1926): 53. Reprinted from Merrill’s *Enumeration of Philippine Flowering Plants*, vol. 4.

<sup>754</sup> When consulting the JSTOR Plants repository online, “Ahern’s collector” is listed as a synonym of Ramos, not unlike the Latin binomial synonym given to plants.



known as part of a collecting pair. Ramos completed many of his expeditions with Gregorio Edaña, another Filipino plant collector who began his work with the Bureau in 1916. “Ramos & Edaña” adorn many specimens in addition to collecting logs and published botany works that can be found today.

From Merrill’s recommendation in 1920, Ramos carried out his career with the Bureau of Science as Chief Botanical Explorer. He collected flora across the archipelago and participated in botanical missions to Bohol, Davao, Mindoro, and the Batanes islands.<sup>755</sup> During a collecting trip in 1932, however, he fell ill while in Buayan, Cotabato on the island of Mindanao. He and other collectors had been sent to bring back live specimens, especially those from the Apocynaceae family. According to a memo sent from the Bureau of Science to Merrill, Ramos died of malaria with heart complications after a brief illness during the collecting trip.<sup>756</sup> Due to limited facilities and personnel, Ramos’s collecting partners left his remains in Buayan. Sometime after notice reached Manila of his death, employees of the Bureau of Science were directed to disinter Ramos’s remains and bring them back to his widow. In a letter to Merrill, a Bureau of Science botanist mourned:

I know you will be with me in this terrible loss and was terribly shocked to learn the death of our best friend and collector Maximo Ramos. He died in Buayan, Cotabato, on May 11, 1932, and due to lack of facilities his corpse was left in Buayan. He died of malaria with heart complications after a very brief illness. . . . I am making all possible arrangements so that his corpse could be unearthed in order to be brought to Manila to satisfy the wishes of his wife.

Following Ramos’s death, Ramos’s longtime collecting partner, Edaña, continued his career in collecting and in teaching. He was responsible for training new groups of botanical collectors associated with the Philippine National Herbarium in the mid-twentieth century. When asked about the death of Ramos, one of Edaña’s former students remarked that Ramos’s colleagues kept secret the details behind his death from most people within and outside of the Bureau of Science. According to the student, Edaña, who was on the same collecting mission to Cotabato, recalled Ramos having developed aggravating gastrointestinal pains. One of the collecting group’s options, Edaña confided, had been to create a kind of enema such that Ramos could evacuate whatever bacteria he had in his gastrointestinal tract. Without access to medicines or proper facilities, however, the group failed to treat Ramos. Out of necessity they left Ramos’s body, which was disinterred at a later date.<sup>757</sup>

When asked why this version of Ramos’s death was not shared with individuals like Merrill, the former student recounted how Edaña and others had feared that the Bureau of Science would

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<sup>755</sup> Letter from E. Quisumbing to E. D. Merrill, April 26, 1930, Folder 14, Box 3, Series 2, Elmer Drew Merrill Records, NYBG.

<sup>756</sup> Letter from E. Quisumbing to E. D. Merrill, May 24, 1932, Folder 15, Box 3, Series 2, Elmer Drew Merrill Records, NYBG.

<sup>757</sup> Hermes G. Gutierrez, Philippine botanist, in discussion with author, 17 December 2017.

receive backlash from the public should word have spread regarding the dangers associated with botanical collecting. Unlike white foreign collectors, whose disappearances or deaths in the field were scrupulously recorded and reported in the Philippines and in nearby colonies, Ramos's death was reported in brief and inconsistent terms. In an effort to reduce outcry from the public and especially Ramos's widow, malaria was cited as the cause of death, according to the former student. This, he expanded, would not deter local men from collecting on behalf of the Bureau of Science, which relied heavily on Filipino personnel.

### *Exhuming through Distortions*

Several screens of distortion exist in the case of Ramos's death. These distortions change the nature of death within the institution proper; for the general public; in the confidence between a teacher and his pupil; and for the historian's plumb of the archive. In the first sense, the circumstances of Ramos's death perhaps could not be communicated even to Merrill, who at the time had already been employed outside of the Philippines. Between Edaño and the other collectors on the expedition to Cotabato, it is difficult to trace who could attest to Ramos's final hours. If, indeed, Ramos died as result of an unspecified gastrointestinal illness and not malaria, one must infer that for the general public at the time, to perish because of malaria was more acceptable in botanical collecting than more indeterminable—and presumably, less dignified—ways of dying. When it came to Edaño's account of Ramos's death, the anecdotal quality of the experience might have functioned not only as a pedagogical tool but also as a divulging of secrets—secrets kept outside of the archival record.

In this sense, such a distortion sustained labor power for the institution and prevented what might have been a public disaster had Ramos's widow known the full circumstances of his death. The bureaucratic record has communicated its own "acceptable" version of events. Yet, there is also something to be said for the perceived power of the widow. For if it were not for her capacity to damage to the institution, such a distortion may not have been necessary. In the history of Philippine botany, widows played an important role in collecting the details behind their spouses' scientific lives and deaths in the field.<sup>758</sup> Beyond the recordkeeping they conducted on behalf of the colonial state, they also made substantive contributions to the science. In the case of Ramos's widow, they were also presumed to be capable of substantive disruptions.

Clemens's role as a botanical emissary—with mixed funding, institutional freedoms, and mobility—becomes more vivid when compared to Ramos's privileges as a Filipino employee of the Bureau of Science. Based on her average specimen sales, Clemens earned nearly five times in one three-month expedition what Ramos earned in one month of employment at the Bureau of Science at the height of his career. Clemens' wide network and white foreigner status ensured her freedom of movement regionally, while Ramos was solely a collector of the Philippines and only once participated in a collecting trip to Borneo, chaperoned by a Canadian botanist. Both were considered amateurs at the start, fielding little training. Yet, their work contributed to Merrill's

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<sup>758</sup> Kathleen Cruz Gutierrez, "Diospyros Embryopteris' by Emina María Jackson y Zaragoza, Philippine Botanical Illustrator," in *Women in the History of Science: A Liberating the Curriculum Sourcebook*, ed. Rebecca Martin, et al. (London: University College London Press, forthcoming).

own published record to cohere Indo-Malayan regional and Philippine proto-national flora. The botanical emissary who engaged in inter-colonial collecting and with institutional freedoms is salient then only in comparison to the work of local colonial collectors, who were developing the botanical index of a single colony. A comparison like this reveals the different models of botanical collecting in practice for U.S. colonial operations.

### *Conclusion: Acknowledgements, Erasures*

Throughout her inter-colonial collecting career, Clemens remarked on the porters and the hired assistants who aided her work. On one 1926 expedition to the northern Philippines, Clemens complained that one of her locally hired *cargadores* (stevedores) had perhaps stolen a rain protector, and that another assistant had “gone on strike” the morning of their collecting as the group was to approach the base of a mountain. A “staff carried by” Joseph allegedly “straightened out matters before [the assistant] had infected his mates.”<sup>759</sup> During their 1929 expedition to Borneo, Joseph wrote of the couple’s Dayak assistants. He noted that,

These Dayaks are wild and fearless. When I had no interpreter and could talk only by sign language, I tapped one fellow on the back of the hand to indicate that he should not handle the plants, and he flew into a rage, and threatened to cut off my head. But I put salve on the place, and by a little present, on his feelings; now the whole family are our friends, and his brother my guide to the mountains. And you would think a guide a wise addition, if you made the trip.

These, in addition to the instance in Indochina that I mentioned previously, speak of physically violent instantiations of effacing hierarchies—along racial and professional lines—in the name of botanical science.

From the Philippine colonial botany archives, collaboration is as much about acknowledgement as it is about erasure. This chapter has tracked historical collaborations among people but also their negotiated nature and the simultaneous intellectual acknowledgment and erasure that came with it. This holds true for the documented scientific collaboration undertaken between Clemens, her husband, their field assistants, and Merrill that contributed to the development of a distinctly Indo-Malayan flora and to the codifying work of the IBC. For a task as accumulative and as extractive as botanical collecting, particular labors are erased or remarkably condensed for efficiency of acknowledgement. Herbarium sheets might be attributed to a single collector—or collecting pair—but this still funnels the contributions of translators, informants, and field hands to a single person. The publishing botanist absorbed the work of botanical emissaries, and the emissaries the work of their assistants, because such singular acknowledgement could entitle remuneration, intellectual capital, naming rights, and legacy.

There are more unnamed and unaccounted individuals in this history, who existed beyond the limits of field notes, correspondence, and published standards of recognition in botany practice.

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<sup>759</sup> Letter from Clemens to E. D/ Merrill, 3 May 1926, BHL.

Unrecorded in these botany archives is, moreover, the military violence that befell the Philippines during the U.S. colonial period. Clemens arrived in the island of Samar in 1902—the site of the bloodiest U.S.-led massacre during the Philippine-American War (1899–1902). Following a surprise armed attack on U.S. soldiers in the town of Balangiga, U.S. General Jacob H. Smith, assigned to avenge the insurgent assault, ordered what we know as the most widespread massacre of Philippine civilians during the war. According to Richard E. Welch, one of the most infamous atrocities included the torture and execution of eleven local guides, who had allegedly plotted to keep knowledge of edible plants from starving U.S. soldiers during a march through central Samar.<sup>760</sup> Furthermore, Clemens’s collecting work on the island of Mindanao was lauded because of the little collecting that had been done there prior<sup>761</sup>—a consequence of longstanding local resistance to Spanish and U.S. colonial incursion. This violence is muted in botany records. I have expanded the lens for the history of colonial Philippine botany in order to render visible collaboration’s intrinsic limits. While doing so, I have also highlighted what constituted the scientific labor—and the environment—then considered intellectually substantive for acknowledgement.

