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

Weber, A

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Author: Weber, Andreas

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Forging a New Identity

During his travels which he [Reinwardt] is expected to carry out on Java and the neighbouring islands with clearly prescribed aims, he is obliged to focus his attention on the customs, language and mentality (denkwijze) of the inhabitants, their religion and their forms of government in order to be able to deliver us after his return a well-reasoned report on the real condition of the possessions visited by him.

Article 5 of Reinwardt's instructions
issued by Willem I on 11 January 1815.¹

From July 1817 onwards, Reinwardt and his draughtsman Jannes Theodorus Bik accompanied the General Commissioners Elout and Van der Capellen on a tour of inspection along Java's north coast and to the courts in Surakarta and Yogyakarta in the interior of the island. The tour took four months. Like their Batavian colleagues Goldberg and Kops, Van der Capellen and Elout considered the tour an opportunity to verify and supplement the information they had received beforehand. Before the expedition departed in July 1817, all district heads were informed of the

¹ UB Leiden 2425, 3, Royal decision 11 January 1815, article 5: "Op reizen welke hij met voorschreven oogmerk hetzij in de binnenlanden van Java, hetzij op de omliggende eilanden doen zal, behoort hij bijzonder zijne aandacht te vestigen op de zeden, taal en denkwijze der inwoonderen, hunne godsdienst en hunnen regeringsvorm, en zich, zoo doende, in staat te stellen, ons, bij zijn retour, een beredeneerd verslag van de eigenlijke gesteldheid der door hem bezochte bezittingen aan te bieden."

upcoming visit of the commissioners. In order to facilitate the tour, all district officers (*residents*) had to provide suitable accommodation and enough post horses to carry urgent administrative letters between the travelling administrators and the colonial bureaucracy back in Batavia.² During their stay in the capitals of the various districts, the General Commissioners gathered with the European and indigenous heads of the provincial administration. Usually they used these meetings to discuss the reports that European and indigenous district officers (*residents* and *regents*) had submitted beforehand. Moreover, they tried to gather new data on the current political and economic state of the respective provinces.

Reinwardt played a crucial role during this journey. As advisor to the General Committee, Elout and Van der Capellen constantly requested that he observe, judge and evaluate pressing administrative issues they encountered in the field. Travelling with the General Committee was thus an exhausting endeavour. In particular the requirement to summarize all observations in the form of a 'report'—a central feature of the General Committee's governance—seemed to have exceeded Reinwardt's capacity for hard work by far. In various letters to friends in the Netherlands, he complained about the heavy workload. To De Vries in Amsterdam he wrote: "My duties themselves are already too big and diverse; burdened with such a broad array of tasks one man is not enough to fulfil all of them."³

Reinwardt's almost exclusive focus on governmental issues created tensions with his friends in the Netherlands. Apparently many of them had expected that Reinwardt would spend most of his time on collecting natural historical specimens in order to satisfy the growing public interest in colonial nature and society at home. Van Marum, De Vries and Van Lennep sent angry letters to Elout in which they demanded that Reinwardt be released from administrative tasks and given more time for his natural historical investigations. Although Elout's first reaction was rather reserved, the interventions from the Netherlands bore fruits.⁴ In April 1818, Elout reported to Van Lennep that the colonial government had given Reinwardt a spacious house close to the botanical garden in Buitenzorg where he could

² P.H. van der Kemp, *Het Nederlandsch-Indisch bestuur in het midden van 1817* ('s-Gravenhage: Martinus Nijhoff, 1915), 322-23.

³ KB The Hague, 121 B 8, letter Reinwardt to De Vries, Batavia, 24 December 1817: "Mijne bezigheden zijn zelfs al te groot en onderscheiden; door het hebbenden van zoo vele taken kan men in singularis niet voldoen."

⁴ Van Lennep, *Het Leven van D.J. van Lennep*, 155-61, letter Elout to David Jacob van Lennep, Batavia, 29 March 1818.

live for the rest of his stay in the colony. He even promised to provide financial means for longer natural historical expeditions to the hinterland of Batavia and the Eastern part of the Malay Archipelago.⁵ Reinwardt was consequently exempted from participating in a second and third tour of inspection through Java which took place in 1819 and 1821/22 respectively.⁶

By following Reinwardt into 'the field', this chapter sheds light on the genesis and construction of his identity as colonial administrator *and* scientific traveller. After his return to the Netherlands in 1823, Reinwardt used this hybrid identity as a vehicle to secure and enhance his status and authority as an investigator and 'improver' of the Dutch colony in the East. While individuals such as his assistant Blume and the American naturalist and collector Horsfield focused on the mere description, classification and naming of specific plant and animals families, Reinwardt decided to fashion himself as a lonely and 'heroic' traveller *and* 'virtuous' administrator who had risked his life in the colony for the public good. Even unfavourable conditions at the top of volcanoes, as he put it in a speech at the Batavian Society of Arts and Sciences (Bataviaasch Genootschap van Kunsten en Wetenschappen) given in early 1821, could not deter him from gathering qualitative and quantitative data *in situ*.

An analysis of his two journeys on Java will show that investigating, surveying and governing Java in 'the field' was a far more complex enterprise than Reinwardt tends to admit in his writings. In particular, in the hilly hinterland of Batavia travellers such as Reinwardt depended heavily on the colonial infrastructure, as well as on the knowledge, skills and cooperation of landowners, plant experts, colonial civil servants, owners of workshops, guides, hunters and porters. Though he often remained publicly silent about this, many of them supplied Reinwardt with essential data on Java's geography, administration and nature and helped him to move through a complex physical and social landscape. In many cases, Reinwardt simply had to believe what he heard or saw, although to give greater authority to his claims, he often buttressed his observation with the claimed accuracy of data he drew from the barometers, thermometers, eudiometers, aerometers and other measuring devices he had brought from the Netherlands. Some of his reports—on the silver content of the new currency in the colony and the improvement of saltpetre production in Gresik, for instance—were based on the extensive use of these devices on site. As the last part of the chapter will

⁵ Ibidem, 162-3, letter Elout to David Jacob van Lennep, Buitenzorg, 24 April 1818.

⁶ Stevens, *Van der Capellen's koloniale ambitie*, 91.

show, the actual employment of these devices ‘in the field’ helped Reinwardt to stabilize his identity as a ‘virtuous’ administrator who was able to manage and govern the colonial public body in the most efficient way.

Gathering Statistical Information

The General Committee and Reinwardt departed from Buitenzorg in early July 1817. In the months to come, the caravan travelled along Java’s northern coast and visited among others the places Tjiandjur, Bandung, Sumedang, Cheribon, Semarang, Surakarta, Yogyakarta, Rembang, Gresik, Surabaya, and Probolinggo. Their journey was rounded off with a detour to the island Madura. Since the establishment of a military road (Grote Postweg) which stretched from Anjer in West-Java to Panarukan in East-Java, travelling along the island’s northern coast was a relatively easy endeavour. Only in the hilly Preanger region close to Buitenzorg local helpers regularly faced severe difficulties to push the heavy loaded coaches of high-ranking European notables to Tjiandjur.⁷ In order to facilitate their journey to the eastern part of Java, the General Committee was accompanied by 300 local porters.⁸

Since the reign of Daendels, Java was divided into a number of administrative districts, the so-called *residenties* (districts). Every *residentie* was administrated by a European civil servant (*resident*) and one indigenous civil servant (*regent*). In order to guarantee their loyalty, both received a salary from the colonial government in Batavia. The Javanese courts in Surakarta and Yogyakarta had continued to maintain a semi-independent status.⁹

One of the aims of the tour of inspection was the gathering of information. A brief summary of the visit to Sumedang, one of the major places in the Preanger region in the hinterland of Batavia, in July 1817, sheds more light on how the encounters in the field were usually organized. In Sumedang the General Committee was first welcomed by a high indigenous notable, the so-called *adipatih*. After the *adipatih* and several *regents* from

⁷ P.J.M. Nas and Pratiwo, “Java and the Grote Postweg, La Grande Route, the Great Mail Road, Jalan Raya Pos” *Bijdragen tot de Taal- Land- en Volkenkunde* 158:4 (2002): 711-12, and more general Th. Stevens, “De Postweg van Daendels: een vraagstuk,” in *Herman Willem Daendels*, ed. F. van Anroy et al. (Utrecht: Uitgeverij Matrijs, 1991), 71-76.

⁸ UB Leiden, BPL, 2425, 5, Reis naar Indië en Java.

⁹ On Daendels’ reforms, see Van den Doel, *De stille macht*, 35-41.

neighbouring provinces had assured their loyalty by swearing an oath to the new colonial government, Elout, Van der Capellen and Reinwardt talked with each *regent* individually in order to gain more information about the current social, political and economic state of their districts. The respective entries in Reinwardt's travel diary give a good impression of the scope and content of these interviews. Reinwardt noted information on the number of families living in the different sub-districts and the production of crops such as coffee, rice, and coconut trees.¹⁰



Figure 27: Map of Java with places the General Committee and Reinwardt visited.

