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## **Hybrid ambitions : science, governance, and empire in the career of Caspar G.C. Reinwardt (1773-1854)**

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# PART III

*Leiden*



## 6

### *Leiden as a Difficult Landscape for a Late Career*

*As the products and resources of an entire empire cannot be known unless one has surveyed all provinces, cities, villages and citizens, everyone who wants to understand nature better and more thoroughly must have surveyed the different parts of the earth.*

Reinwardt, about his field work in the Netherlands Indies in his inaugural lecture in Leiden in 1823.<sup>1</sup>

When Reinwardt landed at Texel in autumn 1822, the political climate in the Netherlands had changed tremendously. After the collapse of the French empire in 1815, Willem I and his advisors had initiated numerous projects to transform Napoleon's former satellite into a powerful and influential nation-state with an economically rewarding colonial appendix in the Netherlands Indies. The economic prospects seemed promising. While the southern provinces possessed a flourishing textile industry and plentiful natural resources such as pit coal, the commerce-oriented northern provinces were poised to organize the shipping of finished textiles and industrial products to the Netherlands Indies. On their passage back, the ships were supposed to

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<sup>1</sup> Reinwardt, *Over hetgeen*, 23: "Want, gelijk de goederen en rijkdommen van een geheel rijk niet kunnen gekend worden, ten zij men alle de provinciën, steden, dorpen en burgers gade sla; zoo moet ook ieder, die de natuur volkomen en grondiger verlangt te kennen, de onderscheidene gewesten der aarde doorzien hebben."

bring colonial products such as cloves, nutmeg, tea and coffee to the Netherlands. Newly established financing and commerce agencies such as the Funds for the Stimulation of the National Industry (Fonds ter aanmoediging der Nationale Nijverheid, established in 1821), the General Netherlands Society for the Support of the People's Diligence (Algemene Nederlandsche Maatschappij ter begunstiging van de volksvlijt, 1822), the Amortization-Syndicate (Amortisatiesyndicaat, 1822) and, most important, the Dutch Trading Society (Nederlandsche Handel-Maatschappij, 1824-25) had to enhance the formation of an economically strong nation state.<sup>2</sup>

These economic projects were paralleled by cultural and scientific reforms. In order to promote the unity and grandeur of the Dutch kingdom, the king actively supported societies such as the Dutch Bible Society (Nederlandse Bijbel Genootschap, 1814) and the Society of Benevolence (Maatschappij van Weldadigheid, 1818). The latter society had initiated the establishment of agricultural colonies for impoverished people in Drenthe. Moreover, the king strengthened and enlarged cultural institutions which had been established in the aftermath of the Batavian Revolution such as the National Library (Nationale Bibliotheek, 1798) in The Hague and the National Art Gallery (Nationale Konst-Gallerij) for fine arts in Amsterdam. In order to ensure the colonies in the East a prominent place in Dutch society, the king also founded two new national museums and repositories for the kingdom's fast-growing ethnographic and natural historical collections: the Royal Cabinet of Rarities (Koninklijk Kabinet van Zeldzaamheden, 1816) in the Hague and the National Museum of Natural History ('s Rijks Museum van Natuurlijke Historie, 1820) in Leiden. In 1829, the king also decided to establish a National Herbarium ('s Rijks Herbarium) in Brussels, but following the violent secession of Belgium the next year, this was eventually moved to Leiden. Willem I and his advisors fostered the strong hope that these institutions would provide the cultural cement for their expansionist and aggressive economic policy at home and abroad.<sup>3</sup>

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<sup>2</sup> J. Roegiers and N.C.F. van Sas, "Revolutie in Noord en Zuid," in *Geschiedenis van de Nederlanden*, ed. J.C.H. Blom, et al. (Baarn: HB Uitgevers, 2006), 251-52; and F. Santegoets, "Het Verenigd Koninkrijk 1815-1830," in *Het ontstaan van het moderne Nederland. Staats- en natievorming tussen 1780 en 1830*, ed. W. Fritschy (Nijmegen: Sun, 1996), 225-28. For a more detailed analysis, see Van Sas, *Onze natuurlijkste bondgenoot*, chapter 3 and 4.

<sup>3</sup> On the museum and cultural policy of Willem I, see Effert, *Royal cabinets and auxiliary branches*, 17-26; and Legène, *De bagage van Blomhoff en Van Breugel*, 327-97. For

The establishment of the National Museum of Natural History and the National Herbarium had a tremendous impact on the country's intellectual and cultural geography. In the years after their foundation both institutions quickly developed into nodal points for natural historical research in Europe, and by the mid-nineteenth century their collections equalled those in Paris. For many individuals interested in the study of nature the new institutions formed an ideal stepping stone for careers as a botanist, zoologist, geologist taxidermist, collector, and draftsmen. The members of the Committee for Natural History of the Netherlands Indies (Natuurkundige Commissie voor Nederlandsch-Indië) mentioned in the introduction to this study exemplify the pattern. Although many of them never returned to Europe most of their specimens, the field diaries, maps, measurements, sketches, notebooks, letters, observations and drawings that they accumulated during their stay in the region did. These materials constituted the central basis for the region's natural history as it was written in the form of lavishly illustrated monographs, travel narratives, and journal articles in the first half of the nineteenth century.<sup>4</sup>

By focusing on Reinwardt's early years as professor in Leiden, this chapter will show that the influx of a large number of natural historical specimens and written and pictorial notes from the Malay Archipelago and elsewhere caused tensions among directors of natural historical institutions, owners of collections and travellers who had gathered specimens abroad. Many of these individuals hoped to secure their authority and status by offering the king their services and expertise in the as yet vaguely defined field of natural history. Reinwardt's attempt to establish himself at home as an heroic traveller and virtuous administrator—an identity which he had

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separate institutional histories, see, for instance, P.W. Klein and M.A.V. Klein-Meijer, *De wereld van de Koninklijke Bibliotheek, 1798-1998. Van statelijke institutie tot culturele onderneming* (Amsterdam: Uitgeverij G.A. van Oorschot, 1998), 30-91; C.A. Kloosterhuis, *De bevolking van de vrije koloniën der maatschappij van weldadigheid* (Zutphen: Walburg Pers, 1981), chapters 1-3; Gijzen, *'s Rijksmuseum van Natuurlijke Historie; Holthuis, 1820-1958: Rijksmuseum van Natuurlijke Historie*; P. Smit, "The Rijksherbarium and the scientific and social conditions which influenced its foundation," *Blumea* 25 (1979): 5-11; E. Bergvelt, *Pantheon der Gouden Eeuw. Van Nationale Kunstgallerij tot Rijksmuseum van schilderijen (1798-1896)* (Zwolle: Uitgeverij Waanders, 1998); and, more focused, D. Meijers, "The Dutch method of developing a National Art Museum: How crucial were the French confiscations of 1795?," in *Napoleon's legacy: The rise of national museums in Europe, 1794-1830*, ed. E. Bergvelt, et al. (Berlin: Staatliche Museen zu Berlin, 2009), 41-53.

<sup>4</sup> For detailed references see chapter 1, footnote 4.

developed already in the Netherlands Indies—eventually failed. In particular, his claim that measuring and surveying the colonial hinterland would reveal fertile but still unexploited areas in Java fell on deaf ears in The Hague. Despite his best efforts and arguments, however, neither the king nor his ministers were willing to support Reinwardt's attempt to compile the 'physical geography' (*physikalische aardsbeschrijving*) of the Malay Archipelago that was, in his opinion, a necessary prerequisite for reaching that goal.

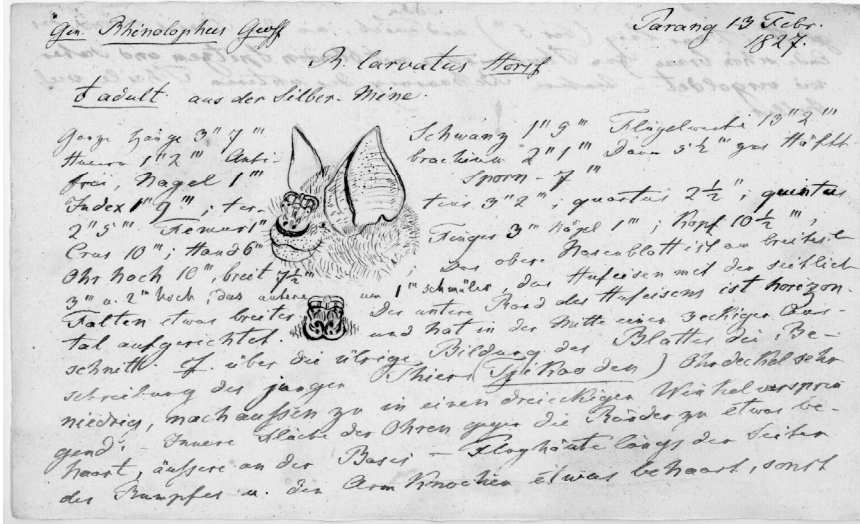


Figure 34: Description and sketch of an Intermediate Leaf-nosed Bat (*Hipposideros larvatus*) by Heinrich Boie. The text is written in German.