Clemens’s work was nonetheless essential to the furtherance of regional floristic studies. Her specimens were enfolded in the published works of Merrill, which had concretized the phytogeographic region among botanists. Spanish botanists of the late nineteenth century had acknowledged the Indo-Malayan region as a unique floristic region to which the Philippines belonged, especially give the floral predominance of the Dipterocarpaceae family.<sup>762</sup> No Spanish colonial botanist in the Philippines had embarked, however, on such an expansive correction of previously produced pioneer botany tracts like Merrill. Botanist C. G. G. J. van Steenis recognized Merrill’s contributions posthumously for his contributions to the study of regional Malesian flora: “To be fair, we should always keep in mind that during the period in which he achieved his great contributions to Malesian botany, that is 1902–1923, he started without a predecessor from absolute scratch, without personnel, without a book or collection, in an almost unexplored very rich archipelago covered largely by primary forest. Later too, he had to work under scientific vacuum conditions in that he had almost no colleagues around him in Manila.”<sup>763</sup> The flora of Borneo, Celebes, the Moluccas, and New Guinea had been known in only a “fragmentary way,” but Merrill’s work assisted in bringing more regional coherence.

Clemens and Joseph covered Philippine collecting from 1922 through 1930. During this period, they took a short time away to research briefly at the NYBG and to attend the IBC in Vienna in 1930. By then, Clemens had become known as a collector of Indo-Malayan flora, assisting European and North American botanists in gaining access to flora then inaccessible.

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<sup>760</sup> Richard E. Welch Jr., “Atrocities in the Philippines: The Indictment and the Response,” *Pacific Historical Review* 43, no. 2 (1974): 238–289.

<sup>761</sup> Elmer D. Merrill, “New Philippine Plants from the Collections of Mary Strong Clemens, I,” *Philippine Journal of Science* 3, no. 3 (1908): 129–130. Of Clemens’s Mindanao collections Merrill writes, “Under the circumstances Mrs. Clemens is to be congratulated on the extent and value of the material which she secured.”

<sup>762</sup> *Exposición de Filipinas: Colección de artículos publicados en El Globo Diaro ilustrados politico, científico, y literario* (Madrid: J. Salgado de Trigo, 1887), 42.

<sup>763</sup> Steenis, *Flora Malesiana*, 10–11. Van Steenis uses the term “Indo-Malesian.”

Their return to the region was funded by the British Museum, which agreed to sponsor their two-year collecting trip to Mount Kinabalu in North Borneo. While stationed at Kinabalu from August 1931 to December 1933, the couple took a five-month trip to Java in 1932 for plant identification at the s'Lands Plantentuin (National Botanic Garden) in Buitenzorg.<sup>764</sup> While on Java, they also collected specimens on the western part of the island. They returned to Manila in 1934 where they collected through 1935. In 1935, the couple left for the Territory of New Guinea, where Mary Clemens largely spent the remainder of her life and collecting career. Joseph Clemens, however, did not long survive.

In January of 1936, the couple was stationed at Wareo mission in New Guinea. While there, Joseph left to attend a conference at Missions-Station Sattelberg. He had written Clemens, explaining that he had “eaten too hurriedly and became sick en route.” Clemens left Wareo to visit her husband and on his sudden death, she wrote, “When I arrived he was sleeping when he awoke it was to be with JESUS in Glory forever. Praise GOD for the forty years of his companionship and devotion; for his unselfish consecration to the kingdom which endures forever.” To friends and colleagues, she identified dysentery as the likely cause of death, contracted from contaminated meat.<sup>765</sup> She confided, “I hope I may remain here and work.” Writing to Edwin Copeland, Philippine botanist and longtime colleague, Clemens felt encouraged to stay in New Guinea. Though implored by her brother to return to Nebraska after Joseph’s death, Clemens was more dutifully committed to living abroad. “It was a constant joy to live with such a radiant spirit. Then with your sound judgment,” she agreed, “it was a comfort to know you encourage me to remain here.”<sup>766</sup> Following Joseph’s death, a number of her international colleagues reached out to Clemens to share their condolences. The remainder of her collecting career, through her death in 1968, was situated primarily in the Territories of Papua and New Guinea and Queensland, Australia.

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<sup>764</sup> J.H. Beaman and R.S. Beaman, “Diversity and Distribution Patterns in the Flora of Mount Kinabalu” in *The Plant Diversity of Malesia: Proceedings of the Flora Malesiana Symposium Commemorating Professor Dr. C. G. G. J. van Steenis, Leiden, August 1989*, ed. Pieter Baas, Kees Kalkman, and Rob Geesink (Dordrecht: Kluwer Academic Publishers, 1990), 148.

<sup>765</sup> Letter from Mary S. Clemens to Gwendolan Newell, 21 January 1936, Mary S. Clemens–1930 – 1939, H.H. Bartlett Correspondence, Box 5, University Herbarium, BHL.

<sup>766</sup> Letter from Mary Strong Clemens to Edwin Copeland, 7 June 1936, Mary S. Clemens–1930–1939, H.H. Bartlett Correspondence, Box 5, University Herbarium, BHL.

## Conclusion

The scientific lives and activities examined herein brought modern Philippine botany into being. Working in and beyond Philippine colonial terrain, Regino García y Basa, Sebastián Vidal y Soler, and Mary Strong Clemens also shaped a science that consolidated empires at the turn of the nineteenth and twentieth centuries. Their inter-imperial and inter-colonial work contributed to the internationalist character of the science and its principal association, the International Botanical Congress (IBC). Though the three may not have had direct influence over IBC proceedings, their labor and intellectual production helped define botany's internationalist direction. They also laid the groundwork for a proto-national botany by cataloging and collecting the plants that would someday be claimed to comprise the Philippine nation. In short, Vidal's writing, García's illustrations and publications, and Clemens's plant specimens reflect a time in the history of botany during which inter-imperial collaboration heightened.

### *Three Lives and a Science in the Philippines*

The Philippines offered the ground on which García, Vidal, and Clemens built their careers as an illustrator, botanist, and collector, respectively. For García, this meant developing a visual catalog of plants that was both artistically unique and significant while still following a classificatory arrangement that was popular among botanical synopses at the time. García's artistic acumen and style was born in Manila, where a characteristic mix of Iberian *costumbrista* styles, classical realism, and the Philippine everyday equipped him with techniques that he brought to illustrating plant life. As I covered in Chapter Two, his peers who also contributed to the *Flora de Filipinas* also developed similar styles. But it was García's atlas for *Sinopsis* that made for an achievement that was both steeped in the Philippine environment and important to Spain's scientific statecraft in the late nineteenth century. García's professional trajectory remained important through the Philippine–American War and the start of the U.S. colonial period, when he provided his botanical knowledge and institutional know-how for two politically disparate camps.

García died on July 6, 1916, at the age of 75. Over a decade before his death, García stepped away from the U.S. colonial service. He picked up private work overseeing forests and agricultural land in the province of Laguna.<sup>767</sup> Much of the writing and reporting he had done at the start of the century ceased. The year of García's death, José María Clotet, S.J. wrote a biographical profile of García. In it, Clotet proposed erecting a statue of García beside one commemorating Vidal in what had become the Mehan Gardens under the U.S. colonial administration. Clotet imagined the statue to be the “realization of a happy idea,” one that would glorify in Manila the “intimate and inseparable friends and companions in the glory and struggle on behalf of Philippine flora.”<sup>768</sup>

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<sup>767</sup> José G. Reyes, “¿Quién fué Don Regino García y Baza? Notas Biográficas sobre este ilustre Botánico Filipino,” 26, Unpublished manuscript, Manila, 1940, HL-UST.

<sup>768</sup> “Un regular estatua de D. Regino García sobre un modesto pedestal formando pendant con la estatua de D. Sebastian Vidal, sería la realización de una feliz idea y sería la glorificación en Manila de los dos íntimos e inseparables amigos y compañeros de glorias y fatigas por la Flora Filipina,” “¿Quién fué Don Regino García y Baza? Notas Biográficas sobre este ilustre Botánico Filipino.” Reyes, 28, HL-UST.

The city never raised a statue to honor García, but his work has been posthumously summarized elsewhere.<sup>769</sup>

Vidal's secular botany work put Philippine botany on the map, so to speak, in the late nineteenth century. His botany and forestry training revived the failing Jardín Botánico de Manila (Botanical Garden of Manila; JBM) and spurred the Comisión de la Flora y Estadística Forestal de Filipinas (Philippine Flora and Statistics Commission) to systematically catalog Philippine flora. But as I explained in Chapter Two, he was only intermittently in the Philippines because of the extensive international work he completed on behalf of the Spanish government. A functionary of the Empire's scientific statecraft, Vidal mapped through his itinerary the multilateral imperial networks that marked the turn of the century. It was the Philippines that made his career exceptional, especially as he represented all of the overseas IGM outfits at the Centennial International Exposition in Philadelphia in 1876. But, as I also covered in Chapter Two, his close professional relationship with García produced the *Sinopsis*, the visuality of which also allowed for a new mobility for Philippine plants.

