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## **The Early Dutch Sinologists : a study of their training in Holland and China, and their functions in the Netherlands Indies (1854-1900)**

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## CHAPTER FOUR

### CONTRIBUTIONS TO SCIENCE

From the beginning, there was a connection between Chinese studies and the study of the natural sciences. As an assistant of Von Siebold, Hoffmann studied Chinese and Japanese botanical subjects and published on them. One of his first students, the military pharmacist De Grijs, was allowed to study Chinese for the explicit purpose of learning to consult Chinese works on botany. Later, Hoffmann always stimulated his students who had finished the *gymnasium*, or passed the *admissie* examination, and were thus allowed to take university courses, to take courses in *natuurkunde*, the sciences of nature, which included not only botany but also physics and chemistry. Two students, Buddingh and Groeneveldt, even requested and obtained a special allowance of *f*300 together to buy equipment for performing scientific research; although they originally planned to use the equipment in Japan, they probably did so in China instead.

After the students came to China, some indeed made contributions to science. De Grijs contributed to the field of botany by collecting specimens of plants and discovering some twenty new species, some of which were even named after him, and he produced at least two scientific publications. Schlegel, Buddingh, and to a lesser extent Schaalje all contributed to zoology and mineralogy by collecting large numbers of animal and mineral specimens for the Museum of Natural History in Leiden; they also discovered some new species.

#### *De Grijs collecting flora*

When De Grijs was sent to the Indies in 1855, he was explicitly charged to continue his Chinese studies for the sake of science; but when he was sent to China a year later, no such purpose was mentioned.<sup>1</sup> A few months after his arrival in Amoy, in October and November 1857, the British official and botanist Dr. H.F. Hance visited Amoy and collected plants in the vicinity.<sup>2</sup> He must have met De Grijs then; perhaps they had already become acquainted while De Grijs was living in Macao.

H.F. Hance (1827–86) had come to Hong Kong and entered the civil service in 1844. In his spare time he collected and described the plants on the island of Hong Kong. In 1854 he was transferred to the superintendancy of trade in China. Starting in 1861, he was Vice-Consul in Whampoa

for 25 years, all the while continuing his botanical research. He was helped by other foreign officials in various parts of China who collected specimens for him, which he examined and described.<sup>3</sup> De Grijs was one of those collectors.

In the years when he was stationed in Amoy, De Grijs often made excursions to the Nan Taiwu or Taiwu Shan hills on the mainland south of Amoy<sup>4</sup> and to the tea districts in Ankoe (Anxi 安溪). He often went there accompanied by other students or foreign friends from Amoy. Two such excursions are mentioned in a letter in English to a certain “Mac” from 1863:

Life goes on quietly and studying. Sometimes I take a trip up the river, for instance a few weeks ago I went with Nicholls to the tea country. We had plenty of grub and no lack of fine scenery, so we spent the time very pleasantly. Saturday I went with Johnston, Pye and Groeneveldt to the Nam t'ai wu [Nan Taiwu 南太武]; we left Amoy at Four, arrived near Kang Beh [Gangwei 港尾] at 5½, and walked Sunday morning before breakfast to the hot springs; after breakfast we went up the Nam t'ai, and left the top about three p.m.,



10. *Camellia grijsii* (from website of The International Camellia Society, March 2008, photo by Yuri Panchul).

went into the boat at six, slept not on the water, but with the boat in the mud, and left for Amoy on Monday (today) at six, arrived here at nine a.m.<sup>5</sup>

According to the Russian botanist E. Bretschneider, De Grijs collected 21 new species for Hance in Fujian between 1858 and 1862, some of which had already been described by others. All except two were described by Hance.<sup>6</sup> These new species included:<sup>7</sup>