Such gatherings also often resulted in concrete decisions and orders. In Sumedang, the General Commissioners, for instance, decreed that there should be no tax levied on the vaccination against the highly contagious skin disease of smallpox.¹¹ Moreover, Reinwardt was ordered to accumulate more information about this disease and the current state of the vaccination program which the British Lieutenant General Sir Thomas Stamford Raffles had introduced during his tenure. Beside the official meetings, the General Commissioners enjoyed excursions to surrounding areas. On these trips, which were either organized by the indigenous *regents* or local Dutch administrators, they went fishing or hunting or attended tiger fights.¹²

¹⁰ UB Leiden, UBL, 2425, 5, Reis naar Indië en Java, entry: 27 July 1817.

¹¹ P. Boomgaard, "Smallpox, vaccination, and the Pax Neerlandica, Indonesia, 1550-1930," *Bijdragen tot de Taal-, Land- en Volkenkunde* 159:4 (2003): 591.

¹² UB Leiden, BPL, 2425, 5, Reis naar Indië en Java, entry: 24/25 July 1817.

Dealing with the Land-rent System

In Cheribon and Tegal, Van der Capellen, Elout and Reinwardt dealt with the land-rent system, another product of the British interregnum. While prior to 1800 the VOC had contracted with the local rulers to deliver fixed amounts of coffee, indigo and other cash at a set price, the British introduced a more progressive taxation system, based on the one employed in Bengal. Instead of negotiating prices and contingents with the *regenten*, Raffles allocated small parcels of land to the so-called village heads (*desa hoofden*). He hoped that the village heads would follow their self-interest by producing crops that could be sold profitably on the world market. As a compensation for the land ownership and the expected profit, Raffles demanded a land-rent payable either in money or in cash crops. The actual amount of the land rent depended on local factors such as the quality of the soil, local prices and the actual amount of the harvest.¹³

The British administrators were well aware that the land-rent system would never function unless enough statistical information about soil quality, cash crops, population, land rights, in the villages was available.¹⁴ In order to gather such data, they had set up the so-called Mackenzie Land Tenure Commission. Under the supervision of the former surveyor of British India Lieutenant-Colonel Colin Mackenzie (1754-1821), the committee compiled information about the quality of soils and the ownership of land.¹⁵ Moreover they ordered individual tax collectors to compile detailed maps of their respective districts including political borders, villages, roads, forests, and an exact description of all agricultural areas.¹⁶ Much of the material served also as the basis for lavishly produced monographs such as Raffles' *History of Java* (1817), Crawford's multi-volume *History of the Indian Archipelago, containing an account of the manners, arts, languages, religions, institutions, and commerce of its inhabitants* (1820) or Horsfield's *Zoological researches in Java, and the neighbouring islands*, which came off the press in London in 1824.

¹³ For a detailed description of Raffles' land rent system, see J.S. Bastin, *Raffles' ideas on the land rent system on Java and the Mackenzie land tenure commission* ('s-Gravenhage: Martinus Nijhoff, 1954) and more recent W.R. ter Bruggen Hugenholtz, "Landrentebelasting op Java 1812-1920" (PhD thesis, Leiden University, 2008).

¹⁴ Ter Bruggen Hugenholtz, "Landrentebelasting op Java," 26.

¹⁵ Bastin, *Raffles' Ideas on the land rent system*, 18-33.

¹⁶ Ter Bruggen Hugenholtz, "Landrentebelasting op Java," 23.

On top of the projects already mentioned, Mackenzie and his colleagues had distributed questionnaires among the village heads in order to gather information on the available land, products, population, property rights, and work force. Since only parts of that material had been published in Raffles' *Substance of a Minute on the introduction of an improved system of internal management and the establishment of a land rental on the island of Java* (1814), the General Committee could often only guess how the system functioned in the various districts. In October 1817, Van der Capellen summarized his observations in a letter to the king's secretary Falck as follows:

So many districts [*residentien*], so many applications, and some completely against the spirit of the regulations, although they had been the same everywhere. Every British district officer introduced the system according to his own ideas, and our [colonial civil servant] mostly continued the way they had found it. . . . We are still busy collecting material and probably we will have to decide to appoint a suitable and experienced civil servant who . . . takes care that the law will be introduced every way in the same way and informs the government of all anomalies.¹⁷

In the field, the General Committee often depended on the goodwill and advice of local civil servants. In Cheribon, for instance, the local district officer provided a detailed table containing data on the number of renters, the total and average amount of rent, and information on people who did not rent land such as children and teenagers.¹⁸ From November 1817 on, the General Committee could also draw upon Raffles' *History of Java*, in which the former British administrator of Java summarized the accumulated statistical and other data about the island's economy, culture, geography and

¹⁷ Colenbrander, *Gedenkschriften van Anton Reinhardt Falck*, 469, letter Van der Capellen to Falck, Sourabaya, 14 October 1817: "Zoo vele residentien, zoo vele verschillende applicatien, en sommige geheel tegen den geest der regulatien, hoewel deze overal dezelfde geweest zijn. Elk Engelsch Resident heeft zijn ideeën bij de invoering opgevolgd, en de onzen zijn meestal voortgegaan zooals zij het gevonden hebben. . . . Wij zijn nog bezig om alle de materialen daartoe bijeen te brengen, en waarschijnlijk zullen wij er toe moeten komen om een geschikt en ervaren ambtenaar te benoemen, die . . . zorgt dat de wet overal eenparig worde uitgevoerd en het gouvernement steeds van alle afwijkingen worde onderrigt."

¹⁸ UB Leiden, BPL 2425, 5, Reis naar Indië en Java, entry 31 July 1817.

nature in the form of a large narrative written for a wide European audience.¹⁹

Owing to the perpetual lack of statistical material, the General Committee eventually decided to install two special inspectors, P.H. van Lawick van Pabst (1780-?) and Hendrik Jan van de Graaff (1782-1827), who received orders to survey the land-rent system. While Van Pabst belonged to the group of 'oudgasten' who had held various high posts in the colonial administration, Van de Graaff was a newcomer to Java. Both inspectors had to submit written reports on a monthly basis. In order to facilitate their work, they were also asked to discuss their findings with the soil expert Reinwardt.²⁰ Until the introduction of the cultivation system in 1830, Van Lawick van Pabst's and Van De Graaff's reports formed the basis for numerous decisions regarding the administrations of the land-rent system in Java.²¹

Visiting the Principality Surakarta

After a brief visit to Pakalongan and Semarang, where Reinwardt inspected an indigo factory and a textile workshop,²² the caravan headed for the principalities of Surakarta and Yogyakarta in the interior Java. Although the two Javanese courts had maintained a semi-independent status, the relationship with the colonial administrators in Batavia had not remained free of tensions. In particular the aggressive policies of Herman Willem Daendels and Raffles had incited unrest among the Javanese aristocracy at the courts in Solo and Yogyakarta. Instead of approaching the Javanese aristocracy in the hinterland carefully, Daendels and Raffles had forcibly subordinated the rulers in the principalities to the colonial government in Batavia. In June 1812, Raffles had attacked and plundered the sultan's palace in Yogyakarta and he banished the ruling sultan Hamengkubuwono II to

¹⁹ P.H. van der Kemp, *Het Nederlandsche Bestuur in 1817, tot het vertrek der Engelschen naar oorspronkelijke stukken* ('s-Gravenhage: Martinus Nijhoff, 1913), 388, letter Elout to Goldberg, Semarang, 11 November 1817.

²⁰ Staatsblad van Nederlandsch Indië voor 1817, no. 62, besluit van Commissarissen Generaal, 5 December 1817, no. 52, art. 4 and 23.

²¹ Van Niel, *Java's Northeast Coast*, 308.

²² UB Leiden, BPL 2425, 5, Reis naar Indië en Java, entries 5 and 13-15 August 1817.

Padang on Sumatra. Moreover, he annexed parts of the sultan's territory and allocated the land to a Javanese prince who collaborated with the British.²³

Despite the political tensions, the General Commissioners and Reinwardt were courteously received in Surakarta, where the *susuhunan* (ruler), his family and a large number of troops on horses accompanied the Dutch administrators from peripheral areas of Surakarta to the *kraton* (royal palace).²⁴ Van der Capellen, Elout and Reinwardt stayed in Solo for three days. Beside various festivities such as a public fight between a tiger and bull, the Dutch officials held gatherings with the *susuhunan* and other court officials where political and statistical information was exchanged. The gatherings took place in the house of the Dutch district officer as well as in the *kraton*.²⁵

During their stay in Solo, Reinwardt was accommodated in the house of the American naturalist Thomas Horsfield, who was preparing the shipping of the last part of his huge natural historical collection to the museum of the East India Company in London. His enormous collection—Reinwardt was full of admiration—consisted of a large number of prepared plants, minerals, mineralogical maps, fire weapons, antiquities, drawings and sketches.²⁶

Like Reinwardt, Horsfield had been trained in chemistry, pharmacy and natural history at Moravian schools at Bethlehem and Nazareth in the state of Pennsylvania and at the University of Pennsylvania. He had reached Java in 1801 and first worked as a surgeon in the Dutch colonial army, to receive permission to travel in Java.²⁷ Henceforth, Horsfield investigated not only large parts of west- and central Java, but also the island of Banka. He had also carried out chemical analyses of volcanic ash, minerals and water samples which he took from various volcanoes in the hinterland of Java. For Raffles, who wrestled with the introduction of the land-rent system, Horsfield's geological investigations were invaluable, and he encouraged

²³ W. van den Doel, *Het rijk van Insulinde. Opkomst en ondergang van een Nederlandse kolonie* (Amsterdam: Prometheus, 1996), 14-21.