In the mid-1820s, when Reinwardt tried to find sponsors for his planned publication, the king and his ministers gradually became aware that the colonies were far from being a direct source of financial reward. To the contrary, a thorough examination of the growing number of trade statistics revealed that the attempt to establish a strong and centralized administration in the Netherlands Indies had resulted in a tremendous increase of costs. Violent uprisings in Java, Sumatra, Borneo and the Moluccas further aggravated the situation. With the introduction of the cultivation system (*cultuurstelsel*) in 1830, the king and his ministers eventually opted for a system of economic exploitation that relied heavily upon local village heads who were made responsible for the production of export cash crops such as indigo, tea, sugar and coffee. Virtuous but expensive administrators such as Reinwardt, who had based their careers on compiling statistics and surveying

and improving nature and society in the field, had lost their function in Dutch society.

## A New Museum of Natural History in Leiden

Reinwardt's hopes to receive assistance from the Dutch king received its first setback in the summer of 1819. While his friend Van Marum tried to delay the king's final decision on the reorganization of the museum landscape until Reinwardt's return from the Netherlands Indies, Coenraad Jacob Temminck, who, together with Van Marum, had replaced Reinwardt as interim-director of the State Cabinet of Natural History, urged the king to establish a new national museum for natural history with him as director. Temminck's trump card was a huge and unique private collection of birds and mammals, which he had inherited from his father, a former treasurer of the Dutch East India Company (VOC). According to a catalogue, Temminck's cabinet, stored in his spacious house at Herengracht 400 in Amsterdam, contained approximately 4000 prepared birds and 240 mammals.<sup>5</sup>

In a long letter written to Falck, minister for education, national industries and the colonies, dated July 1819, Temminck threatened to leave the country with his valuable cabinet if the king declined to establish a "magnificent monument of natural historical studies"<sup>6</sup> under his directorship either in Brussels or Amsterdam.

The king and his minister first hesitated, but after the sudden death of the Leiden professor for botany, natural history, medicine and chemistry Sebald Justinus Brugmans in July 1819, Temminck's wishes were at least partly fulfilled. In August 1820, the king decided to merge the State Cabinet in Amsterdam with the academic cabinet of the university in Leiden and Temminck's bird and mammal collection under the roof of a new national museum of natural history to be established in Leiden.<sup>7</sup> The Hof van Zessen,

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<sup>5</sup> C.J. Temminck, *Catalogue systématique du cabinet d'ornithologie et de la collection de quadrumanes de C.J. Temminck. Avec une courte description des oiseaux non-décrits* (Amsterdam, 1807); and A.M. van Lynden-de Bruïne, *In vogelvlucht door Europa. De reisjournalen van Dionysia Catharina Temminck-Cau, 1807-1824* (Zutphen: Walburg Pers, 2001), 14.

<sup>6</sup> NA The Hague, collectie Falck, 85, letter Temminck to Falck, Amsterdam 17 July 1819: "... schitterend monument der natuurkundige studien. . . ."

<sup>7</sup> For a concise history of the three natural historical collections mentioned, see Holthuis, *1820-1958. Rijksmuseum van Natuurlijke Historie*, 10-15; and most important Gijzen, 's *Rijksmuseum van Natuurlijke Historie*, 22-42.

a large building situated on the Rapenburg, one of Leiden's main canals, offered, as the king argued, a suitable venue for the new institution. Temminck also received ample financial compensation for relinquishing his collection to the state. Beside the directorship, the king granted him a lifelong pension and an annual compensation of 2000 guilders above his regular salary.<sup>8</sup>



Figure 35: Portrait of C.J. Temminck by Jan Adam Kruseman (1804-1862).

When Reinwardt first heard about Temminck's appointment as director of the new national museum he was quite agitated. In a letter to Van Marum, he complained that Temminck had informed him about neither the personnel changes nor about the general state of the cabinet.<sup>9</sup> In earlier letters to Van Marum, Reinwardt had expressed his doubts about Temminck's

<sup>8</sup> Holthuis, *1820-1958. Rijksmuseum van Natuurlijke Historie*, 9-10.

<sup>9</sup> NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Batavia, 25 March 1822: "De Heer Temminck heeft mij daaromtrent niets, en in het geheel in een paar jaren niet geschreven, en dus ook niet den verkoop zijner verzameling, en zijner aanstelling bij het Museum gemeld. Dit moet mij natuurlijk zeer bevreemden, te meer, daar anderen alhier nog onlangs brieven van hem ontvangen hebben."

merits as interim director of the State Cabinet in Amsterdam and his fear that Temminck was only interested in using his cabinet as a means to further enrich his private bird collection and to strengthen his scientific network and reputation in Europe.<sup>10</sup>

Reinwardt's judgment was not entirely wrong. During his years as interim director of the State Cabinet Temminck made several long journeys and met numerous collectors in Germany, France, Austria, Italy and Switzerland.<sup>11</sup> Moreover, he prepared two multi-volume ornithological monographs containing detailed descriptions of prepared bird specimens that he had examined in various European cabinets. Both works, the *Manuel d'ornithologie, ou tableau systématique des oiseaux qui se trouvent en Europe* (first edition 1815; second edition 1820-40) and the lavishly illustrated *Nouveau recueil de planches coloriées d'oiseaux* (1820-39) were praised among bird experts in Germany, France and Britain for their precise descriptions and the multi-volume monographs cemented Temminck's status as an outstanding ornithologist who considered the exact description and stringent classification of as many as possible specimens as the core task of every practitioner of natural history.<sup>12</sup>

## Natural History in Dispute

Temminck's vision of how natural history should be practiced did not remain unanswered by Reinwardt, who was equally concerned about how to position himself in the kingdom's scientific landscape. In his inaugural lecture, titled "Over hetgeen het onderzoek van Indië tot uitbreiding der natuurlijke historie heeft toegebracht" (Lecture on what the research of the Netherlands Indies has contributed to the development of natural history), Reinwardt formulated and promoted an alternative vision of how natural history should be practiced in the Dutch kingdom and its colonial annex. Many of his old friends from Amsterdam and Harderwijk attended the lecture, which was held in the academy auditorium, the *Akademiegebouw*, to see him again and learn more about his stay in the Dutch East Indies.

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<sup>10</sup> KB The Hague, 121 B8, letter Reinwardt to De Vries, 20 May 1817 and NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, 31 October 1817.

<sup>11</sup> Van Lynden-de Bruïne, *In vogelvlucht door Europa*, 125-253.

<sup>12</sup> E. Gassó-Miracle, "The significances of Temminck's work on biogeography," *Journal of the History of Biology* 41 (2008): 710-12.

Tellingly, the director of the new National Museum of Natural History in Leiden, Temminck, was absent; he and his wife were on short trip to Paris.<sup>13</sup>

Reinwardt, who in the meantime had been made Knight of the Order of the Dutch Lion (Ridder van de orde van de Nederlandsche Leeuw)—one of the highest royal distinctions in the Dutch kingdom—dedicated the lecture to his former superiors Van der Capellen and Elout. In order to increase the readership of the academic lecture, which was originally given in Latin, Reinwardt's friend and colleague Matthijs Siegenbeek eventually translated the lecture into Dutch.<sup>14</sup> The Amsterdam publishing house Johannes van der Hey and Zoon took care that the translation of the lecture was spread among the readers in the Dutch kingdom.<sup>15</sup>

Reinwardt opened the lecture by introducing himself once again as the heroic traveller who had mastered the perils of travelling in the 'tropics', an area which classical authors had described as an inaccessible and scorched zone (*versengde hemelstreek*) between the tropic of Cancer and the tropic of Capricorn. Instead of following these ancient imaginations of the Malay Archipelago, Reinwardt stressed the immense fertility and extreme diversity of nature in a region that awaited further investigation and economic exploitation.<sup>16</sup> Neither the sun nor the unfavourable climate, nor the supposedly barbaric societies there should keep naturalists and merchants from visiting and settling in the Netherlands Indies, he argued. Individual travellers who feared the climate could protect themselves through self-discipline and moderation, and, more practically, by wearing suitable clothes, and consuming appropriate food.<sup>17</sup> Furthermore, the various native people were good-natured and would welcome guests as long as they did not try to change their customs and traditions.<sup>18</sup> But the most important reason to visit

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<sup>13</sup> Van Lynden-de Bruïne, *In vogelvlucht door Europa*, 258.

<sup>14</sup> For the Latin version, see C.G.C. Reinwardt, *Oratio de augmentis quae historiae naturali ex Indiae investigatione accesserunt* (Leiden: J. Luchtmans, 1823).

<sup>15</sup> C.G.C. Reinwardt, *Redevoering van C.G.C. Reinwardt over hetgeen het onderzoek van Indië tot uitbreiding der natuurlijke historie heeft toegebracht, gehouden den 3 Mei 1823* (Amsterdam: Johannes van der Hey en Zoon, 1823).

<sup>16</sup> *Ibidem*, 11.

<sup>17</sup> *Ibidem*, 17-9. For an in-depth discussion of food and clothing in the context of late eighteenth-century travel narratives, see E.C. Spary, "Self-preservation. French travels between cuisine and industrie," in *The brokered world. Go-betweeners and global intelligence, 1770-1820*, ed. Simon Schaffer, et al. (Sagamore Beach, MA: Science History Publications), 355-86.