*Clematis caesariata*  
*Camellia Edithae* (a shrub)  
*Camellia theiformis* (a shrub)  
*Zanthoxylum simulans* (a thorny shrub or tree)  
*Prunus pogonostyla* Maxim. (a tree)  
*Prunus campanulata* Maxim. (a tree)  
*Rubus althaeoides* (raspberry-like shrub)  
*Rubus jambosoides* (raspberry-like shrub)  
*Corylopsis multiflora* (a shrub blooming before it gets leaves)  
*Eugenia Grijsii* (a kind of clove, later named *Syzygium Grijsii*)  
*Patrinia graveolens* (a herb)  
*Echinops Grijsii* (ball-thistle)  
*Vaccinium iteophyllum* (a kind of blueberry)  
*Myrsine buxifolia* (a shrub, now called *Distylum buxifolium*)  
*Machilus Grijsii* (a tree)  
*Machilus oreophila* (a tree, also called *Persea Grijsii*)  
*Elaeagnus Grijsii* (a tree or shrub)  
*Buxus stenophylla* (a tree or shrub)  
*Pellionia Grijsii* (a tropical herb)  
*Iris Grijsii*  
*Chrysopogon pictus*  
*Alsophila Metteniana*

In articles dated 1878 and 1879, Hance mentioned other plants collected by De Grijs that are not mentioned on this list.<sup>8</sup> For instance, *Camellia Grijsii* is missing, the best-known of De Grijs' new species, discovered in 1861.<sup>9</sup> It is also called *Thea Grijsii* and is distributed in China (Fujian, Hebei, Sichuan, Guangxi) and used for high-quality oil production (see illustration 10). *Camellia Grijsii* has great hybridising potential, and there is a double-flowered Chinese cultivar named Zhenzhucha.<sup>10</sup> *Camellia Grijsii* is also cultivated in Western gardens. Although De Grijs studied at the National Herbarium in Leiden, he never sent any plants to that institution.<sup>11</sup> Other than these contributions to science, De Grijs published very little. However, he was very active in Chinese studies and prepared several publications in manuscript,<sup>12</sup> but only two of them have any connection with botany. The first was a short article in Dutch, "On the preparation and use

of the green Chinese dye 綠糕 or 綠餠 [*lǜgāo*], *Lǚ Kaô* (green cake).<sup>13</sup> De Grijs also mentioned another name for this dye that was later commonly used: 綠膠 *lǜjiāo*, 'green paste.'<sup>14</sup> In the middle of the nineteenth century this expensive Chinese dye became known in Europe and drew much attention. Until then, green dyes used in silk or cloth changed in appearance under artificial light, losing their beauty, because they were composed of blue and yellow dye. But when this mysterious Chinese dye was used, silk dresses kept their lustre even under candlelight or gaslight; this was demonstrated by a lady at the World Exhibition in Paris in 1855. In France, in particular, there were scientific discussions and research was performed on the ingredients and production process of this dye. In the Netherlands, a series of articles was published in *De Volksvlijt* (National industry) on these questions in 1856–8.<sup>15</sup>

In the beginning, Hoffmann was also consulted, but he could not solve the problem of the ingredients on the basis of his 1853 list of Chinese and Japanese plant names (*De Volksvlijt* (1856), 419). He probably contacted De Grijs, who had just arrived in China, and who then obtained information from the French missionary J. Hélot S.J. in Shanghai. De Grijs then wrote an article explaining that this dye was made from the bark of two kinds of trees in Zhejiang, and he gave a detailed description of the production process. His article was published in *De Volksvlijt* with the help of Hoffmann, and the latter also provided the Chinese type necessary for printing the characters of the Chinese names of plants and substances. De Grijs also sent seeds and plants to the National Hortus Botanicus in Leiden in 1858 (*De Volksvlijt* (1858), 188). At the end of his article, De Grijs wrote: "My chemical and technological studies here again come in handy for me, and it is a great pleasure for me in the midst of my literary and language studies to learn something of industry as well. If there are other things you wish to be studied, I'm waiting for your questions." (p. 319). Unfortunately, De Grijs is not known to have written other similar articles.<sup>16</sup>