As I described at the close of Chapter Two, Vidal died in 1889 at the age of 47. Following Vidal's sudden passing from cholera, Vidal's maternal uncle, the painter Francisco Soler i Rovirosa (1836–1900), appealed to the colonial government to erect a statue of him created by sculptor Enric Clarasó i Daudí (1857–1951). As shown in Figure 19, the monument featured Vidal in IGM uniform, decorated with reproductions of medals he received during his career: a cross from the Prussian crown, one of the Order of the Lion of the Netherlands, and the Grand Cross of the Order of Isabella the Catholic. His left arm carried a book titled *La revision de plantas vasculares filipinas*, which he published in Manila in 1886.<sup>770</sup> Two years ahead of the monument's unveiling, García notified Kew Gardens curator Robert Allen Rolfe (1855–1921) of Vidal's passing. "I direct this [missive] to you," García wrote, "with the sad news of the demise of my distinguished companion D. Sebastián Vidal y Soler."<sup>771</sup>

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<sup>769</sup> Aside from short encyclopedic entries on García—both printed and online—Reyes's unpublished 44-page booklet has been the best single repository of biographical information on García Reyes's work was likely the source for most of these encyclopedic entries.

<sup>770</sup> "El pedestal es sencillito en armonía con el monumento." Reyes, 28.

<sup>771</sup> "Muy Sr. mio y de mi mayor consideración: dirijo a Ud. esta con el objeto de participarle la triste noticia del fallecimiento de mi distinguido compañero Dn. Sebastián Vidal y Soler, que ha trabajado con Ud. en el Museo de Keü en la identificación de las plantas recojidas por la Comisión de la Flora de estas islas." Letter from Regino García to Robert Allen Rolfe, 8 May 1890, Directors' Correspondence 165/288 (KDCAS9545), Library and Archives at Royal Botanic Gardens, Kew.



Figure 19. "Vidal Monument" c. 1910. The image features the statue raised posthumously in Vidal's honor. Reproduction permission courtesy of the Photo Archive of the Filipinas Heritage Library, Ayala Museum.

Indeed, collaboration was also indispensable to the execution of Clemens's work. Hers was a long career spent working with her husband, Joseph, in inter-colonial terrain and with field assistants across Malesia and Indo-Malaya. Unlike the botanizing amateurs in the United States at the start of the twentieth century, as I discussed in Chapter Five, Clemens was a botanical emissary who furnished a growing catalog of plants for metropolitan patrons while also remaining invested in the advancement of the science. She developed the plant collections from which careers were launched. Like several other independent collectors who flocked to the Philippines at the start of the twentieth century, Clemens bolstered collections and facilitated access to climes that taxonomizing metropolitan botanists could not themselves reach. The Philippines were her stomping grounds, the site of her first major institutional base internationally, and the site of her most significant work with and for Merrill.

Clemens's descriptively written letters and notes provide us with references to local field assistants, collectors, and scientists associated with the U.S. colonial Bureau of Science in Manila. Her remarkable records have become one of the most important repositories for U.S. colonial botany in the Philippines, especially as she befriended and worked with many Filipino personnel who have no dedicated archives of their own. In the late 1940s, Maria Johanna van Steenis-Kruseman compiled an extensive list of Malesia plant collectors. A plant collector herself, van Steenis-Kruseman published the compendium in the maiden volume of *Flora Malesiana* organized by her husband, Dutch botanist Cornelis van Steenis. Ahead of publication, Cornelis wrote Mary



Clemens for photographs of certain Malesia collectors, including that of García. Then residing in Brisbane, Clemens reviewed van Steenis-Kruseman's list and underlined the last names of her Philippines associates, many of whom appeared regularly in her correspondence: Gregorio Edaño, Eugenio Fenix, Maximo Ramos, and Jose Vera Santos among them (see fig. 20). She also underlined García's name. Though no archival documentation yet found shows Clemens's direct professional relationship with García, my sense at the very least is that she knew of García or where his photograph could be procured. Had they met, it would have been during Clemens's first expeditions to the Philippines at the start of the twentieth century.

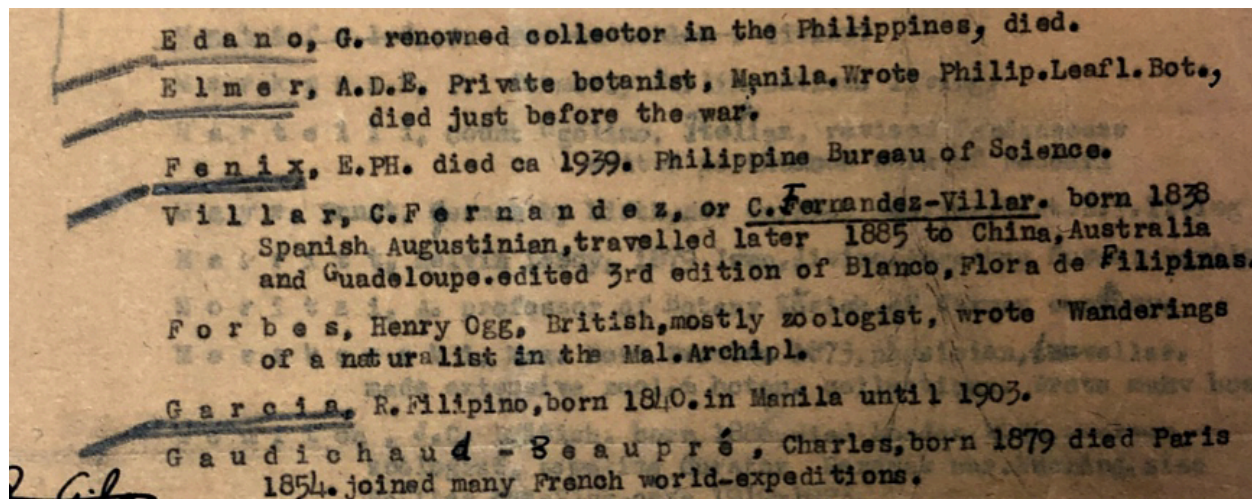


Figure 20. Detail of “Persons of whom a photograph is desired for Flora Malesiana” from Cornelis G. G. van Steenis to Mary Strong Clemens, 21 June 1948, Folder 2, Clemens 1940–1949, Box 5, University Herbarium, BHL. Gregorio Edaño, Maximo Ramos’s collecting partner, whom I mentioned in Chapter Five, is incorrectly describe as having died by 1948. Edaño lived until 1960.

Reproduction permission courtesy of the Bentley Historical Library, University of Michigan.

Even though archival records might obstruct the historian’s full sense of another’s humanity—that is, “the less explicitly measurable, even unquantifiable, domains of intention, meaning, and spirit that animate the human experience”<sup>772</sup>—they can nevertheless reveal qualitative experiences ranging from the mundane to the profound. For García, this could have been his displeasure with a sketch of a species of *Palaquium*, unfinished because of his own doubt as to the correct genus determination.<sup>773</sup> For Vidal, it may have been his impatient uncertainty as to whether he needed to return to the peninsula or stay in the Philippines following Madrid’s dissolution of the Comisión.<sup>774</sup> For Clemens, perhaps it was her reassuring her friends that she was at home in her “little windowless room” in New Guinea and that following Joseph’s death, “[w]ork is a quicker anodyne than time.”<sup>775</sup> The history I have written gestures toward the breadth of

<sup>772</sup> Richard J. Franke, “The Power of the Humanities & a Challenge to Humanists,” *Daedalus* 138, no. 1 (2009), 17.

<sup>773</sup> “*Dibujos de plantas por Regino García*,” by Regino García, p. 28, unpublished volume, PDTSC.

<sup>774</sup> Ultramar, Legajo 524, Expediente 14, Número 51, AHN.

<sup>775</sup> Letter from Mary Clemens to Mrs. Lyon, 9 July 1916, Mary S. Clemens – 1930–1939, H.H. Bartlett Correspondence, Box 5, University Herbarium, BHL.

human sentiments—fabulous and extreme, agonized and pedestrian—that these actors had as they laid the foundation for modern Philippine botany.

### *Critically Examining the History of an Intellectual Divide*

The historiography of a deep intellectual division in the Philippines drove my interest in García, Vidal, and Clemens. My initial questions circled the differences and similarities between Spanish and U.S. colonial botanies, and I committed to writing a history without “1898” as a bookend. García’s career, political choices, and lifespan troubled this temporal marker the most. A sharply periodized history of colonial botany in the Philippines not only mimics some of the earliest U.S. detractors of Spanish colonial science in the Philippines, it also fails to account for the local dimensions of the science and the continuities therein. García was not the only local Philippine actor to work through the imperial transition. Trinidad Pardo de Tavera, León María Guerrero, IGM employees, field assistants, and Escuela de Agricultura (School of Agriculture) graduates, to name a few, carried their knowledges of flora into the dawn of the new colonial regime. Even Vidal’s intellectual production continued into the twentieth century, widening U.S. officials’ grasp of Philippine plant life. It then took a collector like Clemens to advance materially the notion of a regional flora—a notion that Spanish colonial intellectuals had explored as they situated the Philippines in broader phytogeographic space.

