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

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# 3

## *Sociability as a Vehicle for a Career*

*You know the odd, inexplicable inspiration  
which makes one return to botanical work.*

Letter Reinwardt to Van Marum,  
Batavia, 1 January 1817.<sup>1</sup>

When Reinwardt commenced his new position as director of the Jardin du Roi in 1808, the political situation was fragile in the Netherlands. In particular, the appointment of Louis Napoleon Bonaparte (1778-1846) as king of the Netherlands in the summer of 1806 had stirred tensions among the Batavian administrators. While his brother hoped that a strong French sovereign would guarantee the political integrity of the country, many Dutch patriots feared that the establishment of a 'monarchy' would endanger their republican ideals for which they had fought during the Batavian Revolution in 1795. Various pamphleteers and intellectuals such as Maria Aletta Hulshoff (1781-1846) and David Jacob van Lennep questioned the legitimacy of the new king and refused their allegiance. In order to secure his position, Louis Napoleon pursued a policy that aimed at reconciling patriots and Orangists under the banner of a 'constitutional' monarchy with him as a strong sovereign.<sup>2</sup>

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<sup>1</sup> NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Batavia, 1 January 1817.

<sup>2</sup> Van der Burg, *Nederland onder Franse invloeden*, chapter 2.

A core part of this policy was the preparation of a new constitution, which was meant to cement the king's central role in the new monarchy above all other representative bodies. The complex history of the constitution illustrates how Louis Napoleon first balanced the different positions and then interfered in an effort to secure his central role in the new state.<sup>3</sup>



Figure 17: Portrait of Louis Napoleon Bonaparte (1778-1846).

Beside the new constitution, Louis Napoleon's government launched various projects to centralize and improve the country's public health care, legal system, infrastructure, agriculture, processing industry and education.<sup>4</sup> Moreover, he initiated the establishment and enlargement of splendid palaces, ample parks, a royal botanical garden, a menagerie, national art gallery and museums. In order to realize these prestigious projects he hired, among others, the French architect Jean-Thomas Thibault (1757-1826), his Dutch colleague Johan Ph. Posth (1763-1831), the landscape

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<sup>3</sup> Van der Burg, "Transforming the Dutch Republic," 151-70.

<sup>4</sup> See Van der Burg, *Nederland onder Franse invloed*, chapters 3-8. For an overview of a few infrastructural projects, see, for instance, W. Uitterhoeve, *Cornelis Kraijenhoff, 1758-1840. Een loopbaan onder vijf regeringsvormen* (Nijmegen: Vantilt, 2009), chapter 8.

architects Johan David Zocher sr. (1763-1817) and his son Johan David Zocher jr. (1791-1870).<sup>5</sup> Louis Napoleon hoped that such a policy would dispel all doubts among radical and moderate patriots and Orangists about a ‘constitutional’ monarchy with him as autocratic monarch.

As director of the new Jardin du Roi and the menagerie, Reinwardt became directly involved in one of these prestigious projects. While Louis Napoleon first considered his palace in Baarn a suitable venue for the royal garden, Reinwardt suggested that the king establish the new institutions in the park of his residency in Haarlem, Paviljoen Welgelegen. The soil and climate there offered an ideal natural environment for the acclimatization and cultivation of various exotic, medical and economic plants. Moreover, the proximity of Paviljoen Welgelegen to the capital Amsterdam would make it an attractive place for domestic and foreign visitors.<sup>6</sup> When Louis Napoleon’s private physician Matthias van Geuns (1735-1817) confirmed Reinwardt’s judgment, the king followed the advice and confirmed Haarlem as new venue.<sup>7</sup>

An analysis of Reinwardt’s activities as director of the royal botanical garden and menagerie is presented in the first part of this chapter. The second part reconstructs his social activities in Haarlem and later in Amsterdam. Of particular importance was his friendship with Martinus van Marum, secretary of the Dutch Society of Sciences (Hollandsche Maatschappij der Wetenschappen) and director of Teyler’s Museum, who helped advance his further career. Only with the support of Van Marum did Reinwardt receive access to these learned circles in Haarlem. Van Marum

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<sup>5</sup> P. Rem, “De paleizen van Lodewijk Napoleon en hun inrichting,” in *Lodewijk Napoleon. Aan het hof van onze eerste koning, 1806-1810*, ed. Paul Rem, et al., 20-35 (Walburg Pers: Zutphen, 2006); Ben Groen, “De tuinen van Lodewijk Napoleon,” in *Lodewijk Napoleon. Aan het hof van onze eerste koning, 1806-1810*, ed. Paul Rem, et al., 37-46 (Zutphen: Walburg Pers, 2006); J.G. Kikkert, *Louis Bonaparte (1778-1846). Koning van Holland* (Rotterdam: Donker, 1981), 58-68; and E. Koolhaas-Grosfeld, “Inleiding, Lodewijk Napoleon en de Nederlandse samenleving. Verwachtingen, plannen en projecten,” in *Lodewijk Napoleon en de kunsten in het koninkrijk Holland*, ed. E. Koolhaas-Grosfeld, et al. (Zwolle: Waanders Publishers, 2007), 25.

<sup>6</sup> E. van der Pool-Stofkoper, “Verwachtingen en werkelijkheid: parken en tuinen van het domein Welgelegen in de periode 1808-1832,” in *Paviljoen Welgelegen 1789-1989. Van buitenplaats van de bankier Hope tot zetel van de provincie Noord-Holland*, ed. F.W.A. Beelaerts van Blokland (Schuyt & Co: Haarlem, 1989), 126.

<sup>7</sup> E. Starkenburg, “La Santé et salubrité du Pays’. Het streven van Lodewijk Napoleon naar een gezonde woonomgeving,” *Lodewijk Napoleon en de kunsten in het koninkrijk Holland*, ed. E. Koolhaas-Grosfeld, et al., 307-10 (Zwolle: Waanders Publishers, 2007).

and Reinwardt shared a deep passion for experimental chemistry and the cultivation of foreign and exotic plants and the two men stayed in close contact until Van Marum's death in 1837.<sup>8</sup> Although Reinwardt already possessed a vibrant network in Amsterdam, it is highly likely that Van Marum also arranged for his friend to be made a member of the First Class of the Royal Institute of Sciences, Literature and Fine Arts (Koninklijk Instituut van Wetenschappen, Letterkunde en Schoone Kunsten) which Louis Napoleon founded in Amsterdam in 1808. Although the Royal Institute was never as active as the learned societies in Haarlem, Middelburg or Rotterdam, it provided a forum in which learned men such as Reinwardt and Van Marum could come together to present and promote their expertise.

This chapter thus illustrates the close relationship between science and sociability in the years after the Batavian Revolution, and how these enabled Reinwardt to further his career. By the time Napoleon forced his brother Louis Napoleon to abdicate the throne and leave the country in summer 1810, Reinwardt's status and position as a plant expert and chemist were secure. As extraordinary professor of chemistry and pharmaceutical art at Amsterdam's Athenaeum Illustre and a member of various learned societies, Reinwardt was a well connected figure ready to continue his career in a colonial context. But that is the topic of the fourth and fifth chapter.

## Paviljoen Welgelegen: A Royal Garden in Haarlem

Reinwardt commenced his new position as royal gardener in Haarlem in late 1808. Originally, the palace Paviljoen Welgelegen had been built by the wealthy banker and merchant Henry Hope. Like other wealthy men of affairs in Amsterdam, Hope used the palace as country seat outside of the city for the summer months.<sup>9</sup> Hope was co-owner of the Amsterdam company, Hope & Co, which was specialized in large financial transactions between European powers. The company also traded grain, wood, potash, various colonial commodities, diamonds, gold, silver, seeds, textiles, ammunition,

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<sup>8</sup> The extensive correspondence between Reinwardt and Van Marum can be found in the Noord-Hollands Archief in Haarlem. For detailed excerpts of the correspondence, see T.W. van Heiningen, *The Correspondence of Caspar Georg Carl Reinwardt*,

<sup>9</sup> R. van der Laarse, "De hang naar buiten. De notabele levensvormen van het Amsterdamse handelskapitaal," In *Beelden van de buitenplaats. Elitevorming en notabelencultuur in Nederland in de negentiende eeuw*, ed. Rob van der Laarse, et al., 25-48 (Hilversum: Veloren, 2005).

and cochineal, which they acquired in the Middle East, Northern and Central America and subsequently sold in Europe or Russia.<sup>10</sup> Owing to the relative decline of their business, the company also sponsored the Amsterdam Society of Dutch Chemists, whose experimental work aimed at improving the chemical processes necessary to purify or refine imported raw materials.<sup>11</sup>

Between 1769 and 1785, Hope had purchased nineteen parcels of land near Haarlem and not far from Amsterdam. The new venue was situated in the so-called Krommelaan area, which Albrecht of Bavaria had given to the city of Haarlem in 1390. In the middle of the seventeenth century, the southern part of the area had been transformed into a garden complex comprising around a hundred parcels of between 90 and 500 square meters. The parcels were first owned by Haarlem's administrative and learned elite.