²⁴ UB Leiden, BPL 2425, 5, Reis naar Indië en Java, entry: 20-23 August 1817.

²⁵ *Ibidem*.

²⁶ *Ibidem*.

²⁷ For Horsfield's biography and field investigations in Java, see J. Bastin and D.T. Moore, "The geological research of Dr Thomas Horsfield in Indonesia 1801-1819," *Bulletin of the British Museum (Natural History), historical series* 10:3 (1982): 75-115; and Bastin, *The natural history researches of Dr Thomas Horsfield (1773-1859)*.

Horsfield to publish his findings. His articles appeared in the *Proceedings* of the Batavian Society of Arts and Sciences between 1814 and 1816.²⁸



Figure 28: Bird illustration in Horsfield's monograph *Zoological researches* (1824).

In order to visualize his geological findings, Horsfield also compiled a mineralogical map of Banka and Java.²⁹ The latter map was published in

²⁸ T. Horsfield, "Scheikundige ontleding van een vulkaanasch zand en een ijzer-erts," *Verhandelingen van het Bataviasche Genootschap van Kunsten en Wetenschappen* 7:3 (1814): 1-8; idem, "Over de rivier van Solo in een brief aan de dirigerende leden van het Bataviasche Genootschap," *Verhandelingen van het Bataviasche Genootschap van Kunsten en Wetenschappen* 7:4 (1814): 1-16; idem, "Reis naar de ooster-streken van Java," *Verhandelingen van het Bataviasche Genootschap van Kunsten en Wetenschappen* 7:4 (1814): 17-31; idem, "Berigt, van eene met vaste-lucht bezwangerde bronwel, in het regentschap Parakan-Moentjan," *Verhandelingen van het Bataviasche Genootschap van Kunsten en Wetenschappen* 7:8 (1814): 1-12; idem, "On the mineralogy of Java. Essay I. Account of the island from its western extremity to the mountain of Sumbing, situated near the longitude of Semarang," *Verhandelingen van het Bataviasche Genootschap van Kunsten en Wetenschappen* 8:4 (1816): 1-47; idem, "Essay on the geography, mineralogy and botany of the western portion of the territory of the native princes of Java," *Verhandelingen van het Bataviasche Genootschap van Kunsten en Wetenschappen* 8:6 (1816): 1-183.

Raffles' *History of Java* (1817). Although the geological information was only superficial, it remained a crucial starting point for inquiries into Java's geology for several decades. The German traveller Franz Wilhelm Junghuhn (1809-1864), who in the 1850s published a multi-volume work on the geology and volcanology of Java, praised Horsfield's geological map for its accuracy.³⁰

Reinwardt was interested in Horsfield's investigations, because his geological and mineralogical inquiries were essential for the further improvement of the land-rent system. His meeting with Horsfield gave Reinwardt an important insight into the naturalist's plans to publish his results for a European audience. Owing to the large number of items, Reinwardt estimated that it would take Horsfield several years to finish his *Natural History of Java*, which Raffles had announced in the last volume of his *History of Java*.³¹ In a letter to Van Marum he rather optimistically concluded:

You recognize that Raffles and Horsfield have done a lot of work, but you don't have to fear that there is nothing left for me. At the end of the book [*Raffles' History of Java*] a *Natural History of Java* by Horsfield is announced; but from what I have told you of this man and his investigations in my letter from Japara you can easily conclude that the public has yet to wait for that work for several years.³²

²⁹ In the second half of the eighteenth century, various mineralogical maps were produced with the intent of mapping the natural resources (ores, limestone, coal) of France, Britain, and the German states. For more details, see D.R. Oldroyd, *Thinking about the earth. A history of ideas in geology* (London: Athlone, 1996), 71-85.

³⁰ F.W. Junghuhn, *Java, deszelfs gedaante, bekleeding en inwendige structuur*, vol. 1 (Amsterdam: P.N. van Kampen, 1851), 98-99. For a recent biography of Junghuhn see also R. Sternagel, *Der Humboldt von Java. Leben und Werk des Naturforschers Franz Wilhelm Junghuhn, 1809-1864*. (Halle (Saale): Mitteldeutscher Verlag, 2011).

³¹ NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Semarang 14 November 1817.

³² *Ibidem*: "Gij zult daaruit zien dat door Raffles en Horsfield veel gedaan is, doch Gij behoeft niet te vrezen dat voor mij niet nog genoeg is overgelaten. Op het eind van dat werk wordt ook eene Naturl. Historie van Java door Horsfield aangekondigd; doch uit hetgeen ik U van dien man en zijn werkzaamheden in mijnen brief van Japara geschreven heb, kunt Gij ligt opmaken, dat het publiek nog wel wat jaren op dat werk zal moeten wachten."

Reinwardt's judgment was partly right. After the publication of the illustrated monograph on Java's zoology in 1824, it took Horsfield many more years to transform his notes and field sketches into a similar monograph on Java's plants. When the first sheets of his *Plantae javanicae rariores* came off the press in 1838, Reinwardt's assistant Blume had already placed his sumptuous *Flora Javae* on the European market.³³

After their visit to the court in Surakarta, the General Commissioners and Reinwardt moved on to neighbouring Yogyakarta, where they were welcomed by the young sultan Hamengkubuwono IV and the Dutch district officer (*resident*) Huibert Gerard Nahuijs van Burgst (1782-1858).³⁴ The visitors spent six days in the principality. On the first day, Reinwardt visited a limestone area near Yogyakarta where he inspected several lime kilns and investigated and analyzed the geological structure of the soil. On the next day, Reinwardt and the General Commissioners attended a fight between tigers and buffalos which the Javanese sultan had organized for them and visited the country house of the Dutch district officer a few kilometres from Yogyakarta. During his stay in Yogyakarta, Reinwardt continuously assembled data on the political and economical situation in the principality and he recorded, among other things, information on the income of the sultan, the levying of import and export duties, the most important export crops, and the current status of the rice fields.³⁵

Improving Java's Northeast Coast

After a brief visit to Yogyakarta, Magelang and Japara, the General Commissioners and Reinwardt reached the city of Rembang on Java's northeast coast. Rembang was home to a large shipyard and a staple depot for teak wood from the nearby forests. The timber of Rembang was vital for Java's infrastructure, for it was used for repairing ships and constructing houses and bridges across the whole island.³⁶ The British had exported large

³³ The full title of Horsfield's and Blume's botanical studies are: C.L. Blume and J.B. Fischer, *Flora Javae nec non insularum adjacentium* (Brussels: J. Frank, 1828-1851); and T. Horsfield, J. Bennett and R. Brown, *Plantae Javanicae rariores, descriptae iconibusque illustratae, quas in insula Java, annis 1802-1818* (London: G.H. Allen, 1838-52).

³⁴ UB Leiden, BPL 2425, 5, Reis naar Indië en Java, entry: 24 August 1817.

³⁵ *Ibidem*, entry: 28-29 August 1817.

³⁶ For a more general account of the administration and exploitation of Java's forests, see P. Boomgaard, "Droefenis en duurzaamheid. Beheer en exploitatie van de bossen op Java onder Daendels (1808-1810)," *Jaarboek voor ecologische geschiedenis 2009: Natuur en*

quantities of teak wood to Bengal and the Cape, but the General Committee now forbade the export of trees and strengthened the authority of local civil servants who were responsible for the cutting and distribution of wood in Java.³⁷ One of their local informants was F.C.P. von Winckelmann, a former soldier. Von Winckelmann had acquired significant expertise about the economic usage of the enormous forests of Java's northeast coast and Reinwardt, who was accommodated in Winckelmann's house, was more than a little impressed by his host's knowledge about forestry in the region.³⁸

A couple of days later, the General Commissioners and Reinwardt moved on to the coastal city of Gresik. Reinwardt's main task there was the inspection of the saltpetre factory at nearby Sutji. The limestone caves in Sutji offered a fertile natural environment for the production of saltpetre, one of the core ingredients in gunpowder. During his inspection, Reinwardt examined the instruments and ingredients which the workers used for the production of saltpetre. Since they applied neither an aerometer—an instrument which was necessary to judge saltpetre starch—nor used potash that met the needed requirements, Reinwardt wrote an extensive report on how the production of saltpetre in Sutji could be improved.³⁹ In this report he advised Elout and Van der Capellen to import accurate aerometers made of glass from the Netherlands, unless the colony's engineers in Surabaya could come up with better calibrated instruments than they had so far.⁴⁰ Moreover, he also recommended the establishment of a separate potash manufactory in a nearby forest, because the stumps of cut trees would provide excellent raw material for the production of pure potash.⁴¹

In early October 1817, the General Commissioners and Reinwardt reached Surabaya where they stayed for more than two weeks. While Elout and Van der Capellen focused their attention on issues such as the reorganization of the postal service, the cultivation of coffee and the local taxation system, Reinwardt was asked to survey and improve the production

milieu in Belgische en Nederlandse koloniën, ed. M. 't Hart et al. (Gent: Academia Press, 2010), 53-77; and P. Boomgaard, *Changing economy in Indonesia. Volume 16: Forests and forestry 1823-1941* (Amsterdam: KIT, 1996), 9-38.

