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## Decent colonialism? Pure science and colonial ideology in the Netherlands East Indies, 1910–1929

Andrew Goss

*This article examines changes within the Dutch civilising mission ideology after the decline of the Ethical Policy. Support of pure science, scientific knowledge that supposedly transcended ideology and politics, allowed the colonial administration to continue to project their rule as decent and moral, even as conflict and repression dominated colonial politics in the 1920s. The argument starts with the construction of pure science after 1910, under the care of J.C. Koningsberger, out of the research traditions at the Department of Agriculture. It next examines the creation of institutions and agendas of pure science. And finally it analyses the absorption of pure science into the civilising mission of the 1920s. It concludes with a discussion of what this means for historical evaluations of the Dutch colonial project.*

In 1914, at the opening of a visitor's laboratory on the grounds of the Buitenzorg Botanical Gardens, the director of the gardens, J.C. Koningsberger tried to convince the gathered colonial officials to broaden their support of science to include his field, pure (*zuiver*) science. He lectured the dignitaries that the applied agricultural science they were now supporting was too narrow for the complex task of managing tropical nature. Koningsberger argued that only men with university degrees in the sciences, such as his staff at the Botanical Gardens, were capable of 'independent observation and interpretation of what one sees, and deciding the meaning of the observed phenomena'.<sup>1</sup> In his effort to muster support and respect for the Botanical Gardens, he suggested that pure scientists were elite conduits between man and nature. He referred to the visitor's laboratory as a 'temple of botanical science',<sup>2</sup> where research scientists produced universal knowledge that transcended its colonial location. And he did not hesitate to drive home his point in a language the colonial officials understood: 'No matter its size, every contribution that further adds to the knowledge of this land's nature – still so very secretive in many ways – can only contribute to increasing the inviolability of our bill of ownership [*eigendomsbrief*]'.<sup>3</sup> The evidence suggests Koningsberger meant

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1 J.C. Koningsberger, 'Horrea replenda,' *toespraak gehouden bij de opening van het Treub-Laboratorium te Buitenzorg op 4 Mei 1914* (Buitenzorg: Departement van Landbouw, Nijverheid en Handel, 1914), p. 11.

2 *Ibid.*, p. 3.

3 *Ibid.*, pp. 13–4.

in all seriousness that pure science would extend the entitlement of colonial power. But at the time of Koningsberger's speech in 1914, when the Botanical Gardens had become a pariah within the colonial administration and applied scientists were hailed as the saviours of tropical agriculture, it is unlikely the gathered colonial officials were convinced of the primacy of purity over utility. Given that, it is all the more surprising that a decade later senior colonial officials had become enthusiastic supporters of pure science. Not because they had swung round to believing in Koningsberger's idealistic pronouncements, though, but because they had come to think that publicly sustaining pure science made Dutch colonialism look decent.

Koningsberger, along with many of his contemporary scientists, believed sincerely and idealistically that political administration was secondary to science. Predictably, most colonial officials never saw science this way; science was for them a handmaiden, useful when its knowledge enhanced colonial power. Governor General A.W.F. Idenburg had in his speech at the visitor's laboratory opening cautioned that all scientific research should anticipate the practical needs of society.<sup>4</sup> Still, Koningsberger was changing scientific policy. While the administration continued to mostly support science useful to agriculture, Koningsberger created an institutional basis for science for science's sake. During Koningsberger's eight-year appointment as director of the Botanical Gardens, he transformed the identity of the Gardens into a centre of pure science, where his research scientists were respected and paid for generating general biological knowledge about the land in the colony. This knowledge was pure, Koningsberger claimed, in the sense that it transcended issues of utility. Still, Koningsberger never convinced the colonial bureaucracy that pure scientists were high priests of natural knowledge, superior to applied scientists working on agricultural problems. The critical change for pure science came in the 1920s, when colonial officials began to see the benefits of appearing to value pure knowledge over political expediency. The existence of an independent and vibrant community of pure scientists was an opportunity for colonial leaders to tell the world that the Dutch colony's support of pure science proved that not all Dutch colonialism was impure. In the international arena after the First World War, when the European empires began to look less inevitable, the Dutch colonial regime began to justify its existence by pointing to aspects of its regime that transcended colonial occupation and administration. In this context, the promotion of pure science became a new focus for the civilising mission ideology of the Netherlands East Indies.

Historians of science have dealt extensively with the question of the existence of pure, universal knowledge. Scientists are constantly in the process of refining what we know about nature, and are well aware that they are creating knowledge, not just discovering the laws of nature.<sup>5</sup> Moreover, a wide range of evidence from early-modern and modern science shows that scientific knowledge is always created in particular social and political contexts.<sup>6</sup> In this sense, while scientists and others may extol

4 Ibid., p. 25.

5 Bruno Latour, *Science in action: How to follow scientists and engineers through society* (Cambridge, MA: Harvard University Press, 1987).

6 The classic in this genre is Steven Shapin and Simon Schaffer, *Leviathan and the air-pump: Hobbes, Boyle, and the experimental life* (Princeton: Princeton University Press, 1985). For a sympathetic review of the changes within the history of science influenced by the outlook that scientific knowledge is a social

the ideal of pure knowledge, in practice there is no such thing. The argument in this paper extends these results, in arguing that the pure science championed by Koningsberger and his successors was an invention, which came to have authority because of its relevance to politics and society in the colony. Pure science was not unknown in the Netherlands East Indies prior to 1910. As Michael Adas has demonstrated, the idea of pure and superior scientific knowledge had been used by Europeans to justify their ideology of colonial conquest and control since the early nineteenth century, if not earlier.<sup>7</sup> Still, as Daniel Headrick's case studies explained, this conceit was separate from the way European colonial states used science in exerting colonial rule. For practical reasons of governance, colonial administrators saw science and technology as a resource meant to promote political or economic interests. For example, European empires needed chemical and biological knowledge about quinine, but only so far as it allowed them to create a cheap, plentiful, and reliable source of quinine for European soldiers, administrators, and inhabitants.<sup>8</sup> Colonial elites valued science for its practical and useful benefits, even as they continued to believe in the superiority of European culture. This was amplified in the Dutch empire because Dutch nineteenth-century university scientists held to an ideology of science serving practical and moral uses, and their students made up the ranks of scientists in the Netherlands East Indies.<sup>9</sup> By the early twentieth century, Dutch colonial elites did not think of pure learning associated with European research laboratories as having a place in the colony. As I will argue below, this changed in the two decades surrounding the First World War.

### Science and power

At the beginning of the twentieth century, scientists and bureaucrats in the Indies both concurred that an expertise of colonial nature served colonial power. Forestry officials, agriculturalists, and experimental station researchers expanded the exploitation of the agricultural and natural wealth of the Netherlands East Indies. These ideas were formally adopted as administration policy in 1905 with the creation of the Department of Agriculture, which thereafter controlled agricultural policy.<sup>10</sup> It did so through administrative oversight of most of the colony's biological and agricultural

product, refer to Jan Golinski, *Making natural knowledge: Constructivism and the history of science* (Cambridge: Cambridge University Press, 1998).

7 Michael Adas, *Machines as the measure of men: Science, technology, and ideologies of western dominance* (Ithaca, NY: Cornell University Press, 1989).

8 Daniel R. Headrick, *The Tools of empire: Technology and European imperialism in the nineteenth century* (New York: Oxford University Press, 1981); and Daniel R. Headrick, *Tentacles of progress: Technology transfer in the age of imperialism, 1850–1940* (New York: Oxford University Press, 1988).

9 Bert Theunissen, 'Nut en nog eens nut': *Wetenschapsbeelden van Nederlandse natuuronderzoekers, 1800–1900* (Hilversum: Verloren, 2000).

10 For recent research about Melchior Treub and the creation of the Department of Agriculture, refer to Eugene Cittadino, *Nature as the laboratory: Darwinian plant ecology in the German Empire, 1880–1900* (Cambridge: Cambridge University Press, 1990); H.W. van den Doel, 'Practical agricultural education in the Netherlands East Indies: The Transfer of agricultural knowledge to the indigenous population of Java, 1875–1920', *Journal of the Japan-Netherlands Institute*, 6 (1996): 78–94; Harro Maat, *Science cultivating practice: A History of agricultural science in the Netherlands and its colonies, 1863–1986* (Dordrecht: Kluwer, 2001); and Suzanne Moon, *Technology and ethical idealism: A History of development in the Netherlands East Indies* (Leiden: CNWS, 2007).

science institutes. This department was created by the biologist Melchior Treub, who had in the 1880s and 1890s turned the Botanical Gardens into a world-famous centre of tropical biology, independent of scientific or political power in the Netherlands. By creating a research station that looked and operated like a European scientific institute, Treub achieved authority for the Botanical Gardens' scientific knowledge.<sup>11</sup> After 1900, he leveraged this authority to convince colonial officials of the need for one central department to direct colonial agriculture. And as Suzanne Moon has recently shown, he was able to frame this proposal within the reformist agendas of the official Dutch civilising mission, the Ethical Policy.<sup>12</sup> The theory behind Treub's Department of Agriculture was that agricultural knowledge and expertise flowed out of research-based science, such as that done in the colony at the Botanical Gardens. In his 1902 proposal, he argued that continued funding of 'purely scientific' [*zuiver natuurwetenschappelijk*] work in Buitenzorg was fundamental to its being applied practically to colonial agriculture.<sup>13</sup> In a follow-up clarification, Treub argued forcefully against the division between research and its application: 'Trustworthy, practical results *can only be reached* BY APPLYING SCIENTIFIC RESULTS.'<sup>14</sup> Although the vision of the department changed after Treub's departure in 1909, colonial officials on the whole continued to think of scientific research as part of a policy to enact practical agricultural improvements. In this way, Treub's science fits Daniel Headrick's thesis that science was a tool of empire.<sup>15</sup>

In 1905, when Treub became the director of the Department of Agriculture, he intended that the Department advance the power of scientists in the colony more generally, and as he had planned, he created an autonomous set of institutions for Dutch colonial science, independent not only from scientific institutions in the Netherlands, but also from the vagaries of non-scientific officials and administrations as well. But the creation of the department also had the consequence, not intended by Treub, of establishing the policy that the proper science for the Dutch colony was any science with a useful economic impact on agriculture. After Treub's resignation in 1909, this came to mean the devaluing of the research part of the department. Nonetheless, scientists without an interest in or the ability to practise agricultural science continued to find employment. Prior to the First World War, sciences such as systematic botany and zoology, as well as astronomy and physics, existed on the margins of colonial science, usually within the confines of more practically oriented scientific institutes. Most were run by the colonial state, and in an atmosphere where greater and greater emphasis was placed on being applied and practical, pressure was mounting for those scientists who did not produce practical scientific knowledge to justify public funding for their work. For scientists such as Koningsberger, a zoologist who had been in the

11 That this was his intention is made clear in Melchior Treub, *Over de taak en den werkkkring van 's lands plantentuin te Buitenzorg* (Buitenzorg: 's Lands Plantentuin, 1899).

12 Suzanne Moon, 'The Emergence of technological development and the question of native identity in the Netherlands East Indies', *Journal of Southeast Asian Studies*, 36, 2 (2005): 191–206.