<sup>18</sup> Reinwardt, *Over hetgeen*, 10: "Zeker zij hadden te voren, en hebben ook thans nog hunne bewoners, en deze geenszins zoo woest, als andere volken zich dezelve gemeenlijk

the Netherlands Indies was, according to Reinwardt, nature itself. He proclaimed that any visitor from the “temperate zone” would be at first struck and overwhelmed by the incredible diversity and productivity of nature.

First, he [the traveller in the field] is amazed at the unusual magnitude of everything; then he is so surprised by the variety and the abundance of the forms that he almost begins to despair of wanting to know all of them. Subsequently, he starts thinking about the origin of everything; about how nature can produce such abundance, based either on the earth’s hard and stony elementary substances [*beginselen*], or the circulating air, or the battle and transition between those two.<sup>19</sup>

Subsequently, the naturalist in the field will recognize “that everything which exists in nature is nourished . . . by mutual interdependence, and that nothing, separated from the rest, can exist on its own.”<sup>20</sup> He further added that “although the truth of this is uncontested, it is still a major shortcoming within the entire field . . . [of] natural history”,<sup>21</sup> especially among sedentary naturalists who analyze natural specimens without having experienced and investigated the natural environment from which they come. Reinwardt warned that the underlying assumption that nature manifested itself in every specimen separately was highly problematic. Only the meticulous observation of plants, animals, and minerals *within* their local environment

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verbeelden, maar in maatschappij en tot burgerstaten verenigd, tot beschaafdheid gevormd, velen zelfs door gedenkstukken der oudheid, kunsten en vermaardheid van uitgevoerde daden beroemd, en door Godsdienstigheid uitmuntende.”

<sup>19</sup> Ibidem, 42-43: “Eerst toch staat hij over de ongewone groottee (sic!) van alles verbaasd; daarna verwondert hij zich over de verscheidenheid en den overvloed der gedaanten, zoodat hij schier moet wanhopen van dezelve allen te leeren kennen. Vervolgens denkt hij over den oorsprong van alles na, en uit welke stoffen, en op welke wijzen de Natuur een zoo grooten overvloed van dingen werke en uitvinde, hetzij uit harde en rotsachtige beginselen der aarde, hetzij uit die der rondomstroomende lucht, hetzij uit den strijd en overgang van beide. . . .”

<sup>20</sup> Ibidem, 28-29: “. . . dat alles, wat in de Natuur bestaat, door . . . eene onderlinge samenwerking gevoed wordt, en dat niets, afgescheiden van het overige, geheel op zich zelve bestaat.”

<sup>21</sup> Ibidem, 29: “Ofschoon de waarheid hiervan buiten alle bedenking is, is dit nogtans een gemeen gebrek, zich door de gansche Natuurlijke Historie verspreidende. . . .”

and the careful comparison of those observations on a global scale could lead to a new type of natural history that would help to identify and exploit the natural resources of a certain area. Such a 'new' natural history had to be based on field observations and the careful measurement and analysis of the air, water and soil.<sup>22</sup> Reinwardt later went so far as to claim that it must be considered a great misconception if a naturalist who wants to know more about the natural products of remote countries believes that specimens collected in the field can be properly analyzed in Europe. He was certain that those remote analyses would not at all contribute to constructing the "great building of science."<sup>23</sup> On the contrary, it would rather lead to ". . . a large number of superfluous names and uncertain and doubtful matters which would only cause confusion in science, and which cost others who wanted to use them fruitless efforts and precious time."<sup>24</sup>

To validate his point, Reinwardt referred to coral "plants" (*koraalgewassen*) which he had thoroughly investigated in the Archipelago. The naturalist, as he put it, who had not experienced and seen the corals in their environment, would think of them as rigid rocky lumps that never change their shape. Only naturalists who had observed corals in the sea water would recognize that they were created and continuously reshaped by marine animals. At the same time, Reinwardt continued, corals reveal that there is no clear boundary between earth and sea. One must even assume, as he put it, that the entire earth had apparently emerged out of the sea—a fact which sedentary naturalists would never realize.<sup>25</sup>

By announcing a 'new' natural history that differed wholly from the natural history as practiced by sedentary naturalists such as Temminck, Reinwardt thus offered his listeners an alternative account of the Malay Archipelago's nature. Instead of compiling descriptions of specific plants and animals, he introduced a more holistic narrative which was based on observations and measurements in the field. In Reinwardt's account, colonial nature did not remain static as it was bound to do in a museum. He rather constructed the natural scene as a dramatic play in which natural forces and elements such as volcanoes, lava streams, ash, the sea, rivers, caves, rocks and

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<sup>22</sup> *Ibidem*, 22-25.

<sup>23</sup> UB Leiden, BPL 2425, 20, 33-34: ". . . *het groot gebouw der wetenschap. . .*"

<sup>24</sup> *Ibidem*, 35: ". . . eene hoop van onnodige benamingen en onzekere en twijfelachtige en onbepaalde zaken, die alleen verwarring in de wetenschap brengen, en waaraan anderen die dezelve willen gebruiken, vruchteloos moeite en kostbaren tijd verspillen."

<sup>25</sup> Reinwardt, *Over hetgeen*, 31-33.

heavy rain staged a constant battle.<sup>26</sup> As Reinwardt pointed out, only a fearless travelling and measuring naturalist would be able to understand how this battle had shaped and continued to shape Java and the neighbouring islands. Such insights were not only essential to complete the natural history of the Malay Archipelago, but also to identify and exploit Java's natural wealth.<sup>27</sup>

Reinwardt's inaugural lecture shows again that he used a hybrid strategy to claim authority as a scientific traveller and to promote his fieldwork with the secret hope that the king would sponsor his planned publications. On the one hand, Reinwardt emphasized the economic utility of his approach, for only, as he put it, a travelling and measuring naturalist who dedicated his life to the public good was able to guarantee that the colony's natural wealth was exploited efficiently. On the other hand, he offered an attractive narrative that fitted within the king's larger aim of strengthening the cultural unity of his kingdom and its colonial annex. For in Reinwardt's account the Netherlands Indies—with Java as its crown jewel—appeared as the most fertile overseas possession of the Dutch Empire.<sup>28</sup>

Reinwardt's plea, however, remained unheeded. For since the late 1810s, influential individuals such as Johannes van den Bosch (1780-1844), a man with wide experience in the Indies and founder of the Society of Benevolence, warned the king and his advisors about the immense costs which the current administration of Java and the neighbouring islands would cause. In 1825, less than two years after Reinwardt's inaugural lecture, the king eventually acknowledged the urgency of the matter. In his annual speech to parliament he announced immediate and direct interventions in order to prevent a further rise of the public debts incurred by the colonies, which had almost doubled since the arrival of the General Committee in Java

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<sup>26</sup> *Ibidem*, 35-38.

<sup>27</sup> *Ibidem*, 44-47.

<sup>28</sup> Like late eighteenth-century French travellers, Reinwardt used a combination of sensual and bodily field experiences as key features to establish his authority in Europe. For an in-depth analysis, see Spary, "Self-preservation. French travels," 355-86. For a similar analysis but with a focus on Von Humboldt, see M. Dettelbach, "The stimulations of travel: Humboldt's physiological construction of the tropics," in *Tropical Visions in an age of empire*, ed. by Felix Driver, et al. (Chicago: University of Chicago Press, 2005), 43-53.

in 1815.<sup>29</sup> The subsequent appointment of Johannes van den Bosch as new governor-general of the Netherlands Indies in 1828 was thus a clear sign that the king had lost his confidence in the promise that the colony could be easily transformed into a profitable annex of the Dutch kingdom.<sup>30</sup>

## Teaching at Leiden University

The decline of Reinwardt's authority and status in the Netherlands was mirrored in his teaching activities at Leiden University. While in the aftermath of the Batavian Revolution, 'teaching' at universities had constituted an important vehicle to prove one's utility for society, in the Dutch kingdom, university teachers had been assigned to focus on the 'general education' of their students. Practical and useful subjects such as navigation, veterinary medicine and technical chemistry had to be taught at separate schools. Following the lead of the Prussian reformer Wilhelm von Humboldt (1767-1835—Alexander's older brother), it was felt that every university student should first receive a broad education before he or she started with a specialized training in a particular profession.<sup>31</sup> Medical students, for instance, were obliged to attend classes in mathematics, physics, botany, logic, Latin and Greek in their first year. All classes had to be taught in Latin except the courses in Dutch literature and economy.<sup>32</sup>

According to the public university calendar, the *series lectionum*, Reinwardt offered four or sometimes even five courses each semester.<sup>33</sup> The majority of his students came from well-to-do families in the provinces of

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<sup>29</sup> For a detailed analysis, see E. Horlings, "Miracle cure for an economy in crisis? Colonial exploitation as source of growth in the Netherlands, 1815-1870," in *Colonial empires compared. Britain and the Netherlands, 1750-1850*, ed. by Bob Moore, et al. (Aldershot: Ashgate, 2003), 145-51.

<sup>30</sup> Van den Doel, *Het rijk van Insulinde*, 48-50.

<sup>31</sup> W. Otterspeer, *Groepsportret met de dame*, vol. 3, *De werken van de wetenschap. De Leidse Universiteit 1776-1876* (Amsterdam: Bert Bakker 2005), 24-26 and 223-24; and B. Theunissen, 'Nut en nog eens nut'. *Wetenschapsbeelden van Nederlandse Natuuronderzoekers, 1800-1900* (Hilversum: Verloren, 2000), 13-36.