³⁷ Staatsblad van Nederlandsch Indië, no. 48, decision 8 October 1817, 136-37.

³⁸ UB Leiden, BPL 2425, 5, Reis naar Indië en Java, entry: 15 September 1817.

³⁹ The report is reprinted in De Vriese, *Reinwardt's reis*, 181-198.

⁴⁰ De Vriese, *Reinwardt's reis*, 189.

⁴¹ *Ibidem*, 192-3.

of silver coins in the local minting facility.⁴² Since the formation of a stable and uniform monetary system was a prerequisite for trade, administration and taxation, the General Commissioners had spent considerable time on this issue since their arrival on Java.⁴³ In order to survey and check the production of the new silver money, the so-called Indies guilder (*Indische gulden*), in Surabaya, the General Commissioners and Reinwardt had observed the actual minting of coins in late 1817.⁴⁴ Reinwardt subsequently provided Elout and Van der Capellen with a detailed analysis of the minted money.⁴⁵ Since the coins produced did not contain the prescribed amount of silver, the Commissioners General eventually decided to stop the production of the Indies guilder in Surabaya. In contradiction to their orders from the Netherlands, they instead instructed the head of the factory in Surabaya to continue with the production of the copper coins, the so-called *duiten*. The General Commissioners also advised the authorities in the Netherlands to produce more copper coins and ship them to Java. In order to provide the local economy with a sufficient amount of money, the colonial government also stipulated the issuing of new paper money from 1820 onwards.⁴⁶

The General Commissioners and Reinwardt returned to Batavia at end of November 1817. In the months that followed Elout and Van der Capellen spent their time evaluating the outcome of their journey. The experiences, conversations, reports observations and statistical data which they had acquired in the course of the journey resulted in a large number of decisions and regulations. In particular the new *Regeringsreglement* issued at the end of 1818 constituted an important framework for the colony's administration in the decades to come.⁴⁷ In 1820, Van der Capellen initiated

⁴² Van der Kemp, *Het Nederlandsch-Indisch bestuur in 1817*, 385-87, letter Elout to Goldberg, Sourabaya, 10 Oktober 1817.

⁴³ Van Niel, *Java's Northeast Coast, 1740-1840*, 291-92. For a more general analysis of the monetary system on Java after 1816, see J.T.M. van Laanen, *Changing economy in Indonesia*, vol. 6, *Money and banking 1816-1942* (The Hague: Martinus Nijhoff, 1980).

⁴⁴ Van der Kemp, *Het Nederlandsch-Indisch bestuur in 1817*, 387-9, letter Elout to Goldberg, Sourabaya, 11 November 1817.

⁴⁵ NA The Hague, Ministerie van Koloniën, 1850-1900, inv. 368, 8: Muntwezen: Reinwardt to Raad van Finantiën, Sourabaya, 5 October 1817.

⁴⁶ J.L. van Zanden, "Linking two debates: money supply, wage labour, and economic development in Java in the nineteenth century," in *Wages and currency. Global comparisons from antiquity to the twentieth century*, ed. Jan Lucassen, et al. (Bern: Peter Lang, 2007), 178; and De Prins, *Voor keizer en koning*, 129. For an older but still valuable analysis, see Zappey, *De economische en politieke werkzaamheid*, 110-15.

⁴⁷ Efthymiou, *De organisatie van regelgeving voor Nederlands Oost-Indië*, 157.

a large statistical survey of Java and neighbouring islands. Though the outcome of the survey was never published, it gave an important impetus for similar endeavours carried out in the late 1820s and 1830s.⁴⁸

Despite the high workload demanded by the compilation of the many reports before and during the journey, Reinwardt was rather satisfied about his work. In May 1818, he informed Falck that his administrative duties had been reduced and that he was preparing a journey to the Preanger region in the hinterland of Batavia on a journey dedicated exclusively to the investigation of Java's nature and geography and the collection of plants, animals and minerals.⁴⁹

Investigating the Hinterland of Batavia

Reinwardt's preparations for the expedition were cut short because the General Commissioners continued to ask him to write reports on various issues such as, for instance, the copper plating of ships.⁵⁰ In June 1818, Reinwardt even received orders to go to Semarang to open the military school there. This journey to the eastern part of Java lasted one month. In a letter to De Vries, Reinwardt bluntly complained about the fact that he again had to postpone his expedition: "If I had not been obliged to go to Semarang, I would have already been on my physical journey; now I am again busy with preparations for it."⁵¹

Preparations for the colonial government-sponsored expedition to the mountainous hinterland of Batavia, the so-called Preanger region, were not finished before March 1819. Although Dutch and British merchants had penetrated the region since the end of the eighteenth century in their efforts to establish the cultivation of coffee on a large scale, large parts of the Preanger remained a *terra incognita* to Java's colonial authorities in Buitenzorg and Batavia.⁵² The land-rent system had never been introduced in

⁴⁸ Stevens, *Van der Capellen's koloniale ambitie*, 89.

⁴⁹ H.T. Colenbrander, *Gedenkstukken der Algemene geschiedenis van Nederland 1795-1840*, vol. 8, II, 192-93, letter Reinwardt to Falck, Batavia, 20 May 1818.

⁵⁰ NA The Hague, Ministerie van Koloniën, 1814-1849, inv. 2418, letter Reinwardt to governor general, 6 June 1818.

⁵¹ KB The Hague, 121 B8, letter Reinwardt to De Vries, 29 August 1818: "Had ik niet naar Samarang moeten gaan, ik was reeds op mijne physische reis; nu houd ik me verder met voorbereidingen tot dezelve bezig."

⁵² J. Breman, *Koloniaal profijt van onvrije arbeid. Het Preanger stelsel van gedwongen koffieteelt op Java, 1720-1870* (Amsterdam: Amsterdam University Press, 2010), 21-148.

the Preanger region, and owing to the lack of well-maintained roads between the main settlements, travelling was difficult. In order to facilitate the work in the field, Reinwardt hired numerous hunters, plant collectors, butterfly hunters, a cook, and local porters to carry the collecting equipment and food provisions, which were packed in large boxes called *dongdang*. Ultimately the caravan consisted of more than a hundred people.⁵³

The Brussels landscape painter and architect Antoine Auguste Joseph Payen (1792-1853) also accompanied Reinwardt on his expedition through the Preanger. Payen had been directly appointed and instructed by Willem I. Similar to other landscape painters who had joined British and French expeditions to the Pacific and India in the second half of the eighteenth century, Payen was commissioned to produce paintings and drawings illustrating the general characteristic of the landscape of the Dutch colony.⁵⁴ Payen's most important teacher was the landscape painter Henri Asche (1775-1841) who ran a studio in Brussels. Asche taught Payen how to make preliminary sketches in the field with watercolours and oil paint. The field sketches formed the central basis for colourful paintings which were finished in the seclusion of the painter's studio.⁵⁵ Payen had never had the opportunity to refine his painting technique on a Grand Tour through Italy which, at that time, was one of the essential elements of a landscape painter's training. His tour to the Dutch colonies was to compensate for this lack in his education.⁵⁶

The expedition first moved to Ciampea, an estate a couple of miles west of Buitenzorg, where Reinwardt and his European personnel were accommodated in the spacious country house of the Riemsdijk family. The Riemsdijks were one of the biggest landowners in the hinterland of Batavia.⁵⁷ Various family members had held high positions within the colonial bureaucracy in Java. In Ciampea, the brothers Petrus Wilhelmus Helvetius van Riemsdijk (1780-1857) and Willem Vincent Helvetius van Riemsdijk

⁵³ Scalliet, *Antoine Payen*, 269; Journal I, Payen, entry: March 1819.

⁵⁴ On the appointment of Payen, see M.-O. Scalliet, "'Back to Nature' in the East Indies," in *Pictures from the tropics. Paintings by Western artists during the Dutch colonial period in Indonesia*, ed. M.-O. Scalliet, et al., 44-47 (Amsterdam: Koninklijk Instituut voor de Tropen, 1999).

⁵⁵ Scalliet, *Antoine Payen*, 17-30.

⁵⁶ Scalliet, "'Back to Nature' in the East Indies," 47-49.