In the course of the eighteenth century, the size of these parcels increased while the numbers of owners decreased. Many Amsterdam merchants bought several parcels at the same time and subsequently merged them into larger garden complexes.<sup>12</sup> Hope's new neighbour in Haarlem, for instance, was Egbert de Vrij Temminck (1700-1785), a mayor of Amsterdam and director of both the East India Company and West India Company. De Vrij Temminck even set up a private botanical garden on his piece of land.<sup>13</sup>

The establishment of Hope's new country seat, Paviljoen Welgelegen, next to the city's municipal forest, the Haarlemmerhout, involved a large reorganization of the whole area. In 1785, the Haarlem city council accepted the proposal of Hope's German architect, Johann Georg Michael (1738-1800), to build a thirty-two feet broad alley and a foot path from the entrance of his house to the Spanjaardenlaan at the southern boundary of the forest. Michael eventually transformed the Haarlemmerhout into a landscape garden with long winding paths and roads, flowering shrubs, vegetable gardens, and varied forest and tree arrangements.<sup>14</sup> The neo-

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<sup>10</sup> Buist, *At spes non fracta*, 1-154.

<sup>11</sup> On the connection between the Hope brothers and the Amsterdam chemical community, see Roberts, "An arcadian apparatus," 251-76.

<sup>12</sup> M. Glaudemans, *Amsterdams Arcadia. De ontdekking van het achterland* (Eindhoven: 2000), 118-28.

<sup>13</sup> B.C. Slingers, "Henry Hope's vermakelijke buitenleven en de Haarlemmerhout," in *Paviljoen Welgelegen 1789-1989. Van buitenplaats van de bankier Hope tot zetel van de provincie Noord-Holland*, ed. F.W.A. Beelaerts van Blokland (Haarlem: Schuyt & Co, 1989), 28.

<sup>14</sup> *Ibidem*, 29-39.

classical palace, which comprised large representative rooms for Hope's substantial art collection, was erected on the west side of his property.<sup>15</sup> When French troops invaded the country in 1794/95, Hope left the Netherlands and settled in Britain, but it was not until 1808 that he finally sold Paviljoen Welgelegen and the surrounding land to Louis Napoleon for 300.000 guilders.<sup>16</sup>

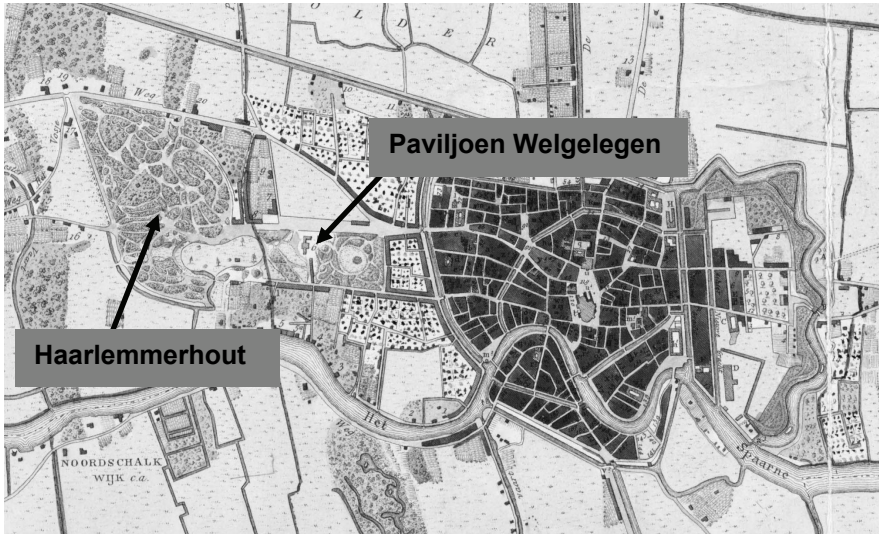


Figure 18: Map of Haarlem by F.J. Nautz, with Paviljoen Welgelegen and Haarlemmerhout marked.

Michael's reorganization of the landscape in the Haarlemmerhout formed an important basis for Louis' Napoleons own royal botanical garden and menagerie. From August 1808 until May 1809, Reinwardt and Johan Meerman (1753-1815), Director General for Education and Sciences (Directeur-generaal van onderwijs en wetenschappen) discussed and developed the exact layout of the garden. Johan David Zocher, sr., used the information as the basis for a construction plan which he finished in the

<sup>15</sup> J. Nederlof, "Bouwgeschiedenis en architectuur," in *Paviljoen Welgelegen 1789-1989. Van buitenplaats van de bankier Hope tot zetel van de provincie Noord-Holland*, ed. F.W.A. Beelaerts van Blokland (Haarlem: Schuyt & Co, 1989), 41-52.

<sup>16</sup> M.G. Buist, "Henry Hope, merchant-bankier, bouwheer van Welgelegen," in *Paviljoen Welgelegen 1789-1989. Van buitenplaats van de bankier Hope tot zetel van de provincie Noord-Holland*, ed. F.W.A. Beelaerts van Blokland (Haarlem: Schuyt & Co, 1989), 18-25.



course of 1809.<sup>17</sup> According to this plan the garden comprised an orangery, various beds for domestic plants, fruit, and herbals, a hot house for exotic plants, an arboretum, a separate garden for fruit trees and vegetables, and a house for a collection of dried plants, a library and perhaps even a small laboratory. All these elements were smoothly integrated into the landscape. Moreover, Meerman and Reinwardt prepared a list of dead and living animals to be bought for the new menagerie. Guiding framework for their planning was the Jardin des Plantes of the National Museum of Natural History (Muséum national d'Histoire naturelle) in Paris.<sup>18</sup>

Like the royal garden in Paris, the garden in Haarlem had thus various functions. It illustrated for domestic and foreign visitors the wealth and prestige of the kingdom. It functioned as a place where new medicinal and economically rewarding plants could acclimatize. And, finally, the garden had a political function, creating a space where citizens could sensually engage in and gradually identify themselves with the kingdom's environment. Nature thus appeared as a sublime spectacle successfully disciplined by the king's gardeners. To attract the visitor's attention, elements such as caves, hills, tree arrangements, exotic flowers, shrubs and unexpected views formed an essential part of the garden's design.<sup>19</sup>

Reinwardt commenced his position as director of the garden at Paviljoen Welgelegen in July 1808, employing as his new secretary his former Harderwijk disciple, Jacob Vosmaer (1783-1824). Antoine Alpy, owner of a large number of living animals, became director of the menagerie, and the Leiden planter Hermanus Schuurmans Stekhoven (1757-1855) was appointed head gardener. Both received accommodations in the northern part of the park. Reinwardt and Daniel J. Guicherit, whom the king had

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<sup>17</sup> For a reprint of Zocher's construction plan, see C. Oldenburger and J. Oldenburger, *Zocher on-line. Groenprojecten van de Zochers in perspectief. Landschapsarchitectuur in 19<sup>de</sup> eeuw Nederland* (Amsterdam: Oldenburgers Historische Tuinen, 2009). Available online: <http://www.historischetuinen.nl/oldenburgers/pdf/zocher-online.pdf> (accessed: 12 July 2011).

<sup>18</sup> L. Brummel, "De zorg voor kunsten en wetenschappen onder Lodewijk Napoleon," *Publicaties van het Genootschap voor Napoleontische studien* 1 (1951): 14-26.

<sup>19</sup> E. Koolhaas-Grosfeld, "Nature and culture II," in *Dutch culture in a European perspective*, vol. 2, *1800: Blueprints for a national community*, ed. J. Kloek, et al., 333-42 (Assen: Royal van Gorcum, 2004). On the interplay between gardens and revolutionary politics in France, see Spary, *Utopia's garden*, chapter 5. A more general survey of the form and function of gardens around 1800 is provided by N. Robin, "The influence of scientific theories on the design of botanical gardens around 1800," *Studies in the history of gardens & designed landscapes* 28:3&4 (2008): 382-99.

appointed as administrator of the entire royal domain, were lodged in a house closer to the palace.<sup>20</sup>



Figure 19: View of the Paviljoen Welgelegen with visitors strolling through the park.

