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THE BLEEKER/GÜNTHER LETTERS AND THE SALE OF BLEEKER SPECIMENS TO THE BRITISH MUSEUM

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A survey is given of the correspondence between the ichthyologists Bleeker (The Hague) and Günther (British Museum, Natural History, London), mainly dealing with the sale of fishes and some other animals by Bleeker to the British Museum. The publication dates of the parts of the "Atlas ichthyologique des Indes orientales néerlandaises" (1862–1878) and of the volumes of "Catalogue of the fishes in the British Museum" (1859–1870) are discussed. The possible sale of type specimens is examined. Finally, a survey is given of the lists of fishes and reptiles requested by Günther and sent by Bleeker.

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INTRODUCTION

The Günther archive in the British Museum (Natural History) contains several thousand letters written to Albert Günther (1830–1914) by nineteenth century naturalists during the nearly forty years he worked at the Museum. Among them are 35 letters from the Dutch ichthyologist Pieter Bleeker (1819–1878) which are largely concerned with the sale of Bleeker's fish and reptile specimens to the British Museum. This Bleeker/Günther correspondence throws interesting light on the working relationship of two prominent ichthyologists in the period 1860–1873. It also helps to clarify which Bleeker

specimens sent to the British Museum are types and provides some clues to a more certain dating of parts of both men's published works. The Günther archive was purchased in 1969 from his grandson Albert Everard Gunther, who has published an extensive biography of Albert Günther (1975). It is complemented by the volumes of letters in the Zoology Department of the Museum, which date from Albert Günther's period as Keeper of Zoology (1875–1895). The Bleeker correspondence is here supplemented by 40 letters in the Rijksmuseum van Natuurlijke Historie in Leiden, of which photocopies are in the British Museum (Natural History). These include drafts of Bleeker's letters to Günther and Günther's replies. Bleeker wrote in French, Günther mostly in German; the exceptions are official Museum requests which were written in English.

The main theme in this correspondence is the British Museum's desire to acquire Bleeker's largely Indonesian fishes so that they could be included by Günther in his monumental eight-volume *Catalogue of the fishes in the British Museum* (1859–1870). In turn, Bleeker eventually admitted his need to sell his fishes in order to help finance his own project, the lavishly illustrated *Atlas ichthyologique des Indes orientales néerlandaises* (1862–1878). By 1862, Bleeker had amassed some 23,000 fishes (1,200 species) and 1,700 reptiles (60 species)¹ and from August 1863 these were installed in his house in The Hague. Although Bleeker gave or exchanged generously with various European museums, he apparently realised the value of unique or type specimens and was determined to keep these in his main collection while there was still a chance that the Leiden museum would purchase the entire collection. On the other hand, it was precisely these specimens, or the ones illustrated in the *Atlas*, that were particularly desired by Günther and by John Edward Gray, then Keeper of Zoology. The dissensions aroused by these conflicting interests, coloured also by Günther's rather aggressive tactics, are well expressed in the letters.

There is no full biography of Bleeker, but his short autobiography (Bleeker, 1878) has been translated by Boeseman and published in Lamme (1973) and the fate of his fish collections, including the sale of fishes to the British Museum, has been described by Whitehead *et al.* (1966) with reference to one group of fishes (the clupeoids); a further account is given by Boeseman (1973b: 59–61) in the reprinted edition of Bleeker's papers. In the introduction to a supplementary volume of Bleeker's *Atlas*, Boeseman (1983) has summarized the negotiations between Bleeker and Günther, based mainly on the letters in Leiden; the letters in London help to round out the story. The status of these Bleeker specimens in the British Museum (Natural History) is of continuing and often vital importance in fish taxonomy.

1. Bleeker to Günther, 14 February 1862 (B16; cf. Table 1)

THE LETTERS

The letters are numbered here for easy reference (see Table 1). The Bleeker letters are prefixed B; the Günther letters G. The Table shows the location of these letters, i.e. GL = Günther archive in General Library, British Museum (Natural History); Z = Keeper of Zoology's letter-books in the Zoology Department, British Museum (Natural History); RM = Rijksmuseum van Natuurlijke Historie, Leiden.