Differences did exist between the two colonial botanies. Institutionally speaking, their hiring practices were distinctive. The Spanish colonial botany and forestry institutions hired in an insular manner: officials either came from Spain or the Philippines. Even if the institutions distanced themselves from the once intellectually secretive practices of the Spanish monarchy—the *arcana imperii* of the Iberian Peninsula that kept imperial records unpublished<sup>776</sup>—the JBM and the IGM did not have other foreign employees regularly walking through their doors, collecting botanical matter, or overseeing provincial lands. The U.S. Bureau of Science did. The impetus to invite, hire, and collaborate with non-U.S. and non-Filipino personnel came from a very clear need. Even with the College of Agriculture in Los Baños and the *pensionado* (scholarship recipient) program to train Filipina and Filipino students in the United States, dozens of researchers—amateur and otherwise—brought their intellectual appetite for the natural sciences to the Philippines and contributed substantially to the U.S. colonial inventory of Philippine flora.

Comparatively, U.S. colonial botany was a publishing machine. Elmer D. Merrill was not alone in his prolific productivity. The Philippine colonial administration, the Bureau of Science, and independent naturalists published regularly on Philippine plants. This included agricultural treatises, commercial profiles of product-bearing flora, and descriptive botany. The *Philippine*

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<sup>776</sup> Jorge Cañizares-Esguerra, *Nature, Empire and Nation: Explorations of the History of Science in the Iberian World* (Stanford: Stanford University Press, 2006), 23. Cañizares-Esguerra works from Richard L. Kagan’s concept of *arcana imperii* found in Richard L. Kagan, “*Arcana Imperii: Mapas, Ciencia y poder en la corte de Felipe IV*” in *El atlas del rey planeta: La “Descripción” de España y las costas y puertos de sus reinos de Pedro Texeira (1634)*, ed. Pereda Marías and Fernando Marías (Hondarribia: Nerea, 2002), 49–70. Raquel A.G. Reyes also summarizes Kagan’s argument in Raquel A.G. Reyes, “Collecting and the Pursuit of Scientific Accuracy: The Malaspina Expedition in the Philippines, 1792” in *Empire and Science in the Making: Dutch Colonial Scholarship in Comparative Global Perspective, 1760–1830*, ed. Peter Boomgaard (New York: Palgrave-Macmillan, 2013), 77–78.

*Journal of Science*, moreover, gave U.S. colonial scientists, Philippine specialists, and those in “adjacent countries of the Orient” completing “scientific work of the proper character” a venue to share the latest in plant discoveries and experimentation.<sup>777</sup> Of the five research essays in the journal’s first 1906 issue, three dealt with a local palm: the coconut. Under the ambit of U.S. professionalization, even if U.S. botanists and foresters discursively upheld the “professional” as paramount, this did not keep others like García from publishing on Philippine plants under U.S. colonial auspices, as I highlighted in Chapter Four.

Spanish operations, on the other hand, did not have as many publishing specialists. Even if the IGM and the Comisión produced the greatest number of publications seen in secular colonial Philippine botany and forestry under the Spanish, significant manuscripts left the desk of only a key few: Sebastián Vidal, Domingo Vidal, Ramón Jordana, Santiago de Ugaldezubiari, and García. One reason for this may have been the hierarchical organization of Spanish scientific operations. Chief engineers alone may have had the peninsular and colonial authority and resources to publish such expensive books. Yet, this does not discount the late nineteenth-century natural history writings of other foreigners, like Fedor Jagor, who detailed the Philippine environment. Vidal’s Spanish translation of Jagor’s work, which I elaborated upon in Chapter Two, demonstrated a willingness on the part of the Spanish Empire to collaborate with emerging European imperial powers. Nevertheless, foreign naturalists did not publish under the auspices of Spanish colonial scientific operations as they did under that of the United States.

While acknowledging the differences between the two colonial botanies, this dissertation has also detailed the institutional, intellectual, and political similarities between the two. These similarities contribute to a growing Philippine historiography that seeks to complicate the inter-imperial transition beyond simplified narratives. First, Spanish and U.S. colonial botanists dedicated the infrastructure and personnel resources to develop botanical libraries, herbaria, and research gardens. Their herbaria preserved specimens from the archipelago and from neighboring colonies, which reveals both Spanish and U.S. interest in inter-colonial intellectual exchange. Even if members of the public criticized the JBM’s floundering quality in its first decade and a half of operations, by the close of the nineteenth century JBM researchers cultivated trees and plant species non-endemic to Manila. The same went for U.S. researchers, who brought plants from places like the island of Culion to raise and study on garden grounds in the colonial capital.

Second, both colonial administrations established and developed programs to train local men in land surveying, agriculture, botany, and forestry. The JBM’s Escuela de Agricultura and the revived Escuela de Agricultura of the late 1880s and 1890s not only trained students, but also provided a student-worker (*alumno-obrero*) program that afforded students a small wage as they completed their studies. The U.S. colonial College of Agriculture provided theoretical and field training for local men, some of whom continued decades-long careers in botany and forestry. Furthermore, both colonial states’ *pensionado*-style method of recruitment of local students suggests that their institutional practices were more similar than has been previously remembered. Long associated with the U.S. colonial state, the *pensionado* program funded a select number of local students to train academically in the U.S. with the expectation that those students would

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<sup>777</sup> Paul C. Freer, “The Philippine Journal of Science,” *The Philippine Journal of Science* 1, no. 1 (1906): 1.

return to serve the colonial administration in the Philippines. Spain instituted a similar program through the JBM. Though local students were not sent to the metropole for botany training, students from provinces distant from Manila received funding to study with the expectation that they would return to their home provinces and propagate modern botanical practice.<sup>778</sup>

Third, both colonial botanies responded to major developments in international botany. As discussed in Chapter One, Zoilo Espejo and García followed Candollian systematics to arrange the JBM's annual seed catalogs. With the advent of Bentham and Hooker systematics, Vidal arranged the major Comisión publications following the British taxonomic system. At the start of the U.S. colonial period, U.S. botanists subscribed to the Engler-Prantl system that responded to developments in Darwinian evolutionary theory. During the political upheaval on the peninsula in the second half of the nineteenth century, Spanish botanists did not play a significant role in the direction of the IBC. Later in the century, on the other hand, U.S. botanists did. Peter Mickulas's notion of U.S. botanical nationalism, whose scope I broadened in Chapter Four, reared its head aggressively in IBC deliberations at the turn of the century: U.S. botanists sought to rival, if not surpass, the institutional legacies of European botanical theory and practice. Doing so secured major U.S. influence over the IBC in the first third of the twentieth century, as I covered in Chapter Five.

The Philippines offered especially fertile ground to U.S. botanists to advance this goal. Not only did the archipelago provide U.S. botanists with thousands of previously undescribed species to shore up botanists' publishing reputations, it also gave the same botanists an opportunity to minimize Spanish botany and a colonial launching pad from which to correct significant imperial botanical treatises produced on nearby colonies. I elaborated on these analyses in Chapters Four and Five. At the turn of the century, nonetheless, both Spanish and U.S. colonial botanies were not blinkered to the increasingly internationalist quality of imperial botany. On the contrary, they contributed to it. This leads to the most important similarity shared between the two colonial botanies—the one that has driven the principal argument of this dissertation.

### *A Shared Strategy*

Botany consolidated empires at the turn of the century. This was different from the imperial consolidation of previous centuries because botany not only politically and intellectually entrenched the power of a single empire, it now did so in an inter-imperial manner. As a cosmopolitan science, botany offered a platform for empires to formalize their intellectual collaborations. This reflects a “modernization of empires,” as Alfred McCoy writes, that was “preceded by the transformation of [colonies'] metropolises from old regimes to modern liberal states.”<sup>779</sup> A “reinvention of the state,” McCoy adds, heralded “new information systems for control of overseas territories”—an amassing of colonial data that could parade imperial intellectual

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<sup>778</sup> Ultramar, Leg. 527, Exp. 1, Núm. 73 [labeled 63], AHN.

<sup>779</sup> Alfred McCoy, “Fatal Florescence: Europe’s Decolonization and America’s Decline,” in *Endless Empire: Spain’s Retreat, Europe’s Eclipse, America’s Decline*, ed. Alfred W. McCoy, Josep M. Fradera and Stephen Jacobson (Madison: University of Wisconsin Press, 2012), 16.

legitimacy.<sup>780</sup> This happened in tandem with major international developments politically at the turn of the century, as well, and fell under the umbrella of the IBC's institutional growth.

This was Spain and the United States' most notable shared strategy: to use botany as a means to fashion their empires as intellectually competitive while simultaneously offering the grounds for collaboration. For Spain, a move away from colonial economic agriculture, which had been one of its primary occupations in the Philippines, demonstrated responsiveness to developments in international botany in the second half of the nineteenth century, as I argued in Chapter One. This was not only seen in the descriptive and taxonomic work of the colonial IGM and Comisión. As I also discussed in Chapter One, Madrid and Manila officials' focus on theoretical botany with a research bearing coincided with end of Isabella II's reign and the development of the Spanish liberal state. By the establishment of the Comisión and under Vidal's leadership, botany in the Philippines was part of a two-pronged strategy to gain a firmer intellectual grip over tropical forests. Vidal's collaboration with German intellectuals and the Spanish state's proffering of the Comisión's *Sinopsis*, I argued in Chapter Two, reveal the internationally oriented character of the Spanish state, especially as it supported the new imperial powers of Germany and Italy.