As director of the new garden, Reinwardt regularly received seeds and plants from various plant experts from within the Netherlands and abroad. In 1809, for instance, Meerman forwarded him a box with around twenty seeds which an unknown planter from Nuremberg had sent to Haarlem on his own initiative. Although Reinwardt usually declined such shipments, he advised Meerman to make an exception because the box possibly contained unknown ‘oeconomic’ plants which might help to improve domestic agriculture. Reinwardt further asked Meerman whether he could plant the seeds in the royal garden in order to propagate more seeds to learn more about the efficient cultivation of the crops.<sup>21</sup>

Although Reinwardt and the king’s architect, Thibault, had quickly agreed on the exact layout and positioning of the new garden, actual construction work proceeded slowly. At the end of 1809, neither the public menagerie nor the garden had been completed. The wild animals—about twenty-five of them, including a lion, a bear, a wolf, a panther, birds, a tiger

<sup>20</sup> Van der Pool-Stofkoper, “Verwachtingen en werkelijkheid,” 126, 129-30.

<sup>21</sup> MM The Hague, letter Meerman to Reinwardt, Haarlem, 10 April 1809.

and several monkeys—had to be accommodated in the nearby coach house and the palace's stables. The useful exotic, 'oeconomic' and medical plants were stored in the old orangery. Already in March 1808, Reinwardt warned the administrators of the king:

Only just in time and with difficulty, however, I managed to rescue and store the plants already present in the king's garden during the last winter season, not only in the small orangery but also in the pineapple greenhouses, the stables and partly also at good friend's places. This won't be possible during the next winter of 1809, on the one hand because the number of plants has already risen and will further increase . . . through cultivation, shipments of seeds and crops, etc., and, on the other hand, because it is highly likely that the mentioned storage places will be used for other pursuits, and regardless they are not adequate for a severe winter. This means that if the greenhouses, orange houses, etc. as scheduled in the new large plan aren't either entirely, or at least partly, finished before the next winter season, then other means will have to be found and or expenses have to be made which are not yet incorporated in the budget.<sup>22</sup>

In the end, the garden and the menagerie were never fully built; only remnants of it are visible on later maps. After a visit to Paviljoen Welgelegen in May 1809, Louis Napoleon suddenly decided to move the animals, plants

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<sup>22</sup> NA The Hague, Ministerie van Financiën: Kroondomein, 1806-1810, inv. 57, letter Reinwardt to I.A. Twent, Haarlem, 3 March 1809: "Hoewel ik de planten, nu reeds in 's Konings tuin aanwezig, gedurende bijna verlopen winter seizoen, echter niet dan naauwelijks en met moeite, behalve in de kleine orangerie alhier, in de ananaskassen, paardenstallen en gedeeltelijk ook bij goede vrienden heb overgehouden, zal dit echter het volgende winterseizoen van 1809 niet geschieden kunnen, eensdeels omdat het getal der planten al gestegen . . . echter door aankweeking, toezending van zaden en gewassen enz. aanmerkelijk zal vermeerderd worden, en anderen deels, omdat waarschijnlijk de laatsgemelde bewaarplaatsen tot andere einden zullen moeten gebezigd worden, en ook bij eenen gestrengen winter niet voldoende zijn. Indien dierhalven onverhoopt de broeikasten, oranje huizen enz. voor het nieuwe groote plan geprojecteerd, voor het aanstaande wintersaizoen hetzij geheel, hetzij gedeeltelijk niet mogten tot stand komen, dan zouden er andere middelen beraamd en onkosten gemaakt moeten worden die almede in de eerste opgave niet begrepen zijn."

and collections of natural historical objects to Amsterdam. The poor health of some of the animals may have tipped the scales. While the animals were transferred to the Amsterdam *hortus botanicus*, the plants were moved to the garden of the Royal Institute of Science at the Kloveniersburgwal. In order to guarantee the survival of the living plants, Louis Napoleon appointed Reinwardt's former teacher Gerardus Vrolik as second director of the now fragmented royal garden and menagerie. While Reinwardt was now responsible for the menagerie and the natural history collection, Vrolik took care of the living plants.<sup>23</sup>

The removal of the animals and plants to Amsterdam turned out not to be a final solution. Already a year later, in June 1810, Louis Napoleon decided to dissolve the menagerie and the natural history collection. The remaining animals—apparently two lions, a tiger, a zebra and an ostrich had not survived the move from Haarlem to Amsterdam—were offered for sale in the royal newspaper in July.<sup>24</sup>

The preceding paragraphs have shown that the garden and menagerie in Haarlem turned out to be a shaky launching pad for Reinwardt's career. Although the new position as royal gardener seemed promising, not at least because of the higher salary, the garden project never got off the ground, and the institution's move to Amsterdam deprived Reinwardt of an important pillar of his existence and a career as a naturalist seemed out of reach. The following sections will show how Reinwardt compensated for this setback by increasing his engagement in Haarlem's learned societies. His friendship with Van Marum, the influential secretary of the Dutch Society of Sciences, proved decisive in making up for Louis Napoleon's capricious garden policy.

## Socializing with Haarlem's Elite

Reinwardt had regularly attended the meetings of the Dutch Society of Sciences from 1805. The society had been established by well-situated members of Haarlem's elite in the aftermath of the Austrian War of Succession (1740-48) in 1752. Since the war had hit Haarlem's formerly flourishing textile industry heavily, its investors considered the society as a platform to enjoy 'sociability' while searching for ways to improve the

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<sup>23</sup> Groen, "De tuinen van Lodewijk Napoleon," 43.

<sup>24</sup> G.A. Evers, *Utrecht als koninklijke residentie. Het verblijft van Lodewijk Napoleon te Utrecht 1807-1808* (Utrecht: A.W. Bruna & Zoon, 1941), 200-201.

dwindling local industry.<sup>25</sup> As board members of the new society, they subsidized the activities of the regular members who were supposed to deliver lectures and review contributions for the society's proceedings. New members were chosen for their high reputation or, for instance, because of an essay they had submitted to one of the society's essay competitions.<sup>26</sup>

Backed by a physico-theological notion that society and human beings were malleable and reformable entities, the members of the Dutch Society used these competitions to spread and popularize 'useful' knowledge. These competitions addressed a large variety of 'useful' topics ranging from the silting of rivers to the prevention of the breaking of dams, the physical education of children, the purification of water with charcoal, the speed of water flow in rivers, the decline of Dutch trade and other natural historical, chemical or philosophical issues. In 1777, the members of the Dutch Society even decided to establish a separate 'oeconomic' branch—the *Oeconomische Tak van de Hollandsche Maatschappij der Wetenschappen*—to further stimulate the production and circulation of 'useful' knowledge in order to mitigate the nation's flagging economy.<sup>27</sup>

Essays were usually judged by small committees with expertise in the field. Reinwardt participated in several of these committees. Together with Van Marum, Sebald Justinus Brugmans (1763-1819), professor of natural history in Leiden, the Amsterdam professor and director of the botanical garden Gerardus Vrolik, the veterinary expert Jan Arnold Bennet (1758-1828), and the patriot agronomist Jan Kops, Reinwardt judged essays on silviculture, the reproductive power of plants, the fertilization of uncultivated areas, lead poisoning from water and the interaction between charcoal and water, and the differences between shell and lump lime.<sup>28</sup> In 1808,

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<sup>25</sup> W.W. Mijnhardt, *Tot heil van 't menschdom. Culturele genootschappen in Nederland, 1750-1815* (Amsterdam: Radopi, 1987), 88. The link between sociability and utility is established by L. Roberts, "Going Dutch: Situating science in the Dutch enlightenment," in *The sciences in enlightened Europe*, ed. William Clark, et al. (Chicago: University of Chicago Press, 1999), 380.

<sup>26</sup> For an overview of the members, see Bierens de Haan, *De Hollandsche Maatschappij der Wetenschappen*, 338, Bijlage VII: Naamlijst van directeuren, binnenlandse en buitenlandse leden van de maatschappij van de stichting in 1752 tot 1 januari 1952.

<sup>27</sup> Mijnhardt, *Tot heil van 't menschdom*, 52-4 and 90, and J. Bierens de Haan, *Van Oeconomische tak tot de Nederlandsche Maatschappij voor Nijverheid en Handel, 1777-1952* (Haarlem: Tjeenk Willink, 1952).

<sup>28</sup> NHA Haarlem, 492: *Hollandsche Maatschappij der Wetenschappen*, Notulen 1805-15, see pages 1866, 1899, 1934, 2010-2012.

Reinwardt even proposed an essay competition on the question on the production of what is now called oxygen in the atmosphere.<sup>29</sup>

Besides reviewing essay competitions, the members of the society used their meetings to practice and enjoy sociability, one of the core elements that bound together the learned middle-class and mercantile elite in late Dutch Republic.<sup>30</sup> One of the more important topics of their ‘cultured’ conversations was the society’s natural historical and mineralogical cabinet which since 1777 was displayed in the rooms where the members held their regular meetings. For Reinwardt, such conversations about plants and minerals were a rather simple social exercise. His knowledge of plants and minerals, which he had gained as an apothecary, far exceeded that of many other members.