During 1861 Pieter Bleeker corresponded almost monthly with Albert Günther at the British Museum. The letters were friendly, each praising the other's ichthyological progress, and publications were exchanged. On 29 January Bleeker acknowledged Volume I of Günther's *Catalogue of the fishes in the British Museum* (B1) and at the end of April sent him a copy of his own *Enumeratio specierum piscium hucusque in Archipelago indico* (Bleeker, 1859) (B2). He remarked that he had not had a formal request from the British Museum for fish specimens; also he said that he had started work on the scarid and labrid families for the first parts of his *Atlas ichthyologique*. In response to this, Gray wrote to Bleeker on 9 May, "I am very desirous of obtaining as many of the species you have described as I possibly can and should much prefer to have specimens authentically named by yourself, so that there can be no doubt their being the Types of your species . . . I should not object to receive an entire collection properly determined. I am quite ready to pay for them a fair and proper price . . ." He went on to ask for the "Gobioids at once", as Günther was working on that group in his *Catalogue*. Naturally, Bleeker assumed that the British Museum wanted to purchase his entire collection in the near future and on 16 May he wrote a worried letter to Günther explaining that the Dutch Government might not approve of such a scheme (B3). Meanwhile they discussed their work on gobiids and labrids, often exchanging proofs of forthcoming articles to assist each other's work.

On 26 October 1861 Bleeker sent Günther his proposal for selling specimens to the British Museum (B7). He was willing to send a series of all fish, reptiles and invertebrates of which he had duplicates. This series would contain, where possible, two individuals of each species and the charges would be 10/- for fish and reptiles, 6/- for invertebrates, and 1/- for insects. He added that as soon as he felt free to do so, he would dispose of his unique specimens under the same conditions. Gray replied that the British Museum could not afford such a large purchase and suggested that Günther draw up a list of *desiderata* for the labrid and siluroid fishes which Bleeker might be willing to supply (9 November 1861, Rijksmuseum, Leiden). Bleeker's response to Günther (B9) was to insist that two or three specimens of each species of a given

family be purchased, presumably to make sure the British Museum did not simply ask for just the rare and important species.

It was not until the New Year that Gray wrote to Bleeker stating firmly that he only intended to buy certain species as listed by Günther (22 January 1862, Rijksmuseum, Leiden). A list of 178 specimens entitled "List of desiderata of East Indian fishes in [sic] the British Museum", now in the Rijksmuseum, Leiden, was probably enclosed with Gray's letter of 22 January 1862. Bleeker reluctantly agreed to the proposal (B13) on condition that Günther fully acknowledged the source of material in his *Catalogue*. He asked Günther (B16) whether the payments for his fish collections might be made into some form of annuity and on 21 February he wrote to Günther and Gray informing them that 131 species had been sent by rail that day (B17, B18). He added that the specimens were packed in linen with the proper determinations written on small pieces of parchment and that the cost would be £ 67/10/-. On 28 February, just seven days after the date of dispatch, the zoological register in the British Museum shows 133 specimens purchased from Dr. Bleeker, the specimens apparently already bottled, named and numbered.

Bleeker wrote a very cheerful and confident letter to Günther on 14 April 1862 (B19). In it he rejoiced that at last the first two parts of his grand *Atlas ichthyologique* has appeared. This work, which was published in parts over 16 years, is often difficult to date (Mees, 1962: 77) and this letter indicates exactly when the first two parts were issued (see under Dating below p. 302). Günther then supplied a further list of *desiderata* at Bleeker's prompting (enclosed with G10-36 species of pleuronectids). On 28 May (B21, B22) Bleeker dispatched 32 specimens, adjusting the earlier bill to read 163 specimens for £ 84. He also added that Part 3 of his *Atlas* was available. The zoological register for 3 June shows this latest batch of fishes, 31 flatfishes registered as 1862.6.3.1-31. For the remainder of 1862 the correspondence appears slight, although Bleeker sent Günther Part 4 of his *Atlas* in July (B25) and was anxious to see Volume 4 of Günther's *Catalogue*, which appeared in November (B26).