The United States operated similarly. Botany was an important scientific intellectual and political tool for asserting the United States' potential on the imperial stage. Alongside this, the U.S. continued to comprise an influential contingent in IBC deliberations. By the 1930s, Merrill played a prominent role in the IBC. Meanwhile, he began to accelerate the development of regional floristic studies. A botanical regionalism developed alongside this botanical internationalism: for as empires collaborated with one another on scientific norms, practices, and nomenclatural rules, so too did they promote and advance the notion of regional flora, in an imperial intellectual move to make more efficient and strategic the study of the globe. Botanical regionalism resulted from multiple scales of collaboration among people and plants, botanists and collectors, and empires operating under the ethos of cooperation.

### ***Collaboration and Regional Thinking***

"Collaborations are produced out of differences as much as synergy" begins the preface to Frederick Cooper and Ann Laura Stoler's *Tensions of Empire*.<sup>781</sup> The statement holds true for the scientific collaboration undertaken between Vidal and García, Clemens, her husband, their field assistants, Merrill, and the bevy of other botanists who contributed to the development of a distinctly Indo-Malayan phytogeographic zone and the Malesian region within it. It also applies to the work of the fifth IBC, which had been described in terms of its collaborative effort: "There was apparent throughout the entire [fifth] congress a very fine spirit of cooperation," a botanist detailed, "Attracting as they do hundreds of botanists from all parts of the world they cannot but accomplish a great amount of good in the way of cooperation in the field of botany and, perhaps, to some

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<sup>780</sup> McCoy, 16.

<sup>781</sup> Frederick Cooper and Ann Laura Stoler, Preface to *Tensions of Empire: Colonial Cultures in a Bourgeois World*, ed. Frederick Cooper and Ann Laura Stoler (Berkeley: University of California Press, 1997), x.

extent aid in the fostering of international good will.”<sup>782</sup>

As I detailed in Chapter Two, Malesia became the regional grounds upon which Spanish, German, and Italian botanists shared their intellectual production. As I mentioned in the same chapter, Swiss botanist Heinrich Zollinger coined the term and floristic region “Malesia” in 1857.<sup>783</sup> Zollinger observed that the territory that comprised Malesia defied the colonial borders defined by European empires. While van Steenis credits Merrill for conducting the best work to advance Malesia, I showed in Chapter Two that Vidal was immersed in inter-imperial intellectual exchange and cooperation by engaging with German botanical material and vice versa: German botanists came to rely on Vidal’s works while developing botanical studies of what had been forming as a floristic region.

By the mid-1930s, Merrill and others were also advancing international cooperation. Dutch bryologist Frans Verdoorn championed “the need of international collaboration and cooperation” in taxonomy in particular and botany in general.<sup>784</sup> Verdoorn was the founder of the *Chronica Botanica* publishing company (f. 1933) and the *Chronica Botanica* serial, which in addition to publishing the latest in pure and applied botany, was an internationally oriented publication. It boasted reports in English, German, French, Spanish, and Italian and debuted in the spring of 1935.<sup>785</sup> In 1934, Verdoorn appealed to Merrill to join the journal’s advisory board because Verdoorn had heard of Merrill’s “interests in international collaboration of botanists.”<sup>786</sup> He asked Merrill to write the publication’s leader for its maiden volume on the topic of international collaboration. Merrill’s response to Verdoorn was a bit delayed, which Verdoorn suspected was the result of the very sensitive nature of the topic given the “present conditions, which show us a victory of the doctrine of nationalisation.”<sup>787</sup>

Verdoorn’s comment likely referenced political developments in Germany. Harley Harris Bartlett, whose words opened this dissertation, spoke in 1935 of how “the peaceful internationalism of German science was made one of the instruments of a grasping and unethical nationalism, that had dire results for the world in bloodshed and impoverishment.”<sup>788</sup> In addition to this, German participation in the International Union of Botanical Sciences was inconsistent,

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<sup>782</sup> Truman G. Yuncker, “The Fifth International Botanical Congress,” *Proceedings of the Indiana Academy of Science* 40 (1931): 66.

<sup>783</sup> Niels Raes and Peter C. van Welzen, “The Demarcation and Internal Division of Flora Malesiana: 1857–Present,” *Blumea* 54 (2009): 6–7. As I explained in Chapter Two, Raes and van Welzen correct the contemporary assumption that van Steenis first defined “Malesia” in the mid-twentieth century. In van Steenis’s first volume of *Flora Malesiana*, van Steenis credits Zollinger’s correction of Dutch botanist Friedrich Miquel’s *Flora Indiae Batavae*, which led the introduction of the term. See Cornelis G. G. J. van Steenis, *Flora Malesiana*, Series I, Volume I (Jakarta: Noordhoff–Kolff, 1950), xiii.

<sup>784</sup> Letter from Frans Verdoorn to Elmer D. Merrill, 5 December 1934, Netherlands – Folder 9, Series 2 (Correspondence), Elmer Drew Merrill Records, NYBG.

<sup>785</sup> Adolf Carl Noé, “*Chronica Botanica*. Vol. 1. Fr. Verdoorn,” *Botanical Gazette* 97, no. 2 (1935): 430.

<sup>786</sup> Letter from Frans Verdoorn to Elmer D. Merrill, 7 August 1934, Netherlands – Folder 9, Series 2 (Correspondence), Elmer Drew Merrill Records, NYBG.

<sup>787</sup> Verdoorn to Merrill, 5 December 1934, Elmer Drew Merrill Records, NYBG.

<sup>788</sup> Harley Harris Bartlett, “Nationalism, Imperialism, and Spheres of Influence in Natural Science,” Manuscript, 40, Folder 3–Nationalism and Science–Bartlett, Box 7–Correspondence, Harley H. Bartlett Papers, BHL.

and German scientists had been excluded for some time during deliberations.<sup>789</sup> In 1935, Merrill published a commentary in *Science* about the prohibitively high cost of German technical periodicals, which after the Great Depression still amounted to “extortion.” According to Merrill, German periodicals sold for five to eight times the rate of titles produced elsewhere. Merrill notified his colleagues that he would cancel sixteen subscriptions to German periodicals, and directed other U.S. institutions to do the same to attempt to reduce the cost.<sup>790</sup> These actions could have been seen as part of what would make an uncooperative botany community.

Consequently, Verdoorn made more urgent the prospect of more international collaboration and cooperation among botanists and plant researchers. Verdoorn asked Merrill to write the leader in part because taxonomy, as “the oldest branch of botany,” showed “better than any of the other branches the need of international collaboration and cooperation.”<sup>791</sup> Furthermore, Verdoorn loudly voiced his interest in international collaboration, to the extent that he was recognized for his “editorial and international relations work in biology.”<sup>792</sup> Other Dutch botanists had also attempted to advance collaborative international work, like Marius Jakob Sirks (1889–1966), who appealed to the National Research Council of the United States to join the International Union of Biological Sciences (f. 1919) as a permanent organization to carry out the cooperative work during IBC interregna.<sup>793</sup>

Indeed, botanists at this time began to flex political muscles in the terrain they knew best: botany. Merrill’s call to boycott German publications and Verdoorn’s work to uphold the ideals of international cooperation reflect a time of internationalism. As Marc Matera and Susan Kingsley Kent’s edited volume has shown, “despite incipient or resurgent expressions of national principle, internationalist impulses and transnational connections better characterize the 1930s” or what they call the “international decade.”<sup>794</sup> In this climate, Verdoorn has also been described as one of several “scientific internationalists” who emerged.<sup>795</sup> Verdoorn’s calls for collaboration were critical to the success of internationalist botany practice. Even as collaboration was occurring on a practical level—among botanists, collectors, field assistants, and illustrators—so too did it happen with rhetorical calls to stem the perceived intellectual and political ills of nationalization.

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<sup>789</sup> Letter from Friedrich August Ferdinand Christian Went to E.D. Merrill, 28 March 1934, Netherlands – Folder 9, Series 2 (Correspondence), Elmer Drew Merrill Records, NYBG.

<sup>790</sup> Elmer D. Merrill, “The Cost of German Scientific Journals,” *Science* 81, no. 2100 (1935): 316.

<sup>791</sup> Merrill, 316.

<sup>792</sup> “Dr. Frans Verdoorn,” *Nature* 158 (1946): 866. The brief article in *Nature* was published on the occasion of Verdoorn’s receiving the first Mary Soper Pope Medal of the Cranbrook Institute of Science in Michigan.

<sup>793</sup> Letter from Marius Jakob Sirks to National Research Council, 20 August 1934, Netherlands – Folder 9, Series 2 (Correspondence), Elmer Drew Merrill Records, NYBG.

<sup>794</sup> Marc Matera and Susan Kingsley Kent, “Introduction: The Wilsonian Moment Betrayed, 1919–1929” in *The Global 1930s: The International Decade*, ed. Marc Matera and Susan Kingsley Kent (London: Routledge, 2017), 3–4.