De Grijs' other scientific publication is the translation into Dutch of the *Xiyuan Lu* 洗冤錄.<sup>17</sup> This was a handbook on forensic medicine dating from the Yuan dynasty (1279–1368), 300 years before anything comparable appeared in Europe, according to De Grijs in his introduction. His translation was published by the Batavian Society of Arts and Sciences in 1863 as *Geregtelijke geneeskunde, uit het Chineesch vertaald* (Forensic medicine, translated from the Chinese).<sup>18</sup> De Grijs used an edition from 1830 with the title *Xiyuan lu jizheng huizuan* 洗冤錄集證彙纂.<sup>19</sup> Originally he meant to publish this work as an appendix to his translation of the *Qing Code* (*Da Qing lüli* 大清律例), but that translation was never published. In his introduction, De Grijs wrote: "This work is written in a clear style and the main difficulty in translating is to find European

synonyms for the Chinese names of plants, animals, stones, medicines, parts of the body, etc.” He then gave a list of European and Chinese works which he had consulted, ending: “To what extent I have succeeded in finding the correct European names is up to experts to judge.” In this translation, no characters were provided, and for Chinese terminology and names the reader is, most inconveniently, referred to the page and line numbers and order of the characters in Hoffmann’s list of Chinese matrices of 1860.<sup>20</sup> In the translation, place names and names of persons are often left out, probably because they were considered irrelevant for the Dutch public. There are some consistent misspellings, for instance “Tokien” for “Fokien” (Fujian), “Tsoan-tsin” for “Tsoan-tsiu” (Quanzhou), “Wang-in-hoai” for “Wang Iu-hoai” 王又槐, “moch” for “moeh” 木, etc., which are due to misinterpretations of De Grij’s handwriting. Clearly, no proofreading was done by De Grij or anyone else knowing Chinese. R.H. van Gulik had a high opinion of this translation.<sup>21</sup> It was later retranslated into German without correction.<sup>22</sup>

After his appointment in the Indies, De Grij became a member of the Royal Association for Natural Sciences in the Netherlands Indies (*Koninklijke Natuurkundige Vereeniging in Nederlandsch-Indië*) in 1865.<sup>23</sup> This association, which was established in 1850, aimed to promote the natural sciences in the widest sense. No other contributions to the sciences by De Grij are known.

### *Schlegel collecting fauna*

Francken took a course with Professor Suringar and specialised in the study of algae.<sup>24</sup> Before he left the Netherlands, he bought twenty books on the natural sciences out of his book allowance, but it is not known if he collected any specimens in China.

Gustaaf Schlegel did not take scientific courses at the university, probably because he was not allowed to do so before he finished his *gymnasium* or passed the *admissie* examination. But he was the son of the well-known zoologist Herman Schlegel, who became titular professor and director of the Museum of Natural History in Leiden in 1858. Herman Schlegel was well known for his *De vogels van Nederland* (The birds of the Netherlands), first published in 1854–8, a standard work on Dutch birds illustrated with his own drawings.<sup>25</sup> According to Gustaaf, his father went bird hunting every Saturday and was permitted to do so for the Museum the year round, even outside hunting season and near the railroad.<sup>26</sup> Gustaaf was also an enthusiastic and knowledgeable birdwatcher. Before he left for China, his father instructed him on how to collect complete series of every species. According to Gustaaf, his father also presented him with a copy of Dar-

win's travel accounts as an example of how to observe nature.<sup>27</sup> Since the German translation of the book, entitled *Naturwissenschaftliche Reisen*<sup>28</sup> also appears on the list of books purchased with his book allowance, it was probably paid for in that way. It appears also on Francken's list and on the combined list of Buddingh and Groeneveldt.<sup>29</sup>

When in Amoy, Gustaaf met the British consular official Robert Swinhoe,<sup>30</sup> who was just four years older than he was. He shared with him his interest in birds, and both stayed in Amoy simultaneously for about a year and a half. During this time, Gustaaf discovered one new species that was described by Swinhoe in 1863 as *Anthus Gustavi*.