Exactly a year passed and Bleeker apologised to Günther for the long silence and explained the delay in Parts 5-10 of the *Atlas*, Part 11 being ready for the printers (B27). Günther probably asked for further consignments of fishes because Bleeker agreed to send a batch of siluroids and any other groups of fishes or reptiles requested. By 9 or 10 November 4 boxes, 87 specimens of siluroids and 101 of reptiles, were on their way to the British Museum (B28). Bleeker remarked that there were unique specimens amongst them and also offered the single specimens of scarids and labrids which he had declined from sending the year before (evidently because he had not then completed

his final revision of the group). In a postscript he also offered his cyprinoid fishes, but suggested that consignments could be spread over several years. This latest purchase (siluroids and reptiles) was registered on 4 December 1863 and the list is in the Keeper of Zoology's letterbook for that period.

During 1864 contact between the two ichthyologists was maintained. On 29 March (B30) 13 species, being 22 specimens of hydrophidioid and other snakes, were sent and in April (B31) the promised unique specimens of scarids, labrids and further siluroids. They were registered by the British Museum on 7 April and 15 May respectively. Bleeker then offered (B33) to sell the types of his muraenid, cyprinoid, plectognath and antennariid fishes. This offer does not appear to have been pursued immediately, perhaps because of Bleeker's proposed visit to London early in 1865 (B34). The next letter is dated 14 April 1866 (B35) and in it Bleeker apologised for the year's delay in writing. He explained how the present Dutch Colonial Government had withdrawn its subsidy for the *Atlas*, how the first 20 parts had cost £ 3,000 and how only £ 970 in subscriptions had been received. With this in mind, Bleeker offered the British Museum further unique specimens from his collection, admitting that he required the money to continue his *Atlas*. Günther obviously leapt at this opportunity and answered rapidly, for by 21 April 220 fishes, mostly cyprinoids and some unique specimens were packed in 5 boxes and mailed to the British Museum (B36). They were registered on 2 May, the price being £ 112 (B37).

Günther was by now one of the world's leading ichthyologists. The sixth volume of his *Catalogue* had appeared in October 1866 and he had published numerous papers. It is clear from the literature, however, that he often disagreed with fellow ichthyologists and Bleeker was no exception. Although Bleeker did not retaliate, others did and there is strong evidence that some naturalists declined to present or sell specimens to the British Museum because of disagreements with Günther. The classic example is Francis Day, whose quarrels have been well documented by Whitehead & Talwar (1976). At this time too, Bleeker's wife became seriously ill and not unreasonably his work output decreased. It was a rather ill-tempered letter from Günther dated 28 October 1867 (G17) that seems to mark the beginning of the conflict with Bleeker. In the letter Günther accused Bleeker of sending smaller, poorer quality specimens than those figured in the *Atlas*. He went on to write "You once told me that you would send types. But what is the use of a typical specimen that is in a condition not allowing anything to be seen. Many of the cyprinids sent lack the pharyngeal teeth" (translated from the German by Boeseman, 1983). In reply (B38) Bleeker admitted that, given a choice of two specimens, he would not give the best away. He then insisted that Günther