<sup>795</sup> Bert Theunissen, “Unifying Science and Human Culture: The Promotion of the History of Science by George Sarton and Frans Verdoorn” in *Pursuing the Unity of Science: Ideology and Scientific Practice from the Great War to the Cold War*, ed. Harmke Kamminga and Geert Somsen (London: Routledge, 2016), 193.

*Scientific Regionalism: Mapping Floristic Space before a Geomilitary “Southeast Asia”*

Regionalism was elemental to inter-imperial collaboration. As I argued in Chapter Five, with the IBC’s formalization of the type concept, the botanical emissary became a necessary figure toward the accumulation of plant specimens for colonial and imperial herbaria. Creating floristic regional coherence relied on the work of botanical emissaries who were able to reach terrain that botanists situated in metropolitan research centers could not. Even for botanists located within the Malesia or Indo-Malaya, independent and contractual labor could reach lesser-known locations. Clemens’s work contributed to the study of Indo-Malayan and Malesian flora, which Merrill concretized through his published revisions. Van Steenis’s *Flora Malesiana* relied on Merrill’s corpus to further the idea and to map the Malesian floristic realm, which today includes all of modern island Southeast Asia.

Van Steenis considered the first volume of *Flora Malesiana*, published in 1950, an international achievement. According to van Steenis, its basis had been “laid by representatives of many nations,” with its scope “following the limits imposed by Nature rather than those made by man.”<sup>796</sup> In other words, the geographical area or phytogeographic space covered by Malesia (“Malaysia” as spelled by van Steenis) included “more territory than is ruled by a single Government.”<sup>797</sup> According to van Steenis, Indonesia, the Malay Peninsula, Sarawak, British North Borneo, Brunei, the Philippines, Christmas Island, Portuguese Timor, New Guinea, and the Bismarck Archipelago comprised the region.<sup>798</sup> For him, completing such a comprehensive work required cooperation and collaboration among those stationed in colonies and metropolises to produce a regional flora. Van Steenis worked from decades of data collected by foreign and local plant specialists. In the maiden volume, he describes Malesia as a natural geographic unit with a history that began in the twentieth century,<sup>799</sup> although referencing and crediting the work of collectors and botanists in the previous century. Indeed, van Steenis acknowledges that “the development of Malaysia was of course preceded and accompanied by wide-spread and intensive exploration of unknown country” before the twentieth century.<sup>800</sup>

Thus, as inter-imperial consolidation occurred at the turn of the century, so too did the notion of scientific regionalism in the science of botany. This regionalism was defined by “Nature,” as van Steenis insists, because plant genera and families stayed uniquely within particular boundaries and were not “ubiquitous” everywhere in the tropics. Prior to the first publication of *Flora Malesiana*, even Bartlett celebrated the “especially interesting” development in Philippine botany: “the reaching out into adjoining regions in order to obtain material of the related floras that have so much in common with the flora of the Philippines. Here, needless to say,” Bartlett added, “there have been no political motives, but merely a carrying out of the natural impulse to complete our scientific knowledge by correlating the botany of the Philippines with that of her

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<sup>796</sup> Cornelis G. G. J. van Steenis, *Flora Malesiana*, Series 1, Spermatophyta, Volume 1 (Jakarta: Noordhoff-Kolff N.V., 1950), vii.

<sup>797</sup> Van Steenis.

<sup>798</sup> Van Steenis, xi.

<sup>799</sup> Van Steenis, xxxiv.

<sup>800</sup> Van Steenis, xii.



neighbors.”<sup>801</sup> Indeed, for these mid-twentieth century botanists, regional botany seemed to be (optimistically) proscribed by nature and not by imperial politics.

In the intellectual history of Southeast Asia studies, the term and region “Southeast Asia” gained popularity at the time of *Flora Malesiana’s* first publication. This is not to say that “Southeast Asia” (spelled, hyphenated, and capitalized variously) as a term was not used decades or even the century prior. As Donald K. Emmerson has tracked, British anthropologist J. R. Logan initiated the scholarly use of “Southeast Asia” in 1847.<sup>802</sup> But it was “warfare not scholarship” that “made ‘Southeast Asia’ popular.”<sup>803</sup> “Making war meant making maps” so the well-known Emmerson quote goes.<sup>804</sup> World War II occasioned not only the widened use of the term but also standardized the geographical boundaries of the region. Intellectual production followed suit and began to argue the region’s historical and cultural coherence. One of the originary texts in contemporary Southeast Asia studies, George Cœdès’s *The Indianized States of Southeast Asia* (1944) examines the development of Southeast Asian states through the lens of linguistic and political “Indianization” or India’s civilizational expansion.<sup>805</sup> Daniel George Edward Hall challenged Cœdès’s “India-centric” notion of “Farther India” in 1955 by providing a historical overview of the region, but this was chronologically arranged based on the region’s encounter with European empires.<sup>806</sup> Scholars from the mid-twentieth century historically and culturally mapped the region in various ways, at times including or excluding the Philippines, for instance. But after the World War II, as Hall explained, Southeast Asia as a geographical space came into “general use” in order “to describe the territories of the eastern Asiatic mainland forming the Indo-Chinese peninsula and the immense archipelago which includes Indonesia and the Philippines.”<sup>807</sup>

Thinking regionally, however, was not limited to the domain of the social sciences, whether at the turn of the century or into the mid-twentieth century. Regional thinking preoccupied botanists as well. As I have discussed in this dissertation, botanists stationed in the colonial Philippines worked to catalog the flora of phytogeographic space—Indo-Malayan and Malesian—well before World War II generals did so for geomilitary strategy. It is unclear when “South-East

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<sup>801</sup> Bartlett, “Nationalism, Imperialism, and Spheres of Influence,” 40, BHL.

<sup>802</sup> Donald K. Emmerson, “‘Southeast Asia’: What’s in a Name?,” *Journal of Southeast Asian Studies* 15, no. 1 (1984): 6.

<sup>803</sup> Emmerson, 7.

<sup>804</sup> Emmerson, 7.

<sup>805</sup> George Cœdès, *The Indianized States of Southeast Asia*, ed. Walter F. Vella, trans. Sue Brown Cowing (Honolulu, HI: East-West Center Press, [1964] 1968). *The Indianized States* was originally written in 1944 as *Histoire ancienne des États hindouisés d’Extrême-Orient* and revised under new titles in 1948 (*Le états hindouisés d’Indochine et d’Indonésie*) and 1964 before its 1968 English translation. According to Cœdès, Southeast Asia or “Farther India” comprised of modern island Southeast Asia except for the Philippines, the Indochinese Peninsula except for northern Vietnam, and the Malay Peninsula.

<sup>806</sup> D. G. E. Hall, *A History of South-East Asia* (New York: St. Martin’s Press, 1955). Hall organized his monograph into four sections: “The Pre-European Period,” “South-East Asia during the Earlier Phase of European Expansion,” “The Period of European Territorial Expansion,” and “Nationalism and the Challenge to European Domination.” Hall’s study covers Burma, Thailand, Indochina, Malaya, and “the islands stretching away eastwards from the Andamans and Nicobars to New Guinea.” He adds, “It does not include Assam on the one side or the Philippines on the other, since both stand outside its main stream of historical developments.” See Hall, 3.

<sup>807</sup> Hall, 3.

Asia” penetrated botanical vocabulary, but van Steenis shows that by the late 1940s, Malesia included “South-East Asia,” which was different from the neighboring “triangular extension of Southern Asia” or “Further India.” While there may have been overlap with the social scientific understandings of the terms and their geographical boundaries, what I show through my work is that botany and botanical practice also worked to carve out a unique region of its own, one that was the grounds for inter-imperial intellectual study. As Roy MacLeod correctly postulated, “While it would be too sweeping to suggest that the conceptual content of individual fields was determined by imperial expansion, it would not be too unwarranted to speculate that the rate and direction of such a development might be affected by new evidence, testing established theory, or by new hypotheses bred of observations at different latitudes and in different geophysical regions.”<sup>808</sup>

Anglo-European empires at the turn of the century deployed scientific regionalism toward political and intellectual collaboration. People, publications, and plant specimens moved widely through colonial and metropolitan spaces. Botanists functioned as diplomats to carve a world seen through the lens of liberal cooperation and the “natural” spread of plant genera, but were never innocent of the extreme environmental extraction, colonial inequities, and erasures within collaborative relationships that characterized imperial botany. Indeed, it would also seem that in their pursuit of intellectual advancement, botanists appeared to stand outside of—if they were not entirely indifferent to—the colonial violence and wars that surrounded them. Simultaneously with this, the IBC’s development occurred alongside the enactment of several other internationally oriented agreements that sought to dissuade violent imperial contest across colonial lands and imperial terrain. Like the Berlin Conference (1884–1885) to regulate trade and colonization in Africa, the Brussels Conference Act of 1890 to end land and sea slave trade in parts of Africa and the Ottoman Empire, the Paris Peace Conference (1919–1920) at the end of World War I, and the 1920 establishment of the League of Nations, these agreements comprised the commercial, political, and military landscape of inter-imperial collaboration. The growth of scientific regionalism in botany functioned similarly with “Nature” as its principal arbiter.