⁵⁷ Knight, "Estates and plantations in Java," 136-7. For more information on the Riemsdijk family see also P.R. Feith and P.C. Bloys van Treslong Prins, *De bekende landheer van Tjampea c.a. Willem Vincent Helvetius van Riemsdijk* (Batavia: Kolff, 1933).

(1784-1847) provided Reinwardt and his staff with practical information about the region and accompanied them on day trips to the close vicinity. Reinwardt and his assistant Kent used these small trips to collect and describe plants, birds and insects. His draftsmen made first sketches of the gathered items.⁵⁸

After a brief stay at a nearby place called Sadang where Reinwardt and his European and indigenous helpers continued their collecting, the entire caravan headed for Gunung Parang, a large private estate in the southern part of the Preanger district. The caravan aroused curiosity among the inhabitants of the smaller villages they passed. In one, a group of villagers approached Bik and asked about the travellers' aims. They were especially interested in the large number of metal drums which contained the plant and animal specimens collected by the expedition. Bik recorded in his diary:

It was not easy to answer this question and to give them a good understanding of what we are doing. We said that the professor was a important physician [*doekan besar*] and that all the plants and animals were collected in order to prepare various medical drugs in order to be able to cure all diseases. This answer, which was partly true, satisfied them and even made them think highly of us.⁵⁹

In the third week of April 1819, the caravan reached Sukabumi, where they were welcomed by Andries de Wilde (1781-1865), who lodged them in his spacious country house. De Wilde was co-owner and administrator of a large private estate which stretched as far as the southern coast of the island. De Wilde was born in Amsterdam and had reached Java in 1803. After his appointment as surgeon he had been named inspector of coffee cultivation, first in the Buitenzorg district and later the Preanger district.⁶⁰ De Wilde had bought Sukabumi in 1813, when Raffles initiated the selling of huge tracts of

⁵⁸ KITLV Leiden, H 596, Travel diary J. Th. Bik, entries 20 and 21 March 1819.

⁵⁹ Ibidem, entry 10 April 1819: "Het was niet gemakkelijk om deze vraag te beantwoorden en hun daarvan eene goede begrip te geven. Wij zeiden hun dat professor eene doekan besaar was, en dat alle die planten en beesten, moesten dienen om daaruit verschillende geneesmiddelen te bereiden om alle ziekten te kunnen genezen. Dit antwoordt dat gedeeltelijk waarheid bevatte was voor hun bevredigend en deed hun tevens een goede dunk van ons op vatten."

⁶⁰ For a detailed biography of De Wilde, see De Haan, *Priangan*, vol. 2: *Personalia*, 284-87.

land in Krawang and the Preanger regions. The second owner of the estate was Nicolaus Engelhard.⁶¹

De Wilde's and Engelhard's investment turned out to be a success. Owing to high coffee prices on the world market in the aftermath of the Haitian Revolution of 1791-1804, the landowners profited immensely from the large coffee plantations on their estate. The improvement of the irrigation system which Bik praised in his diary further increased the efficiency of this agricultural enterprise.⁶² Bik summarized the brief stay in Sukabumi as follows:

It was good that we stayed here for only two days, otherwise we would have forgotten our 'rustic' [*bosche*] life and it would have cost us much effort to change our simple meals [*tafel*] for the ones of Sukabumi.⁶³

Already one day after their arrival, Reinwardt, De Wilde and the local district officer organized a meeting to plan the remainder of their tour through the Preanger.⁶⁴ De Wilde had already accompanied Raffles on a similar expedition through the area.⁶⁵

One week later, the caravan reached the top of the Gunung Gede volcano, where they set up a large camp. In the meantime a number of indigenous rulers had joined the group, and one of the regents had even provided the expedition with six fresh horses and food.⁶⁶ Reinwardt and his crew used the days to come to investigate the geology of the crater and to measure the position and height of the neighbouring mountains. One of the things which attracted Reinwardt's companions was the basalt formations, for as Bik put in his diary, "it is not yet decided among the geologists

⁶¹ Knight, "Estates and plantations in Java," 45.

⁶² For an overview of De Wilde's years as landowner, see De Haan, *Priangan*, vol. 2: *Personalia*, 287-309.

⁶³ KITLV Leiden, H 596, Travel diary J. Th. Bik, entry: 11 April 1819: "Het was goed dat wij hier slechts twee dagen bleven, want anders hadden wij spoedig ons bosche leven vergeten en het had ons veel moeite gekost om onze eenvoudige tafel voor die van Sukabumi te verwisselen."

⁶⁴ Scalliet, *Antoine Payen*, 269: Journal Payen I, entry: 13 April 1819.

⁶⁵ A. de Wilde, *De Preanger Regentschappen op Java gelegen* (Amsterdam: M. Westerman, 1830), 20-5.

⁶⁶ KITLV Leiden, H 596, Travel diary J. Th. Bik, entry 14 April 1819.

whether the basalt clods have been created by fire or water.”⁶⁷ Payen and the Biks prepared several drawings and sketches of the crater and the surrounding area. The field work at the top of the Gunung Gedeh was a cooperative enterprise. Classifying and naming plants, animals and localities was an especially complex endeavour in which local helpers played an important role. In one of the entries in his travel diary Bik put it as follows: “We were accompanied by a local who knew many names of plants, mountains and rivers.”⁶⁸

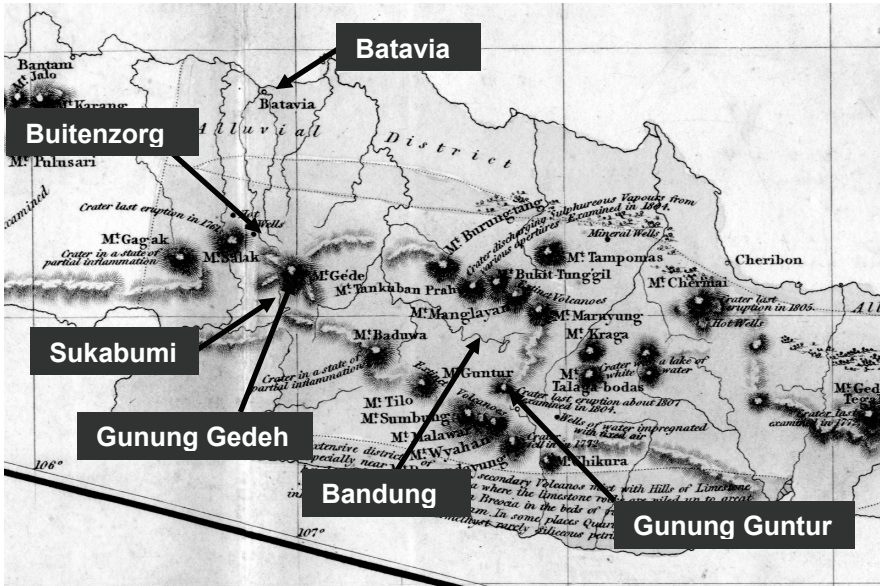


Figure 29: Mineralogical map of the Preanger by the American naturalist Thomas Horsfield.

The caravan was regularly visited by local regents who often accompanied Reinwardt and his helpers for a while and sometimes even organized the performance of local dances and small gamelan concerts.⁶⁹ In the small village of Cipetir, near the border of the Bandung district (the Preanger region was divided into four administrative districts at the time), they were received by a local noble called Rajamandala. The regent of

⁶⁷ Ibidem, entry 17 April 1819: “. . . het is onder de geologen nog niet beslist of die basalt klompen door het vuur of door het water zijn ontstaan.”

⁶⁸ Ibidem: “Wij hadden een inlander bij ons welke zeer ervaren was in alle benamingen van planten, bergen en rivieren.”

⁶⁹ Scalliet, *Antoine Payen*, 269: Journal Payen I, entry: 24 April 1819.

evening hours; and often bundles of documents which Reinwardt had reviewed and offered advice about were dispatched to Batavia.⁷³ In other words, the letters from Batavia did not stop.⁷⁴

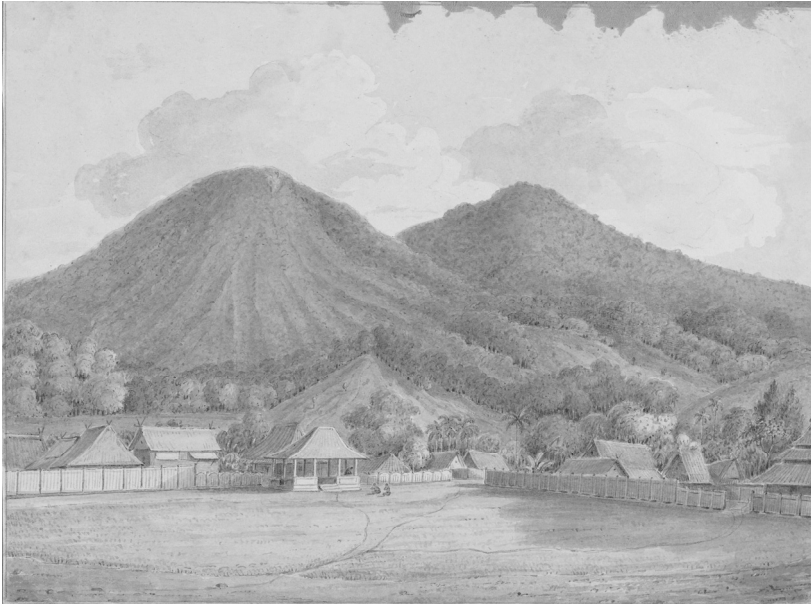


Figure 31: Sketch of a village in the Preanger with two volcanoes in the background made by Jannes Theodorus Bik (1819).