specify the numbers of individuals required in the next consignment, otherwise he would be tempted to send them all. He confidently stated that he had collected further rare specimens since the publication of his *Enumeratio* in 1859 and somewhat cheekily told Günther that he could find them in the literature. In response to Günther's criticism over the lack of pharyngeal teeth, he offered for sale his collection of 100 pharyngeal bones of cyprinoids. However, this last offer was not accepted and they are now in the Rijksmuseum in Leiden. Günther had provided Bleeker with a further list of *desiderata* (enclosed with G17), eager to obtain as many Bleeker types as possible. On 16 or 17 November 1867 (B39) 367 specimens of clupeoids, muraenids and plectognaths and a bill for £ 183/5/- were dispatched. Bleeker's accompanying letter pointed out that if the British Museum would purchase his entire collection, then they would obviously get the best specimens. He concluded that this collection was still worth more than £ 7,000 but that he could not sell any more at present because of the delay in his *Atlas*. This decision not to sell may well have been weighted by a current round of arguments in the fish literature, in which Bleeker was involved. Günther had been arguing with Francis Day over the generic allocation of a fish which Day called *Badis* but Günther considered *Catopra* and he was obviously annoyed that Bleeker's opinion had been sought by Day in an effort to clarify the problem; Bleeker opted for the genus *Nandus* (see Whitehead & Talwar, 1976: 29). Günther showed his disdain by publishing in the *Zoological Record* for 1866 the following comment "It is to the Recorder quite inexplicable how even Bleeker could add to the confusion by referring it to *Nandus*. The essential character of *Catopra* is the singular dentition of the bottom and roof of the cavity of the mouth; to separate *C. malabarica* as a distinct genus on account of the entire praeoperculum is a proceeding quite consistent with Dr. Bleeker's systematic attempts generally, but which will not be adopted by the majority of ichthyologists". This cutting remark probably appeared in December 1867 and it is interesting to note that after a short letter from Bleeker on 17 December (B41), there is a gap in the correspondence of almost five years.

In March of the following year (B42) Bleeker enquired from the Principal Librarian of the British Museum about his payment for the November collection. He was tersely informed that the bill would be submitted before the Trustees in April (letter in Rijksmuseum, Leiden) even though the collection had been registered on 28 November 1867 and Günther had cited specimens in Volume 7 of his *Catalogue* (March 1868). Between 1868 and 1872 relations between Günther and Bleeker finally broke down. Bleeker managed to publish six further parts of his *Atlas*, but he did not offer the British Museum any specimens. Indeed, there are two letters in the Rijksmuseum, Leiden which

show that Bleeker was in touch with a natural history agent in London in the spring of 1872. The first is a letter by A. Boucard, dated 4 April, replying to Bleeker's letter of 2 April (now missing). The second, and more important, is Bleeker's draft reply of 6 April (B43). In it he offered his entire reptile collection for £ 180, the lower animals for £ 40 and the fish from 6d to 10/- each; he also suggested that Boucard should visit The Hague to see the collection personally. It is clear from the registers that the British Museum often bought collections from Boucard and it is quite possible that Boucard informed Gray about Bleeker's offer.

Meanwhile, Günther was publishing further criticisms of Bleeker's nomenclature, this time relating to reptiles purchased from him in 1863 and 1864. "From an examination of the typical specimens . . . I find that but few of these names can be maintained, as the majority were given to known species . . .". Later he added "of this species [*Gecko albofasciolatus*] we have received three specimens from Dr. Bleeker under as many different names . . ." (Günther, 1872).

On 16 November 1872 Bleeker received a letter from Günther in English (G20). The fact that it was not in German seems to indicate that it was written from Günther's official position as Assistant Keeper of Zoology. It said "The appearance of the 26th part of your grand Ichthyological Atlas . . . reminds me of your promise to deposit in this Museum, the types of your new fishes, after you have published them in your work. Having completed now the greater part of the Percoids, you would perhaps be now inclined to part with them." Günther added that the Museum could not afford to buy them until March of 1873 and then said "I believe we are living in a state of chronic warfare with each other and I am afraid this will continue as long as we work. You have given me in your last part such hard blows as to put me on the defensive". Bleeker replied on 21 November (B44), apparently relieved that contact had been resumed. He praised Günther's work and urged him not to take the criticism personally, for he claimed "always to have had the conviction that errors committed by a simple autodidact would be forgiven by his colleagues and that criticisms of a too personal kind would prove detrimental only to their author" (translated from the French by Boeseman, 1983). Nevertheless, Bleeker was willing to sell further specimens to the British Museum, adding a list of disposable specimens (possibly one of the undated lists in the Keeper of Zoology's letterbooks). Letters drifted back and forth during the early part of 1873, but it seems that no specimens were sent and no further correspondence has yet come to light. One possible explanation comes in the Preface by Günther to Boulenger's *Catalogue of the fishes in the British Museum*, 2nd edition, Volume 1, where he claimed that "In 1872 Bleeker infor-

med me of his intention to offer to the British Museum, from the remainder of his collection, only those species of which he had more than two specimens. As this offer no longer included the types, or even absolutely authenticated specimens, I did not avail myself of it, and consequently the British Museum does not contain any types of the families described by him in the later volumes of the 'Atlas'." (Boulenger, 1895: vii).