### *The Archipelago at the Center*

The Philippines played a crucial role in these inter-imperial and regional developments. On the one hand, I centered my study on the archipelago because of its unique history as a colony of two successive major empires. The Philippines became the intellectual battling grounds for U.S. colonial scientists that have had lasting ramifications in the historiography of Spanish colonial science in the Philippines. This has offered, as I have just summarized, an important comparative study of two colonial botanies. On the other hand, and more importantly, the Philippines, its plant life, its local intellectuals, and the foreign plant specialists who helped developed its floral inventory were essential to how botanists came to envision the archipelago as part of Malesia and Indo-Malaya at the turn of the century. The Philippines made Vidal’s and Merrill’s careers, and both were critical to opening new routes of inter-imperial cooperation by way of botany.

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<sup>808</sup> Roy R. MacLeod, “On Visiting the ‘Moving Metropolis’: Reflections on the Architecture of Imperial Science,” *Historical Records of Australian Science* 5, no. 3 (1982): 6.

During this time, too, reformists and revolutionaries began to reinforce the territorial bounds of Philippine proto-national space. Botany was one of several disciplines that armed local intellectuals with the tools to espouse what Thongchai Winichakul has termed the “geo-body,” or the mechanisms of territoriality that construct a nation-state by classifying, communicating, and enforcing its boundaries.<sup>809</sup> Philippine intellectuals did so through the archipelago’s flora. As I covered in Chapter Three, the *sampaga* and *sampaguíta* comprised this effort to evoke a sensorial patriotism by way of an indigenously growing flower. Philippine writers and artists portrayed the *sampaga* and *sampaguíta* as essentially Philippine, something that could symbolize ideal femininity and the everyday. At the same time, some held the flower as above the constraints of Linnaean taxonomy and nomenclature. As I argued, sovereign vernaculars were local plant names whose users actively defied the imperial logics of Latin binomial nomenclature. As discussed in Chapter Five, Merrill himself championed what he considered the immutability of local plant names compared to the mutability of Latin nomenclature and plant synonyms. But sovereign vernaculars also helped to advance the possibility of territorial domain and conjured a corporeal patriotism among a particular section of Philippine society at the turn of the century.

Like other Anglo-European social scientific and scientific disciplines, botany offered a grammar for advancing territorial domain. At the same time, as I also explained in Chapter Three, such visions were held by an elite few. The politicians who eventually asserted the *sampaguíta*’s status as the Philippine national flower in 1935 extended a plant commonly grown in cultivation with a Manila-centric name across a landscape comprised of more than seven thousand islands. Pointing to such a contradiction and investigating the romanticism associated with a plant like the *sampaguíta* contributes to what Warwick Anderson implores of post-colonial science studies scholarship: “to render more turbulent the supposedly laminar global flows, to deconstruct and impede grandiose claims to sovereignty and hegemony.”<sup>810</sup>

Anderson’s charge applies to the very machinations that worked to derive regional floristic space, which relied heavily on the at times dangerous labors of botanical collecting in colonial terrain. This, as I covered in Chapter Five, was reported and looked very different between foreign and Filipino botanical collectors. The comparison I offered of Mary Clemens and Maximo Ramos reveals the uneven nature of colonial botany operations in the Philippines, specifically as Clemens moved more easily across several colonial sites, while Ramos was almost completely constrained to the Philippine colony. The unclear details behind Ramos’ death in 1932 point to erasures in botany archives, and the distortions that we as historians must peer through to continue tracking the effacing hierarchies of colonial science. The figure of the botanical emissary is only thinkable by understanding Clemens’ work vis-à-vis Ramos and the dozens of unnamed local field assistants who made her work possible.

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<sup>809</sup> Thongchai Winichakul, *Siam Mapped: A History of the Geo-Body of a Nation* (Honolulu: University of Hawai’i Press, 1994), 16–17.

<sup>810</sup> Warwick Anderson, “Postcolonial Science Studies” in James D. Wright, ed., *International Encyclopedia of the Social & Behavioral Sciences*, 652–657 (Amsterdam: Elsevier, 2015), 656.

### *A Philippine Botany Unfolding*

I end this dissertation with an herbarium sheet housed in the Philippine National Herbarium (PNH). According to its labels, Vidal collected a sample of *Mangifera indica* in 1885 in the province of Bulacan. García likely accompanied him on this collecting trip. Vidal and García remitted the specimen to the Real Jardín Botánico (Royal Botanical Garden) in Madrid. Its duplicate, most likely kept in the herbarium of the JBM, was probably destroyed in the 1890s. After World War II, Filipino botanist Eduardo Quisumbing repatriated the sheet along with dozens of Vidal's other specimens back to the Philippines. As I have elaborated elsewhere, Quisumbing set out to rehabilitate the collection of the PNH after U.S. military fire completely razed the institution during the Battle of Manila in 1945.<sup>811</sup> As indicated by Quisumbing's unique label on the bottom right corner of the sheet, he probably brought the specimen to the PNH in 1958.

In García's *Catálogo*, *Mangifera indica* (#2547 in *Catálogo* and the number also indicated by the specimen label) allegedly came from Jolo in the Sulu archipelago. But the herbarium label indicates that the specimen came from Quingua, Bulacan. This is either a mistake in the labeling or a duplicate of the *M. indica* found in a locality (Quingua) aside from Jolo. Taken as a whole, this sample's itinerary—from Jolo or Bulacan to Manila, from Manila to Madrid, and Madrid back to Manila—reveals the geographic and temporal distances that scientific material traveled. Although herbarium sheets were not unique to late nineteenth-century botany, these in particular would become especially important to a national Philippine botany. A continuity is, therefore, present in the sample of *M. indica*, which resurrects the Spanish colonial botany work conducted ahead of the U.S. colonial period. In this light, even Quisumbing, a staunch supporter of the United States and its intellectual traditions, acknowledged an intellectual continuity across the U.S. and Spanish colonial periods up to mid twentieth-century Philippine botany.

As a science of the archive, botany engages with the past and the future, accumulating stores of plant specimens from centuries prior and preserving them in anticipation for ongoing, future collective inquiry.<sup>812</sup> A kind of posthumous collaboration then is inherent in sources like an herbarium sheet, which as Lorraine Daston explains, exist toward a collective empiricism that can span generations.<sup>813</sup> García would have used a duplicate of this particular specimen sheet while completing the *Catálogo* in the early 1890s following Vidal's death in 1889. As I covered in Chapter Two, García worked exclusively from Vidal's Philippine collections. He was the only local IGM employee to have collaborated as intimately with Vidal and therefore had the most familiarity with his plant material. For Philippine botanists working after World War II, the specimen functioned as essential material to rebuild the floristic knowledge of the new Philippine nation, which declared its independence at the end of the war. Collected during the height of Spanish colonial secular botany, the specimen sheet served a national purpose by the time of its repatriation.

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<sup>811</sup> Kathleen Cruz Gutierrez, "Rehabilitating Botany in the Postwar Moment: National Promise & the Encyclopedism of the Eduardo Quisumbing's *Medicinal Plants of the Philippines* (1951)," *Asian Review of World Histories* 6, no. 1 (2018): 42–45.

<sup>812</sup> Lorraine Daston, "The Sciences of the Archive," *Osiris* 27, no. 1: Clio Meets Sciences: The Challenges of History (2012): 162–164.

<sup>813</sup> Daston, 163.

Within this long stretch of history, dozens of stories of Philippine botany have yet to be written. These include theoretical developments in the science and stories of its practitioners from the Philippine Commonwealth onward. As I have shown, colonial Philippine botany and its specialists participated in and shaped inter-imperialist, proto-nationalist, and regionalist impulses at the turn of the century. For the remainder of the twentieth century, botanists had a hand in nationalist reconstruction, the dictatorial fantasia of the Marcos dictatorship, and National Democratic activism.<sup>814</sup> Indeed, botany and plant life have had a critical role in the Philippines' many sociotechnical imaginaries, defined by Sheila Jasanoff as the “collectively held, institutionally stabilized, and publicly performed visions of desirable futures.”<sup>815</sup> But for these sociotechnical imaginaries, the past remains indispensable. Because the discipline of botany hinges on an ongoing posthumous collaboration with the past, so too does the past play a fundamental role in the imagining of better futures. For some scientists and activists under the Marcos dictatorship, this meant the industrial-level production of *materia medica* to meet the health needs of a growing population and to wrench a nation from its dependence on imported pharmaceuticals.<sup>816</sup> For others, botany was one discipline of several to fashion the Philippines' New Society in which “Science” with a capital S could usher an entire people out of poverty.<sup>817</sup> Such “desirable futures” link back to the stories of the people and institutions captured herein that also envisaged the Philippine floral catalog as part of a wider whole—one that could achieve dreams of political sovereignty or international cooperation.

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<sup>814</sup> Gutierrez, “Rehabilitating Botany in the Postwar Moment”; Kathleen Cruz Gutierrez, “Imelda Marcos Toad Lily: *Tricyrtis imeldae*” (unpublished manuscript, December 13, 2019), Microsoft Word File.

<sup>815</sup> Sheila Jasanoff, “Future Imperfect: Science, Technology, and the Imaginaries of Modernity” in *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Landscape of Power*, ed. Sheila Jasanoff and Sang-Hyun Kim (Chicago: University of Chicago, 2015), 6.