The cabinet witnessed an immense growth in these years. The collections comprised shells, horns, stuffed animals and insects, fossils, minerals and dried plants which wealthy amateurs and others had gathered in the Netherlands and abroad. In 1762, the society had, for instance, received a shipment of natural historical items from the East Indies. The items had been brought together by the governor-general of the Netherlands Indies, Jacob Mossel (1704-1761). A few years later, the cabinet was further enriched with the collection of Jacob Cornelis Sylvius van Lennep, one of the society’s directors, and various specimens from the physician Job Baster (1711-1775). Specimens and drawings from other Dutch colonial outposts in Surinam, Bengal, Japan and the Cape quickly followed. The majority of the collectors were aristocrats or employees of the VOC or West India Company.<sup>31</sup>

Owing to the growing number of specimens, which came to equal the cabinets of other wealthy private collectors in Haarlem, the directors of the Dutch Society decided in 1777 to appoint Van Marum, then twenty-

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<sup>29</sup> Ibidem, *Notulen 1808*, page 1949.

<sup>30</sup> J. Kloek and W. Mijnhardt, “Sociability,” in *Dutch culture in a European perspective*, vol. 2, *1800: Blueprints of a national community*, ed. J. Kloek, et al. (Assen: Royal van Gorcum, 2004), 93-114.

<sup>31</sup> For a detailed history of the natural historical collection of the *Hollandsche Maatschappij*, see B.C. Sliggers, “Het naturaliënkabinet van de Hollandsche Maatschappij der Wetenschappen,” in *Het verdwenen museum. Natuurhistorische verzamelingen 1750-1850*, ed. B.C. Sliggers, et al., 46-142 (Blaricum/Haarlem: V+K Publishing/Teyler’s Museum, 2002); and J.A. Bierens de Haan, *De geschiedenis van een verdwenen Haarlemsch museum van natuurlijke historie* (Haarlem: De Erven F. Bohn N.V., 1941).

seven, as director of the society's collection.<sup>32</sup> Van Marum had studied medicine, botany and philosophy under Petrus Camper (1722-1789) at the University in Groningen. Camper taught not only experimental physiology, but also obstetrics, pharmacology, botany, surgery, and anatomy. In his botanical lectures and classes, Camper stressed the importance of experimental physiological research in order to understand the inner anatomy of plants. Van Marum, who was attracted by Camper's physiological work, finished his university education in 1773 with both a philosophical and a medical dissertation. Both dealt with the movement of fluids in plants and in animals and were based on exhaustive experimental research with an electrical machine he had designed together with his friend the instrument maker Gerhard Kuyper.<sup>33</sup>

When the academic senate in Groningen ignored Van Marum's ambition to succeed his teacher Camper as professor of botany, he moved to Haarlem and established himself as a physician. Beside his practical work, he also offered private classes in physics for interested citizens, merchants, magistrates and notables to whom he demonstrated the 'usefulness' of physical and chemical experiments. In 1777, he was eventually appointed municipal lecturer in philosophy and mathematics. During the summer months, he also lectured on geology, physics, hydrostatics, medical sciences, geology and mechanics. Those lectures were held at the former concert hall of the Prinsenhof where the Dutch Society also held its monthly gatherings. In 1780, he married Joanna Bosch, daughter of Jan Bosch, the wealthy printer of the proceedings of the Dutch Society. Bosch's financial assets allowed Van Marum to make extensive journeys through Europe during the summer months.<sup>34</sup>

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<sup>32</sup> For a biographical sketch of Van Marum, see B. Theunissen, "Martinus van Marum, 1750-1837. 'Ten nutte en ten genoegen der ingezetenen,'" in *Een elektriserend geleerde. Martinus van Marum 1750-1837*, ed. A. Wiechmann, et al., 11-32 (Haarlem: Joh. Enschedé en Zonen, 1987); and A.M. Muntendam, "Dr. Martinus van Marum," in *Martinus van Marum. Life and Work*, vol. 1, ed. R.J. Forbes, 1-72 (Haarlem: H.D. Tjeenk Willink & Zoon, 1969).

<sup>33</sup> T.H. Levere, "Martinus van Marum and the introduction of Lavoisier's chemistry into the Netherlands," in *Martinus van Marum. Life and Work*, vol. 1, ed. R.J. Forbes (Haarlem: H.D. Tjeenk Willink & Zoon, 1969), 159.

<sup>34</sup> For more details on Jan Bosch and other learned amateurs in Haarlem, see B.C. Sliggers, "Honderd jaar natuurkundige amateurs te Haarlem," in *Een elektriserend geleerde. Martinus van Marum, 1750-1837*, ed. A. Wiechmann, 67-102 (Haarlem: Joh. Enschedé en Zonen, 1987).

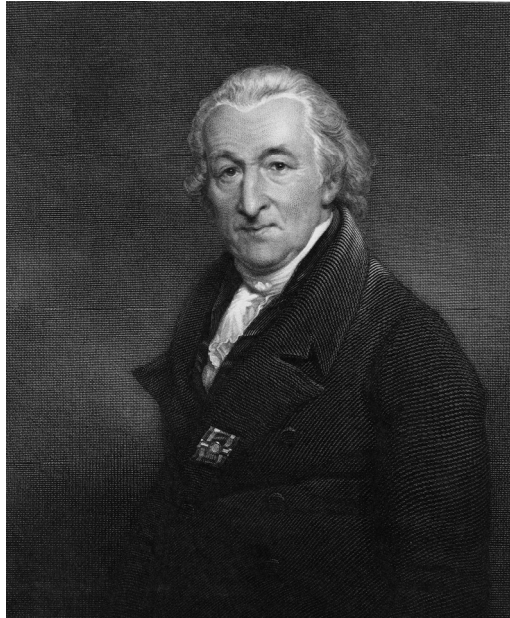


Figure 20: Portrait of Martinus van Marum (1750-1837), secretary of the *Hollandsche Maatschappij der Wetenschappen* (Dutch Society of Sciences).

Beside his work at the Dutch Society, Van Marum was also a member of Haarlem's second learned society: Teyler's Second Society (*Teylers Tweede Genootschap*). In 1784 he was even made director of the society's natural historical and physical cabinet and library. The society had been founded with the bequest of the silk manufacturer and merchant Pieter Teyler van der Hulst (1702-1778). Owing to his Mennonite background, Van der Hulst had never been engaged as sponsor and member of the Dutch Society of Sciences. In fact, Teyler van der Hulst's enormous financial assets helped fund two societies—a theological and a learned society—as well as a museum for antique coins, physical instruments, paintings, sketches, books, and natural historical items.<sup>35</sup> Teyler's Museum opened its doors in 1784. In order to prevent rivalries between this cabinet and that of the Dutch Society, the directors of the societies separated their fields of interest: while the Dutch

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<sup>35</sup> For more details on Teyler van der Hulst and his ideals, see B. Sliggers, et al., eds., *De idealen van Pieter Teyler. Een erfenis uit de verlichting* (Haarlem: Gottmer Uitgevers Groep, 2006).



Society focused on zoological specimens, Teyler's Museum accumulated geological specimens.<sup>36</sup>

Beside geological and mineral specimens, Van Marum continuously enriched the museum with new instruments and measuring devices which he used during his public classes. Although the directors of Teylers Foundation (Teylers Stichting) questioned Van Marum's utilitarian approach, Van Marum continued acquiring a large number of these devices. His acquisitions comprised instruments such as small cranes, a magnetic compass, capillarity plates, hydrometers, electrometers, barometers, thermometers, mirrors, and telescopes.<sup>37</sup> One of the most spectacular instruments at Teyler's Museum was a huge electrostatic generator which Van Marum developed in cooperation with the English instrument maker John Cuthbertson (1743-1821), who had lived in Amsterdam since 1766. The machine, which was financed by Teyler's Second Society, was completed and moved to the museum in 1784. It consisted of two large glass discs with a diameter of sixty-five English inches. Owing to its sheer size, the machine attracted a large number of visitors and scholars from the Netherlands and abroad. Van Marum's public demonstrations and his written accounts of the machine and the experiments conducted with it were enthusiastically received not only in Haarlem, but also at academies in Paris, London and St. Petersburg.<sup>38</sup>

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<sup>36</sup> For more information on the organization of the museum and the role of Van Marum, see B. Sliggers, "Het idee van een Ovale Zaal," *Teylers Magazijn. Special issue: Teylers Ovale Zaal* (2009): 12-17; and A. Wiechmann and L. Touret, "Frappez, frappez toujours! Van Marum als verzamelaar en bezieler van het geleerd bedrijf in Haarlem," in *Een elektriserend geleerde. Martinus van Marum, 1750-1837*, ed. A. Wiechmann, et al., 103-53 (Haarlem: Joh. Enschede en Zonen. 1987). The changing relationship between the museum and the public is discussed in M. Weiss, "De gang naar toegankelijkheid. Publiek gebruik van Teylers Museum in de negentiende eeuw," *De negentiende eeuw* 34:3 (2010): 267-85.