He could freely collect specimens without being hampered by the Chinese, since he knew how to explain this activity to them. He said many years later in a speech:

When I was shooting animals and birds and collecting insects in China for the Museum of Natural History in Leiden, I only needed to make the Chinese farmers believe I was collecting these animals in order to make medicine out of them, and I was let through unimpeded.<sup>31</sup>

The guns were not only useful for hunting but were, according to Schlegel, also convenient for protection against pirates, thereby creating good-will for the Dutchmen among the Chinese villagers on Gulangyu:

They also knew that when Chinese pirates would try to land on the island during the night, we would come to help the Chinese farmers with our shot-guns, and just the rumour that six whites were protecting the village was enough to scare off the pirates.<sup>32</sup>

Gustaaf collected animals and minerals for his father's museum. He sent three shipments to Holland, comprising in total 1,922 pieces. The first shipment was sent on 2 November 1859, and it arrived in Leiden eight months later on 2 June 1860. The second and third arrived on 6 April 1861 and 20 February 1862. They included at least 22 mammals, 370 bird skins, 43 eggs, some nests, 42 reptiles, 214 fishes, 638 crustacea, hundreds of shells, 250 insects, 42 mollusks, etc.<sup>33</sup> He also sent specimens of earth, clay and rock from the island of Gulangyu. At least ten of the bird skins were bought in Amoy and were said to originate from China; most of the birds were probably shot by Gustaaf himself. He may also have bought other specimens such as butterflies, as he wrote in his description of his first shipment:

A large box of insects, which seem to include a large number of new kinds, in particular among the night-moths or kinds without gaudy colours, both of which are not collected by the Chinese.<sup>34</sup>

Many years later, in his short biography of his father, Gustaaf mentioned some of his more important contributions. These were the *Muscicapa*



*Mugimaki* (a kind of flycatcher) and the very rare *Lobivanellus inornatus* (similar to the peewit, in Dutch *kievit*)—in all of Europe, only the Leiden museum possessed one specimen from Japan, and Gustaaf shot a second one in Amoy. Others were new species, such as the *Anthus Gustavi*, named after him; two new species of Pennatulides (sea pen): *Pteroides Chinense* and *Halisceptrum Gustavienum*, described by J.A. Herklots; a lot of new fishes, four of which were described by P. Bleeker in 1863, *Pteroplatea Schlegeli*, *Pseudosciaena amblyceps*, *Pseudosciaena amoyensis*, *Arius Schlegeli*;<sup>35</sup> and about 22 new insects.

In 1870 he had already complained in a letter to the editors of the *Bataviaasch Handelsblad*<sup>36</sup> that he had not received the slightest remuneration for his contributions to the Museum, which had cost him f1,000; all he had received was an official letter of thanks from the director (his father). He thereupon promised himself never to offer any presents to such an ungrateful fatherland. In his short biography of his father in 1884, he even complained that he never received the slightest acknowledgement, and after his return to Holland in 1872, he found that most of his bird skins were still lying unstuffed in the storerooms.<sup>37</sup> He estimated in 1884 that the total value of the collection would be about f5 apiece or f9,610 in total, adding that the collection would have been worth much more in the past: Swinhoe's collection of birds alone, which was not larger than his own, had been sold for £ 1,000,<sup>38</sup> that is f12,000.

His best known contribution to the sciences of nature is his discovery of *Anthus Gustavi* Swinhoe. The common English name for this bird is Pechora Pipit (Dutch: *Petsjora pieper*), which was given by the British ornithologist Henry Seebohm in 1875 after he collected (shot) five birds in their breeding ground near the Pechora River. This river lies west of the Ural Mountains and flows northward, ending in the sea just south of Nova Zembla. Upon his return home, Seebohm found that this bird had been described by Swinhoe in 1863, but its common name seems to have been provided by Seebohm.