<sup>32</sup> H. Beukers, "Medical education in the Netherlands in the nineteenth century," in *History of medical education. Proceedings of the 6<sup>th</sup> international symposium on the comparative history of medicine—East and West*, ed. Teizo Ogawa (Tokyo: Saikon Publishing, 1983), 188.

<sup>33</sup> UB Leiden, AC II: Archief van Curatoren (1815-77), 216.

North and South Holland.<sup>34</sup> Beside chemistry (*chemia*) and pharmaceutics (*ars pharmaceutica*), Reinwardt taught medical botany (*rei herbariae fundamenta*), natural history (*historia naturalis*) and sometimes also geology and mineralogy. Reinwardt's chemistry classes were held at the chemical laboratory in the Nonnensteeg, a little street off the Rapenburg. His classes are well documented. Beside the records of a medical student, the university library in Leiden houses several boxes of Reinwardt's preparatory notes.<sup>35</sup> These show that Reinwardt lectured on organic and inorganic chemistry, physiology and sometimes even on technical chemistry. Occasionally he illustrated his classes by carrying out experiments in front of his students, who would then practice some of the techniques demonstrated after the lectures.<sup>36</sup>

From 1826 onwards, Reinwardt was assisted by his former student Anthony van der Boon Mesch (1804-74), an apothecary from Delft. On behalf of Reinwardt, the trustees appointed him as lecturer for chemistry in Leiden. Under Reinwardt's supervision, Van der Boon Mesch had written a thesis on the geology of Java's volcanoes based on Reinwardt's own geological observations and measurements on the island.<sup>37</sup> While Reinwardt taught at the university laboratory, Van der Boon Mesch held his classes in the laboratory of the Industry School (*industriecollege*) at the Aalmarkt in Leiden. The school had been established in 1825 on behalf of Willem I in order to improve the chemical, mathematical, and physical expertise of craftsmen, apothecaries and textile manufacturers in Leiden. Similar schools were established in Groningen, Utrecht, Liège, Leuven and Gent.<sup>38</sup>

Reinwardt's botanical courses were split into two parts. In the more theoretical course (*rei herbarium fundamenta*) he lectured about plant physiology—that is, the anatomy of plants—, plant geography, and the

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<sup>34</sup> Otterspeer, *Groepsportret met de dame*, 177.

<sup>35</sup> For the student notes, see UB Leiden, BPL 1280, Collegedictaat: Dictata in chemiam (1823-24). For Reinwardt's preparatory notes, see BPL 599: Lectiones chemicae; BPL 600: Lectiones de chemia organica et anorganica; BPL 601: Lectiones et adnotationes de chemia animalia et physiologia; BPL 602: Lectiones et adnotationes de chemia technica; and BPL 610: Adnotationes de experimentis suis chemicis

<sup>36</sup> UB Leiden, AC II: Archief van Curatoren (1815-1877), 270-3 (I), Annual report by Reinwardt, 1837.

<sup>37</sup> A.H. van der Boon Mesch, *Disputatio geologica de incendiis montium igni ardentium insulae Javae, eorumdemque lapidibus* (Lugduni Batavorum: Haak et Socios, 1826).

<sup>38</sup> On the establishment of industry schools in Leiden and elsewhere in the Netherlands, see N.B. Goudswaard, *Vijfenzestig jaren nijverheidsonderwijs* (Assen: Van Gorcum, 1981), 33-45, 133-8.

different taxonomic systems according to which plants were named and classified.<sup>39</sup> Reinwardt's second class (*historia plantarum*) was held in the *hortus*. In this class, which was only taught in spring and autumn, Reinwardt showed his students how to identify and harvest medicinal and other plants. The practical botanical classes in the *hortus* were open not only to medical students. In 1825, the local apothecaries' association, the Concordia, asked Reinwardt to teach extra classes for their apprentices. From 1826 onwards, these classes were given by his colleague Jan van der Hoeven (1801-68), who had been appointed as extraordinary professor of natural history in the same year.<sup>40</sup> Van der Hoeven, who came from a rich family of Rotterdam merchants, taught classes on natural history, anthropology, comparative anatomy and osteology, geology, mineralogy, zoology and pharmaceuticals. Owing to his former position as 'honorary custodian' of the National Museum in Leiden, Temminck allowed Van der Hoeven to use the museum collection for educative and other academic purposes.<sup>41</sup>

In his function as professor for botany and natural history, Reinwardt was also responsible for the university's botanical garden. Until his return from the Netherlands Indies in late 1822, the directorate had been held temporarily by the medical professor Gerard Sandifort (1779-1848). Sandifort had managed to convince the trustees of the university to build two new hot houses in which plants, shrubs and trees from the Cape, South America, Australia, and Asia could be cultivated. According to a catalogue compiled by Sandifort, the garden included more than 5000 plant species as of early 1821.<sup>42</sup> Under Reinwardt's direction, the garden again witnessed several infrastructural changes. Similar to Sandifort, Reinwardt initiated the establishment of new hot houses and a new heating system for the cultivation of orchids, palm trees and other exotic plants during the winter months.<sup>43</sup>

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<sup>39</sup> See the records of one of his students in UB Leiden, BPL 1497: *Dictata in rem herbariam*. His own preparatory notes can be found in UB Leiden, BPL 594 I-III: *Lectiones botanicae accedunt permultae adnotationes*.

<sup>40</sup> Bierman, *Van arsenijmengkunde naar arsenijbereidkunde*, 221-22.

<sup>41</sup> C.J. van der Klaauw, *Het hooger onderwijs in de zoölogie en zijne hulpmiddelen te Leiden* (Leiden: A.W. Sijthoff's Uitgeversmaatschappij, 1926), 11.

<sup>42</sup> On Sandifort's interim directorate, see T.W. van Heiningen, *Gerard Sandifort (1779-1848) in twee werelden* (Utrecht: Drukkerij Elinkwijk BV, 1995), 32-33; and W.K.H. Karstens and H. Kleibrink, *De Leidse Hortus. Een botanische erfenis* (Zwolle: Uitgeverij Waanders, 1982), 57-58.

<sup>43</sup> Karstens and Kleibrink, *De Leidse Hortus*, 62-65; and E.M. Terwen-Dionisius, "Vier eeuwen bouwen in de hortus, deel II," *Leids Jaarboekje* 73 (1981): 71-75.

Besides shipments from the botanical garden in Buitenzorg, Reinwardt regularly exchanged living plants and seeds with botanical gardens in Bonn, Greifswald, Münster, Göttingen, Munich, Gent, the Cape, Hamburg, Liège, Surinam, Paris, and London.<sup>44</sup> Another supplier of seeds and living plants and herbs was the German physician Philipp Franz Balthasar von Siebold, who had established a botanical garden close to the Dutch factory on Deshima in Japan.<sup>45</sup> A catalogue of the Leiden *hortus* compiled in 1831 lists several plants gathered by Von Siebold and his numerous Japanese helpers around Nagasaki Bay between 1824 and 1828.<sup>46</sup>

Since under Willem I academic professors were forced to offer general courses in their respective fields, Reinwardt was not able to use his teaching as a vehicle to promote his particular vision of nature. Reinwardt, who was used to teaching practical courses, had to spend much of his energy and money catching up with the latest developments in botany, natural history, geology and chemistry. In this new academic climate, his seven years in the Indies now turned out to be heavy burden.

## Another Setback

Between teaching and administering the botanical garden, Reinwardt tried to find time to prepare his travel account and a substantial publication on Java's flora, with the working title *Flora Javanicorum*. In 1825, the trustees of the university allowed him to employ as his assistant the Groningen apothecary Pieter Willem Korthals for one year.<sup>47</sup> But Reinwardt was not the only one working on a monograph of Java's flora. Also in 1825, Reinwardt's former assistant Carl Ludwig Blume returned to the Netherlands with a huge collection of botanical and zoological specimens, notes and illustrations. During the first months of his stay, Blume even lived in Reinwardt's house in

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<sup>44</sup> For a good overview of the institutions and people with which Reinwardt exchanged seeds, see Van Heiningen, *The correspondence of Caspar Georg Carl Reinwardt*, 461-727.

<sup>45</sup> For Siebold's botanical field work in Japan, see T. Yamaguchi, *Von Siebold and Japanese botany* (Kumamoto: Aitsu Marine Biological Station, Kumamoto University, 1997), 1-45.

<sup>46</sup> H. Veendorp and L.G.M. Baas Becking, *Hortus Academicus Lugduno-Batavus, 1587-1937* (1938; repr., Leiden: Rijksherbarium, 1990), 153-57.