In October 1819, Reinwardt received a letter from Van der Capellen ordering him to depart immediately for Semarang in his function as curator of the military school and administrator of the health service. Since Reinwardt had expected that his stay in Semarang would take longer, he decided to send the caravan back to his house in Buitenzorg. He further instructed his companions to prepare the large number of collected birds, plants, stones and animals for shipping to Europe.⁷⁵ A quick shipment of the

⁷³ *Ibidem*, entry: 6 May 1819: “[H]et regende dan soms ook van officiële brieven waartoe hij [A.W.: Reinwardt] meestal den avond koos om dezelve te beantwoorden en gingen dikwijls bundels met stukken naar Batavia terug waarop Professor zijn consideratien en advies had gegeven.”

⁷⁴ *Ibidem*, entry: 22 September 1819.

⁷⁵ *Ibidem*, entry: 13 October 1819.

collected items was necessary in order to protect them from detrimental environmental influences such as humidity and vermin.⁷⁶

An Unexpected Appointment at Home

In January 1820, the end of Reinwardt's tenure as Director of Agriculture, Arts and Sciences was rapidly approaching. According to his instructions, decreed by the Dutch king Willem I in January 1815, his time on Java was limited to a period of at most four years, which meant that he had to leave Java around April 1820. In a long letter to Van der Capellen, Reinwardt argued for an extension of his stay in the Malay Archipelago on the grounds that his natural historical inquiry had not yet attained the peak of perfection and completeness. In particular the expedition through the Preanger region had shown that in-depth field work was necessary to meet the expectations of the king and the public in the Netherlands. Reinwardt thus proposed to the Governor General that his stay in the Dutch colony be prolonged for one year, or even better until the end of 1821.⁷⁷ Van der Capellen immediately forwarded Reinwardt's request to Willem I in the Netherlands.⁷⁸

Yet it turned out that there was little to negotiate. In his absence, decisions had already been made. In early 1820, Reinwardt heard from his friends De Vries in Amsterdam and Van Marum in Haarlem that he had been appointed as professor of chemistry, botany and natural history and director of the botanical garden at the University in Leiden, as successor to Sebald Justinus Brugmans, who had abruptly passed away.⁷⁹ Reinwardt, who knew Brugmans from his years as a member of the First Class of the Royal Institute in Amsterdam, first doubted whether he should accept the position. In a letter to De Vries he complained that neither his friends in the Netherlands nor the authorities had informed him about his appointment. Reinwardt feared that the position in Leiden could not compensate for the loss of his functions as director of the State Cabinet of Natural History or as professor of natural history, chemistry and botany at the Athenaeum Illustre

⁷⁶ NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Batavia, 10 February 1817.

⁷⁷ De Vriese, *Reinwardt's reis*, 295, letter Reinwardt to Gouverneur Generaal Van der Capellen, Buitenzorg, 6 January 1820.

⁷⁸ NA The Hague, Ministerie van Koloniën, 1814-1849, inv. 2452: Decision of the Gouverneur Generaal, 15 January 1819, 18.

⁷⁹ NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 23 February 1820.

in Amsterdam. Moreover, he was concerned about his salary and he feared that the professorship would prevent him from preparing more extensive publications on his fieldwork in the Netherlands Indies. In the end, he accepted the offered position rather grudgingly.⁸⁰ In another letter written in September 1820, he complained about the fact that the curators of the Athenaeum Illustre had failed to give him any sign of their appreciation of his work, which definitely would have changed his mind.⁸¹

A Last Journey to the Moluccas

However, before Reinwardt returned to the Netherlands, the king eventually allowed him to carry out a sea expedition to the eastern part of the Malay Archipelago, a region where the colonial authority was barely established.⁸² The political influence of the Dutch district officers was often restricted to the boundaries of their small coastal settlements which the merchants of the Company had established in the course of the seventeenth and eighteenth centuries.⁸³ A chronological and detailed account of this expedition, which took place from January 1821 until March 1822, was made public after Reinwardt's death in 1858 by Willem H. de Vriese (1806-1862), who succeeded Reinwardt as professor for botany at Leiden University. The voluminous report of the expedition, which is evidently based on Reinwardt's field notes, sheds light on various improvised and spontaneous processes of knowledge accumulation in the field.⁸⁴ Reinwardt almost completely depended on the available colonial infrastructure and on various local informants throughout this trip.⁸⁵

Reinwardt travelled on the ship *Experiment*, which was chartered by the colonial government. His research crew consisted of a gardener, two draftsmen, and a personal servant, called Philips, and someone from Borneo, who presumably had to serve as translator during the trip. Furthermore the traveller was accompanied by three locals who were responsible for the collection of plants and insects and the preparation of specimens in the field.

⁸⁰ KB The Hague, 121 B 8, letter Reinwardt to De Vries, 30 June 1820.

⁸¹ Ibidem, 30 September 1820.

⁸² The following section is based on: A. Weber, "Encountering the Netherlands Indies," *Itinerario* 33 (2009): 51-54.

⁸³ E.M. Jacobs, *Merchant in Asia. The trade of the Dutch East India Company during the eighteenth century* (Leiden: CNWS Publications, 2006), 13-40.

⁸⁴ UB Leiden, BPL 2425, 6 and 12.

⁸⁵ See De Vriese, *Reinwardt's reis*, 305-643.

The ship's crew, as Reinwardt reports, consisted of twenty five persons among whom were Bengalis, people from South Africa, Javanese, and a Chinese carpenter. Local people also regularly supplied them with sufficient fresh food which they received in exchange for flintlocks and gunpowder.⁸⁶

Travelling on land itself was—at least for Reinwardt—a rather comfortable endeavour, since he was either carried in a litter (*draagstoel*) or could make use of horses or carriages provided by local colonial officials; only in special cases did he have to walk by himself. His litter was normally carried by four local porters. A fifth person took care that that it remained balanced. Reinwardt noted in his account the following:

This mode of travelling is above every other [mode] comfortable; the carriers walk very quickly and I was quite astonished that they were carrying us over steep hills, sometimes even running, particularly when the carriers of one chair spurred on those who carried another by challenging and competing with them.⁸⁷

During his visit to Menado, the administrative capital of Celebes, Reinwardt recorded that the service of being carried for free was part of an earlier VOC agreement with the various indigenous rulers. Each of those rulers had to provide carriers when Dutch officials were crossing their district.⁸⁸

Encounters on the different islands always followed the same pattern. After having called at the respective harbour, Reinwardt and his helpers were received and welcomed by the local Dutch district officer or missionaries, who subsequently gave him an account of the local situation. This briefing comprised information on the political relations between the Dutch and the indigenous rulers, about earthquakes, volcanic eruptions, floods, agriculture, the local religion, special customs, the population, etc. After that, Reinwardt often visited the local rulers in order to complete his information. Those encounters were highly ritualised. In many cases Reinwardt was accompanied

⁸⁶ *Ibidem*, 307-8 and 333.

⁸⁷ *Ibidem*, 376: “Deze wijze van reizen is boven elke andere gemakkelijk; de dragers gaan zeer snel en ik verwonderde mij niet weinig, dat zij ons met het grootste gemak over het steile gebergte droegen, somtijds zelfs in een snellen loop, vooral wanneer de dragers van den eenen stoel die van eenen andere, door uitdaging en wedijveren met elkander, aanmoedigen.”

⁸⁸ *Ibidem*, 544.

by Dutch officials and a translator who mediated between him and the indigenous rulers.⁸⁹

On Timor, the Dutch district officer even organized an expedition to the hinterland, where Reinwardt hoped to find gold and copper. Since the diplomatic and political relations with Timor's hinterland rulers appeared to quite weak and uncertain, the resident had to bring together a small army (roughly 300 armed persons) which eventually accompanied the naturalist and his companions. A local Chinese served as guide to the column. During the expedition Reinwardt met several local rulers, observed and collected plants and animals and analysed rock samples. However, the expedition did not reach the river where gold and copper was assumed to be, since some of the accompanying princes refused to continue the trip inland due to a supposed lack of food. Reinwardt's final judgement regarding the situation in Timor was sober, clear, and obviously directed toward the interest of his imperial sponsor: "It is a great pity that this place is so much in decline. The frequent mutual wars ... between the many weak princes and rulers must be blamed for this. Those [wars] must stop. A single and uniform administration must be introduced. This would allow the safe opening, exploration and exploitation of the metal mines."⁹⁰

The reconstruction of Reinwardt's fieldwork in the Moluccas and in the Preanger region has shown how much the investigation of nature in the field was based on cooperation with local informants and further, how much he depended on an entire hierarchy of assistants, ranging from servants to draftsmen. In areas where colonial infrastructure barely penetrated, travellers such as Reinwardt depended heavily on the support and goodwill of peasants, local rulers and European landowners. They helped travellers such as Reinwardt to identify, name, and structure their observations in the field. This collaborative fieldwork was essential to the large-scale collection of plants, animals and minerals and the preparation of visual representations of these specimens. With the help of his draftsmen, Reinwardt mapped out the geography and vegetation of the visited territory in the form of field sketches and maps.