<sup>37</sup> For more information on Van Marum's acquisitions for Teylers physical cabinet, see Wiechmann and Touret, "Frappez, frappez toujours!," 121-25; and G.L.E. Turner, "A very scientific century," *Martinus van Marum. Life and Work*, vol. 4, *Van Marum's scientific instruments in Teyler's Museum*, ed. E. Lefebvre, et al. (Haarlem: Hollandsche Maatschappij der Wetenschappen, 1973), 9-12, 17-18.

<sup>38</sup> For an English translation of Van Marum's description of the machine, see M. van Marum, "Description of a very large electrical machine installed in Teyler's Museum at Haarlem and of the experiments performed with it (Haarlem, 1785)," in *Martinus van Marum: Life and work*, vol. 5, ed. E. Lefebvre, et al., 1-237 (Haarlem: Tjeenk Willink, 1974).

## A Crucial Friendship

Although his classes, lectures and demonstrations of various useful physical and chemical measuring devices received a new stimulus in the aftermath of the Batavian Revolution in 1795, Van Marum gradually lost interest in experimental work and turned his attention back towards the cultivation and observation of plants in their natural environment, an interest he had fostered since his years in Groningen. One reason for this shift was the ongoing tension with the directors of Teyler's Foundation. While Van Marum continuously requested costly chemical and physical measuring instruments and hardware to continue his experiments, the directors preferred to direct their funds to charitable purposes or the acquisition of art.<sup>39</sup>

In order to pursue his botanical interests, Van Marum purchased a house and land close to the river Spaarne on the southern edge of Haarlem. The new venue, which Van Marum baptized Plantlust, comprised several garden beds, a gardener's lodge and stables. In 1804, a new parcel was added for the cultivation of foreign plants.<sup>40</sup>

Reinwardt and Van Marum, who already knew each other from meetings of the Dutch Society of Sciences, must have further intensified their friendship in the years 1808 and 1809. While Van Marum eagerly tried to find plant experts who could help him improve his garden, Reinwardt sought to expand his social network in Haarlem. Since Van Marum's garden was less than a kilometre away from Paviljoen Welgelegen where Reinwardt was employed as royal gardener, they visited each other frequently.<sup>41</sup> In one of the many letters to Van Marum written from Java a couple of years later, Reinwardt rather emotionally described the early years of their friendship:

If our relationship had been restricted to mere scientific communication, as they began, then the absence would be enormous, but bearable—although one misses it here a lot;

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<sup>39</sup> On the tensions between Van Marum and the directors of Teylers Tweede Genootschap, see Mijnhardt, *Tot heil van 't menschedom*, 300-39.

<sup>40</sup> M.J. van Steenis-Kruseman, "Botany and gardening," in *Martinus van Marum. Life and Work*, vol. 3, ed. R.J. Forbes, 129-36 (Haarlem: H.D. Tjeenk Willink & Zoon, 1971).

<sup>41</sup> In a later letter Reinwardt refers to these earlier visits of Plantlust. NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 1 January 1817.

it is only now that I realize how much it has become interwoven with my entire person, it was a need for my heart and a source of my satisfaction and happiness.<sup>42</sup>

Following the prevailing fashion of the period, Van Marum designed his garden in the organic English landscape style rather than in the more formal and artificial arrangement preferred by the French. He thus carefully integrated the cultivated plants into the natural terrain of the area. The majority of the flowers, trees and shrubs were planted in long rows along the paths that curled through the territory. Van Marum sorted his garden according to the scheme developed by the South African botanist Christiaan Hendrik Persoon (1761-1836). It is highly likely that Van Marum regularly invited friends to his garden to instruct them about the order of plants and their relationship with the environment.



Figure 21: Van Marum's garden, Plantlust, in 1822.

Van Marum quickly established an international network of professional and amateur gardeners. Within the Netherlands, he purchased

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<sup>42</sup> NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Batavia, 14 September 1816: "Hadden onze betrekkingen zich slechts tot wetenschappelijke mededeeling bepaald, gelijk zij begonnen zijn, dan zoude dat gemis reeds groot doch misschien, hoe zeer men het ook hier mist, nog verdraagelijk zijn; nu eerst ontwierd ik hoezeer zij in mijn gehele wezen waren ingeweven, voor mijn hart eene behoefte en de bron waren van mijnne tevredenheid en vergenoegdheid."

seedlings from companies in the Haarlem area, but he also dealt with planters in Brussels, as well as in Norwich and Chelsea, near London. Beside private planters, Van Marum regularly visited and exchanged specimens with the directors of various academic and medical gardens in the Netherlands, Great Britain, Flanders, Denmark, Germany, Switzerland, France and Austria. In Austria, for instance, he corresponded with the botanist Joseph von Jacquin (1727-1817) who was director of the botanical gardens of the university in Vienna.<sup>43</sup>

Van Marum's intensive engagement gradually bore fruit in 1810, when he published an extensive catalogue of the plants he cultivated in his garden. Among the roughly 2900 plant specimens, one could find a large amount of succulents originating from South Africa.<sup>44</sup> Many of these, such as *Aloe vera*, had medicinal properties, and since they stored water in their leaves, they could be cultivated in dunes and other areas where water was scarce. Other plants in his garden came from around Europe, the Mediterranean, the Americas, Asia and Australia (New Holland). In order to expand his plant cultivation, Van Marum eventually decided to build an orangery according to a design by his friend Reinwardt. A year later in 1817, he further enlarged his garden with a hot-house for the exotic plants which he expected to receive from Reinwardt, who had left for the Indies in 1815. From 1823 onwards, Van Marum even employed two gardeners who helped him maintaining the garden.<sup>45</sup>

Experimental chemistry was another interest that linked Reinwardt and Van Marum. Like the older Van Marum, twenty-three years his senior, Reinwardt was experienced in dealing with chemical and other measuring devices. In 1807/08, they carried out joint experiments with potash, which was used in the industrial production of glass, soap and fertilizers. They later reported that in their experiments, which were based on the work of the chemists Louis Joseph Gay-Lussac and Louis Jacques Thénard (1777-1858), they apparently succeeded in splitting potash into its different constituent elements by treating it with fire.<sup>46</sup>

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<sup>43</sup> For an overview of Van Marum's extensive botanical correspondence network, see Van Steenis-Kruseman, "Botany and Gardening," 139-49.

<sup>44</sup> M. van Marum, *Catalogue des plantes cultivées au printemps 1810, dans le jardin de M. van Marum à Harlem* (Haarlem: 1810).

<sup>45</sup> Van Steenis-Kruseman, "Botany and gardening," 137-39.

<sup>46</sup> Verslag van de werkzaamheden der eerste klasse van het Koninklijk Instituut van Wetenschappen, Letterkunde, en Schoone kunsten uitgebracht in de algemene vergadering des jaars 1809, 29.

## Socializing at the Royal Institute in Amsterdam

In the years that followed, Reinwardt and Van Marum remained in close contact. After Reinwardt's appointment as professor of natural history, chemistry and botany at the Athenaeum Illustre in Amsterdam in the summer of 1810, they frequently saw each other during meetings of the Royal Institute of Sciences, Literature and Fine Arts (Koninklijk Instituut van Wetenschappen, Letterkunde en Schoone Kunsten) which had been established in Amsterdam on the initiative of Louis Napoleon in the spring of 1808.<sup>47</sup> From 1812 onwards, meetings of the Royal Institute were held at the Kloveniersburgwal in the centre of Amsterdam in a monumental house of the art-dealer and painter Cornelis Sebille Roos (1754-1820), which eventually became the institute's permanent home.<sup>48</sup>

In Louis Napoleon's view, the institute had to fulfil two roles: It was supposed to illustrate the splendour and prestige of his kingdom, and, as was true of the Institut de France in Paris, its members were expected to advise the government on a broad range of issues. This latter goal was never fully realized. Unlike the Institut de France, the Royal Institute never developed into a central advisory organ to the government, and after the Dutch kingdom became part of the French Empire in 1810, the Royal Institute even fell into obscurity.<sup>49</sup> Renamed the Dutch Institute of the Sciences, Literature and Fine Arts (Hollandsch Instituut van Wetenschappen, Letterkunde en Schoone Kunsten), it received hardly any attention from the administrators in Paris who derisively referred to the institution as 'l'Institut d'Amsterdam'.<sup>50</sup>

Although the institute in Amsterdam was not very active, its meetings provided opportunities to practice and enjoy 'sociability'. By listening to lectures and conversing on a broad range of topics, the institute offered a forum where new contacts could be made and gossip about the country's learned world exchanged. The contacts with foreign national academies linked it with Europe's learned world. Beside their work as

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<sup>47</sup> A copy of the royal decision can be found in: UB Leiden, BPL 2425, III: Royal decision, 28 June 1808.