<sup>47</sup> Karstens and Kleibring, *De Leidse Hortus. Een botanische erfenis* (Zwolle: Uitgeverij Waanders, 1982), 61-2.

the Nonnensteeg. His collection was temporarily stored in the orangery of the hortus.<sup>48</sup>

A few months after his return to Leiden, the Dutch government approached Blume about whether he would be willing to sell his botanical and zoological collection to the king. Temminck, who had also heard about the rich diversity of Blume's collection, had already handed in an official request to merge the collection with the specimens of the National Museum of Natural History in the nearby Hof van Zessen. Blume's reaction to the king's request was positive. Like Temminck a couple of years earlier, he offered his botanical and zoological collection to the king, but with several preconditions: apart from a financial compensation, he claimed the directorship of a new institution for botanical research as well as financial and political support for the publication of an illustrated *Flora Javae* which should, Blume suggested, comprise around 400 pages of text and 1600 partly coloured lithographs, 200 of them in folio format. Blume asked the government for a sum of 50.000 guilders spread out over several years.<sup>49</sup> He strengthened his claim by noting that Reinwardt's teaching and other obligations allowed the latter hardly any time to work on his *Flora*.<sup>50</sup>

Unlike Reinwardt's appeal, Blume's request did not go unnoticed in The Hague. After the Ministry of the Interior sought the advice of Temminck, the king decided to buy Blume's rich collection of dried animals skins, skeletons, minerals and fossils. Blume received a stipend of 5000 Dutch guilders, 2000 guilders for his collection of insects, dried animals skins, skeletons, and minerals, and 3000 guilders for his services as health officer in the Netherlands Indies. The collection, which was packed in sixty-two boxes, was handed over to Temminck in August 1828. Temminck was more than pleased with the quantity and good state of preservation of the items.<sup>51</sup>

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<sup>48</sup> For a detailed and thorough study of Blume's activities in Leiden see the excellent MA thesis of A. den Ouden which is stored in the library of the National Herbarium Leiden: A. den Ouden, "C.L. Blume, periode 1826-1832" (Master's thesis, Leiden University, 1979).

<sup>49</sup> Blume expected the entire publication would cost 163.500 guilders. For his calculations, made up in Leiden in March 1827, see NA The Hague, Ministerie van Binnenlandse zaken, 1813-1870, inv. 2778, Royal decision, 23 July 1827, no. 152.

<sup>50</sup> Den Ouden, "C.L. Blume, periode 1826-1832," 16-37.

<sup>51</sup> *Ibidem*, 21-32.

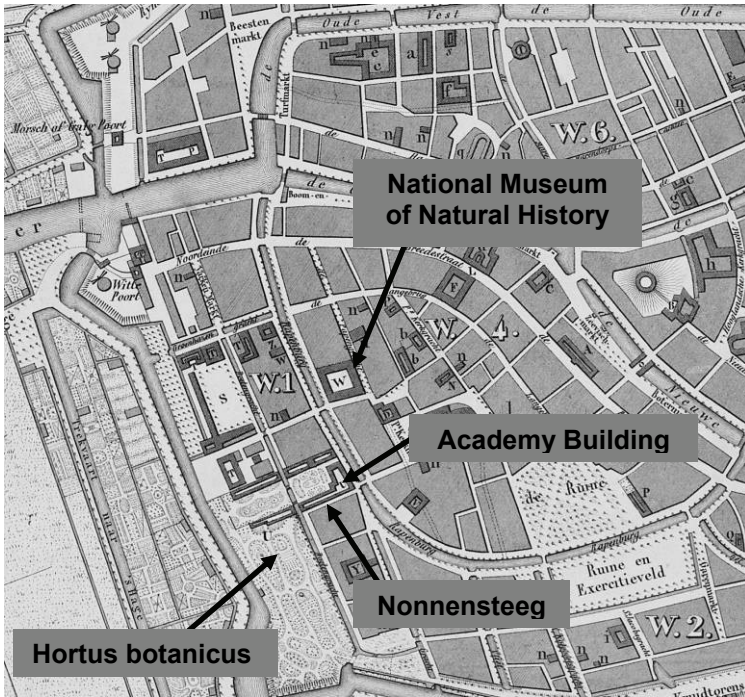


Figure 36: Section of a map of the Leiden city centre (1832).

Blume's second precondition, the publication of a *Flora Javae* was only realized after a series of lengthy negotiations.<sup>52</sup> When Blume sent his plans to the Ministry of the Interior, the king initially approved them on the condition that Blume would further discuss his proposal with Reinwardt and Jacobus Gijsbertus Samuël van Breda (1788-1867), professor of botany, zoology and comparative anatomy in Gent, in order to prevent double descriptions of the same plants. Van Breda was preparing a monograph on Javanese orchids and *asclepiadae* (milkweed) based on field notes, specimens and illustrations by Johan Conrad van Hasselt and Heinrich Kuhl, members of the Committee for Natural History of the Netherlands Indies, who had passed away shortly after their arrival in Java.<sup>53</sup>

<sup>52</sup> Ibidem, 33-46.

<sup>53</sup> P. Smit and Th. J.J. Kooien, "J.G.S. van Breda als botanicus, in het bijzonder zijn aandeel in de publicatie van de 'Genera et Species Orchidearum et Asclepiadarum quas in itinere per insulam Java...', in *Leven en werken van J.G.S. van Breda (1788-1867)*, ed. A.S.H. Breure, et al. (Haarlem: Hollandsche Maatschappij der Wetenschappen, 1979), 147-56; and Klaver, *Inseparable friends*.



Figure 37: Portrait of Carl L. Blume published in the third volume of the *Rumphia, sive commentationes botanicae*, published in 1847.

In the end, Reinwardt and Van Breda were confronted with a *fait accompli*. In July 1827, the king decreed that Temminck and Blume should start working on a joint publication on the natural history of the Netherlands Indies. Temminck was asked to write the volume on zoology and Blume the volume on botany. To finance the costly undertaking, the king granted Blume and Temminck 7000 Dutch guilders each, while Reinwardt was asked to hand over his private herbarium, illustrations and all the notes which he had compiled in the Netherlands Indies.<sup>54</sup>

Reinwardt agreed grudgingly. In December 1827, he promised Daniël Jacob van Ewijk—the responsible civil servant at the ministry of the interior in The Hague—to deliver his botanical and zoological notes to Blume and Temminck. But at the same time he complained that the new

<sup>54</sup> NA The Hague, Ministerie van Binnenlandse zaken, 1813-1870, inv. 2778, Royal decision, 23 July 1827, 152.

project would make much of his preparatory work for a travel account and *Flora Javanicorum* useless. Reinwardt was of course irritated about Blume's claim to be the only expert of Java's flora. Some of the discoveries Blume mentioned in his *Bijdragen tot de Flora van Nederlandsch Indië* (Contributions to the flora of the Netherlands Indies) were, according to Reinwardt, based on his own observations and notes which he had shared with Blume in the Netherlands Indies and which Blume had used without informing or asking him.<sup>55</sup> In the same letter, Reinwardt voiced similar concerns about the zoological notes and specimens which he had to hand over to Temminck. Reinwardt explained to Van Ewijk that despite his wide-ranging teaching and administrative duties he had already started to prepare his own publication on the flora and fauna of the Netherlands Indies. Beside the acquisition of expensive books which were not available in the library of the university, he had already prepared and arranged for a certain number of plant drawings.<sup>56</sup>

## The Foundation of a National Herbarium

Blume's third precondition was fulfilled in the spring of 1829. After months of negotiations during which Blume threatened to leave the country with his collection, the king agreed on establishing a national herbarium with Blume as its head.<sup>57</sup> Blume should receive an annual salary of 3000 guilders and was even decorated with an extraordinary professoriate without teaching obligations. Since the mayor of Brussels had agreed to provide a suitable venue, the new botanical institution (*'s Rijks Herbarium*) was to be established in the southern part of the Netherlands. The new institute was based on the herbaria of Blume, Reinwardt, Kuhl and Van Hasselt, Von

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<sup>55</sup> Ibidem, inv. 4379, letter Reinwardt to Van Ewijk, Leiden, 3 December 1827 and ibidem, letter Reinwardt to Ewijk, Leiden 12 December 1827, in which he wrote: "Van de daartoe gunstige gelegenheid gebruik makende, heeft hij met de uitgave zijner Bijdragen tot de Flora van Nederl.[andsch] Indie een algemeen beschrijving van de bekend geworden gewassen van die gewesten gegeven, en daartoe zonder mijne voorkennis, van het door mij aan hem medegedeelde gebruik gemaakt, zelfs van mijne waarnemingen en verzamelingen, gedaan op plaatsen die hij zelf niet bezocht heeft, en zulks zonder vermelding van het door mij verrigte of aan hem door mij medegedeelde, en derhalven klaarblijkelijk met het oogmerk om eene bekendmaking door mij zelve van mijne nasporingen te doen voor te komen, dezelve nutteloos te maken. . . ."

<sup>56</sup> Ibidem, inv. 4379, letter Reinwardt to Van Ewijk, Leiden, 3 December 1827.

<sup>57</sup> For a concise overview, see Den Ouden, "C.L. Blume, periode 1826-1832," 63-72.