⁸⁹ *Ibidem*, 320.

⁹⁰ *Ibidem*, 361: "Het is dus te bejammeren, dat deze plaats thans zoo zeer in verval is. De veelvuldige onderlinge oorlogen ... van de menigte kleine Vorsten en Hoofden, zijn daaraan voornamelijk schuld. Deze moesten ophouden. Een eenig en eenparig bestuur moest worden ingevoerd. De metaalmijnen konden dan met veiligheid geopend, onderzocht en misschien met groot voordeel bewerkt worden."

Forging a New Identity

Already in the Netherlands Indies, Reinwardt intensified his reflections about his identity as a 'scientific traveller'. In January 1819, briefly after his return from the Preanger expedition, he had sent Van Marum sketches made by his draftsmen and living specimens of five plants which, in his opinion, had not yet been described and classified by other botanists such as Georg Everhard Rumphius in his *Herbarium Amboinense* (1741). Reinwardt asked Van Marum to cultivate the plants in the hothouse at Plantlust in Haarlem until his return. Since Reinwardt was insecure how to go about preparing and arranging the publication of a *Flora Javanicorum*, he asked Van Marum for advice. Reinwardt was particularly concerned about whether sufficient funding and a suitable engraver could be found in the Netherlands. One of the few options was the engraver Van Beek who had produced the plates for Dietrich Georg Kieser's *Mémoire sur l'organisation des plantes*, which had appeared as eighteenth volume of Teyler's Second Society in 1814. Reinwardt even authorized Van Marum to forward the drawings to Van Beek or someone else, in order to produce proof plates that could be used to attract sponsors for his publication. In order to complete the set, Reinwardt added short texts in which he described the specific features of these five plants. At a later stage, he planned to add observations on the physiognomy and 'oeconomy' of the chosen plants.⁹¹

Reinwardt also informed Van Marum that he had prepared enough written descriptions and illustrations of birds, insects and snakes to serve as the basis for an illustrated work on the fauna of Java. While he was confident in the originality of his botanical work, he was less certain about whether he had named the animal specimens correctly and whether they had not already been described by others. He hoped that the bird expert Coenraad Jacob Temminck (1778-1858) would help him to detect unknown species among the collected items.⁹²

Besides more descriptive monographs on his botanical and zoological investigations in Java, Reinwardt harboured plans to transform his field notes into a coherent travel narrative as other travellers had done before him. In particular the French and British expeditions under the command of John Byron (1723-1786), Samuel Wallis (1728-1795), Philippe Carteret (1733-1796), Louis Antoine de Bougainville (1729-1811) and James Cook (1728-1779) to the Pacific after the Seven Years' War had triggered the

⁹¹ Ibidem, letter Reinwardt to Van Marum, Buitenzorg, 10 January 1819.

⁹² Ibidem.

publication of lavishly produced travel narratives and descriptions of regions that lay beyond the horizon of Europe's learned world. The narrative strategies of these accounts were diverse. While most authors gave a chronological description of their journey based on their travel diaries, others decided to summarize their observations according to self-defined categories. In *Observations made during a voyage around the world, on physical geography, natural history, and ethic philosophy* (1777), Johann Reinhold and Georg Forster, who had accompanied Cook on his second circumnavigation from 1772 to 1775 summarized their findings by using the following six labels: the earth and its strata, water and the ocean, changes of the globe, the atmosphere, organic bodies and human species.⁹³



Figure 32: Illustration from Temminck's *Histoire naturelle des pigeons* (1808).

⁹³ For a thorough contextualization and analysis of a large number of these travel accounts, see J. Osterhammel, *Die Entzauberung Asiens. Europa und die asiatischen Reiche im 18. Jahrhundert* (München: C.H. Beck, 1998).

To foster curiosity among his readers in the Netherlands, Reinwardt rejected all requests from journals and institutions in the Netherlands to send them pieces about his field work, for as he put it, “[i]s there a traveller, who has published his field diary before he has returned?”⁹⁴ However, a brief analysis of one of his lectures, held at the Batavian Society of Arts and Sciences in April 1821, sheds more light on the construction of his identity as a ‘virtuous’ administrator and ‘heroic’ traveller.⁹⁵ The society was one of the most important forums for the colony’s elite to socialize, gossip and discuss the latest surveys and curiosities of the Malay Archipelago’s nature and geography. Since 1815, the society had held its irregular meetings in a new building in Weltevreden, one of the southern suburbs of Batavia.⁹⁶ Reinwardt’s lecture, which carried the title *Over de hoogte en verdere natuurlijke gesteldheid van eenige bergen in de Preanger Regentschappen* (On the height and further natural disposition of a few mountains in the Preanger administrative districts) was eventually published in the ninth volume of the Batavian Society’s proceedings.

Reinwardt opened his presentation by stressing the usefulness and importance of his expeditions to the Preanger region. Altitude measurements in the hilly interior of Java were essential to gain more insight into the island’s natural diversity and agricultural and economic wealth. In order to prove the virtue of his field work, Reinwardt emphasized the accuracy of his measurements, which far exceeded the precision of earlier surveys. Although earlier surveyors such as Raffles, the plant expert and chemist Horsfield, and the physician H.B. Henke in Yogyakarta, had also used standardized thermometers as measuring devices, Reinwardt argued that their figures were too incoherent to count as dependably accurate.⁹⁷

Before Reinwardt presented the actual results of his fieldwork, he first informed his readers about his instruments and his own methods of measuring. To increase the accuracy of measurements in the field, Reinwardt advocated the combined use of thermometers and barometers manufactured

⁹⁴ NHA Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Bandung 16 August 1819: “[w]at reiziger is er, die zijn Journaal voor zijne terugkomst heeft laten drukken?”

⁹⁵ This lecture was later published in the Society’s proceedings: C.G.C. Reinwardt, “Over de hoogte en verdere natuurlijke gesteldheid van eenige bergen in de Preanger-Regentschappen,” *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen* 9 (1823): 1-36.

⁹⁶ Groot, *Van Batavia naar Weltevreden*, 157-93

⁹⁷ Reinwardt, “Over de hoogte en verdere natuurlijke gesteldheid,” 3-7.

by British and Dutch instrument makers. Since, in his experience, the British thermometers had proven more dependable than the Dutch ones, he had based his field notes mainly on the British instruments. His so-called mountain barometers, or travel barometers, had a more compact design than regular barometers. Because the British and Dutch instruments used different units of measurement, he had to convert the different values continuously in order to obtain comparable numbers. Here Reinwardt advocated using the formulas mentioned in Johann Friedrich Benzenberg's manual on the use of travel barometers titled *Beschreibung eines einfachen Reisebarometers. Nebst einer Anleitung zur leichten Berechnung der Berghöhen* (Description of a simple travel barometer with a manual for the easy calculation of the height of mountains), published in Düsseldorf in 1811. In order to illustrate and document the accuracy of his measurements, Reinwardt added a detailed table to his published account.

In order to reach a high degree of accuracy in the field, Reinwardt also advised his readers to use two thermometers simultaneously. One instrument should be combined with a barometer in a cylindrical case, while the other was directly exposed to the air in a shady place, for instance under a tree. If the measurements of both thermometers differed, the extra barometer could be used to calculate a more exact value by using the tables in Benzenberg's manual. This technique could be applied at sites where measuring travellers could only stay for a short time, such as at the top of volcanoes.