What had been begun so enthusiastically in 1861, had lost its momentum seven years later and was virtually finished with by 1872. The British Museum had acquired many important Bleeker specimens, but the cream of the collection, through the 1879 auction, eventually came to Leiden, as Bleeker had always hoped.

DATING

Atlas ichthyologique des Indes orientales néerlandaises 1862–1878

There are no firm publication dates for all of the 36 parts of Bleeker's *Atlas*. Dr G. F. Mees, with the help of Dr M. Boeseman at the Rijksmuseum, attempted to reconstruct this information, using an unbound copy of the *Atlas* in the Leiden Museum, together with the *Zoological Record* and acknowledgement letters from the librarian of the Royal Library in The Hague to Bleeker on receipt of Parts 1–18. The results were published by Mees (1962: 77). The Bleeker/Günther correspondence helps to pinpoint certain of the dates and to narrow down others. In table 1 we have combined the data from Mees and from the letters.

Parts 1–2	Mees gives "before 4 June 1862". In a letter of 14 April 1862 (B19) Bleeker told Günther that Parts 1–2 had appeared.
Part 3	Again Mees gives "before 4 June 1862". On 28 May 1862 (B21) Bleeker informed Günther that Part 3 was available.
Part 4	On 10 July 1862 (B25) Bleeker sent Günther Part 4. This confirms Mees' dating of 8 July.
Part 5	With the same letter (10 July 1862) Bleeker sent proof sheets 31–35, being the first half of Part 5 (which Mees dates as 2 October 1862).
Part 6	In a letter of 24 October 1862 (B26) Bleeker wrote that Part 6 would be ready in a few days. Mees gives 26 November 1862, which is perhaps slightly late.
Parts 7–10	See Mees and Table 1.
Part 11	Mees gives "after 8 October 1863". In a letter of 24 October

- (B27) Bleeker wrote that Part 11 was ready for the printers, thus perhaps issued in November.
- Parts 12–13 See Mees and Table 1.
- Part 14 Mees gives 25 June 1864. In a letter of 24 June 1864 (B32) Bleeker stated that Part 14 was at the printers, thus perhaps issued in July.
- Parts 15–18 See Mees and Table 1.
- Parts 19–20 Mees was unable to ascertain when in 1865 Parts 19 and 20 appeared. It seems from a letter dated 28 April 1865 (B34) that they were at the printers then and perhaps appeared in July or August of that year.
- Parts 21–25 See Mees and Table 1.
- Part 26 Mees gives merely 1872, but Günther certainly received it by 16 November (G20) and probably responded almost at once.
- Parts 27–36 See Mees and Table 1.
- Although Bleeker discussed the progress of his *Atlas* in many letters, no further precise dating can be deduced.

Catalogue of the fishes in the British Museum 1859–1870

The Preface to each volume of the *Catalogue* is dated, but the actual date of publication was as much as ten months or as little as one month afterwards. Sherborn used the dates of the British Museum Trustee's meetings when the price for each volume was agreed. We give here the dating published by Sherborn (1934) which the Bleeker/Günther correspondence confirms, with one small exception.

- Vol. 1 10 December 1859
- Vol. 2 13 October 1860
- Vol. 3 The Preface to Volume 3 is dated 15 July 1861. The Trustees met on 14 December 1861, to decide the price of the volume (10s.6d.). However, in a letter dated 2 December 1861 (B10) Bleeker thanked Günther for Volume 3, which he had just received.
- Vol. 4 8 November 1862
- Vol. 5 10 December 1864
- Vol. 6 13 October 1866
- Vol. 7 14 March 1868
- Vol. 8 25 June 1870

TYPES

It is of continuing importance to clarify which specimens in a collection are the designated types. At the auction of Bleeker's collection in 1879 it was generally accepted that all the types were gathered in group A and purchased by the Leiden Museum (see Boeseman, 1973b), with the understanding that Bleeker had only ever disposed of duplicate specimens. However, clues in the correspondence and remarks by Günther in the prefaces of his *Catalogue* reveal that at least some type specimens were purchased by the British Museum during the period 1862–1867.