13 Melchior Treub, 'Schematisch nota over de oprichting een agricultuur departement in Nederlandsch Indië', 30 Jan. 1902, in Nationaal Archief, The Hague (hereafter, NA), Ministerie van Koloniën 1900–53 (hereafter, MvK), Verbaal 7 Aug. 1902/74, inv. no. 136.

14 Emphasis in original. Treub to Idenburg, 16 Mar. 1903, in Arsip Nasional Republic Indonesia, Jakarta (hereafter, ANRI), Algemeene Secretarië (hereafter, AS) 1891–1942, Besluit 23 Sept. 1904, no. 20.

15 Headrick, *The Tools of empire*.

colony since 1894 and who had become director of the zoological museum under Treub, the challenge was to change the government's perception of their value to colonial society. So in addition to turning out scientific knowledge, Koningsberger led the Botanical Gardens in an effort to change local perceptions of the value of scientific knowledge without immediate application. Critical to this endeavour was explaining the difference between pure and applied science, and then showing why pure science mattered. Koningsberger had considerable success. Over the course of the 1910s and 1920s, pure science was established as a permanent part of the colonial enterprise. And by the time Batavia hosted the fourth Pacific Science Congress in 1929 (while Koningsberger was Minister of Colonies), there was a new *modus operandi*, with colonial officials raising the funds and supporting the conference. Pure science had by then become part of the civilising mission ideology, intending to show the world that the Dutch were decent colonial masters.

The histories of science written by Dutch colonial scientists after 1910 have made the idea of pure and non-ideological science leading the Dutch colonial intellectual programme seem commonplace for the entire colonial period. Beginning with M.J. Sirks' 1915 survey of Netherlands East Indies scientific research, *Indische Natuuronderzoek*, and ending with H.H. Zeijlstra's 1959 biography of Melchior Treub, the emphasis has been on celebrating (mostly Dutch) scientists who, much like their European counterparts, advanced scientific knowledge of the land in which they worked.<sup>16</sup> Within this literature, the existence and even priority of pure scientific knowledge was extended back into the nineteenth century. Many histories of Dutch colonial science after 1920 were written in English, meant for an international audience. These histories consistently obscured the connection between science and colonial politics, sketching a purified version of Netherlands East Indies science. For its readers outside the Netherlands East Indies, it depicted the Dutch as running a moral and decent colony, generating scientific knowledge untainted by conquest or occupation ideology. This was also part of an argument for continued Dutch authority to rule the territory. This argument faded after the end of the Dutch colonial rule, although the question of how decent Dutch colonialism really was has continued to be debated amongst Dutch historians.<sup>17</sup> More recently, scholars have rediscovered scientific colonialism in the colony, and have

16 M.J. Sirks, *Indisch natuuronderzoek* (Amsterdam: Ellerman/Harms, 1915); 'Science in the Netherlands East Indies', ed. L.M.R. Rutten (Amsterdam: Koninklijke Akademie van Wetenschappen, 1929); 'Science and scientists in the Netherlands Indies', ed. Pieter Honig and Frans Verdoorn'. (New York: Board for the Netherlands Indies, Surinam and Curaçao); *Report of the scientific work done in the Netherlands on behalf of the Dutch overseas territories during the period between approximately 1918 and 1943*, ed. B.J.O. Schrieke (Amsterdam: North-Holland Publishing Company, 1948); *Een eeuw natuurwetenschap in Indonesie 1850-1950: Gedenkboek Koninklijke Natuurkundige Vereeniging* (Bandung: KNV, 1950); and H.H. Zeijlstra, *Melchior Treub: Pionier of a new era in the history of the Malay archipelago* (Amsterdam: KIT, 1959).

17 For an insightful review of recent Dutch historiography of colonial Indonesia, which argues that Dutch historians must leave behind the 'question of whether the colonial past was "good" or "bad"', refer to Vincent J.H. Houben, 'Koloniale geschiedenis van Indonesië in de 21e eeuw: Meerzijdig en dubbelzinnig', in *Macht en majesteit: Opstellen voor Cees Fasseur bij zijn afscheid als hoogleraar in de geschiedenis van Indonesië aan de Universiteit Leiden*, ed. J. Thomas Lindblad and Willem van der Molen (Leiden: Opleiding Talen en Culturen van Zuidoost-Azië en Oceanië/Universiteit Leiden, 2002), pp. 293-303.

detailed the ways in which science and scientists enabled colonialism. The scholarly consensus is that applied sciences, ranging from medicine to agriculture to anthropology, furthered the operation of the Dutch colonial state.<sup>18</sup> But with one exception, recent scholarship has overlooked the non-utilitarian disciplines.

Almost 20 years ago, Lewis Pyenson addressed directly the question of the relationship between pure science and colonial power in his *Empire of reason: Exact sciences in Indonesia 1840–1940*. Pyenson argued that the existence in the Dutch colony of what he calls the exact sciences, those with a mathematical basis, proved the universal quality of western science, and its capacity to transcend the dirtiness of empire. His archival reconstruction of the astronomy, geophysics, and physics communities in the Netherlands East Indies certainly proved the existence of science for science's sake, especially in the 1920s. Although Pyenson's ambitions extended back into the nineteenth century, he makes clear that the golden age of exact science was the 1920s; it was in that decade that astronomers began planning an optical telescope with a 60-centimetre diameter in the hills above Bandung, and Jacob Clay's cosmic ray research was only possible after the creation of the Technical College in Bandung in 1920. Pyenson concluded with a semantic (and unproven) flourish: 'The prosecution of exact sciences in the East Indies did not derive from colonial power; rather, power resulted from pure knowledge.'<sup>19</sup> Pyenson defends not only the pure scientists in his study, but by extension the agents of colonialism who supported them. This has attracted the ire of historians of science Paolo Palladino and Michael Worboys. In a review in the history of science journal of record, *Isis*, they accuse Pyenson of letting colonial scientists off too easily, as they point to evidence of science serving the political and economic arm of imperialism.<sup>20</sup> This debate about whether scientists were the good or bad boys of colonialism is largely a dead-end, but on the whole, scholars have been attracted to those disciplines most obviously of relevance to the colonial enterprise, including botany, medicine, and engineering.<sup>21</sup> The best studies of science and empire have shown convincingly that there was a symbiotic relationship between European scientists and colonial officials, and that both the world of science and the world of empire benefited and influenced each other.<sup>22</sup> What then of Pyenson's pure scientists? No historian has

18 Peter Boomgaard, 'The Making and unmaking of tropical science: Dutch research on Indonesia, 1600–2000', *Bijdragen tot de Taal-, Land- en Volkenkunde*, 162, 2–3 (2006): 191–217.

19 Lewis Pyenson, *Empire of reason: Exact sciences in Indonesia, 1840–1940* (Leiden: Brill, 1989), p. 180.

20 Paolo Palladino and Michael Worboys, 'Science and imperialism', *Isis*, 84, 1 (1993): 91–102. Pyenson is well aware some of the colonial sciences served political power directly, as he makes clear in his response to Palladino and Worboys. Lewis Pyenson, 'Cultural imperialism and exact science revisited', *Isis*, 84, 1 (1993): 103–8. In an earlier conference address, published in 1993, he explained what he thought could and could not be proven by analysing the exact sciences in the European colonies. Lewis Pyenson, 'Why science may serve political ends: Cultural imperialism and the mission to civilize', *Sudhoffs Archiv Beihefte*, 30 (1993): 39–54.

21 See, for example, the studies collected in *Nature and empire: Science and the colonial enterprise*, ed. Roy MacLeod, special issue of *Osiris*, 15 (2000).

22 Richard H. Grove, *Green imperialism: Colonial expansion, tropical island edens and the origins of environmentalism* (Cambridge: Cambridge University Press, 1995); Richard Drayton, *Nature's government: Science, imperial Britain, and the 'improvement' of the world* (New Haven: Yale University Press, 2000).

followed-up on pure scientists in the Dutch colony, and his argument that they stood outside of colonial influence remains unverified.<sup>23</sup>

Pyenson's error was not that he identified the prevalence of pure science in the Indies in the 1920s, but rather that he failed to examine carefully the connections between these pure scientists and the colonial administration. His conclusion that 'pure research was, for the colonial government, elaborate and sacred theatre',<sup>24</sup> is based on a very cursory reading of the Dutch colonial state's reaction to pure science. His case studies follow the history only from the pure scientists' point of view. And although scientists such as Koningsberger and Clay attempted to portray themselves as sacred interpreters of nature, colonial officials did not see them in that way. In the 1920s, they mostly appreciated that pure science allowed them to represent the colony as being administered by men with pure and civilised intentions. Indeed, some of the content of the pure and exact sciences was not touched by colonial expediency, even if the institutions were paid for by the colonial government. But that freedom lasted only for the decade of the 1920s; funding and autonomy were far scarcer after 1930. On the whole, the pure science of the 1920s was like other Dutch colonial applied sciences, from anthropology and cartography to agriculture and forestry, in that colonial officials and scientists collaborated to construct and invent a cultural form that facilitated Dutch political hegemony.<sup>25</sup> The content of pure science was not about imperial exploitation and domination, but its practice was, in that it supported a civilising mission ideology. By the 1920s, the existence of institutions of pure knowledge, including Koningsberger's visitor's laboratory, was used to show the world the long-term appropriateness of Dutch colonial rule.

### **Institutionalising pure science**

Koningsberger was not alone in attempting to raise the stature of pure science, but as the director of the best-known scientific institute in the colony, the Buitenzorg Botanical Gardens, located in the same grounds as the governor general's palace, he was in the best position to do so. Furthermore, because the Botanical Gardens were administratively demoted after Treub's departure in 1909, its leadership was actively invested in finding a new colonial identity for its expertise. Shortly after Koningsberger became director of the Botanical Gardens, he charted a course for returning the Botanical Gardens and its scientists to pre-eminence within the colonial administration. But unlike his predecessor and mentor Melchior Treub, who had directed the Gardens from 1880 to 1909, and who had pioneered a melding of

23 Most Indonesian historians that do cite him, do so respectfully, even if they do not engage his argument about cultural imperialism. The only extended treatment of Pyenson's book is Clive Kessler, 'Colonial science and the creation of postcolonial scientific tradition in Indonesia', *Akademika*, 37 (1990): 91–105, which draws attention to the future of international science in Indonesia and Malaysia.

24 Pyenson, *Empire of reason*, p. 178.

25 Roy F. Ellen, 'The Development of anthropology and colonial policy in the Netherlands, 1800–1960', *Journal of the History of the Behavioral Sciences*, 12 (1976): 303–24; John Pemberton, *On the subject of 'Java'* (Ithaca, NY: Cornell University Press, 1994); Nancy Peluso, *Rich forests, poor people: Resource control and resistance in Java* (Berkeley: University of California Press, 1992); Ann Laura Stoler, *Carnal knowledge and imperial power: Race and the intimate in colonial rule* (Berkeley, CA: University of California Press, 2002); and Eric Tagliacozzo, *Secret trades, porous borders: Smuggling and states along a Southeast Asian frontier, 1865–1915* (New Haven, CT: Yale University Press, 2005).



pure and applied natural knowledge, Koningsberger set out to define pure science as a colonial asset separate from the usefulness of science to agriculture.