<sup>816</sup> Gutierrez, “Rehabilitating Botany in the Postwar Moment,” 61–64.

<sup>817</sup> Gutierrez, “Imelda Marcos Toad Lily.”

## Appendix I

“Estado general de la distribución del personal facultativo y auxiliary del ramo de Montes”  
(State of the distribution of skilled and auxiliary personnel in the Forestry branch), in the original  
Spanish. Reproduced from Ultramar, Legajo 528, Expediente 26, Número 59, AHN.

### Servicio ordinario Inspección General

#### Ynspector General Don Luis de la Escosura

1	Yngeniero Jefe de 1 <sup>a</sup>	Don Patricio Bellido
1	Yngeniero Jefe de 2 <sup>a</sup>	Don Carlos de Mazarredo
1	Ayudante 1 <sup>o</sup>	Don Ysidro Garcia Jimenez
2	Ayudante 3 <sup>os</sup>	Don Andres Sanchez Herrero Don Joaquin Piqueras Don Arturo Echevarria
4	Ayudante 4 <sup>os</sup>	Don Eduardo Amor Don José Maria Alonso Dias Don Luis Galindo y Alcedo
1	Delineante 1 <sup>o</sup>	Eulalio Carmelo
1	Delinente 2 <sup>o</sup>	Hugo Navarro
	Escribiente mayor	Hermógenes Buhain
2	Escribiente 1 <sup>o</sup>	Pantaleon de la Cruz Baldomero Rodriguez Zimoteo de los Angeles
4	Escribiente 2 <sup>os</sup>	Santiago Silos Eugeniano de Leon Placido Macario
1	Portero	Esteban Tangquiatco
2	Ordenanzas	Mateo Ursua Gabriel San Luis
1	Montero Mayor	Don Juan Fernandez
1	Montero 2 <sup>o</sup>	Pedro F. Galan

#### Servicio de Distritos Norte de Luzon

Provincia	Residencias	Yngeniero Jefe	Ayudantes	Monteros 2 <sup>os</sup>
Cagayan	Tuguegarao	Don Gabriel L. Olivas	Don Alfredo Alcon	Tranquilino Birri
Ylocos Norte	Laoag	“	Don Vicente Bernis	José Ysabelo Mallari
Ylocos Sur	Vigan	“	Don Francisco C. Corrales	Zacarias Victoria
Abra	Bangued	“		Tito Nepomuceno

Union	San Fernando	“	Don Francisco de la Rosa	Sotero José Giron
Ysabela	Ylagan	“	D. Estanislao B. y Planas	Buenaventura Reyes
Ysabela	Cabagan	“	D. José Gisbert y Abad	Apolinario Mercado
Lepanto	Cayan	“	D. Pedro Gonzalez	Cesáreo Peña
Benguet	La Trinidad	“	D. Ygnacio Fernandez	Brigido Arecheta
Nueva Ecija	Bayombon	“	D. Eduardo Alemany	
Cagayan	Tuguegarao	Montero Mayor	D. Berisimo Giraldez	

### Centro de Luzon

Provincia	Residencias	Yngeniero Jefe	Ayudantes	Monteros 2ºs
Manila	Manila	Don Juan Guillelmi	D. Armando Torrez	Pedro Mayonado
Manila	Bahia	“	“	Damian Sanchez
Manila	Pasig	“	“	Antonio Ma. del Castillo
Manila	Tambobon	“	“	Adriano Fernandez
Pangasinan	Lingayen	“	D. Sinforiano Bona	Pedro Alcántara
Zambales	Subic	“	D. Calixto Ruiz de Austri	Ramon Aguirre
Pampanga	San Fernando	“	D. Ramon Perez Herrera	
Pampanga	Arayat	“	“	Cipriano Pinzon
Tarlac	Tarlac	“	D. José Bermudez de Castro	José Bañuelos
N. Ecija y Principe	San Ysidro	“	D. Leon Bizcarra	Pedro Borja
Bataan	Balanga	“	D. José Ferro y Bugallo	Pablo del Villar
Bataan	Orani	“	“	Cristino Alvarez
Bulacan	Calumpit	“	D. Feliciano Garcia	Protasio Cuaderno
Cavite	Cavite	“	D. José Cano y Polidano	Salomon Barruga
Morong	Morong	“	D. Dionisio Morillo	Alejo Rodriguez
Laguna	Pagsanjan	“	D. Fernando Fernandez	Pedro Cahastian
Ynfanta	Binangonan	“		Marcelo de Lara
Manila	Manila	Montero Mayor	D. Eusebio Fernandez	

### Súr de Luzon

Provincia	Residencias	Yngeniero Jefe	Ayudantes	Monteros 2ºs
Albay	Daraga	D. Angel Fernandez de Castro	D. Justo Gallado y Duro	Claudio Dacomus

Camarines Sur	Nueva Caceres	“	D. Felipe Diaz y Lopez	Gregorio Purificacion
Batangas	Batangas	“	D. Fernando Caballero	Mariano del Carmen
Batangas	Lipa	“	D. Dámaso García Bosque	Lucas Leonés
Mindoro	Calapan	“	D. Felix Bonyon	Aproniano de Guzman
Romblon, Tablas y Sibuyan	Romblon	“	D. Diego de Torrez	Juan Albarran
Marinduque	Gazan	“	“	Enrique Baquiran
Tayabas	Unisan	“	D. Genaro Valera	Ceferino Anastasio
Tayabas	Atimonan	“	D. Ysidro Centenera	
Albay	Pilar	“		Agapito Leño
Camarines Norte	Daet	“	D. Rafael Garcia Arribas	Lázaro Ruis
Masbate, Burias, y Ticas	Palanas	“	D. Victoriano Perez Calvo	Apolinario Macaraig
Masbate, Burias, y Ticas	Ticao	“	“	Santiago Diaz
Albay	Daraga	Montero mayor	D. José Benito Gonzluez	

### Visayas y Mindanao

Provincia	Residencias	Yngeniero Jefe	Ayudantes	Monteros 2ºs
Yloilo	Yloilo	D. Santiago Ugaldezubiaur	D. Francisco Cabañas	Martin Garcia
Yloilo	Guimarás	“	“	Teodoro Yamzon
Capiz	Capiz	“	D. S. José Salcedo y Grande	Lorenzo E. Ynocencio
Cebu	Cebu	“	D. Manuel S. Moreno	Miguel Sanchez
Antique	Antique	“	D. Mariano Santander	Pio Antonio Rubias
Negros	Bacolod	“	D. Segundo Lopez	Hermenegildo de Ocampo
Negros	Carlota	“	D. Antonio Garcia Pastor	José Santa Maria
Leyte	Tacloban	“	D. Juan Gomez Alonzo	Agustin P. y Bello
Bohol	Tagbilaran	“	D. Manuel Castellanos	
Samar	Catbalogan	“	D. José Garcia de Lara	Mateo Valdez
Zamboanga	Zamboanga	“	D. Juan Lopez Gonzalez	Antonio G. Leon



Surigao	Surigao	“	D. José Benito Troncoso
Yloilo	Yloilo	Montero mayor	D. Angel Madrilley

**Comision especial de ventas y composiciones**

	Yngeniero Jefe	D. José Sáinz de Baranda
1	Yngeniero de 2ª clase	D. Victoriano Deleyto
		D. Manuel Piñeyro
3	Ayudante 4º	D. Antonio Casanvoas
		D. Rafael Janin
2	Escribientes 1º	Eriberto José
		Benito Bagay
2	Escribiente 2º	Lorenzo Ysla
		Catalino del Castillo
1	Portero	Eusebio Figuración
1	Ordenanza	Francisco Salvador
1	Montero mayor	D. Vicente Vara y Perez
1	Montero mayor 2º	Federico Muguruza

**Servicio extraordinario**

**Comision de la Flora Forestal**

	Yngeniero Jefe	D. Sebastián Vidal y Soler
1	Ayudante 3º	D. Regino García y Basa
1	Ayudante 4º	D. José Florencio Quadras
		D. Miguel Benitez Alonso
2	Auxiliares botánicos	D. José Perez Macso
1	Dibujante	Francisco Domingo
1	Escribiente	Victoriano Mañalac
1	Ordenanza	Valentin Jimenez

Manila 9 de Octubre de 1882  
El Ynspector General

Luis de la Escosura

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Ultramar

Legajo 226, Expedientes 1, 8

Leg. 524, Exps. 5, 14, 17, 26

Leg. 527, Exps. 1, 2

Leg. 526, Exps. 1, 8, 14

Leg. 528 Exps. 1, 3, 13, 26

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Frank C. Gates Papers

Harley H. Bartlett Collection

University Herbarium

Filipinas Heritage Library, Ayala Museum (Philippines)

Retrato Collection

Heritage Library, Miguel de Benavides Library, University of Santo Tomas (Philippines)

Periodicals

*Libertas*

*Mercantil*

*Revista de Filipinas*

Library and Archives at Royal Botanic Gardens, Kew (U.K.)

Directors' Correspondence

Library of Congress (U.S.)

Gifford Pinchot Papers

National Archives of the Philippines

Varios Personajes

Memorias

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