The Pechora Pipit breeds in Northern Russia and Siberia from the Pechora to the Ob and Yenisey Rivers, and migrates via Lake Baikal, Yantai (Chefoo, Shandong) and Xiamen (Amoy) along the Chinese coast to its hibernating place in Eastern Indonesia (Sulawesi, Moluccas) and the Philippines.<sup>39</sup> The bird that was shot by Schlegel and sent to Leiden was a female specimen. It was on its return to its breeding ground on 20 May 1859 when Gustaaf Schlegel found and shot it on Kolongsu (Gulangyu). Gustaaf thought it was a new species and made a detailed description of it, which is still kept in the Museum Naturalis in Leiden. He must have shown it to Swinhoe, who at first thought it was an *Anthus cervinus* (Red-Throated Pipit; Dutch: *roodkeelpieper*), which passes through Europe on its way from Siberia to Africa. After shooting the bird, Schlegel



11. Stuffed specimen of *Anthus Gustavi* collected by G. Schlegel, 20 May 1859, Kolongsu (Gulangyu) (Museum Naturalis, Leiden).

prepared it by removing the skin with a skinning knife as usual, and sent the hide to his father in the Museum of Natural History in Leiden. Four years later Swinhoe realised it was a new species, and he named it “Gustaaf’s pipit”: *Anthus Gustavi* Swinhoe (see illustration 11).<sup>40</sup>

After its arrival in the Museum in Leiden, another specimen of the same kind was discovered in the collection; this had been sent by the naturalist E.A. Forsten (1811–43) from Sulawesi in 1842, but it had not yet been described. It is most curious to note that Gustaaf’s father, Herman Schlegel, seems never to have understood his son’s discovery. He called it *Anthus Forsteni*, which was later changed to *Anthus cervinus*. Probably it was only after Herman Schlegel’s death that the official name of this specimen was finally recognised in the Museum.<sup>41</sup>

Gustaaf Schlegel never published his description of the *Anthus Gustavi*, nor any other article on the sciences of nature, but there are detailed manuscript descriptions of some of his donations, which are kept at the Museum.<sup>42</sup> In his Dutch–Chinese encyclopaedic dictionary, much attention is paid to the names of plants and animals; often various translations are mentioned, taken from the dictionaries of Medhurst, Lobscheid etc. Schlegel also often adopted and translated Chinese descriptions of flora and fauna in his dictionary, sometimes adding his own observations. For instance, in the entry on *civet-kat* (civetcat), he commented on an article by Swinhoe (part I, p. 766).

*Buddingh collecting fauna*

Another student who actively collected for the Leiden Museum was Arie Buddingh, Gustaaf's cousin and Herman Schlegel's nephew. He originally planned to go to Japan, and Herman Schlegel prepared a three-page list of "Animals to be collected in Japan," including extremely rare and perhaps even non-existent animals such as the Japanese wolf, but also the Hokkaido bear, seals, dolphins, etc. He and Groeneveldt also obtained an extra allowance of f300 for scientific equipment. After arriving in East Asia, he wrote letters to his uncle Herman Schlegel painting a lively picture of the circumstances of his collecting; accordingly, much more is known about his collecting activity than that of Gustaaf, although his contribution to the Museum was much smaller.

During his journey to the Indies and to China, Buddingh already attempted to collect specimens. When he was in Singapore he happened to meet the famous German zoologist E.C. von Martens. On 21 February 1862, he wrote from there to his uncle Herman Schlegel:

Dear Uncle,

Although the lighting at my disposal is bad (it's a small night-light), I want to inform you a little about our journey, because the mailboat will leave tomorrow morning. Papa will certainly have informed you of our safe and sound arrival on Java; the journey produced little of importance. We have not been able to catch any fish or birds at sea, and we have not seen land on the way. But there were a lot of calms, and bad food and bad treatment on board. We only once had a storm, outside the Channel, but all ended well, and during the whole journey we had a beautiful view of the phosphorescent sea at night. The understanding among the 36 passengers was excellent, and this compensated for the bad treatment by the captain, who was otherwise a good sailor and never got angry.