Siebold and a collection of South African plants collected by Christiaan Hendrik Persoon.<sup>58</sup> The different herbaria remained in Brussels for only a couple of years. Owing to the political tensions in the summer of 1830, which eventually led to the establishment of the independent kingdom of Belgium, the entire collection returned to Leiden in the same year. Since Brussels was no longer part of the Dutch kingdom, Willem I finally moved the seat of the Herbarium from Brussels to Leiden, where around fifty boxes were temporarily stored in the orangery of the hortus.<sup>59</sup>

In order to create a solid foundation for the new institution in Leiden, the king decided to merge the herbarium of the hortus with the plant collection of the National Herbarium, with the new institution being accommodated in the rooms of the *hortus botanicus* in Leiden. The instructions for the new institution were not settled before February 1832. While Reinwardt claimed free and unlimited access to the collection for himself and his students, Blume advocated a more restrictive policy. Blume regarded the National Herbarium as a separate institution with no direct links with the university. In Blume's view, academic teachers such as Reinwardt should be granted only very limited access to the collection, in order to guarantee the exclusivity of the institution and its publications. In the end, Van Ewijk followed Blume's advice. According to article four of the instructions, Reinwardt and other specialists were granted access to the collection only with Blume's consent. Borrowing specimens for educational and other purposes also depended exclusively on Blume's good will.<sup>60</sup> To ensure adherence to this restrictive policy, Blume moved the plant collection of the National Herbarium to his house at the Rapenburg in 1834. Later the National Herbarium got accommodated on the ground floor of the National Museum of Natural History in the same street. The Royal Museum for Antiquities (Rijksmuseum van Oudheden) was housed in the same building.<sup>61</sup>

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<sup>58</sup> Van Steenis-Kruseman, "The collections of the Rijksherbarium," 30-31 and Den Ouden, "C.L. Blume, periode 1826-1832," 66-67.

<sup>59</sup> Smit, "The Rijksherbarium," 5-11.

<sup>60</sup> For a detailed history of the genesis of the instruction, see Den Ouden, "C.L. Blume, periode 1826-1832," 78-85.

<sup>61</sup> Van Steenis-Kruseman, "The collections of the Rijksherbarium," 31.

## Traces of an Alternative Account

Owing to Blume's wide-ranging-claims and publications—the first instalments of his *Flora Javae* came off the press in the winter of 1828—Reinwardt's plans to prepare a *Flora Javanicorum* turned out to be unrealistic. Owing to the lack of alternatives, Reinwardt thus focused his attention on transforming his field notes and excerpts into a coherent narrative with a strong focus on the geological features of Java and neighbouring islands. In this he was also unsuccessful, and the remnants of his efforts are now housed in the special collection of Leiden University's library.

In his unfinished manuscript, Reinwardt placed himself in the tradition of the Scottish farmer and entrepreneur James Hutton (1726-1797), author of a monograph entitled *Theory of the Earth with Proofs and Illustrations*, published in Edinburgh in 1795.<sup>62</sup> In contradiction to 'neptunists' who believed that basalt and other rock formations had been shaped in a primordial ocean, 'vulcanists' such as Hutton argued that a strong and extremely hot source in the interior of the earth had shaped its crust and underlying strata.<sup>63</sup> The debates between 'vulcanists' and 'neptunists' peaked in the 1790s and eventually sparked a whole series of geological field inquiries in Europe and elsewhere.<sup>64</sup> While previously mineralogists had often delegated the actual collection of specimens to their assistants, many now emphasized the importance of analyzing rocks in their natural environment. They were particularly attentive to the spatial relationship between different rock types and the observation of geological phenomena such as the eruption of volcanoes or earthquakes.<sup>65</sup> With his account, Reinwardt hoped to fill the gap for the Malay Archipelago, the geology of which had up to that moment only been superficially studied. Already in the Netherlands Indies, he had started to speculate about how an extremely hot force 'from below' had shaped the far-flung Malay Archipelago. In a letter from the Banda Islands to Van Marum he put it as follows: "After

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<sup>62</sup> For a brief biography of Hutton and contextualization of Hutton's work, see Oldroyd, *Thinking about the earth*, 92-97; and M.T. Greene, *Geology in the nineteenth century. Changing views of a changing world* (Ithaca: Cornell University Press, 1982), chapter 1.

<sup>63</sup> M.J.S. Rudwick, "Minerals, strata, fossils," in *Cultures of Natural History*, ed. N. Jardine et al. (Cambridge: Cambridge University Press, 1996), 266-71. For an analysis from a Dutch perspective, see E. den Tex, "Was basalt derived from water or from fire? Dutch contributions to an 18<sup>th</sup>-Century Controversy," in *Dutch pioneers of the earth sciences*, ed. by Jacques L.R. Touret, et al. (Amsterdam: KNAW, 2004), 33-41.

<sup>64</sup> Oldroyd, *Thinking about the earth*, 71-85.

<sup>65</sup> Rudwick, *Bursting the limits of time*, 41-44, 71-84.

all what I have seen here in the East Indian Islands, I had to say goodbye to the Wernerian system; *Hutton* is my man, and everything which one observes here, is a nice comment on his theory.”<sup>66</sup>

Reinwardt’s unfinished manuscript—200 handwritten pages—consists of two large sections. In the first part, he guides his readers to the Netherlands Indies by revising the entries of his field diary made during the sea passage to the Dutch colony. In the second part, Reinwardt changed the narrative mode and developed—as had Hutton—a more holistic vision of the historical development of the Malay Archipelago’s environment.<sup>67</sup>

Reinwardt opened the second part of his account by reviewing the different forces of nature such as water, wind and fire, which according to him, had shaped and continued to shape nature in the far-flung island world of the Malay Archipelago. The fact that the Malay Archipelago was encircled by a natural wall of coral reefs, small islands, narrow sea lanes and submarine rock formations had a tremendous impact on the region’s geology and nature. While the water in the deep sea of the Indian Ocean and the Pacific could move freely without any natural impediments, the sea within the Malay Archipelago formed a segregated area.<sup>68</sup> Since the mud in the water could not traverse the natural barrier around the Malay Archipelago, the material would be deposited on the shores or between different islands. This resulted in two distinct kinds of coastlines. While the coast towards the interior of the Archipelago was characterized by broad and flat alluvial banks, those facing the Indian Ocean and the Pacific featured high and steep rocks, or coral reefs that protected the region from the sea.<sup>69</sup>

Reinwardt saw his thesis confirmed by similar observations made by others along the coastline of mainland Southeast Asia. Not only along the east side of the Malay Peninsula, but also at the mouth of the Mekong delta and in the South China Sea one could recognize alluvial mud banks which would raise and enlarge the existent land and block rivers from flowing directly from the hinterland to the sea. Once the sand and mud banks had

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<sup>66</sup> NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Banda, 23 May 1821: “Na al het geen ik nu hier reeds op de O.I. eilanden gezien heb, heb ik het Wernersche system geheel vaarwel moeten zeggen; Hutton is nu mijn man, en al wat men hier ziet, is een schoone Commentarius op zijn stelsel.”

<sup>67</sup> For an in-depth analysis of contemporary voices who stressed the importance of a ‘geohistory’, see M.J.S. Rudwick, *Worlds before Adam. The Reconstruction of Geohistory in the Age of Reform* (Chicago: Chicago University Press, 2008).

<sup>68</sup> UB Leiden, BPL 2425, 20, 133.

<sup>69</sup> *Ibidem*, 134.

risen above sea level, fast-growing sea plants covered the area and stabilized it with their roots and trunks.<sup>70</sup> Rivers which brought mud from the hinterland of mainland Southeast Asia to the coasts—rivers like the Menam in Siam, the Mekong in Cambodia, the Red River (Reinwardt calls the river Sangkoi) in the province Tonkin in northern Vietnam) and the Yellow River even increased the velocity and intensity of this process.<sup>71</sup> Within the Malay Archipelago the situation was even more dramatic. Beside the mud carried by the rivers from mainland Southeast Asia to the archipelago, the islands would witness a whole array of natural forces such as fast-running water, heavy rain, erosion, and volcanic activity which continuously changed the physical appearance and environment of the area.<sup>72</sup>

In the last part of his unfinished manuscript, Reinwardt warned his readers that his account was only a first attempt to shed light on the working of the various natural forces in the Archipelago. Many more field measurements and observations would be necessary for a general ‘physical’ description of the Malay Archipelago. Such a description had to be based on a detailed analysis of the cyclical and divine interplay between soil, plants, volcanic activity, rain and wind on the different islands.

Reinwardt presented parts of his geological account of the Malay Archipelago in the form of lectures in front of the members of the First Class of the Royal Institute of Sciences in Amsterdam<sup>73</sup> and at a gathering of the Gathering of German Naturalists and Physicians (*Versammlung deutscher Naturforscher und Ärzte*) organized by Alexander von Humboldt in Berlin in late 1828. The latter reacted more than enthusiastically to Reinwardt’s elaborations and immediately initiated the publication of his lecture as a monograph. The Berlin Academy of Sciences (*Berliner Akademie der Wissenschaften*) published the lecture under the German title *Über den Charakter der Vegetation auf den Inseln des Indischen Archipels* (On the character of the vegetation on the islands of the Indian Archipelago).<sup>74</sup>

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<sup>70</sup> *Ibidem*, 137-41.

<sup>71</sup> *Ibidem*, 148: “. . . zij brengen het harde, logge, doode, en van de bewoonde wereld afgescheiden gedeelte der aarde wederom tot den kring van beweging, werking en leven terug.”

<sup>72</sup> *Ibidem*, 154.

<sup>73</sup> A reprint of this lecture can be found in De Vriese, *Reinwardt’s reis*, 101-18.