On top of this, Reinwardt recommended that his readers check the accuracy of their results by using a eudiometer produced by the Italian instrument maker and physician Felice Fontana. Eudiometers were usually used by chemists and physicians to measure the quantity and quality of airs and gases. In late eighteenth- and early nineteenth-century Europe, eudiometry served as an important tool to survey the 'atmosphere' in which the citizens of a country lived. By measuring the air at hospitals, farmlands, canals, graveyards and marshland, administrators such as Fontana had successfully promoted 'eudiometry' as a tool to improve public health by forecasting or preventing famine and epidemic diseases. Many believed that environmental factors had a major impact on people's physical and moral health. Trained state experts who were able to handle and calibrate such a complex instrument in the field thus became a welcome tool for

administrators to demonstrate their ability to manage and govern the public body efficiently.⁹⁸

NAMEN DER PLAATSSEN.	Thermometer van Fahr.	BAROMETER.		HOOGTE DER PLAATSSEN.	
		Strepen. (Millimeters.)	Engelſche Duimen.	Ellen. Meters.	Engelſche Voeten.
Zeeſtrand	32	760	29,922		
Buitenſorg	79	737 5	29,034	265.7	865
Megamendon	66	640.5	25,216	1477	4848
Salak	54	589.5	23,202	2186	7172
Gedé	56	551	21,710	2766	9075
Pontiak Karang (Dist. Tjihca)	74	090	27,152	845.5	2774
Patoeba (Dist. Tjiſendarie).	50	584	22,992	2257	7407
Tombak Rocijong (idem)	61	609	23,978	1017	6291
Dorp. Tjiweduij (idem)	70	670	26,394	1069	3572
Noorder top van den Tiloe (Dist. Banjaran)	60	627	24,690	1653	5425
Zuider top van den Tiloe (id.)	60	614	24,174	1839	6034
Kampong Lamadjan (idem)	71	680	26,771	966	3169
Kampong Malabar (idem)	68	675.2	26,533	1025	3363
Berg Malabar (idem)	61	602	23,700	2018	6621
Dorp Banjaran (idem)	72	698	27,480	772	2534
Kampong Marujon (Dist. Tji- paraij)	71	683	26,889	925	3035
Kampong Nenkellen (idem)	65	666	26,220	1140	3742
Hooft van de Rivier Tjitarun (Dist. Manabaja)	63	645	25,394	1415	4645
Sumbong (idem)	65	624	24,566	1704	5593
Tjikaraha (idem)	64	640	25,196	1224	4017
Goenoeng Goentoer (Dist. Timanganten)	55	612	24,094	1855	6085
Telara Bodas (Dist. Wana- raja)	64	626	24,645	1675	5497
Dorp Trogong (Dist. Timan- ganten)	74	700	27,559	716	2350

Figure 33: A table added to the text of Reinwardt's lecture which was meant to prove the accuracy of his altitude measurements in the Preanger region.

In the remaining part of his speech, Reinwardt combined his altitude measurements with his geological and botanical investigations

⁹⁸ For a more general attempt to capture the hidden career of 'eudiometers' in administration and science, see S. Schaffer, "Measuring virtue: Eudiometry, enlightenment and pneumatic medicine," in *The medical enlightenment of the eighteenth century*, edited by Andrew Cunningham et al. (Cambridge: Cambridge University Press, 1990), 281-318. For the difficulty of handling and calibrating eudiometers, see L. Roberts, "Eudiometer," in *Instruments of science: An historical encyclopedia*, edited by Robert Bud, et al. (London: Garland, 1998), 234-36.

carried out in the Preanger mountains. Like Alexander von Humboldt in his *Ansichten der Natur* (Views of nature, 1805), Reinwardt took his readers on a virtual tour along the hills of the Preanger.⁹⁹ Since Reinwardt quotes Van Humboldt's study in the footnotes in the published version of his lecture, he must have possessed a copy of the latter's travel narrative.¹⁰⁰ His tour started at the foot of the mountains. Or as he put it:

We are entering the natural forests which cover the foot of the basalt mountains and which are characterized by a surprisingly luxuriant growth, heavy and extraordinarily high trees, by a large number of climbing plants; at the same time, the ground consists of a deep layer of black and very fertile mould.¹⁰¹

He then continued with a brief description of the forests which covered the mountains in the Preanger region until a height of 5000 feet. From then on the vegetation gradually changed and a tree which local people called *kimarak* dominated the landscape. Reinwardt could only guess that this further unknown tree belonged to the cypress family. Another shift of the vegetation appeared at the height of around 7000 feet. At that height, trees gradually vanished and shrubs, flowers, herbs and lichens now dominated the flora. As Reinwardt put it, "All plants show entirely different forms those that one usually observes in the lower parts, and the whole reminds us of the Alpine mountains in the cooler North."¹⁰²

In his subsequent floral description of a plain area close to the Gunung Patuha volcano, situated fifty kilometres southwest of Bandung, Reinwardt again stressed the economic importance of his fieldwork. For only

⁹⁹ For a contextualization of Von Humboldt's narrative practices, see M.-N. Bourguet, "Landscape with numbers. Natural history, travel and instruments in the late eighteenth and early nineteenth centuries," in *Instruments, travel and science. Itineraries of precision from the seventeenth to the twentieth century*, ed. M.N. Bourguet, et al. (London: Routledge, 2002), 96-125.

¹⁰⁰ Reinwardt, "Over de hoogte en verdere natuurlijke gesteldheid," footnote (p).

¹⁰¹ Ibidem, 28: "Wij betreden dadelijk de natuurlijke bosschen, die den voet van het basalt-gebergte overdekken, en die door eenen verbazend weelderigen groei, zwaar en ongemeen hoog geboomte, eene zeer groote menigte van slingerplanten, gelijk de grond door eene diepe laag van zwarte zeer voedzame plantaarde gekenmerkt worden."

¹⁰² Ibidem, 32: "[A]lle gewassen vertoonen geheel andere vormen, dan men gewoon is in de laagte te aanschouwen, en het geheel herinnert ons aan het Alpisch gebergte van het koudere noorden."

the combination of accurate measurement and travelling 'in the field' would allow one to determine where foreign and economically rewarding crops could be cultivated. The plain close to the Gunung Patuha, near a village called Tjisondari, would for instance offer an ideal natural environment for the cultivation of European cash crops, for the region's flora resembled the flora of temperate zones in other parts of the world.¹⁰³

This brief analysis of Reinwardt's lecture has shown that Reinwardt's identity as a traveller was rooted in his hybrid function as administrator, surveyor and natural historical investigator. Instead of providing an account of Java's nature based on the observation and description of certain plant or tree families in the form of monographs or articles as his assistant Blume or the American naturalist Horsfield were working on, Reinwardt decided to link the outcome of his supposedly carefully made measurements with his heroic journeys through the wilds of Java. Through Reinwardt's steadfast heroism, the virtue of his instruments and their measurements could be harnessed to a project of laying bare the truths of nature in the colonies for the purpose of understanding and governing exploitation.

Conclusion

This chapter has shown that 'travelling' was a tool common to both colonial governance and science. While the 'travelling' General Committee was a powerful demonstration of authority for local rulers and provincial colonial civil servants, Reinwardt used the field trips to collect natural historical specimens and statistical data on the political, economic and social situation in more remote provinces. In particular during his tour through the Preanger and the eastern part of the Malay Archipelago Reinwardt gathered a broad array of 'oeconomic' knowledge which served as basis for official reports and, of course, his travel account.

However, the reconstruction of a joint tour of inspection through Java has shown that surveying and 'improving' Java *in situ* was a complex endeavour. Although provincial colonial servants received a regular salary from the colonial government in Batavia, many of them were only partly interested in supporting the General Committee with their work. Influential families such as the Riemsdijks and the IJsseldijks, whose members still held various positions within the colonial administration, feared that the 'new-comers' and their liberal ideas would undermine their status and wealth. The

¹⁰³ Ibidem, 34-35.

General Committee and Reinwardt thus had to carefully weigh and evaluate the information which they received on the spot. Since Reinwardt possessed broad 'oeconomic' experience, he was continuously asked to advise the colonial government on pressing administrative issues, as wide-ranging as the cultivation and exploitation of export products from coffee to indigo, the minting of coins and the production of saltpetre. In particular, the application of instruments as thermometers, barometers, aerometers and eudiometers allowed Reinwardt to back his reports and recommendations with a broad and impressive array of putatively accurate numbers. No one within the colonial bureaucracy who had seen the long tables and seemingly complicated measurements would dare to question his ability as administrator.

The last part of this chapter has shown that Reinwardt was also deeply concerned about his identity and role as 'scientific traveller'. To claim such a mantle back in the Netherlands, Reinwardt pursued a dual strategy. He hoped that his own collection of plants and animals would provide him a strong basis for illustrated monographs on the flora and fauna of Java and the Moluccas. As the analysis of his speech in front of the members of the Batavian Society of Arts and Sciences has shown, he simultaneously sought to fashion himself as lonely and 'heroic' traveller and 'virtuous' administrator, who had dared to encounter Javanese nature and society. Reinwardt thus hoped that a narrative that set the act of accurate measurement in the context of a 'heroic' journey would help distinguish him from competitors such as his younger assistant Blume and the American plant expert and traveller Horsfield, whose in many ways simpler strategy was simply to describe, classify and name as many of the plant and animal species they had collected as they could.

In the end, Reinwardt's strategy failed. The following chapter will show that powerful governmental patrons such as the Dutch king Willem I increasingly doubted that Reinwardt—or more generally the General Committee—had used the proper administrative tools to transform the colony into a financially rewarding endeavour. Reinwardt's claim that only a 'new natural history' based on travelling and accurate measurements in the field had the potential to unravel mysteries of the natural wealth of the colony received hardly any support in the Dutch kingdom. Neither Willem nor his ministers were willing to support a 'virtuous' administrator who had returned from the colony empty-handed with the financial means to prepare an account of his supposedly 'heroic' journey through the Malay Archipelago.