<sup>48</sup> K. van Berkel, *De stem van de wetenschap. Geschiedenis van de Koninklijke Nederlandse Akademie van Wetenschappen, deel I: 1808-1914* (Amsterdam: Uitgeverij Bert Bakker, 2008), 57-8, 63-66, 88-90.

<sup>49</sup> The close ties between science and government in France is further investigated by Ch. C. Gillispie. *Science and polity in France: The revolutionary and Napoleonic years* (Princeton: Princeton University Press, 2004), chapters 6 and 7.

<sup>50</sup> Van der Burg, *Nederland onder Franse invloed*, 215-16.

advisors to the colonial government, the members regularly used their meetings to discuss important observations published in the proceedings of other academies in Europe, which could be accessed in the institute's library.<sup>51</sup> At the end of 1809, the institute counted about eighty corresponding members including such luminaries as Alexander von Humboldt and the French chemist Antoine François Fourcroy.<sup>52</sup>

Both Reinwardt and Van Marum were members of the so-called First Class of the Institute. While the Second, Third and Fourth Class dealt with Dutch history and literature, fine arts and the languages and culture of the antique world, the First Class was supposed to focus on mathematical and natural philosophical inquiries.<sup>53</sup>

The First Class counted in total around thirty members, many of them apothecaries, chemists, botanists, engineers and farmers. The founding members were, in addition to Van Marum, the Amsterdam professor of physics and astronomy, Jan Hendrik van Swinden, the anatomist Andreas Bonn, the lecturer for physics Hendrik Aeneae, the water engineer Jan Blanken (1755-1838), the Leiden professor of chemistry and natural history Sebald Justinus Brugmans, the astronomer and navigation expert Jan Frederik van den Beek Calkoen (1772-1811), the physician Matthias van Geuns (1735-1817), who held a chair at Harderwijk University, the mathematician and map expert Jacob Florijn (1751-1818), the Amsterdam apothecary and chemist Willem van Barneveld (1747-1826), and eventually the patriot military commander and fortification expert Cornelis Kraijenhoff (1758-1840).

Yet in the same year, the First Class was enlarged further. Beside the appointment of Reinwardt, the new group comprised the apothecary Adriaan Paets van Troostwijk, the physician and botanist Gerardus Vrolik, the marine engineer Pieter Glavimans (1755-1820), the Groningen lecturer for agricultural chemistry, chemistry, *materia medica* and natural history Petrus Driessen, the agronomists Jan Kops and Allard Philip Reinier Carel van der

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<sup>51</sup> Proces verbaal van de tweede algemene vergadering van het Koninklijk Instituut van Wetenschappen, Letterkunde, en Schoone Kunsten, gehouden in Amsterdam den 28 Augustus—1 September des jaars 1809, 3.

<sup>52</sup> D.J. van de Kaa and Y. de Roo, *De leden van de Koninklijke Nederlandse Akademie van Wetenschappen. Een demografisch perspectief: 1808 tot 2008* (Amsterdam: KNAW Press, 2009), 154-55.

<sup>53</sup> Proces Verbaal van de eerste algemene vergadering van het Koninklijk Instituut van Wetenschappen, Letterkunde, en Schoone Kunsten, gehouden in Amsterdam den 24sten en 27sten Augustus, des jaars 1808, 7.

Borch van Verwolde (1766-1836), the veterinary surgeon Jan Arnold Bennet, and finally the physician Cornelis Hendrik à Roy (1750-1833).<sup>54</sup> Interestingly, these men had trained in a variety of different practical, medical and governmental contexts, and only some of them had pursued a formal academic training.

The majority of the members came from Amsterdam or the neighbouring provinces, and many had already been involved in various surveying, improving and mapping projects launched in the aftermath of the Batavian Revolution in 1795. Kraijenhoff, for instance, played a crucial role in the triangulation of the country after 1798, and his measurements served as the basis for the new map of the Batavian Republic.<sup>55</sup>

Like the other classes, the First Class had a difficult start. Owing to a lack of financial support from the government, the members had neither a suitable venue for meetings nor a laboratory in which to carry out experiments. Repeated complaints about the inadequate facilities in the annual reports of the First Class went unanswered.<sup>56</sup> Nonetheless, the tasks of the First Class were wide-ranging. First, they had to draft advisory reports on different issues raised by ministers, other high officials, or the king himself. In 1808/09, for instance, the members were asked to investigate whether a certain sort of cement would meet the necessary requirements for public construction work. Since such investigations demanded large-scale, months-long studies requiring sophisticated devices and tools, the experimentation had to be done elsewhere. In their annual report of 1809, the members of the First Class commented on the situation as follows:

It is only by chance, that one of the members was able to reserve a part of his house and that the circumstances allowed him to use that part [of his house] for such a long time without using it for his family. Such a situation cannot persist, not in the long run and not [that] often.<sup>57</sup>

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<sup>54</sup> Ibidem, 3-5, 7-8.

<sup>55</sup> Uitterhoeve, *Cornelis Kraijenhoff 1758-1840*, chapter 6.

<sup>56</sup> See, for instance, Verslag van de werkzaamheden der eerste klasse van het Koninklijk Instituut van Wetenschappen, Letterkunde en Schoone Kunsten uitgebracht in de algemene vergadering des jaars 1809, 3.

<sup>57</sup> Proces verbaal van de eerste algemene vergadering van het Koninklijk Instituut van Wetenschappen, Letterkunde, en Schoone kunsten, gehouden in Amsterdam den 28 Augustus—1 September des jaars 1809, 38: “*Het is slechts bij toeval, dat een der Leden een gedeelte van zijn huis daartoe heeft kunnen afstaan, en dat de omstandigheden hem*

Until his departure for the Netherlands-Indies in late 1815, Reinwardt contributed to more than ten different reports. In 1809, Reinwardt and three of his colleagues were asked to investigate whether the work and theories of the French architect and agriculturist François Cointereaux (1740-1830) could be used in the Dutch kingdom. Cointereaux, founder of a school for rural architecture, advocated using clay for the construction of new buildings in the countryside.<sup>58</sup> In order to examine Cointereaux's methods, the members ran practical tests of his method and reviewed fourteen of his books. Moreover, they examined several of Cointereaux's agricultural models which Louis Napoleon had forwarded to the First Class. In the end, Reinwardt and his colleagues concluded that Cointereaux's way of constructing buildings was hardly applicable in the Dutch kingdom, due largely to the high humidity that prevailed across much of the country.<sup>59</sup>

In 1810, Reinwardt, Van Marum and the soil expert Adriaan Gilles Camper (1759-1820) were asked to investigate quartz stones in the vicinity of Amersfoort which had attracted the attention of Louis Napoleon on one of his inspection tours through the country. Since the stones looked like diamonds, the king was eager to know whether the stones had any economic value. Although Reinwardt, Van Marum and Camper came to the conclusion that the stones were rather useless, the minister for the interior who first received the final rapport advised the members to continue with their research and to draw on the expertise of mining workers as well.<sup>60</sup>

In a third commission, Reinwardt and Van Marum worked together with the mathematician Adriaan van den Ende. The trio was asked to review a business plan submitted to the minister of the interior by Abraham Ypelaar (1736-1811). After the disastrous outcome of Fourth Anglo-Dutch War, Ypelaar had shifted the focus of his commercial activities from processing diamonds to the preparation of microscopical cabinets which he sold to interested and wealthy amateurs. Each cabinet comprised a large number of natural historical samples (the biggest cabinet counted 1800 pieces) such as small insects, external and internal parts of those insects, fish scales, woodcuts,

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*veroorloofd hebben, dat gedeelte zoo langen tijd te kunnen afstaan, zonder het ten behoeve van zijn huisgezin te gebruiken. Zoodanig iets kan, nog op den duur, noch zelfs dikwerf gebeuren."*

<sup>58</sup> L. Cellauro and G. Richaud, "Thomas Jefferson and François Cointereaux, professor of rural architecture in revolutionary France," *Architectural history* 48 (2005): 173-74.

<sup>59</sup> Verslag van de werkzaamheden der eerste Klasse van het Koninklijk Instituut van Wetenschappen, Letterkunde, en Schoone Kunsten uitgebracht in de algemene vergadering des jaars 1809, 10.