The departure of Treub from the colony in 1909 drastically changed the direction of colonial science. Governor General A.W.F. Idenburg chose H.J. Lovink as Treub's successor; Lovink was an outspoken champion of applied agricultural science, and had systematically encouraged the appointment of agronomists while director-general of the Dutch Ministry of Agriculture, a position he had held since 1901. Idenburg selected Lovink with the intention of expanding Lovink's pioneering work in Dutch agricultural extension to the colony.<sup>26</sup> This represented a sea-change in scientific and agricultural policy, as Lovink was on record as a critic of Treub's policies promoting native rice agriculture.<sup>27</sup> Lovink went on to lay the groundwork for an agricultural extension service which used agronomists to teach peasants through demonstration to use more productive cultivation techniques.<sup>28</sup> Lovink's model, of linking colonial administration to applied agricultural science, was comparable to the arrangements worked out between European scientific and colonial officials elsewhere in Asia and Africa during the late colonial period.<sup>29</sup> This direction left little room for the academic biologists at the Gardens. Koningsberger, an academically trained zoologist and Treub's handpicked successor, was not only bypassed as director,<sup>30</sup> but his expertise became superfluous within the Department, now renamed the Department of Agriculture, Industry, and Trade. Still, the Department retained the original Botanical Gardens and its various biological laboratories, and Lovink was left to figure out what to do with the famous Botanical Gardens and its scientists. Initially, he suggested the creation of a post for the director of scientific research, which would allow Lovink to concentrate on agricultural education, statistics, and improving native cultivation. Lovink specifically recommended that Koningsberger take up this new position, where he would autonomously direct all scientific research in the Department and would have a consultative role in administering applied science. A scientist such as Koningsberger, more so than Lovink, would have the authority and standing to effectively supervise the young scientific officials in the Department. This structural change would also make it easier for the Department to pursue new research directions, such as plant pathology, which would augment the agronomy focus of the Department.<sup>31</sup> But by the end of 1910, Lovink had made a far less radical change when he decided to sequester only those sciences which had no obvious economic or agricultural component under Koningsberger's care. This became by default an institute of all the

26 Moon, *Technology and ethical idealism*, p. 41.

27 Maat, *Science cultivating practice*, p. 59.

28 E. de Vries, 'De welvaartsdiensten', in *Balans van beleid: Terugblik op de laatste eeuw van Nederlandsch-Indië*, ed. H. Baudet and I.J. Brugmans (Assen: van Gorcum, 1984 [1961]), pp. 267–88.

29 Christophe Bonneuil, 'Development as experiment: Science and state building in late colonial and postcolonial Africa, 1930–1970', in *Nature and empire: Science and the colonial enterprise*, ed. Roy MacLeod, special issue of *Osiris*, 15 (2000), pp. 258–81; William Storey, *Science and power in colonial Mauritius* (Rochester, NY: University of Rochester Press, 1997); *Technology and the Raj: Western technology and technical transfers to India 1700–1947*, ed. Deepak Kumar and Roy MacLeod (New Delhi: Sage Publications, 1995).

30 Koningsberger confirmed he was Treub's choice in Koningsberger to Went, 29 Sept. 1909, in Boerhave Museum archive, Leiden (hereafter, BM), J. C. Koningsberger correspondence archive.

31 Lovink to Idenburg, 23 Apr. 1910, no. 3623, and Lovink to Idenburg, 31 May 1910, no. 5033, in ANRI, AS 1891–1942, Besluit 22 June 1910, no. 8.

disciplines which were not like the applied biology and agronomy of the rest of the Department. Its core identity was in essence a negative one, encompassing all the non-applied sciences. For this new institute, Lovink brought back the older and famous name for the Botanical Gardens, 's *Lands Plantentuin*, with Koningsberger as its director.<sup>32</sup>

Koningsberger chose to see the advantages of the Gardens' demotion. With just the gardens proper, the herbarium, the zoological museum, and a few laboratories under his care, he would not be burdened by administrative challenges, under which 'with today's circumstances nothing can be accomplished anyway'.<sup>33</sup> He and probably the biologists who worked for him as well, were relieved to be released from the responsibility to generate applied knowledge with an economic angle. Now they were freer to pursue the kind of scientific research for which they had been trained in Europe. In a letter written shortly after Lovink's arrival, Koningsberger was enthusiastic about the opportunities he would have overseeing the research institutes of the Department of Agriculture.<sup>34</sup> Even if it was the case that Lovink simply sequestered all the divisions that did not fit his vision of agronomy and agricultural extension into Koningsberger's care, Koningsberger saw as early as 1910 that he had the opportunity to build an enclave for scientific research, where colonial research scientists worked in a manner similar to their colleagues in European universities. Koningsberger's challenge would be to make relevant this new model of scientific research.

His biggest advantage was that he inherited some of the heroic aura of the now mythical Treub. Treub, who died in 1910, was still revered as the colony's greatest scientist, and Koningsberger was his scientific heir. The core scientific institutes of the still-famous Botanical Gardens were under his control. As such he retained considerable power within the Department of Agriculture, Industry, and Trade, and from the middle of 1915 until the end of 1916, while Lovink was on sick leave, Koningsberger was appointed the acting director of the Department.<sup>35</sup> During that time, Koningsberger oversaw the writing of the 1914 annual report of the Department, and included in it a ten-year retrospective of the Department of Agriculture, in which he tried to score points against Lovink. Koningsberger emphasised the groundbreaking work done by Treub in establishing a department with a 'technical character'. The 40-page essay did not include one proper name – Lovink is only once referred to as the 'second director' – in effect emphasising the decade of rewards following the implementation of Treub's vision.<sup>36</sup> Treub's mythical status was safe ground — by then, there was already a *Koninklijke Packetvaart Maatschappij* ship bearing his name and in the previous year Governor General Idenburg had spoken of the great importance of Treub's life.<sup>37</sup> Notwithstanding Koningsberger's attempt to write Lovink out of the history of the Department of Agriculture, it was still Lovink and his Wageningen graduates who set the policies of the Department.

32 Rapport van Departement van Landbouw, 9 Dec. 1910, no. 11352, in ANRI, AS 1891–1942, Besluit 31 Dec. 1910, no. 6.

33 Koningsberger to Went, 14 Dec. 1910, in BM, J.C. Koningsberger correspondence archive.

34 Ibid.

35 J.C. Koningsberger, 'Herinneringen uit mijn directeursjaren van 's Lands Plantentuin (1909 tot 1918)', in *Hortus Botanicus Bogoriensis* (Leiden: Brill, 1942), p. 46.

36 J.C. Koningsberger, 'Het Departement van Landbouw van 1905–1915', in *Jaarboek van het Departement van Landbouw, Nijverheid en Handel 1914* (Batavia: Landsdrukkerij, 1915), pp. 3–46.

37 Koningsberger, 'Horrea replenda', p. 25.

Even in Koningsberger's celebratory text of Treub's genius published in 1915, it was not possible to directly undermine Lovink and his agronomists' scientific credentials. Lovink's arrival in Buitenzorg in 1910 signalled that senior colonial management had decided to change direction with agricultural science. In the Netherlands, Lovink had begun to place graduates from the newly revamped Wageningen Agricultural School into agricultural extension positions, and with this he had begun to replace the university trained biologists in the field of agricultural science. Lovink's long-term goal was to turn Wageningen into an academic institution, on par with other Dutch schools of higher education. This engendered serious opposition from Dutch academics, in particular university biologists, although by 1918 Wageningen had become an agricultural college, with its graduates receiving the title of agricultural engineer.<sup>38</sup> The debate between applied science and pure science simmered in the Netherlands throughout the 1910s, in large part because of the continued conflict between Wageningen and the powerful universities. There were echoes of this debate in the Netherlands East Indies, but the colonial context was quite different. Given the hierarchical nature of the Department and the colony as a whole, and the lack of any power base for academic science, Lovink was not seriously threatened by Koningsberger, who became his subordinate. After Lovink became head of the Department of Agriculture, Industry, and Trade in the colony, he did what he had done in the Netherlands, staffing the agricultural extension service in the colony with the expertise of Wageningen graduates.<sup>39</sup> Lovink also took the agricultural school away from Koningsberger (who had been its director under Treub), and reorganised it along Wageningen lines.<sup>40</sup> The work of Lovink's men in the experimental fields was to do public experiments through which they hoped to reach as many farmers as possible with information and advice. They consciously distinguished themselves from Treub's conviction that these fields would be sites of virtuosity.<sup>41</sup> Even F.A.F.C. Went in Utrecht, Treub's old friend who in the Netherlands led the battle against Wageningen, was in 1914 forced to concede that there existed 'a certain antithesis between practicality [*praktijk*] and science, which has become clearer to me in the last few years'.<sup>42</sup> Still, Went went on to argue that agricultural research in the colony would best be carried out by 'high-standing scientific men'.<sup>43</sup> But then Went's opinion was largely irrelevant, and by the time Lovink landed in Buitenzorg, Koningsberger and the Botanical Gardens had lost their bid to generate agricultural knowledge.

Koningsberger's more serious problem was that the old rules of what counted as scientifically valuable were no longer relevant for his non-applied sciences. Under Treub, scientists at the Botanical Gardens explained their work in terms of how their research was connected to improving colonial agriculture. Lovink had appointed

38 Maat, *Science cultivating practice*, p. 89.

39 Ibid, p. 60.

40 I.J. Brugmans, *Geschiedenis van het onderwijs in Nederlandsch-Indië* (Groningen: Wolters, 1938), p. 343.

41 Maat, *Science cultivating practice*, pp. 59–60.

42 F.A.F.C. Went, *Wetenschap en tropische landbouw* (Weltevreden, 1914), quoted in Wim van der Schoor, 'Biologie en landbouw: F.A.F.C. Went en de Indische proefstations', *Gewina*, 17 (1994): 157.

43 F.A.F.C. Went, *'s Lands Plantentuin te Buitenzorg* (Baarn: Hollandia, 1915), p. 15.

Koningsberger in 1910 to lead the ‘abstract scientific research’ [*abstract natuuronderzoek*] at the gardens, without being specific about what it should accomplish.<sup>44</sup> Koningsberger interpreted it at the time as all ‘purely abstract scientific matters’ [*zuiver abstract wetenschappelijk gebied*].<sup>45</sup> This would mean above all research; in 1910, Koningsberger used the term ‘pure’ [*zuiver*] in the sense of purely research. While Koningsberger and his subordinates were charged with doing and reporting research, this was broadly and initially vaguely conceived. Koningsberger needed to create a system for evaluating what purely research science would be.

At first there was little agreement amongst the scientists in Buitenzorg about evaluating and judging purely scientific research. This came to a head in 1913, when as a result of a nasty and public argument between two department scientists under Koningsberger, scientists in the Netherlands were called in to adjudicate the scientific credibility of colonial science. That Koningsberger could not resolve this dispute is testament to the weakness of the Botanical Gardens’ science after Treub’s departure, and the uncertainty about what pure science was. Still, this weakness was not surprising, given that the various scientists at the Gardens did not coordinate their work, and that there was no central research programme or mandate for unapplied biology. Each biologist had his own idea about what was important research, and how it should be carried out. Initially, there was no consensus about how or even if this science needed to be related to agriculture. Moreover, it appears that Koningsberger had little leverage over his staff and their work, as they had all come up through the ranks together, under Treub.<sup>46</sup> Given his weakened leadership position, it was not surprising that the scientists who worked for Koningsberger disagreed about what this good science was. But when this dispute boiled over and into the public realm, it became clear to the senior colonial officials that science at the Botanical Gardens was in disarray.