<sup>74</sup> C.G.C. Reinwardt, *Über den Charakter der Vegetation auf den Inseln des Indischen Archipels: Vortrag, gehalten in der Versammlung deutscher Naturforscher und Ärzte in Berlin am 20. Sept. 1828* (Berlin: Königliche Akademie der Wissenschaften, 1828). Von Humboldt’s enthusiasm is recounted in W.H. de Vriese, *Ons streven naar den waren roem*.

## Collecting in the Netherlands Indies

While Reinwardt struggled to find the time and the political and financial support to finish his ‘physical description’ of the Malay Archipelago, the neighbouring National Museum of Natural History in the Hof van Zessen witnessed the arrival of a large number of specimens, notes and illustrations from the Netherlands Indies which members of the Committee for Natural History of the Netherlands Indies had amassed on expeditions to West-Java, Makassar, Ambon, Celebes, New Guinea, Timor and Sumatra in the 1820s and 1830s. The Committee had been established in 1820 at Temminck’s behest and with the financial support of the king. Reinwardt was hardly involved in the organization of the Committee. It was in particular Temminck—with the consent of the king—who chose the travellers and issued detailed instructions about how the colony’s natural wealth and diversity should be investigated. According to a report by Wilhelm de Haan (1801-55), since 1825 curator for the collection of invertebrates at the *Rijksmuseum*, the number of insects had risen from 249 to 18.410 in 1834.<sup>75</sup> These specimens not only served as the basis for publications, but were also traded for other specimens held by natural historical museums in Europe such as the Fridericianum in Kassel, the Senckenberg Museum in Frankfurt, the Muséum national d’Histoire naturelle in Paris and the British Museum in London.<sup>76</sup>

Despite the large number of collectors in the Netherlands Indies the preparation of publications proceeded only slowly at first. In the early 1830s only a few articles and excerpts of letters had come off the press.<sup>77</sup> Some of the collected items had even been sent to the Muséum in Paris to speed up their description and publication. The collected fishes of Kuhl and Van Hasselt were for instance described by Georges Cuvier and Achille Valenciennes (1794-1865) in their *Histoire naturelle des poissons* (1828-1849).<sup>78</sup>

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*Eenige woorden van dankbare herinnering bij het afsterven van den hoogleraar C.G.C. Reinwardt* (Leyden: C.C. van der Hoek, 1854), 12-13.

<sup>75</sup> Gijzen, *’s Rijksmuseum van Natuurlijke Historie*, 44.

<sup>76</sup> Holthuis, *1820-1958. Rijksmuseum van natuurlijke historie*, 20-21; R. Visser, “Het rijksmuseum van natuurlijke historie in de 19<sup>de</sup> eeuw,” in *Het verdwenen museum. Natuurhistorische verzamelingen, 1750-1850* (Blaricum: V+K Publishing, 2002), 175-86.

<sup>77</sup> See for instance: W. de Haan, “Uittreksels uit de berigten van de heeren Boie en Macklot, geschreven aan boord van de Dijkzigt, gedurende hunne reis naar Java,” *Bijdragen tot de natuurkundige wetenschappen* 2 (1827): 480-89.

<sup>78</sup> Klaver, *Inseparable friends*, 2.



Figure 38: Specimen of a Vogelkop Tree-kangaroo (*Dendrolagus ursinus*), collected in New Guinea in 1828 now stored in the depot of NCB Naturalis in Leiden.

Owing to the rather slow publication of the results, it is not surprising that voices started to question the usefulness of the rather costly collecting enterprise. In a long letter to the Minister of the Interior in The Hague written in early 1836, Jean Chrétien Baud (1789-1859), since 1833 interim governor-general of the Netherlands Indies, complained about the inefficiency of the Committee for Natural History. Hardly any of the travellers, as he put it, had managed to publish their results and informed the general public in the Netherlands about the wealth of the colony. The majority of the material remained in the possession of some of the committee members or, in some cases, had already been published by foreign naturalists. The Netherlands had thus missed the honour of a large number of discoveries made at considerable expense to the colonial government in Batavia. In order to cut the annual cost of 40.000 guilders, Baud proposed that the minister restrict the naturalists spent collecting in the colony and that he send them back to the Netherlands to publish their findings as quickly as possible.<sup>79</sup>

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<sup>79</sup> NA The Hague. Binnenlandse zaken. Archief van het ministerie van Binnenlandse Zaken, inv. 4652, verbaal: 5 September 1837. Extract uit het register der resolutien van den Gouverneur Generaal ad-interim van Nederlandsch Indië in rade. Buitenzorg, 27 February 1836.

Baud's complaints did not go unanswered. Since the king and his minister felt uncertain how to answer the governor-general's request, they asked Temminck and Reinwardt for further advice. While Temminck complained mostly about the lack of financial support by the king and the unreliability of his collectors to report about their field work in an appropriate manner,<sup>80</sup> Reinwardt told the king that Temminck and his helpers had, as Reinwardt put it, spent years sorting, describing, classifying and naming an incredible number of new specimens. While voicing his support for these activities by emphasizing that they were a prerequisite for a worthwhile publication of the findings, however, Reinwardt again claimed that natural historians had to move beyond merely descriptive activities. Moreover, Reinwardt condemned all attempts to consider the discipline of natural history as an exclusively nationalist endeavour. In his view, all observations made and specimens accumulated in the Dutch colonies should belong to a shared pool accessible to naturalists all over Europe for their investigations.<sup>81</sup>

Reinwardt's appeal to practice a transnational natural history received little attention in The Hague at first. In the years after the Java-War (1825-30) and the violent secession of Belgium in 1830, especially, the king and his ministers sought to cut the costs associated with the colonial project in the Malay Archipelago, which had risen to forty million guilders per year. As explained in chapter five, the king had followed Johannes van den Bosch's advice to introduce a more conservative exploitation system (*cultuurstelsel*) in Java. Instead of stimulating free trade and 'liberating' Javanese peasants from so-called forced deliveries as the General Committee and Van der Capellen had done, Van den Bosch forced villages (*desa*) to use one fifth of their land for the cultivation of cash crops such as indigo, sugar and coffee. To compensate Javanese farmers for their agricultural services, the colonial

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<sup>80</sup> Unfortunately, I was not able to find Temminck's full answer in the archives of the Ministry of the Interior despite an in-depth research. Large parts of it are reprinted in Veth, *Overzicht van hetgeen*, 84-87.

<sup>81</sup> Ibidem, "Het gebruik van alle die wetenschappelijke hulpmiddelen tot Nederland en Nederlanders te willen bepalen, en als tot een monopolie te maken, zoude voorzeker, en te regt, als eene met den geest en het nuttig doel dier instellingen strijdige bekrompenheid gelaakt worden, terwijl eene geheel vrije en uitgebreide vergunning niet missen kan bij alle beschaafde volken aan Nederland alleen de eer en den roem, deze bronnen van kennis het eerst geopend te hebben, te doen toekomen."

government granted them a small salary which was, of course, far below the price of these mentioned products on the world market.<sup>82</sup>



Figure 39: A loose compilation of Kuhl's zoological field notes now stored in the archives of NCB Naturalis.

Probably owing to the enormous economic success of the cultivation system in the 1830s, the king eventually invited Reinwardt, Blume and Temminck to develop a plan for a larger publication on the natural history of the Netherlands Indies.<sup>83</sup> However, when the king and his ministers heard about the costs of the new multi-volume project, they asked the three naturalists to cut expenses by lowering the salaries of the active members of the Committee for Natural History and scrapping a volume on ethnography, geography and geology. In their reply, Reinwardt, Blume and Temminck defended the project by reminding the king that it would be a rather awkward situation if the only available monographs dealing with Java and the neighbouring islands were Raffles's *History of Java* (1817) and Crawfurd's *History of the Indian Archipelago* (1820), both published in English. The last major Dutch volume on the Malay Archipelago to come off the press was François Valentijn's *Oud- en nieuw Oost Indiën* (1724-26) a century earlier. According to the three naturalists, the reasons for the lack of Dutch engagement with such projects were wide-ranging. Neither the king, nor booksellers would currently dare to finance such costly endeavours. Moreover,

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<sup>82</sup> Van den Doel, *Het rijk van Insulinde*, 48-58.