<sup>60</sup> *Ibidem*, 1810, 6-7.



various parts of shrubs, plants, flowers, seeds, membranes, mushrooms, minerals, gold, silver, copper, iron, metals, stones, petrified wood, and so on. Although Reinwardt, Van Marum and Van den Ende were rather positive about Ypelaar's commercial and natural historical activities, they rejected the plan to subsidize the further expansion of his company on the grounds that it would neither contribute to the general well-being of the people nor contribute much to the development of new natural historical insights.<sup>61</sup>

In 1813/14, Reinwardt again participated in several committees where he worked together with Van Marum, Vrolik, Kops, Van Swinden, Bennet and Paets van Troostwijk. Beside reviews of two cement companies, Reinwardt and his colleagues were asked to report on an aerometer forwarded by the director of the indirect taxes of the department Zuiderzee.<sup>62</sup> The aerometer was used to determine import and export taxes on fluids. Reinwardt, Vrolik and Van Swinden, who actually carried out the investigation, first compared the aerometer of the tax officers with another aerometer which they possessed already. After the comparison they concluded that both aerometers met the standard defined in the most recent edition of the *Bataafsche Apotheek*, the practical manual for apothecaries published in 1807. In order to facilitate the daily work of tax officers, Reinwardt, Van Swinden and Vrolik even added a table with the weight of various distilled fluids.<sup>63</sup>

In 1815, Reinwardt eventually participated in a committee which was supposed to organize and survey the introduction of standardized weights and measures in the Dutch kingdom. After two meetings, Van Swinden, Florijn, Vrolik, Paets van Troostwijk, Kraijenhoff and Reinwardt handed in a long report in which they discussed the advantages and disadvantages of a uniform system for trade, the chemical and pharmaceutical industries, and governmental administration. Van Swinden was especially experienced in this field. As a member of a special committee he had been sent by the Batavian Government to Paris in 1798/99 in order to determine the exact length of a meter and the exact weight of a kilo.<sup>64</sup> In their written advice, he and his colleagues now advocated the introduction of the French metric system in the Dutch Kingdom, for it would excel all other

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<sup>61</sup> *Ibidem*, 1810, 9.

<sup>62</sup> Verslag van de Werkzaamheden der eerste Klasse van het Hollandsch Instituut van Wetenschappen, Letterkunde en Schoone Kunsten, uitgebracht in de algemene vergadering des jaars 1814, 6-9, 13-16.

<sup>63</sup> *Ibidem*, 15.

<sup>64</sup> For a detailed account of the events in Paris: Gillispie, *Science and polity in France*, 458-94.

systems of weights and lengths such as the Rhenish foot and the Amsterdam yard.<sup>65</sup>

The brief review of Reinwardt's activities at the First Class has highlighted his engagement in various commissions which were set up to advise the king's government on specific issues. All commissions documented their investigations in the form of a final report. Some of these were based on joint experimentation carried out in one of the involved apothecary's laboratories while others were the result of intensive discussions among the commission's members.

## The First Class as Platform

Apart from work on committees, the First Class offered individual members a platform to promote the 'usefulness' of their specific expertise. For naturalists such as Reinwardt this was an important way to secure their status. In this sense, Reinwardt was no exception in Europe. In a period of political turmoil and institutional instability, many naturalists in France, Britain and Germany used national academies as platforms to brand themselves as 'useful' members of the community and reliable aids to the quickly changing governments. By doing so they hoped to receive one of the rare permanent positions as gardeners, museum directors, or academics in the emerging post-revolutionary national states. Only a few of them, such as the German cameralist Alexander von Humboldt and the British naturalist Joseph Banks (1743-1820) were wealthy enough to pursue their studies without governmental patronage.<sup>66</sup>

In two long lectures on the plant geography of Holland, Reinwardt applied a similar strategy. Reinwardt used these opportunities to demonstrate for his learned listeners the 'usefulness' of *his* approach to nature. It is highly likely that he hoped that the two lectures would be published in the institute's proceedings, which were disseminated throughout the Netherlands and elsewhere in Europe; but that never happened. The lectures only came

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<sup>65</sup> Verslag van de Werkzaamheden der eerste Klasse van het Hollandsch instituut van wetenschappen, letterkunde en schoone kunsten, uitgebracht in de algemene vergadering des jaars 1814, 8-17.

<sup>66</sup> For a detailed analysis of naturalists at the *Muséum national d'Histoire naturelle* in Paris in this period, see Spary, *Utopia's garden*, chapter 4 and 5. For a thorough study of the self-fashioning of naturalists affiliated with the botanical garden in Kew, see Drayton, *Nature's government*, chapters 4 and 5.

off the press after his death in 1855, in a volume on the natural history of plants in the Netherlands and its overseas possessions edited by Willem Hendrik de Vriese (1806-1862), Reinwardt's successor as professor of botany in Leiden. They appeared under the title *Proeve eener geographische beschouwing der Flora van Holland* (Proof of a geographical survey of Holland's flora).<sup>67</sup>

Reinwardt's talks had a hybrid origin. On the one hand they were based on his various field observations and measurements carried out in the environs of Amsterdam, Harderwijk and Haarlem. On the other, they were based on chemical analyses of soil probably carried out in his laboratory in Harderwijk. Reinwardt now situated his expertise in the tradition of Carl Ludwig Willdenow (1765-1812), since 1810 director of the botanical garden in Berlin. In order to understand Reinwardt's lectures, it is necessary to briefly shed some light on the figure of Willdenow.

Like Reinwardt, Willdenow had originally been trained as an apothecary. After his years of apprenticeship in the chemical laboratory of Johann Christian Wiegleb in Langensalza (Thuringia), Willdenow continued his studies at the university in Halle. He then moved to Berlin where he first worked as physician. Later he was appointed as public lecturer for botany at the newly founded university there. From 1801, he was also member of the Berlin Academy of the Sciences (Akademie der Wissenschaften).<sup>68</sup>

In 1792 Willdenow published an extensive text on herbology (*Grundriss der Kräuterkunde*). Willdenow's book, which was meant to illustrate his lectures and classes in Berlin, was divided into several sections: in addition to sections on terminology, plant physiology and an explanation of various classificatory systems, there was a long section on the historical development of vegetation. Willdenow called this branch of botanical inquiry the 'history of plants' ('Geschichte der Pflanzen'). Like his French colleagues, Willdenow stressed the importance of measurable environmental

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<sup>67</sup> C.G.C. Reinwardt, "Proeve eener geographische beschouwing der Flora van Holland. Aanteekeningen betreffende de kruidkundige wetenschap in de nagelaten papieren van den hoogleraar C.G.C. Reinwardt," in *Tuinbouw-Flora van Nederland en zijne overzeesche bezittingen; bevattende de geschiedenis van afbeeldingen van nieuw of merkwaardige planten, bloemen, vruchten. Tweede deel*, ed. W.H. de Vriese, 323-41 (Leiden: A.W. Sythoff, 1855).

<sup>68</sup> For a short biography, see I. Jahn, "Carl Ludwig Willdenow," in *Geschichte der Biologie*, ed. I. Jahn, 993 (Hamburg: Nikol, 2004); and I. Jahn "Carl Ludwig Willdenow und die Biologie seiner Zeit," *Wissenschaftliche Zeitschrift der Humboldt-Universität zu Berlin. Reihe: Mathematik/ Naturwissenschaften* 15 (1966): 803-12.

factors that every analysis of vegetation had to take into account. Only such a perspective enabled one to understand how hurricanes, earthquakes, and volcanoes influenced the earth's vegetation. In order to structure such an analysis, Willdenow proposed to divide Europe into five major floristic regions.<sup>69</sup>



Figure 22: Portrait of Carl Ludwig Willdenow, director of the botanical garden in Berlin, surrounded by plants.

Drawing upon Willdenow's ideas, Reinwardt opened his lecture by embedding the vegetation of Holland in its historical and spatial context. According to Reinwardt, the region contained hardly any 'unique' flora. Botanical experts who travelled through the region would recognize that almost all plants originated from mountainous regions in other parts of Europe which had been shaped earlier in time. Or as Reinwardt put it,

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<sup>69</sup> C.L. Willdenow, *Grundriss der Kräuterkunde entworfen zu Vorlesungen* (Berlin: Haude und Spener, 1810), 479-514.