The dispute began as a conflict between applied and academic biology, pitting the forester S.H. Koorders against the systematic botanist C.A. Backer. But what started as a disagreement about classifying plants, quickly became a flash-point for issues about scientific credibility and authority. Between 1911–13, Koorders published a new flora of Java, the *Exkursionsflora von Java*, including almost 5,000 species.<sup>47</sup> Most of the research was carried out in the herbarium in the Botanical Gardens, although Koorders’ permanent position was inside the forestry department. Koorders had been collecting samples in the Javanese highlands since the 1890s, all deposited in the herbarium, and he had been officially sequestered to the herbarium to produce a mountain flora of Java. He had greater ambitions though, and in the end produced a comprehensive introduction to Java’s entire flora, including keys and short descriptions written mostly in German, and meant for an audience beyond the colony. Initial reviews from outside the colony were good, and the four volumes were widely welcomed as

44 Lovink to Idenburg, 31 May 1910, no. 5033, in ANRI, AS 1891–1942, Besluit 22 June 1910, no. 8.

45 Koningsberger to Went, 14 Dec. 1910.

46 The herbarium botanists were particularly independent minded, especially after Th. Valeton retired in 1913 (he had been chief of the herbarium since 1904). Thereafter the herbarium staff pursued their own interests under the administratively ineffectual J.J. Smith as the new chief. Valeton to Went, 15 Dec. 1911, in BM, Valeton correspondence archive and Smith to Went, 2 Aug. 1913, in BM, Smith correspondence archive.

47 S.H. Koorders, *Exkursionsflora von Java*, 4 volumes (Jena: Verslag, 1911–13).

the first comprehensive flora of Java published in over 50 years. But others in the Botanical Gardens did not see it that way.

Shortly after the last volume appeared, a staff member of the Buitenzorg herbarium, C.A. Backer, published a 67-page critique, mostly plant-by-plant corrections. He decried the haste and sloppiness of the keys and descriptions, and then went on to accuse Koorders of gross scientific negligence, charging Koorders with including plants not found on Java and with passing off guesses about ecological details as fact. Backer concluded that the book was not the result of purely scientific research:

is as unreliable as possible, is full of gross errors ... has no value for *anyone* ... is a desperately botched advertisement, from which one only can learn how *not* to write ... is *absolutely much worse than the worst* that has ever been written about the flora of Java.<sup>48</sup> [emphasis in original]

Given that Koorders and Backer worked in the same building, this matter caught the attention of both the colonial officials and their bosses in The Hague, who further worried that they had subsidised the printing of Koorders's flora.<sup>49</sup> This conflict came to include not only scientists, but their superiors, and in the process, it became less about Java's plants, and more about who had the right and power to judge what good scientific research was. In early 1914, Koningsberger sided with Backer in blocking publication of an atlas Koorders had intended to accompany his *Exkursionsflora*. Koorders responded to Backer in 1914, with a 200-page book refuting Backer's criticisms. Tellingly, Koorders noted that his superiors in the forestry department had ordered him to write this defence. He accused the cabal of Buitenzorg biologists, including Koningsberger by name, of long hindering his analysis of his collection.<sup>50</sup> In mid-1914, W.G. Boorsma, editor of the Buitenzorg based *Teysmannia*, and in the absence of Koningsberger who was in Europe, the temporarily appointed head of the Botanical Gardens, examined Koorders's rejoinder; he decided Koorders had failed to dispel Backer's negative review.<sup>51</sup>

The Botanical Gardens publicly sided with Backer's science, in a way confirming Koorders' criticism that the Botanical Gardens had an improper monopoly on botanical science. Lovink sensed that there was no unbiased judge of scientific research in the colony, and had Governor General Idenburg contact Dutch academics to decide the 'scientific value' of Koorders's *Exkursionsflora* and whether Backer's criticism had any basis. It would be up to the Dutch academics to judge Koorders's scientific credibility, and if that held, to decide whether Backer had 'unjustly demolished [*afgebroken*] in public a work, with which the name of Government scientific institutions is closely associated'.<sup>52</sup> At the request of the minister of colonies, four Dutch academic

48 C.A. Backer, *Kritiek op de Exkursionsflora von Java* (Weltevreden: Visser, 1913), p. 66.

49 Verbaal 7 July 1913/3, in NA, MvK, inv. no. 1080.

50 S.H. Koorders, *Opmerkingen over eene Buitenzorgsche kritiek op mijne Exkursionsflora von Java* (Batavia: Kolff, 1914), p. 9.

51 W.G. Boorsma, 'Boekbespreking: Opmerkingen over een Buitenzorgsche kritiek op mijne Exkursionsflora von Java', *Teysmannia*, 25 (1914): 478–90. Backer also responded, by writing an essay, *Slotwoord* [Final word], refuting Koorders's defence, which he proposed to publish privately. C.A. Backer, 'Slotwoord', 24 Aug. 1914, in NA, MvK, Verbaal 28 Nov. 1914/42, inv. no. 1285

52 Boorsma's printed review was likely a source of some embarrassment to Lovink and other senior colonial officials, who had commissioned and subsidised the publication of the *Exkursionsflora*. Lovink in 1914 also forbade the publication of Backer's 'Slotwoord'. Lovink to Idenburg, 17 Sept.

botanists (A. Pulle from Utrecht University, F.A.F.C. Went from Utrecht University, J.M. Janse from Leiden University, and J.W. Moll from the University of Groningen) evaluated the debate, sending their comments back to The Hague. Unfortunately, no copies were made, and I have not been able to locate the originals, which probably came to rest in the now-gone archive of the Botanical Gardens. But from comments left by Koningsberger, it is possible to guess at some of the content. All reviewers praised the scientific labour of Koorders in general. Still, they believed many or most of Backer's criticisms were valid. The review of A. Pulle, himself an expert on the Indies flora, repeatedly noted that the *Exkursionsflora* did not satisfy the demands that one should expect from such a work. It had little practical or scientific value. The crisis had passed, though, and Koningsberger did not need to push further: he recommended against punishing Koorders. Koningsberger made no mention of Backer. The governor general took no further action against either Koorders or Backer.<sup>53</sup>

Koningsberger's victory came at the price of public embarrassment, and demonstrated to senior colonial officials that Koningsberger as yet had no way to handle dissent within the Botanical Gardens.<sup>54</sup> But Koningsberger scored not only a victory in that his appraisal of Koorders' book had been vindicated, but more importantly, it established that Koningsberger's non-applied science in the colony was to be judged using the standards of European research science, even as colonial science remained independent of Dutch academic science. Koorders' flora was not valuable science, because it had failed to impress academic scientists in Europe. Koningsberger's institute was pure, not only in doing purely research, but in keeping to the rules of European academic research standards. This allowed Koningsberger to make a value distinction, and even a moral difference, between the merely applied science epitomised by Koorders, and the pure research work done by his scientists. For the first time, Koningsberger had an argument for the superiority of the science done in the pure research environment in Buitenzorg.

Koningsberger quickly pressed his advantage, by pushing for a centrally coordinated institute of scientific research which would oversee purely scientific research, modelled upon European scientific institutes. Koningsberger had been working towards this in 1913, when he submitted a proposal for a central institute meant to coordinate science in the colony. Koningsberger envisioned creating a community of scientists drawn from all the natural and social sciences, from biology and geology to sociology and linguistics, which would referee the 'pure' research work done in the colonial institutes. Koningsberger proposed a coordinating body meant to 'further develop the scientific potential' of scientists in the colony, which would operate outside of the normal colonial bureaucracy. His statutes were closely modelled on the

1914, no. 10293; Erdbrink to Lovink, 9 Oct. 1914, no. 400 (secret); Idenburg to Pleijte, 9 Oct. 1914, Mailrapport no. 1192/ 15, in NA, MvK, Verbaal 28 Nov. 1914/42, inv. no. 1285.

<sup>53</sup> Koningsberger to Idenburg, 28 Feb. 1916, no. 36 (secret); Kinderman to Koningsberger, 25 Mar. 1916, no. 128 (secret), in NA, MvK, Verbaal 22 June 1916/19, inv. no. 1558.

<sup>54</sup> The Utrecht botanist A. Pulle concluded that for pure science to have credibility, the scientists' dirty laundry would have to be kept in house. Refer to J.F. Veldkamp, 'C.A. Backer, schrijver van een uniek woordenboek', in C.A. Backer, *Verklarend woordenboek van wetenschappelijke plantennamen* (Amsterdam: L.J. Veen, 2000), p. xvi.

statutes of the Dutch Royal Academy of Sciences.<sup>55</sup> For Koningsberger, this institute would be a way of institutionalising the presence of pure science in the colony. In the colony, Koningsberger's proposal met with enthusiasm. Lovink, as well as G.A.J. Hazeu the Director of Education and Religion, the Council of the Indies, and Governor General Idenburg were all enthusiastic.<sup>56</sup> They saluted the further consolidation of pure science. Even after the Minister of Colonies J.H. de Waal Malefijt challenged Koningsberger's plan, based upon advice he had received from the Colonial Institute in Amsterdam (now KIT) that had called into question the maturity of science in the Netherlands East Indies, all senior advisors in the colony concurred with Koningsberger's rejoinder that the colony was ready for a central coordinating body for pure science, such as already existed in Europe. The Department of Colonies, now under the new minister Th. B. Pleijte, reversed its earlier decision, and suggested placing the institute on the 1915 budget.<sup>57</sup> Koningsberger and Idenburg did not move forward with the institute, and it is not clear why, perhaps because of the onset of the war. But regardless of actually creating such an institution, Koningsberger had secured broad official support for the continued existence of pure, academic and research-oriented science in the Netherlands East Indies. No longer was it necessary for science to be a handmaiden of colonial administration. And in 1918, when the director of the Batavia observatory oversaw the founding of the *Nederlandsch-Indisch Natuurwetenschappelijk Congres* [Netherlands-Indies Scientific Congress], an umbrella organisation of all scientific organisations, private and government, Koningsberger became the first president.<sup>58</sup>

### Inventing the pure scientist

If Koningsberger's domain was to exclude agricultural research, what then should it be? Not only did it need internal cohesion, but it also needed a justification for continued support in the Dutch colony. Koningsberger's own inclination was towards ecology, the science of understanding biological interactions. This discipline of natural history had been popular since the mid-nineteenth century, and many writers, including Koorders, remained inspired by the example of Franz Junghuhn, who had been known as the Humboldt of Java.<sup>59</sup> Treub's interest and training, though, had shifted the professional biologists towards laboratory, physiological, and ultimately agricultural research. Even Treub, however, may have anticipated the shift back to ecology,

55 J.C. Koningsberger, 'Nota betreffende de oprichting van een Centraal Wetenschappelijk Instituut voor Nederlandsch-Indië', 12 Feb. 1913, in NA, MvK, Verbaal 28 June 1913/14, inv. no. 1055. For a different emphasis on the continuities between early twentieth-century attempts to found a centralised scientific institute, refer to Pyenson, *Empire of reason*, pp. 12–13.