<sup>83</sup> On the economic success of the cultivation system see for instance: Horlings, "Miracle cure for an economy," 153-57.

it would be difficult to find well-trained draftsmen, engravers and lithographers in the Netherlands who had the skills to produce accurate plates of landscapes, people, animals and plants.<sup>84</sup>

Apparently their complaints struck a chord. In February 1839, one year before his abdication, the king eventually agreed to sponsor a multi-volume book project with the working title *Verhandelingen der Nederlandsche Natuurkundigen betreffende de voortbrengselen en gesteldheid der Nederlandsche Overzeesche bezittingen* (Proceedings of Dutch naturalists regarding the products and present state of the Dutch overseas possessions). The volumes were supposed to comprise field reports, observations, and illustrations produced by members of the Committee for Natural History and scientific descriptions of specimens that had been collected in the Netherlands Indies and were stored in the National Museum of Natural History and the National Herbarium in Leiden. The king even invited Temminck to include material from other Dutch travellers and administrators who had investigated and visited the Netherlands Indies. However, all contributions had to be written either in Dutch or Latin. In order to maintain the ‘national flavour’ of the monographs, French—the leading language for natural historical publications at that time—was ruled out. The publication project was also well-funded. The king allowed Temminck, Blume, Reinwardt and Jan van der Hoeven a sum of 36.000 guilders to be spent within a period of three years from 1839 onwards.<sup>85</sup>

Officially the project was steered by Temminck, director of the Museum of Natural History in Leiden. Reinwardt, Blume and Van der Hoeven were supposed to support and assist Temminck and his staff at the museum to screen, arrange and describe the abundantly available raw material. In a long letter to the king which preceded the king’s decision, the Minister of the Interior Hendrik Merkus de Kock (1779-1845), explained and reflected upon Temminck’s leading role in the steering committee. According to De Kock, Temminck had a proven record of splendid natural historical publications and he had developed the museum into an institution recognized across Europe. Reinwardt and Blume scored much lower in his esteem. While Reinwardt had published hardly anything about his stay in the

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<sup>84</sup> NA The Hague, Ministerie van Binnenlandse Zaken, inv. 4670, verbaal: 12 October 1838. Rapport aan zijne excellentie den Heere Minister van Binnenlandsche zaken door de ondergetekende Gecommitteerden in de zaak der natuurkundige commissie op Java. Leiden, 9 October 1838.

<sup>85</sup> NA The Hague, Algemene Staatssecretarie en Kabinet des Konings, inv. 4450, royal decision, 10 February 1839, no. 101.

Indies, Blume's complex personality would make it difficult to finish the project within a fixed period. Nonetheless, in order to prevent tensions, Reinwardt, Blume and Van der Hoeven had to be involved in the publication project as regular members of the steering committee.<sup>86</sup>

The *Proceedings*, which came off the press between 1839 and 1847, comprised in total three volumes delivered in twenty-nine instalments.<sup>87</sup> While the first volume dealt with zoology, the second and third volume focused on botany and ethnography. Each volume was printed in large folio format and included articles and descriptions by the members of the Committee for Natural History and the staff of the National Museum of Natural History in Leiden. The articles in the volume on zoology were mainly written by Salomon Müller, who had returned from the Indies in 1837, Hermann Schlegel (1804-84), curator for vertebrates, and Wilhem de Haan, curator for invertebrates at the National Museum. Their articles discussed and described a large number of mammals, fishes, reptiles, birds and insects that had been collected and observed in the Malay Archipelago. The volume on botany contained eleven papers by Pieter Willem Korthals, who had endowed the National Herbarium with a large number of new plant specimens. In his articles, Korthals gave detailed descriptions of different plant genera, such as the carnivorous *Nepenthes* or evergreen trees and shrubs (*Nauclea*). The third and last volume of the *Proceedings* on ethnography (*Land- en Volkenkunde*) contained reports of expeditions to Ambon, New Guinea, the Banda Islands, Timor, and Borneo. The written travel accounts were accompanied by eighty-six lithographs showing various maps, landscape views, volcanoes, local inhabitants, ethnographical objects such as baskets and weapons, and views on the scattered Dutch settlements in the Malay Archipelago.<sup>88</sup>

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<sup>86</sup> *Ibidem*. Attached to the royal decision is a letter of the Minister of the Interior to the king, dated 24 January 1839.

<sup>87</sup> For exact publication dates of the individual installments, see A.M. Husson and L.B. Holthuis, "The dates of publication of "Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche Overzeesche bezittingen," *Zoologische mededeelingen* 34:2 (1955): 17-24.

<sup>88</sup> For an in-depth discussion of the illustrations of all volumes, see J. Bastin and B. Brommer, *Nineteenth century prints and illustrated books of Indonesia with particular reference to the print collection of the Tropenmuseum, Amsterdam. A descriptive bibliography* (Antwerpen: Het Spectrum, 1979), 15-8.



Figure 40: Lithograph of a herald in Amarassie (Timor) in the ethnography volume of the *Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche Overzeesche Bezittingen* (1839-44).

Financially, the sumptuously produced Proceedings were only a modest success. A substantial number of copies—only 250 came off the press—were ordered by the Dutch government and spread among ministries, learned societies and natural historical museums in the Netherlands and abroad. In 1846, the Academy of Natural Sciences in Philadelphia noted the arrival of several instalments of the Proceedings in their library.<sup>89</sup> Apparently the monographs also served as a diplomatic gift. A catalogue of the State Library in New York reveals that the Dutch consul donated a copy on behalf of the Dutch king.<sup>90</sup> Booksellers in the Netherlands and abroad could purchase each of the instalments for 5,40 guilders with plates and 3,40

<sup>89</sup> *Proceedings of the academy of natural sciences of Philadelphia* 3 (1846-47): 131-32.

<sup>90</sup> *Documents of the senate of the state of New-York*. 1:30 (1849): 137.

guilders without plates. A complete set thus cost 159,30 guilders. Regular costumers had to pay between 200 and 271 guilders in bookshops to acquire the three monographs.<sup>91</sup>

## Conclusion

By following Reinwardt to Leiden, this chapter has shown that in the 1820s the city witnessed the emergence of different approaches to the study of natural history which were to remain influential in the Netherlands throughout the nineteenth century. The success or failure of each of these styles was closely connected to the status and authority of several individuals and the economic and political situation of the Dutch kingdom. As a wealthy aristocrat and owner of a large private natural historical cabinet, though one who had never received an academic degree, Coenraad Jacob Temminck promoted a natural history based on the collection, preparation, precise description and classification of a large number of natural specimens. Temminck buttressed his claim of authority by referring to his reputation as an outstanding bird expert, author of illustrated monographs and owner of a unique and valuable private collection of stuffed birds. As director of a new 'national' museum for natural history, Temminck continued this approach, but on a much larger scale. His new status now allowed him to establish and control a global network of collectors who endowed the museum with a rapidly growing number of specimens, notes and illustrations. The majority of the new material stemmed from the Dutch possessions in the Netherlands Indies.

In contrast to Temminck, Reinwardt's bid for scientific authority was based on his claim of being able to manage the complexities of investigating nature in the field. In both his inaugural lecture and his unfinished travel account, Reinwardt portrayed himself as an heroic traveller and virtuous administrator who had risked his life in the colonies for the public good. Despite many perils from diseases to unfavourable weather conditions, he had succeeded in his efforts to collect a large number of specimens, make observations and take measurements in an effort intended ultimately to maximize the productivity of the colony. Even on the top of smoking volcanoes he had mustered the courage to check and read his barometer and thermometer and enter his observations in his travel diary. In the course of creating his self-portrait, Reinwardt passed over the many

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<sup>91</sup> Bastin and Brommer, *Nineteenth century prints and illustration*, 15.

porters, guides, civil servants, gardeners, translators, draftsmen, and others who had in fact helped him to investigate, structure, name, manage and improve an unknown environment and society.

Reinwardt's appeal to the king and his ministers to offer him the institutional background and financial support to publish a *Flora Javanicorum* and a 'physical geography' (*physikalische aardbeschrijving*) remained unheeded in The Hague. He instead was forced to spend his time and energy on managing the botanical garden and teaching medical students botany and chemistry. The reasons for this royal neglect laid in colonial politics. Even as Reinwardt was publicly promoting his fieldwork and his planned publications in the mid-1820s, Willem I and his advisors were realizing that the General Committee and Van der Capellen had failed to set up an efficient exploitation system on Java. Colonial debts were increasing and the outbreak of the Java War in 1825 was a harbinger of an even more costly future. Since Reinwardt had functioned as an important colonial advisor during these early years, it is not surprising that the colony's problems also damaged his reputation as an able administrator and investigator simply by association.

Reinwardt's pretensions to be the acknowledged expert on the natural history of Java was the arrival of his former assistant, Carl Ludwig Blume, who reached Leiden shortly after he did. While Reinwardt had lost much of the material he and his numerous helpers had collected in the colony due to shipwreck, Blume returned with an incredible amount of dried specimens, notes and a few preliminary publications. This 'private' herbarium was eventually the trump card that enabled Blume to establish himself as an expert of Java's flora. Owing to the growing royal interest in colonial natural history, he was able to claim the directorship of a new national institution for botanical study, a professorship at Leiden University and the financial support for a series of monographs on the flora of Java. As director of the National Herbarium Blume eventually obtained such a strong quasi-monopoly on the interpretation of Java's flora that he could compel Reinwardt and other plant collectors to hand over their collections and notes to his institution, where they were locked away even from the very people who had collected them in the first place.

For Reinwardt, the situation could have been worse. Although he never managed to receive the status and reputation of an acclaimed traveller and expert of Java's flora, his position as director of an academic garden and permanent professor at Leiden University allowed him to remain active in the field. In the years until his retirement in 1845/46, he intensified his

contacts with old friends and gave many lectures at learned societies in the Netherlands and abroad. Moreover, he continued to advise the government in The Hague on a broad array of practical issues such as the cultivation and exploitation of economically useful crops and the detection of natural resources in colonial areas. After his death in 1854, however, the public's memory of Reinwardt faded away. For highly specialized practitioners of geology, botany, zoology, mineralogy and other emerging disciplines, actors such as Reinwardt, whose careers and identities were based on their 'virtue' and 'utility' for the sake of the public good, appeared as odd relicts of a long-forgotten era.