Java is a beautiful country. I have seen little of it. The environs of Batavia did not disappoint me—there are lots of birds and insects. I also saw the so-called walking leaf, which surpasses the boldest imagination. I offered f5 apiece; they came from Bogor, but I did not get them. Collecting insects causes a lot of trouble—the heat of the day is killing for a European. We completed our journey to Singapore by mail steamer in five days. We called in at Mentok on Bangka and at Riau, both lovely islands. On this journey there were again two days of violent wind gusts which are very dangerous. The foggy weather in the Chinese sea prevented us from seeing land to maintain course and avoid the multitude of shoals and islands. Normally, the passage takes three days.

Singapore is an awful place—that is, the town. The population consists of Klings or Singhalese and Chinese, some Malays, as well as Europeans, who generally live outside the town. Yesterday we arrived, and now we are staying at Hôtel de l'espérance. Today at lunch, I suddenly heard a familiar voice speaking German among the English, and looking aside and addressing him, I recognised Von Martens<sup>43</sup>—a pleasant encounter. Tomorrow I'll meet him again. His journey on the *Thetis* is so far successful. The loss of the *Frauenlob*

grieved him very much. His shipments are still frequent. He praised Japan very much, but did not like China. He was sorry not to have met Gustaaf. He asked me to send his friendly regards to all. ...<sup>44</sup>

Buddingh continued collecting immediately after his arrival in Amoy, and on 13 May 1862, he wrote to his uncle:

And now something about collecting. I am busy with these things, but I'm afraid Gustaaf has already sent all there is here. Yesterday I again suffocated two snakes in one of the tins of Chinese brandy. That is an excellent means to kill them—within a few hours they are dead. To my disappointment, the pot of arsenic was broken on the way. They treat goods so terribly on board the ships. But I'll prepare a new one to make the skins—the rest arrived safely.<sup>45</sup>

Four months after his arrival in Amoy, he sent the first shipment of specimens (No. 1) with letters dated 13 and 15 September 1862. These were boxes with bird skins, butterflies, cicadas, and other insects, and nests and eggs of the tailor bird (“if the green is fresh, nothing surpasses the beauty of these nests”). There were also shells and horns (*schulpen en hoorns*), mostly bought in Singapore or found on the beach in Macao, bottles of insects in liquor, and snakes and crabs from Amoy. For the insects (cicadas, *mantis religiosa*), he included larvae and other stages. There was also a mouse from Macao and a scorpion from Batavia, and there were some insects (“blood-red when alive”) from the Atlantic Ocean. Clearly Buddingh had done his best to collect anything he could lay his hands on.

Besides collection, the conservation of specimens was not without problems. Buddingh wrote:

Because of unforeseen circumstances, half of what I collected in these summer months May-September went bad and became unsuitable for sending. May the rest be appreciated, because in a warm, or rather scorching climate, it is a hard job to collect objects during free hours, since they are not really there for the picking, as some in Europe think. On the contrary, our island is very poor. One needs to search for a long time to find anything.<sup>46</sup>

In the same packet, he sent a few boxes of tea. Shipment No. 1 was received in Leiden nine months later, on 1 June 1863; it included, according to a note by Herman Schlegel, 7 birds, 11 birds' eggs, 6 reptiles, 4 fishes and 3 mammals.<sup>47</sup>

Collecting remained troublesome. Buddingh wrote the next summer:

I have not been able to collect a lot because of too much study, unpleasant experiences with skunks and a warm winter that made excursions impossible.<sup>48</sup>

But sending was equally difficult; in the same letter he wrote:

I have until now had no opportunity to give a large chest of birds etc. to a ship to take along. The captains are sometimes such rascals that I do not trust them, and besides, there are so few ships going directly to the Netherlands by way of Java.<sup>49</sup>

He could, however, give a small chest to the German merchant Albert Pasedag.<sup>50</sup>

Just now one of my friends from Amoy returned to Germany for good, because commerce was not up to his expectations. Of course, I could not let this opportunity go and asked him to take along some things to Leiden. I was only permitted one small chest, and therefore I have put in it the smallest and most important things that were ready for sending.<sup>51</sup>

This shipment (No. 2) included:

2 owls (of great value), 2 kingfishers, 1 sea duck (Little Grebe, which are very difficult to get; this one was shot by Schaalje and me simultaneously, each of us fired twice at this animal; an exquisite specimen of which I yield the honour of presenting it to my friend Schaalje, who offers it to you.) ...<sup>52</sup>

He also announced another future donation:

I now intend to prepare the skin of my weasel, which I have still kept alive. He lags behind in growth and is coloured less dark than the specimens in the wild, which can be seen but cannot be caught. I have already done new experiments, which succeeded rather well.<sup>53</sup>

Seemingly, he was doing scientific experiments with his weasel. The small chest also contained other goods such as tea, and six rare Chinese coins for the University Coin Museum (*Academisch Penningkabinet*)<sup>54</sup> of Professor P.O. van der Chijs in Leiden. This shipment No. 2 was received in Leiden two months later on 12 August 1863. Herman Schlegel noted as its contents: "7 birds."

Very soon afterwards, on 7 July 1863, there was an opportunity to send shipment No. 3, a large chest of birds, and a smaller chest, on a Dutch ship. These contained cases and bags of bird skins, many of which were sea birds such as seagulls, albatrosses, and pelicans, and also a set of shark's jaws and a tin can containing a large snake, 8 feet long and weighing 8 pounds, caught on Gulangyu, a present from Schaalje. There were also small snakes and a lot of crabs, for the conservation of which f10 worth of Dutch gin (*jenever*) was necessary. Besides these, there were also pieces of coral and shells, to be given to Buddingh's father in case they were of no use to the Museum, "and finally two skins, one of a rat and one of the tame weasel, which lost its life because of an accident; its tail got lost when it was skinned."<sup>55</sup>

Buddingh hoped to get some instructions from his uncle. "I would like to receive a short description of the objects I sent that are not known to me, with the scientific names, also the names of the birds and whether the snakes are poisonous." He also hoped to get some comments on the quality of the treatment of the bird skins; gradually his skills should improve, although one bird differs from another when one prepares its skin.

At this time, the three students were expecting to leave Amoy and go to Hong Kong. Now that Buddingh had been living there for a year and a half, he had found a better method of collecting.

It's a pity we are leaving Amoy, because one always has to stay for some time at a certain place to get acquainted and be known. For this purpose, I have often incurred expenses that will not yield anything for me, because one has to have everything collected by the Chinese. Collecting on one's own doesn't work—except in the wintertime—it would cost a European his life.<sup>56</sup>

Altogether, he had already spent \$50 on behalf of the Museum, not knowing to what extent this would be refunded. If less were available, he could pay the rest himself, “in other words consider it a donation, together with the time and effort spent.”

One reason that he collected less than the year before was that they had moved to other lodgings.

It will perhaps surprise you that I collected so little compared with the collection of 1862, which is now on its way. But I am now living in the town at the harbour, opposite Gulangyu; since March, I have left the old English Consulate, and therefore the garden and environs. It returned to Chinese hands. Otherwise, I could have gone there from time to time, but now all is closed. Therefore I have not been able to collect birds' eggs, nor butterflies and insects.<sup>57</sup>

Apparently he had done a great deal of collecting in the old Consulate's own garden! Shipment No. 3 was received in Leiden nine months later, on 23 March 1864. Herman Schlegel only noted the receipt of a donation of 37 birds, a pair of shark's jaws and a box of insects from Buddingh and 3 birds from Schaalje.