56 Lovink to Idenburg, 11 Mar. 1913, no. 2661; Hazeu to Idenburg, 29 Mar. 1913, no. 5318; Advies van den Raad van Nederlandsch-Indië, 'Betreffende de oprichting van een "Centraal Wetenschappelijk Instituut voor Nederl.Oost-Indië"', 22 Apr. 1913, in NA, MvK, Verbaal 28 June 1913/14, inv. no. 1055.

57 Vereeniging Koloniaal Instituut te de Waal Malefijt, 16 June 1913, no. 137, in NA, MvK, Verbaal 28 June 1913/14, inv. no. 1055; Koningsberger to Lovink, 21 Aug. 1913, no. 747; Hazeu to Idenburg, 25 Nov. 1913, no. 20496; Idenburg to Pleijte, 22 Dec. 1913, no. 1459/19; 'Oprichting van een Centraal Wetenschappelijk Instituut voor Ned.Indie', Afdeeling A<sup>1</sup>, 23 Mar. 1914, in NA, MvK, Verbaal 31 Mar. 1914/60, inv. no. 1155.

58 Pyenson, *Empire of reason*, p. 14.

59 *Java's onuitputtelijke natuur: Reisverhalen, tekeningen en fotografieen van Franz Wilhelm Junghuhn*, ed. Rob Nieuwenhuys and Frits Jaquet (Alphen aan den Rijn: Sijthoff, 1980).

as his last published article in 1908 was a think piece about the ecology of virgin forests in west Java.<sup>60</sup> In memoirs about Treub, written many years later, Koningsberger suggested that Treub had always been interested in living nature, but had been unfortunate in having trained in laboratory methods during a period of backlash against field biology in the 1870s.<sup>61</sup> Certainly Treub's laboratory orientation went against the grain of most biological research in Indonesia, both before and since. Koningsberger was no exception, however, and between 1911 and 1915, he published the first comprehensive zoology survey as *Java, zoologisch en biologisch*. Using material from the zoological collections in Buitenzorg, he set out 'to construct an ecological representation of the composition of Java's fauna'.<sup>62</sup> He intended to offer 'the residents or visitors of Java, or those who elsewhere make a study of this land, a sort of guidebook [*vademecum*] that could lead to a first and global orientation'.<sup>63</sup> He catered to a broad projected audience of colonial elites. Much of the material, including introductory remarks about the evolution of Java's flora, the main morphological categories, and abiotic environmental factors, was included without citations, and Koningsberger generally adopted a popular tone. Clearly he meant the book to be read, especially by the Dutch colonial population. The book is organised around short descriptions of individual species, with a few sentences covering their interaction with the landscape, both natural and manmade. It is very little like a contemporary zoological research article. His book's primary division was place: cities, towns, farmland, and then finally, wild nature (divided into grass lands, coastal areas, forests, and highlands). His interest was neither with rare nor exotic animals, but with dominant and important ecological impacts. For 'practical reasons', the first animal treated by Koningsberger in full detail, under city mammals, was the *Mus rattus*, the black rat. He noted that unlike Europe and 'other parts of the civilized world' where the brown rat had driven out the black rat, the latter was still the dominant species on Java. Because of its threat to hygiene and its destruction of the rice fields, the black rat was a formidable enemy.<sup>64</sup>

Koningsberger's *Java* was much more than a guidebook to Java's fauna. At its heart was an argument for the colonial relevance of the pure scientist. For Koningsberger, pure scientists were the colonial high priests of the temple of enlightened knowledge. His book tried to demonstrate that only broadly oriented biologists, like himself, were qualified to explain the intricacies of the colony's natural world. These scientists could both understand tropical nature's complexity, while also providing general interpretation and guidance to colonial society. While the ecology of Java was daunting, Koningsberger provided a logical and easily accessible ecological framework for a colonial audience. Koningsberger's knowledge was more valuable than only a solution to the black rat pest, as it provided context about the black

60 Melchior Treub, 'La forêt vierge équatoriale comme association', *Annales du Jardin Botanique de Buitenzorg*, 22 (1908): 144–52.

61 J.C. Koningsberger, 'Herinneringen aan Melchior Treub' (Manuscript, Royal Tropical Institute, Amsterdam [hereafter, KIT], library, 1945).

62 J.C. Koningsberger, *Java, zoologisch en biologisch* (Buitenzorg: Departement van Landbouw, Nijverheid en Handel, 1911–15), p. 2.

63 *Ibid.*, p. 3.

64 *Ibid.*, pp. 55–7.



rat's habitat, while also couching his description within an argument about the still uncivilised state of Java. According to Koningsberger, the pure scientist's authority was based upon broad academic and scientific credentials, but relevance and colonial legitimacy came from the leadership and guidance they provided.

In the 1910s, ecological research became the mainstay of the Botanical Gardens' scientists. This in part reflected a broader trend within worldwide biology towards ecology, but unlike their counterparts in Europe and the US, the Buitenzorg biologists contributed little to larger debates about evolution and development.<sup>65</sup> Instead, ecology was an expert guide for life in colonial nature. It was not that ecology was impractical, but rather that it allowed a pure and unadulterated access to nature, not soiled by concerns over usefulness. Koningsberger built up the pure scientist as an expert who was critical to the professional and the layman, the specialist and the hobbyist.<sup>66</sup> The Gardens' biologists were encouraged to create a web of ecological knowledge that transcended issues of use and applicability, and was readily accessible. So it was not just about presenting research results, but about teaching the scientific method of the pure scientist. C.A. Backer's *School Flora* (1911), started this pedagogical trend; not only was it an introduction to Java's plants via keys and short descriptions, but it was meant to educate high school students on what a scientist did. Backer included detailed instructions on how to build a herbarium through proper drying, storage, and classification.<sup>67</sup> Of longer-term significance was the journal of the Netherlands-Indies Natural History Association, *De Tropische Natuur*, 'Tropical Nature', which soon after it began publication in 1911 came under the control of the Botanical Gardens scientists. Its inaugural edition promised to teach inhabitants of the colony 'to learn to enjoy living nature', specifically by remedying 'the lack of popular tools for orienting oneself in nature'.<sup>68</sup> By 1913, this journal was dominated by botanists at the Buitenzorg Botanical Gardens, one of whom was the editor until 1936.<sup>69</sup> Articles were meant for general popular consumption, but were to be based upon original field research. The pure scientist was not just to be a populariser, but was expected to make scientific results directly available to colonial readers. For more than two decades, colonial readers interested in 'Tropical Nature', which reached 1000 subscribers in 1929,<sup>70</sup> were treated to 12 issues a year of what pure science could accomplish.

By 1918, when both Koningsberger and Lovink left their positions, the split between pure and applied science was complete. The forestry department and agricultural experiment stations were filled with Lovink's men, while the Botanical Gardens

65 For ecological research in the US in the early twentieth century, refer to Gregg Mitman, *The State of nature: Ecology, community, and American social thought, 1900-1950* (Chicago: University of Chicago Press, 1992); Joel B. Hagen, *An Entangled bank: The Origins of ecosystem ecology* (New Brunswick: Rutgers University Press, 1992); and Robert Kohler, *Landscapes and labs: Exploring the lab-field border in biology* (Chicago: University of Chicago Press, 2002).

66 J.C. Koningsberger, 'Bij het honderdjarig bestaan van 's Lands Plantentuin', *Teysmannia*, 28 (1917): 117-22.

67 C.A. Backer, *Schoolflora voor Java. Ranunculaceae-Myrtaceae* (Weltevreden: Visser, 1911), pp. clxvii-clxx.

68 A.R. Schouten, C.A. Backer and A.J. Koens, 'Een woord vooraf', *De Tropische Natuur*, 1 (1912): 1-2.

69 J. Obdam, 'Een terugblik', *De Tropische Natuur, Jubileum-Uitgave* (1936): 8-10.

70 D.F. van Slooten, 'De Nederlandsch Indische Natuur-Historische Vereeniging en *De Tropische Natuur*', *De Tropische Natuur, Jubileum-Uitgave* (1936): 3-8.

was the home of Koningsberger's pure, research biology. Lovink returned to the Netherlands in 1918, and the Wageningen graduate J. Sibinga Mulder became the new director of the Department. In the same year Koningsberger became the first president of the colonial parliament, the *Volksraad*, and his chosen successor, W.M. Docters van Leeuwen, a Utrecht trained biologist, replaced him as director of the Botanical Gardens.<sup>71</sup> The debate between applied and pure science was settled, and in fact, new priorities took up the Department of Agriculture, Industry, and Trade as a whole. Because of new economic responsibilities gained during the war, the department was now closely involved in planning economic policies for the colony.<sup>72</sup> The older, crop-specific experimental stations were almost as distant from the centre of the department as the Botanical Gardens.<sup>73</sup> All of them were spun off as private institutes in the 1910s and 1920s. As a result, the pure science that Koningsberger had developed at the Botanical Gardens took on a new purpose, as part of colonial ideology.

By the time of Koningsberger's departure from the Buitenzorg Botanical Gardens, scientists there had won recognition as the keepers of the colony's pure natural knowledge. The Botanical Gardens was firmly established as an institution of pure science, and pure scientists were recognised as excellent interpreters and explainers of nature. Furthermore, Koningsberger's leadership was accepted amongst senior colonial officials, as evidenced by his promotion to the first presidency of the *Volksraad*. These pure scientists, though, did not have an important economic or ideological role within the colonial bureaucracy. Their purpose or usefulness was rather abstract from the point of view of most colonial officials. The distance between the Gardens and the rest of the administration, in fact, grew larger after Koningsberger's departure. Still, by the mid-1920s, it was this distance that became pure science's greatest asset, as pure science was dressed up as a moral and ideological argument for continued Dutch rule.

#### Pure science and decent colonialism

In the decade after the First World War, pure science became a part of a new civilising mission ideology, used to make the argument that Dutch colonial rule continued to be enlightened. This change reflected diminished confidence amongst Europeans in the nineteenth-century solutions to ruling overseas colonies.<sup>74</sup> As Michael Adas has argued, greater 'doubt and cynicism ... clouded the civilizing mission in the decades after the Great War', and this led to general uncertainty amongst elite Europeans about their colonies.<sup>75</sup> More specifically, it was in the decade after the

71 Koningsberger to Went, 4 Feb. 1918, in BM, J.C. Koningsberger correspondence archive.

72 J.G. Hoekman, 'Het tweede tienjarige tijdvak van het bestaan van het Landbouw Departement', *Koloniale Studiën*, 9, 1 (1925): 131–48.

73 Koningsberger to Went, 4 Feb. 1918.

74 The Dutch colony had been admired in Europe since the middle of the nineteenth century for its peaceful administration coupled with effective economic exploitation. Cees Fasseur, 'Een Britse tegenspreker van Multatuli: Money's lofzang op de cultuurstelsel', in his *De weg naar het paradijs en andere Indische geschiedenissen* (Amsterdam: Bert Bakker, 1995), pp. 89–100. Clive Day had in 1904 celebrated the peace and prosperity brought by liberal changes in the Dutch colony after 1870. Clive Day, *The Dutch in Java* (Kuala Lumpur: Oxford University Press, 1966 [1904]).

75 Adas, *Machines as the measure of men*, p. 348. For the rising anxiety amongst Dutch officials in Netherlands East Indies during the First World War, refer to Kees van Dijk, *The Netherlands Indies and the Great War, 1914–1918* (Leiden: KITLV Press, 2007).