If we thus agree with the majority of soil experts that all plants being scattered across the entire globe originally stem from plants which emerged after the last alteration of the surface of the earth and after the formation of diluvial mountains (*vlotgebergte*), then one can only assign an original flora to such mountains and our lower and later developed solid land would not include any other plants than [those] that have been transmitted from other countries [where they were] already present from an earlier stage.<sup>70</sup>

In order to understand the geographical distribution of plants in Holland, Willdenow's division of Europe into five floristic regions was, according to Reinwardt, only a fragile starting point. Field investigations in Holland had rather shown that it was hardly possible to separate Europe's vegetation into a northern flora (Denmark, Norway, Sweden, Russia, parts of Britain), a Helvetian flora (Holy Roman Empire, Prussia, Bohemia, Poland, France, the Netherlands), an Austrian flora (Austria, Poland, the Balkans, Hungary, Bulgaria), a Pyrenean flora (Spain, the Balearic Islands, Portugal), and eventually an Apennine flora (Italy, Sardinia, Corsica, and parts of Sicily).<sup>71</sup> While Willdenow placed Holland in the zone of Helvetian flora, for instance, there were also many plants from the northern flora.<sup>72</sup>

Willdenow's categorization, however, provided a framework within which Reinwardt could discuss the reasons why Holland counted fewer plants than for instance countries of the Helvetian, Austrian or Pyrenean flora. A core reason for this shortcoming was, according to Reinwardt, a combination of the unfavourable climatic and geographical conditions in Holland. While mountainous regions such as southern Germany and Austria offered plants a diversified natural environment, Holland's flat landscape,

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<sup>70</sup> Reinwardt, "Proeve eener geographische," 325: "Wanneer wij dus nu al verder, overeenkomstig het gevoelen der meeste aardrijkskundigen vaststellen, dat alle gewassen, welke thans over den aardbodem verspreid zijn, oorspronkelijk afstammen van die gewassen, die, na de laatste algemeene veranderingen der oppervlakte van onzen aardbol en na de vorming van het vlotgebergte op denzelfden zijn voortgekomen, dan zal men ook slechts aan dat andere gebergte eene oorspronkelijke Flora moeten toekennen en dit ons lagere, later ontstane vaste land zal geene andere planten kunnen bevatten, dan dezulken, die van andere landen, welke reeds vroeger aanwezig waren, zijn overgebracht."

<sup>71</sup> Willdenow, *Grundriss der Kräuterkunde*, 513-14.

<sup>72</sup> Reinwardt, "Proeve eener geographische," 326.

invariable climate and sandy soil were much less fertile. Yet, despite the small number of plants, Holland could still be considered an important area for plant investigations in Europe.<sup>73</sup>

In the following paragraphs Reinwardt tried to convince his listeners of the uniqueness of the flora in Holland. For despite the unfavourable environmental conditions, the country was still home to a relatively wide variety of plants, especially in as yet unexplored areas, or as he put it:

Such a huge number in a country which is not that vast, [was] shaped during the last formation, whose elevation differed only slightly from sea level, which is so populated, and continuously farmed, tilled, and [which has not been] left in rest and peace, and where thus plants grown in the wild were often removed as weeds, is for a Dutch herbalist a very pleasant peculiarity.<sup>74</sup>

In his subsequent survey, Reinwardt focused on wild plants that he had detected on sandy soils (*zandgronden*). Since these areas of the country were hardly cultivated, they comprised, according to Reinwardt, the largest number of wild plants. The survey was based on his own field observations and chemical analyses, which he had carried out during his years in Amsterdam, Haarlem and Harderwijk. In the first part of the small survey, Reinwardt described the different plants he had observed and identified in the dunes and heaths he had visited.<sup>75</sup>

In the second part of the survey he added details from his chemical analyses. These had revealed that the mentioned plants, owing to the lack of nitrate (*stikstof*), could not be used for feeding human beings. But as producers of carbon (*koolstof*), they were responsible for the constitution of an underground layer which comprised iron and was commonly called primordial or ochre sand (*oer- or okerzand*). Similar and even more concentrated layers could be found at deeper levels. Reinwardt characterized

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<sup>73</sup> Ibidem, 328-30.

<sup>74</sup> Ibidem, 330: “Een zoo groot aantal in een land van eene niet zeer groote uitgestrektheid, van de laatste formatie, wiens hoogte zo weinig van het waterpas der zee afwijkt, hetwelk zoo zeer bevolkt is, en gedurig geroerd, bebouwd, of althans niet in rust en aan zich zelve overgelaten wordt, en alwaar dus de in het wild groeiende gewassen veelvuldig als onkruid uitgerooid worden, is een voor den Nederlandschen kruidkundige zeer aangename bijzonderheid.”

<sup>75</sup> Ibidem, 332-35.

these deeper ore layers as follows: “[T]hey are sometimes so compressed that they have been converted into a rock-hard substance . . .”.<sup>76</sup> By referring to the French chemists and geologists Fourcroy and Barthélemy Faujas de Saint-Fond (1741-1819), Reinwardt concluded his survey with the general statement that ore layers in sandy areas must be the outcome of a complex interaction between plants, soil, water and air.<sup>77</sup>

This brief discussion of Reinwardt’s lectures at the First Class in Amsterdam shows how he used the institution as a platform to promote the ‘usefulness’ of his approach to nature. By summarizing and combining the results of his field observations and his chemical analyses in the laboratory in Harderwijk, he established a close connection between the search for ore layers and his own expertise as a field naturalist. Since the Netherlands lacked important natural resources (e.g. pit coal/*steenkol*), Reinwardt’s conclusion that sandy areas comprised ore layers was clearly directed towards high-ranked administrators in Amsterdam and The Hague.<sup>78</sup>

## Conclusion

By following Reinwardt to Haarlem and Amsterdam, this chapter has shown that ‘sociability’ formed an alternative route to patronage to forge a career. Since the Jardin du Roi never developed as a platform for botanical investigation, the naturalist Reinwardt switched to another well-established vehicle in Dutch society: the learned society. Since the middle of the eighteenth century, forums such as the Dutch Society of Sciences had developed into vital platforms where local notables and learned amateurs socialized with the aim of improving the country’s economy and society. Reinwardt’s key to these learned circles was Martinus van Marum, with whom he shared a deep interest in botany and experimental chemistry. Owing to his strong utilitarian approach, Van Marum was able to advance to an influential advisor under Louis Napoleon. For Van Marum the young Reinwardt was an ideal companion to enrich and enlarge his private garden,

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<sup>76</sup> Ibidem, 338: “[Z]ij zijn somtijds zoo zeer zamengebakken, dat zij tot eene bijna steenharde zelfstandigheid zijn overgegaan. . . .”

<sup>77</sup> Ibidem, 340-41.

<sup>78</sup> For more information on mining in the nineteenth century, see B.P.A. Gales, “Delfstoffen, Machine- en Scheepsbouw,” in *Geschiedenis van de techniek in Nederland*, vol. 4, *De wording van een moderne samenleving 1800-1890*, ed. H.W. Lintsen, 11-35 (Zutphen: Walburg Pers, 1993).

Plantlust, on the outskirts of Haarlem. Even after Reinwardt's appointment as extraordinary professor of chemistry and herbology in Amsterdam, he and Reinwardt remained in close contact. As members of the Royal Institute's First Class in Amsterdam they regularly attended meetings and wrote reports on issues related to their expertise. Beside joint investigations, the First Class offered naturalists such as Reinwardt to promote their 'usefulness' in the form of conversations and lectures. The discussion of one of these lectures has shown how Reinwardt artistically applied his field observations to the needs of the Dutch and French administrators in Amsterdam and The Hague.

In the end, Reinwardt's attempts to fashion himself as a 'useful' naturalist with a strong interest in experimental chemistry and field observation bore fruits. In December 1814, he received a long letter from Anton Reinhard Falck, now secretary of the newly appointed king Willem I (1772-1843). Reinwardt knew Falck from his years as an apprentice in Amsterdam, when both were members of *Libertate et Concordia*. In his letter, Falck praised the naturalist's broad expertise and offered Reinwardt a well-paid position as advisor to the colonial government in the Netherlands Indies. For Reinwardt, the new position was an ideal occasion to prove himself once more as a reliable aide to a new regime. Reinwardt secretly hoped that his efforts in the colonies would be rewarded in the form of a prestigious professor- or directorship, which would in turn allow him to transform his field observations and measurements into splendid publications. As the following chapters show, none of these hopes was fulfilled. Governing and investigating Java and the neighbouring islands turned out to be a much more complex endeavour than any of the parties involved anticipated. And his subsequent attempt to fashion himself as a fearless and measuring traveller in the Netherlands by publishing a travel narrative and a *Flora Javae* never materialized. Other figures such as the British administrator Sir Thomas Stamford Raffles (1781-1826), the American apothecary and collector Thomas Horsfield (1773-1859), the Dutch ornithologist and owner of a large private cabinet Coenraad Jacob Temminck (1778-1858), the German physician Philipp Franz Balthasar von Siebold (1796-1866), and even Reinwardt's assistant, Carl Ludwig Blume (1796-1862), were quicker and much more talented in selling their expertise to their superiors and the growing numbers of readers in Europe.