Buddingh also made a wonderful excursion to Formosa (Taiwan):

Recently I went to Formosa. I was in the interior for three days, but circumstances and time prevented me from collecting anything. I only brought along one bird and a few nests, besides sulphur and coal from the mines. It is a sublime country, nothing less than Java: the name Formosa doesn't suffice—this country should be called 'Formossissima.' I was delighted with the fertility, beauty, natural resources and splendour of this island. The rivers are also wonderful—we don't have anything like them in Europe. I was even more surprised at the beauty of nature, because Formosa is so near the Chinese coast, which looks like a poor orphan—particularly our bare Amoy, which is actually Gulangyu on a large scale. But Amoy has proportionally fewer trees, so it is not at all strange that there are fewer birds. But it surprised me highly that I saw so few birds on my excursions on Formosa, and I still believe there are enough of them. It is just because of the luxuriant forests that they do not appear. They do not have to search for food far away, and disquiet is unknown to them. The pheasant that Swinhoe brought to England and that was named after him, was given to him by the British consul in Tamsui, and he bought it from a Chinese from the highlands of Formosa.<sup>58</sup> I saw a lot of snakes on Formosa, but not of the same kind. The butterflies are beautiful, and also

very different from those of Amoy and Gulangyu. There are also all kinds of monkeys and especially turtles. In all I was on land only for five days, and away from home for ten days.<sup>59</sup>

The next two shipments (Nos. 4 and 5) were sent afterwards, but there is no note of their receipt by the Museum. About the middle of November 1863, he sent No. 5, a small amount of specimens and a large package for his family (with tea, cigars, presents). These specimens included everything he had collected on Formosa (the rest had been eaten by rats on board): two nests from Tamsui including the little eggs (*met de eijertjes*), a bird skin, and pieces of sulphur. And also

a skin of a mammal, from the interior of this province. The Chinese call it stone tiger. I consider it the skin of a civet-cat or wild cat, perhaps something new. It was skinned and dried by the Chinese—however it is all right. There's nothing lacking except the paws, and the tail is badly conserved.<sup>60</sup>

In the last letter present in the Museum (8 December 1863), he wrote that he had received new equipment from the Museum and announced his plan to go on collecting:

Now that I have received the spirits, and we'll stay in Amoy for some time, I'll collect fishes, snakes, etc. according to your wishes for the Museum. I am happy to receive the skinning knives, of which I'm in great need.

Nothing is known of any later donations from China.

From these accounts, it seems that many birds were hunted by the students themselves. De Grijs possessed several shoulderarms and pistols,<sup>61</sup> of which the former were possibly used for hunting. But Buddingh and Groeneveldt may also have bought guns from their allowance for scientific equipment. Where there are guns, accidents tend to happen, and although there is no evidence that Groeneveldt joined the others in hunting, it is known that he accidentally shot another person named Wolff, probably a sailor, in the head. De Grijs wrote to Francken in Surabaya:

Wolf of the Emilie [presumably the name of a ship] should now be in Java, and if you hear that he is in difficult circumstances, or perhaps dead or something, write me. You know that Groeneveldt shot a bullet through his forehead, which cost Wolf an eye when he left Amoy; but since the bullet is not yet out of his head, I'm worried ....<sup>62</sup>

Two weeks later, De Grijs wrote a letter in Dutch to comfort Mrs. Wolff, who was no doubt in the Indies, saying that she was taking good care of her husband, and that he would probably soon be stationed in Semarang.<sup>63</sup>

After Buddingh was appointed in the Indies, he also went on collecting for the Museum for some time. He sent some bird skins, mollusks and

crustacea from Bangka, dating from February 1865 to November 1866. One of the crustacea collected by him was described as a new species almost a century later in 1950.<sup>64</sup> He also sent many specimens of plants to the Botanical Garden in Bogor.<sup>65</sup>