First World War that the ethical policy ran out of steam. As the 1920s wore on, there were fewer and fewer Dutch elites, either inside the government or out, who still believed in the ethical policy's claim that Indonesian nationalism was a natural and progressive force. Beginning in 1920, the government began to clamp down on Sarekat Islam,<sup>76</sup> and the new conservative and repressive direction became official with the appointment of Dirk Fock as governor general in 1921.<sup>77</sup> Amongst the Dutch, the association ideas of the early twentieth century, which had favoured cultivating Indonesian intellectuals who supported the Dutch, largely vanished. It was replaced by identity politics, articulated in nationalist idioms. This was true for the Dutch as well as the Indonesian and Eurasians communities.<sup>78</sup> The Dutch administration reflected this change as well, epitomised by their decision in the late 1920s to intern all nationalists in Boven Digoel who were perceived to pose a threat to the political status quo.<sup>79</sup> With the ethical policy's demise and the Dutch withdrawal of support for Indonesian nationalism, a gap opened up in the ideology of the Dutch civilising mission. This ideology was less relevant within political considerations inside the colony, although still a factor in the way the Dutch administration justified its existence, especially in an international context. Pure science was one way to renew the civilising mission ideology.

In the 1920s, excellence in scientific research became useful in supporting a new colonial ideology. This ideology was meant to convince the world that the Dutch had a pure and enlightened colonial soul. Dutch colonial officials did not afford themselves ambivalence about the colony they administered, and in the context of increased repressive policies, they looked for ways to demonstrate to both an internal and external audience that they were still doing a decent job bringing the colony into the modern world. Support of non-ideological, research science was one way to do this. Especially after the retirement of J. Sibinga Mulder in 1922, and the appointment of A.A.L. Rutgers, an academically trained botanist previously head of the rubber experimental station, as Director of Agriculture, Trade, and Industry, the biological research done at the Botanical Gardens was held up as an example of the continued civilising mission of the Dutch.

Rutgers played an important role in shaping this ideology over the course of the 1920s, culminating in the hosting of the 1929 Pacific Science Congress, in which the Dutch colonial administration proudly showed-off its institutions of pure science to the world. But Rutgers largely stayed behind the scenes, creating the conditions for scientists themselves to expand their research. Although the Dutch administration was not shy about pointing to their support of pure science, they also went out of their way to suggest that the colonial scientists were autonomous and free from government control. At the same time that Rutgers and other colonial officials encouraged the expansion of pure science, they hid the involvement of the colonial state

76 Takashi Shiraishi, *An Age in motion: Popular radicalism in Java, 1912–1926* (Ithaca, NY: Cornell University Press, 1990), pp. 203–15.

77 H.W. van den Doel, *Het rijk van Insulinde: Opkomst en ondergang van een Nederlandse kolonie* (Amsterdam: Prometheus, 1996), pp. 215–22.

78 P.J. Drooglever, *De Vaderlandse Club 1929–1942: Totoks en de Indische politiek* (Franeker: T. Wever, 1980), pp. 24–6.

79 Takashi Shiraishi, 'The Phantom world of Digoel,' *Indonesia*, 63 (Apr. 1996): 93–118.

in science, through the erection of supposedly independent scientific councils that oversaw scientific institutions. Scientists and their research were the best envoys to demonstrate the purity of Dutch colonial rule.

The Botanical Gardens were one of many scientific institutes where pure science thrived in the 1920s. As Lewis Pyenson's research has shown, new or renewed institutions of astronomy, physics, and geophysics were endowed after the First World War. The region around Bandung was to become, as the Council of the Indies wrote in 1920, the 'scientific centre' of the colony.<sup>80</sup> The new Technical College in Bandung opened in 1920, modelled on the Technical College in Delft. Starting in the early 1920s, an optical observatory was built in the mountains north of Bandung, at Lembang. Although much of the equipment for these institutes was purchased with private money, the colonial government was supportive, paying many of the scientists' salaries. And it took over the Technical College in Bandung shortly after its founding.

Amongst the now expanding ranks of scientists in the Indies during the 1920s, morale was high. This was certainly the case at the Botanical Gardens, where the scientists were sheltered from the politics of the colonial bureaucracy. Docters van Leeuwen quickly set to work to raise the scientific output of the Gardens' scientists, in part by streamlining cooperation between the different sections of the Botanical Gardens.<sup>81</sup> As he centralised the research mission in his first year of directing the Gardens, he began to steer the science of the Botanical Gardens away from colonial issues. For Docters van Leeuwen, a high scientific calibre meant holding science to European standards. This shift away from working on colonial issues perturbed Koningsberger, who still saw colonial research as the core mission of the Botanical Gardens.<sup>82</sup> Nonetheless, Docters van Leeuwen was given a free hand, and over the course of the next decade, he turned the Gardens into a more typical, European-style research institute, promoting pure science. Unlike his predecessor, he monitored the work of scientists closely, perhaps drawing upon his most recent experience as the headmaster of a secondary school in Bandung.<sup>83</sup> In late 1918, he had Smith write what would be the first statutes of the herbarium, including work hours (7a.m. to 1p.m.), and times for the two smoking breaks. These statutes spelled out that the herbarium, and the scientific operation of the Gardens more generally, was a hierarchical institute, run with a central mission.<sup>84</sup> Docters van Leeuwen began to integrate the botanical work at Buitenzorg with that done in Leiden, by making sure they did not do overlapping work.<sup>85</sup> And his research on galls (done in collaboration with his wife), as well as his ecological studies of Krakatoa

80 Quoted in Pyenson, *Empire of reason*, p. 119.

81 Docters van Leeuwen to Went, 3 Aug. 1934, in BM, Docters van Leeuwen correspondence archive; Docters van Leeuwen to van Steenis, 5 Aug. 1934; Docters van Leeuwen to van Steenis, 12 Aug. 1934, in NA, Collection Van Steenis, inv. no. 3D.

82 Koningsberger to Went, 10 Apr. 1919, in BM, J. C. Koningsberger correspondence archive.

83 E. du Perron, who had known him as headmaster in Bandung, called him 'an honest man without any true character'. E. du Perron, *Het land van herkomst* (Amsterdam: van Oorschot, 1996 [1936]), p. 467. This description appears not in the autobiographical novel itself, but in a key that du Perron prepared for a friend explaining who his 'fictional' characters were based upon. From the novel it is clear du Perron did not greatly admire Docters van Leeuwen, especially after he had suspended du Perron from school for two weeks over a disagreement with the history teacher.

84 J.J. Smith, 'Reglement voor het Herbarium', Dec. 1918, in NA, Collection Van Steenis, inv. no. 250.

85 Docters van Leeuwen to Goethart, 28 Aug. 1919, no. 514, in Nationaal Herbarium Nederland, Leiden (hereafter, NHN), Buitenzorg correspondence archive 1871–1932.

and the highlands of Java, some of it written in English, set an interdisciplinary standard for the scientific staff.<sup>86</sup> A new visitor's laboratory at Cibodas, paid for in part by European botanists, was opened with much fanfare in 1920.<sup>87</sup> He had no trouble with funding; in 1919 the Gardens hired four systematic botanists, three of whom were new positions.<sup>88</sup> Over the course of the next decade, Docters van Leeuwen was able to hire some of the best young botanists from Utrecht University. The Gardens remained independent of the Dutch universities, but by bringing in recent Dutch doctoral graduates, the research aspects of the Gardens came to look more and more like European research science. Docters van Leeuwen ran a tight ship, and the staff enjoyed working under him.<sup>89</sup> In 1923 he was able to pension off the headstrong Bleeker, which ended the disputes amongst the systematic botanists.<sup>90</sup> The number of scientists at the Botanical Gardens grew steadily until 1930, when the number of scientific staff reached 17, and their scientific output was comparable to that of a European research institute.<sup>91</sup> Docters van Leeuwen took an active interest in arranging for field research for his staff and for himself, while also keeping the Botanical Gardens as the centre of biology in the colony. In 1931, when he heard a rumour that some British amateur naturalists were proposing to collect in the highlands of Aceh, he was aggressive about finding funding for a Botanical Gardens trip, with the explicit aim of beating the foreigners to this previously unexplored region.<sup>92</sup> Docters van Leeuwen himself went on the famous nine month Smithsonian sponsored American-Dutch expedition of 1926 to the interior of New Guinea.<sup>93</sup> For the good part of a year, this trip took up all his time, and he virtually ignored the administrative responsibilities as director of the Botanical Gardens for that time. He made careful preparations to do basic collecting and ecological research, and

86 W.M. Docters van Leeuwen and J. Docters van Leeuwen-Reynevaan, *The Zooecidia of the Netherlands East Indies* (Batavia: de Unie, 1926); W.M. Docters van Leeuwen, 'The Flora and fauna of the islands of the Krakatau-groep in 1919', *Annales du Jardin Botanique Buitenzorg*, 31 (1921): 103–40; W.M. Docters van Leeuwen, 'Biology of plants and animals occurring in the higher parts of Mount Pangrango-Gedeh in west Java', *Verhandelingen van Koninklijke Adademie van Wetenschappen*, 31 (1933): 1–278; W.M. Docters van Leeuwen, *Krakatau 1883–1933* (Leiden: Brill, 1936).

87 *Jaarboek van het Departement van Landbouw, Nijverheid en Handel 1920* (Batavia: Ruygrok, 1922), p. 4; Soetomo Soerohaldoko *et al.*, *Kebun Raya Cibodas, 11 April 1852–11 April 2000* (Bogor: LIPI, 2000), pp. 13–4.

88 Smith to Went, 20 Apr. 1918, in BM, Smith correspondence archive.

89 In the late 1940s, the botanist C.G.G.J. van Steenis (who started at the Gardens in 1927) argued that the Botanical Gardens were freest from controversy under Docters van Leeuwen. van Steenis to F.C. Went, 19 Jan. 1949, in NA, Collection van Steenis, inv. no. 9.

90 Lam to Went, 16 Jan. 1928, in BM, Lam correspondence archive. See also, Veldkamp, 'C.A. Backer', p. xii.

91 W.M. Docters van Leeuwen, 's Lands Plantentuin te Buitenzorg, 18 Mei 1817–18 Mei 1942', in *Hortus Botanicus Bogoriensis* (Leiden: Brill, 1942), p. 17.

92 Docters van Leeuwen to Indische Committee voor Wetenschappelijke Onderzoekingen (hereafter, ICWO), 11 May 1931, no. 305, in NA, Collection ICWO, inv. no. 38.

93 Docters van Leeuwen was not initially invited, but he finagled himself onto the team after permission to take a plane for anthropological study required Dutch government intervention. C.C.F.M. le Roux, 'Beknopt voorloopig plan voor een Amerikaansch-Nederlandsche Expeditie naar het Nassau-gebergte in Ned. Nieuw-Guinee', 27 Jan. 1926, in NA, Collection ICWO, inv. no. 124. For a good introduction to this expedition, refer to Paul Michael Taylor, *By aeroplane to Pygmyland: Revisiting the 1926 Dutch and American expedition to New Guinea*, published online by the Smithsonian Institution Libraries, <http://www.sil.si.edu/expeditions/1926> (last accessed on 9 July 2008).

ultimately filed fourteen scientific reports.<sup>94</sup> Unlike his predecessor, he showed neither the skill nor the interest in being an upwardly mobile colonial official: in 1928 he wrote that ‘after I have been sitting behind the writing desk for a while, I long for some brisk walking, hard climbing, and transpiration’.<sup>95</sup>

By the mid 1920s, there was little at the Botanical Gardens that connected it to colonial economics or administration; only one centre of economic botany was left, and it was run single handedly by K. Heyne, who continued to work on an encyclopaedia of ‘useful plants’ of the colony until his retirement in 1927.<sup>96</sup> The scientific staff of the Gardens concentrated on expanding the ecological understanding of plants, animals, and their environments. One biologist even gained international stature, using research in Buitenzorg to launch an academic career in the United States. F.W. Went, the son of the senior botanist at Utrecht University, came to Buitenzorg in 1928 fresh out of graduate school, as head of the director’s laboratory. He turned to ecological investigations of epiphytic plants, with the goal of working towards a broader physiological study of tropical adaptations. He left for Cal Tech in late 1932, without ever having needed to give a thought to tailoring his research towards practical, colonial needs.<sup>97</sup>

Beginning shortly after the commencement of Docters van Leeuwen’s tenure at the Gardens, other colonial officials within the Department of Agriculture, Industry, and Trade, began to see these non-utilitarian research institutes as colonial assets. It was with pride that they looked upon a whole range of science being practised in the colony. Applied science remained important to the economic health of the colony, but after nearly two decades of a scientific and agricultural department, applied science had settled into the regular colonial routine. And while the ecological research championed by Koningsberger in the 1910s was still read throughout the colony, the research content of pure science mattered less than its existence. It was the pure scientific institutes in the colony, where world-class research was being carried out, that was useful for propagandistic reasons. Scientists pursuing scholarship dispassionately, on an equal footing with scientists in Europe and the United States, was something the colony could proudly show off.

Over the course of the 1920s, colonial officials and pure scientists cooperated to put the Netherlands East Indies on the map as a centre of reputable science. Rutgers, the Director of Agriculture, Trade and Industry, spearheaded this effort, especially through his work bringing the fourth Pacific Science Congress to the Netherlands East Indies in 1929.<sup>98</sup> Rutgers envisioned that Batavia would join the ranks of other Pacific rim cities as host of this prestigious cross-disciplinary conference (previously held in Honolulu in 1920, Sydney and Melbourne in 1923, and Tokyo in 1926). This would raise the profile of the colony in international eyes, and simultaneously boost the standing of science in the colony itself. The foreign attendees

94 W.M. Docters van Leeuwen, ‘Vorbereiding van den bioloog van de Expeditie’, Apr. 1926, in NA, Collection ICWO, inv. no. 125 and NA, Collection ICWO, inv. no. 126.

95 Docters van Leeuwen to Went, 6 Mar. 1928, in BM, Docters van Leeuwen correspondence archive.

96 K. Heyne, *De nuttige planten van Nederlandsch-Indië*, 2<sup>nd</sup> edn, 3 vols. (Batavia: Ruygrok, 1927). Heyne was replaced in 1927 by the systematic botanist C.G.G.J. van Steenis who did only the bare minimum of economic botany work thereafter.

97 F.W. Went, ‘Reflections and speculations’, *Annual Review of Plant Physiology*, 25 (1974): 1–26.

98 Docters van Leeuwen to Went, 1 Apr. 1926, no. 214, in BM, Docters van Leeuwen correspondence archive.

would be treated to a healthy dose of Dutch colonial propaganda — coming not just in papers presented by the Dutch colonial scientists, but also in the form of dozens of excursions around Java. And at the same time, the ability of colonial scientists to attract hundreds of outsiders to the colony would legitimatise the purpose of pure science inside the colony. Their presence confirmed how science in the colony was ushering modern thinking into the Netherlands East Indies. For the Botanical Gardens, the congress would complete the transformation of institutional biology that had started when Koningsberger took over the Gardens in early 1911, from a bureaucratic science serving the agricultural public, to a pseudo-independent academic science meant to look like European science.

In order to prepare the ground for the Pacific Science Congress, Rutgers and other colonial officials found it necessary to occlude the presence of the colonial state behind most of the colony's science. It was not appropriate for the government to directly organise the congress; this should be done by a scientific academy. Yet this was a delicate matter. There were amateur scientific academies in the colony, such as the Batavian Society of Arts and Sciences and the Royal Natural Association, but these organisations lay outside the control of the government. Hence a new academy would need to be established, appearing independent, but in essence a government body. In late December of 1926, Rutgers called a meeting of all the scientific associations in the colony, and under the guidance of Utrecht Professor F.A.F.C. Went, himself head of the Biological section of the Dutch Royal Academy and a big supporter of the Pacific Science Congress, decided to form a pan-scientific association 'independent of the government'.<sup>99</sup> Notwithstanding this ideal of autonomous action, and the election of the new commissions' leaders, it was Rutgers, director of Agriculture, Industry, and Trade, who wrote a proposal and sent it to the governor general. Rutgers suggested a *Natuurwetenschappelijke Raad*, or Scientific Council, for the Netherlands East Indies. Its statutes were modelled on the metropole Royal Academy of Arts and Sciences as well as Koningsberger's 1913 proposal for a centralised scientific institute in the colony (not an accident as Koningsberger had in the previous year become minister of colonies). Rutgers started by arguing that the Royal Natural Association was not the appropriate vehicle for this centralised body, as it no longer truly advised the government. Not surprisingly, the proposed council was more tightly drawn than Koningsberger's earlier institute, and focused on establishing the means for greater scientific cooperation amongst the colony's scientists. The commission was cheap, f. 2500 a year, and secured office space at the Royal Natural Association's headquarters in Batavia. Much was made of its independence (membership was to be established by 'scientific value and accomplishment', not official position), although the government was expected to pay for its existence and it would only be established by government decree. Rutgers specifically mentioned that the commission planning the 1929 Pacific Science Congress would be dissolved into the new council, who would take over the preparation for the Congress.<sup>100</sup>

The governor general put the proposal on the fast track so it would be established well before the Pacific Science Congress. It rapidly gained support from the director of

99 Rutgers to De Graeff, 21 Feb. 1927, no. 1756/C, in ANRI, AS 1891–1942, Brief Gouvernements Besluit, 8 Apr. 1927, no. 736B.

100 Ibid.

Education and Religion, as well as the Council of the Indies and the *Volksraad*, who discussed it in January and February of 1928.<sup>101</sup> The official statutes were published in February, only slightly modified from Rutgers's drafts.<sup>102</sup> Although the Scientific Council was cheap, the Congress would be expensive. The organising committee alone would cost f. 29,000, while the care of 150 participants was estimated at f. 125,000. The Scientific Council (and hence the government) absorbed these costs.<sup>103</sup> Docters van Leeuwen lent the herbarium scientist H.J. Lam to run the Congress preparation. As first secretary to the organising committee, he did two-and-a-half years of full-time administrative work.<sup>104</sup> The government spared little expense preparing for the ten-day conference. They printed a lavish brochure with detailed descriptions of the many excursions, which were organised by discipline. Local experts wrote extensive descriptions, with herbarium chief J. Beumée writing the guide to the Bandung-Yogyakarta botanical trip, and Docters van Leeuwen providing an introduction to the Cibodas gardens.<sup>105</sup> Special efforts were made to invite experts to discuss and synthesise technical topics of relevance to the entire Pacific basin: for example, 'Results of gravity determinations upon the Pacific Ocean and the organization of further research', 'Protection of Nature in and around the Pacific', and 'Desirability of a regular exchange of information relative to methods for determining the value of soils for agricultural purposes and the results obtained thereby'.<sup>106</sup> The Scientific Council commissioned a special history of science in the Netherlands East Indies, written mostly by senior Dutch scientists, which in English celebrated the achievements of pure science in the colony. Most of the Dutch contributors had had previous work experience in the colony; the Buitenzorg botanist Lam wrote an extensive overview of the colony's 63 different scientific institutions, divided into 'pure' and 'applied' institutes, and the 100 scientific periodicals they published.<sup>107</sup>

In the 1920s, government scientific policy shifted in favour of pure science. Applying science to improving the colony's export crops was considered sufficiently routine to be done by private institutes. Agronomy within the Department of Agriculture, Trade and industry was increasingly occupied with issues in the native (mostly rice) economy. Pure and independent science was something to show off. Rutgers and other colonial officials were able to proudly point to the existence of technical and scientific institutes in Bandung and Buitenzorg. Although the pure scientists played their part in this endeavour, they still cared more for the content of their research than for the form. In some cases they were reluctant participants: Docters van Leeuwen served as the head of the biological section for the Pacific Congress, even though he believed this 'was a necessary evil for science and advertisement for the Indies'.<sup>108</sup>

101 ANRI, AS 1819–1942, Besluit 6 Jan. 1928, no. 13.

102 'Reglement voor den Natuurwetenschappelijke Raad voor Nederlandsch-Indië', in ANRI, AS 1891–1942, Besluit 28 Feb. 1928, no. 9.

103 Pyenson, *Empire of reason*, pp. 15–16.

104 M. Jacobs, *Herman Jacobs Lam (1892–1977): The Life and work of a Dutch botanist* (Amsterdam: Rodopi, 1984), pp. 32–3.

105 *Fourth Pacific Science Congress Java 1929, Excursion Guides*, in KIT library.

106 *Fourth Pacific Science Congress to be held at Batavia-Bandoeng, from Thursday, May 16<sup>th</sup> to Saturday, May 25<sup>th</sup>, 1929, Supplementary Announcement*, Sept. 1928, in KIT library.

107 H.J. Lam, 'Conspectus of institutions of pure and applied science in or concerning the Netherlands East Indies', in *Science in the Netherlands East Indies*, ed. L.M.R. Rutten, pp. 383–432.

108 Docters van Leeuwen to Went, 21 Feb. 1928, in BM, Docters van Leeuwen correspondence archive.



When in early 1928 Rutgers left Java to become governor of Surinam, he offered the job of head of the planning commission to Docters van Leeuwen, who turned it down (although he served temporarily as chair).

The Fourth Pacific Science Congress went well, attracting 189 members, of which 142 were not from the Netherlands or the Netherlands East Indies. The herbarium scientist Lam oversaw the day-to-day administration of the Congress. The president of the Congress was O. de Vries, head of the Rubber Experiment Station, and son of Hugo de Vries, the famous Dutch biologist. The appeal of the Congress was increased by a total eclipse of the sun on 9 May, which also lured extra foreign astronomers. At the start of the Congress, the governor general threw a lavish party at the palace in Batavia. An exhibition of native industry held in conjunction with the Congress drew 10,000 visitors. After opening ceremonies, the Congress moved to Bandung for the working meetings, where 270 papers were presented.<sup>109</sup> About one quarter of the overseas members came with spouses, using the conference as a reason to tour the Dutch colony.<sup>110</sup> After the proceedings ended on 25 May, the conference party moved east, visiting Yogyakarta, Borobudur, and Mount Bromo. A farewell banquet was held on 4 June in Surabaya. This Congress was larger than any of the previous ones, and went a long way towards showing to the international scientific community that science at the highest and purest level was now done in the Netherlands East Indies.

The tone of the entire conference, from the opening banquet to the panels, was built around the premise that the commonalities of the Pacific natural phenomena were best studied in an international context, transcending colonies and nations. Thus, a panel on plant pathology included papers about pests in Malaya, Hawaii, Netherlands East Indies, the Philippines and Formosa. This started as a discussion about parasitic insects (and the overlap from region to region), but it grew lively when they debated how to advance research collaboratively. Leefmans, the local delegate, had a typical answer for Netherlands East Indies pure science when he noted that, 'more and more separate centralised institutions with extended libraries and big central collections are absolutely necessary for good taxonomic work'.<sup>111</sup> In the plenary sessions, this international cooperation was raised to the level of virtue. O. de Vries said that 'the more Science develops and pervades modern civilisation, the more it takes its place as an instrument to bring people together in peaceful co-operation and brotherly feeling'.<sup>112</sup> Governor General A.C.D. de Graeff, in opening the Congress, was even more explicit about how the Indies government understood pure science, by declaring that

in the field of Science the well known words of Kipling come true that 'there is neither East nor West, border nor breed nor birth'. And, as far as Western activity in the Orient is concerned, with full conviction I subscribe to the statement ... that the most exacting criticism of the part which Europe has played and still plays in the history of the Orient

109 Jacobs, *Lam*, p. 32.

110 *Proceedings of the Fourth Pacific Science Congress Java, 1929: Volume I, General part and reports on oceanography*, ed. H.J. Lam and K.W. Dammerman (Batavia: n.p., 1930), pp. 5–24.

111 *Ibid.*, p. 368.

112 *Ibid.*, p. 73.

must recognize that the purest and perhaps the greatest of all fights which the West has carried East of Suez is the devoted unselfish and impartial labour of modern Science.<sup>113</sup>

De Graeff expected that international cooperation in this pure endeavour could transcend colonial politics, crossing nations, colonies, and races. For the government, science's greatest asset was its ability to shape civilisation without being dirtied by politics. International organisations served this by endowing science with further impartiality. For the Dutch colonial government, promoting a pure science which crossed the political borders of nations and colonies suggested a decent colonial regime, which was actively bringing civilisation to its borders.

De Graeff's words at the opening gala are further revealing in that they suggest not a wholehearted commitment to impartial and pure science, but rather support for pure science as a way to address a criticism of colonialism. In 1929, pure science was important to the government for its symbolic and ideological value, especially in an international context. The instinct of most colonial elites, from the planter all the way to the governor general, was still for scientific knowledge able to positively impact either the colonial export crop economy or colonial administration. In 1929, most people in the colony had little interest in pure science. And the actual financial commitment of the state for pure science was still very modest. The idea of pure science as civilising was powerful, though, and the notion that it could expand Dutch interests continued to exert an influence on policy-makers. But this was still largely in the realm of colonial ideology.

Listening to De Graeff's speech in 1929 might have given the impression that by then the Dutch colony was busy educating a first generation of Indonesians in pure science — in fact no such effort was ever made by the Dutch colonial regime. Indonesian nationalists had raised this issue in the first year of the *Volksraad* in 1918, when *Budi Utomo* member R. Sastrawidjono called for expanded opportunities for non-Europeans to pursue scientific education.<sup>114</sup> In the 1920s and 1930s, a number of institutes of higher learning were established or renewed, but they were in the applied sciences (engineering, medicine, and law), and were intended to generate graduates who could work as government officials. Throughout this period, colonial policy-makers thought largely along the lines expressed by J.E. Stokvis, editor of the *Locomotief*, who in 1912 had rejected the need for a general university in favour of greater access to technical and vocational schools.<sup>115</sup> Little changed in the 1930s, although Indonesian nationalists continued to call for the establishment of a general university.<sup>116</sup> Only in 1939 did the Dutch colonial government begin to plan for such a university, not fully realised until the University of Indonesia was established in the late 1940s.

### Conclusion

Scholars have long recognised nineteenth-century European colonial mastery of science as a component of colonial conquest and administration.<sup>117</sup> Michael Adas

113 *Ibid.*, p. 71.

114 *Handelingen van de Volksraad* 1918, p. 170.

115 J.E. Stokvis, 'Geen universitair, wel hooger vakonderwijs', *Het Tijdschrift*, 9 (1 Jan. 1912): 276–8.

116 G.S.S.J. Ratu Langie, 'De Indonesische universiteit', *Nationale Commentaren* 1, 20 (24 May 1938): 340–2.

117 For British scientists' role in colonial exploitation of natural resources, refer to David Arnold, *Science, technology and medicine in colonial India* (Cambridge: Cambridge University Press, 2000).

showed 20 years ago that science became a touchstone for European colonial ideologies and their civilising missions.<sup>118</sup> The explosion of recent research about colonial science has greatly expanded our understanding of colonial institutions of science, arguing persuasively that they were much more complex intellectual and political realities than simply extensions of European science.<sup>119</sup> These studies have said far less about colonial ideology, and no study has taken up Michael Adas's argument that the civilising mission, and science's role in it, changed after the First World War. My argument here is that in the Netherlands East Indies, and even as challenges to the civilising mission multiplied in the 1920s, the colonial government's ideological support for 'science for science's sake' justified their continued presence in the colony. This new civilising mission was probably less relevant inside the colony, where political conflicts overshadowed it, but it remained important in the international context. And while this ideology was never as potent as earlier representations and uses of science, it had long-lasting effects, certainly in the way the Dutch continued to understand their colonial past as decent.

Pure science shrank in the 1930s, as a result of the depression and the serious revenue problems it caused for the Netherlands East Indies state.<sup>120</sup> By 1931, across the board budgetary cuts were called for, including a 20 per cent cut at the Botanical Gardens.<sup>121</sup> These savings were realised relatively painlessly through Docters van Leeuwen's retirement. But as the depression wore on, and more drastic changes came to be called for, the very existence of the Botanical Gardens and its pure science came under attack.<sup>122</sup> The Department of Agriculture, Trade, and Industry moved to Batavia in 1934, with a new name and new mission as the Department of Economic Affairs. The Botanical Gardens' pure science seemed to some an anachronism in this time of serious economic hardship. And purely scientific research shrank drastically in the 1930s. But by then, the position of pure science was safe as part of a new civilising mission ideology.

Pure science as envisioned by Koningsberger in the 1910s was to have an organic and intimate relationship to the colony. Research grew out of local concerns, even if the methods and practices were European. This changed in the 1920s, not only because of Docters van Leeuwen's interest in raising the research calibre, but also because of pure science's integration into the Dutch civilising ideology. Biology flourished in Buitenzorg, but it also became increasingly distant from colonial society. Knowledge was being generated about colonial nature because that was the research material at hand. Yet connections to the land faded, perhaps best epitomised by F.W. Went's physiological research, which landed him a job in US academia.

118 Adas, *Machines as the measure of men*.

119 For an excellent review of this literature, refer to Roy MacLeod, 'Introduction', in *Nature and empire, science and the colonial enterprise*, special edition of *Osiris*, 15 (2000): 1–13.

120 For an examination of the government's changing economic priorities during the depression, refer to Anne Booth, 'The Evolution of fiscal policy and the role of government in the colonial economy', in *Indonesian economic history in the Dutch colonial era*, ed. Anne Booth, W.J. O'Malley, and Anna Weidemann (New Haven, CT: Yale University Southeast Asian Studies, 1990), pp. 210–43.

121 Docters van Leeuwen to Went, 19 Oct. 1931, in BM, Docters van Leeuwen Correspondence Archive.

122 The most famous attack was made, ironically, by J.C. Koningsberger's son, V.J. Koningsberger, 'Het werk van Melchior Treub na 25 jaren', *Koloniale Studiën*, 18, 1 (1934): 249–58.

By the late 1920s, pure science was a reality in the colony, but largely through its relevance to a colonial ideology.

After 1930, colonial officials continued to point to the existence of pure science in the colony, using it as evidence for the efforts the Dutch were making to bring modern civilisation to the colony and its inhabitants. This argument reached its height at the nadir of the Dutch empire in the 1940s. Two books produced during the war and printed in 1945, an English version of the celebratory *Daar werd wat groots verricht* entitled *Mission interrupted: the Dutch in the East Indies and their work in the XXth century* and a long series of essays about *Science and scientists in the Netherlands Indies*, argued for the continued relevance of the Dutch civilising mission in the East Indies.<sup>123</sup> Neither is exclusively about pure science, but both make the more general point that Dutch colonialism was animated by pure principles, which helped bring civilisation to the islands. The keen and enthusiastic observer of Dutch colonialism J.S. Furnivall recommended both as indicating ‘the importance of the contribution made by Netherlands India to the general welfare of the world’, and ‘the enlightened spirit with which the government has been informed’.<sup>124</sup> Ultimately these books failed to do what they intended to – to convince the world, especially the Anglo-American world, to support a continued Dutch presence in Indonesia – but they have served to structure some of the debate about Dutch colonialism in the Netherlands. Gone is the confidence and bravura of the 1945 texts, replaced with a more cautious set of questions about how pure the work of the Dutch was in the Netherlands East Indies. Beginning with the 1961 collection *Balans van Beleid*, in which 17 authors, most of them retired colonial officials, evaluated the success of the Dutch colonial regime, Dutch historians of the colony have debated the question of how enlightened and how decent the colonial regime was.<sup>125</sup> These questions have remained implicit or explicit for many Dutch historians of Indonesia.

Vincent Houben has suggested that these questions be jettisoned, and that today’s morals should not be imposed upon the Dutch colonial past.<sup>126</sup> This is sound advice for the Indonesian historian. Still, the kind of studies he praises, which examine the complex relationships between coloniser and colonised, and their legacies for Indonesia, Southeast Asia and the Netherlands, cannot entirely skirt moral issues. This is not least the case because world political opinion has been against colonialism for a half-a-century or more. Furthermore, going back to Multatuli’s *Max Havelaar* in the middle of the nineteenth century, the Dutch continuously debated and questioned the moral questions raised by ruling the Netherlands East Indies as a colony. And as I argue above, the Dutch went out of their way to support pure science in the 1920s; this benefited a small number of research scientists, but it hardly changed the overall nature of the Netherlands East Indies. As the

123 *Mission interrupted: The Dutch in the east Indies and their work in the XXth century*, ed. W.H. van Helsdingen and H. Hoogenberk (Amsterdam: Elsevier, 1945) and *Science and scientists in the Netherlands Indies*, ed. Verdoorn and Honig.

124 J.S. Furnivall, untitled book review in *Pacific Affairs*, 19, 2 (1946): 212–14.

125 *Balans van beleid*, ed. Baudet and Brugmans. Harry Benda wrote that this book reflected an ‘unperturbed certitude in the rightness – and inevitable gradualness – of the Dutch civilizing mission in Indonesia’. Harry Benda, ‘The Pattern of administrative reform in the closing years of Dutch rule in Indonesia’, *Journal of Asian Studies*, 25, 4 (1966): 590.

126 Houben, ‘Koloniale Geschiedenis van Indonesië’, p. 302.

world began to turn against colonialism after the First World War, senior colonial officials in the Netherlands East Indies worked hard to prove to the world that they were a moral regime. Still, their efforts to propagate the ideology that pure science was thriving, instead of, for example, supporting efforts to train Indonesian scientists, is hardly good evidence for the decency of Dutch colonialism.