Unfortunately, Bleeker rarely used the word type, usually referring to "Unica" or unique specimens. Only in one list, that of November 1867, does he mark individual specimens and then only four times:

No 45 *Puntius (Puntius) lawak* Blkr (unicum)

No 49 *Puntius (Barbodes) koilometopon* Blkr (unicum)

No 232 *Notopterus borneensis* Blkr typ

No 236 *Notopterus maculosus* Blkr typ = *Notopterus borneensis* Blkr

It seems, therefore, that Günther assumed the responsibility for designating type status to individual specimens without specific indications from Bleeker. However, if it was a Bleeker species and his unique specimen, then Günther could reasonably deduce that it ought to be a type. By comparing a specimen with the plate and description in Bleeker's *Atlas*, he could also ascertain whether it was the actual specimen used by Bleeker and therefore presume it to be a type. As shown by Whitehead *et al.* (1966), however, Günther was not always correct in these assumptions.

The Bleeker/Günther correspondence gives us certain clues. The first sale of specimens to the British Museum in February 1862 contained labrids, and Bleeker had stated several times that he was only willing to dispose of duplicates so as not to reduce the value of his collection (B7, B14). In May of the same year, Bleeker also supplied 32 pleuronectids and similarly these were duplicates (B21). Thus Günther, in the Preface to Volume 4 of his *Catalogue*, dated 15 June, could only boast "a collection of Pharyngognathi and Anacanthini from the East Indian Archipelago, illustrative of the species described by Dr. P. v. Bleeker". One must remember, however, that such duplicates could have been syntypes. In an important letter of 8 November 1863 (B28), Bleeker described the contents of the four boxes just dispatched to the British Museum. Two of the boxes contained siluroid fishes and as Bleeker had finished his study of this group, he sent his "unica" as well as duplicates. He also offered the "unica" of his scarid and labrid fishes not included in the previous consignments. These were duly forwarded in April 1864. (B31). The remain-

ning two boxes contained reptiles and included all the unique specimens of his species, which Bleeker suggested would be useful for Günther's *Catalogue of the reptiles*. In February 1864, Günther recorded in the Preface to Volume 5 of his *Catalogue*, "the typical specimens of Siluroids described by Dr. P. Bleeker".

By 1866 Bleeker was experiencing financial difficulties in publishing the *Atlas*. He discussed with Günther the possibility of selling further unique specimens (B35). On 21 April (B36) he dispatched 5 boxes of fishes, noting that they contained all the unique specimens desired by Günther. Bleeker added that he was willing to sell unique specimens only after they had appeared in his *Atlas*. Thus, 220 specimens, mostly cyprinoids, were registered in May 1866 and in the Preface to Volume 7 of Günther's *Catalogue*, dated 1 November 1867, he claimed "typical specimens of East-Indian cyprinoids and clupeoids described by Dr Bleeker". Negotiations for the last consignment of specimens purchased from Bleeker started in October 1867. In a letter of 7 November (B38) Bleeker offered his "unica" of clupeoids, muraenids and plectognaths. Some 367 specimens were sent on 17 November and in the Preface to Volume 8 of the *Catalogue*, dated 20 May 1870, Günther claimed "typical specimens of East-Indian Muraenoids, Lophobranchs, Plectognaths and Plagiostomes, described by Dr Bleeker". It is interesting to note that in Bleeker's letter of 7 November 1867 (B38) he said that he would only send duplicates of the syngnathids and plagiostomes, promising the "unica" of these latter, possibly the following March or April. Although we have no correspondence for 1868, the register shows no further collections from Bleeker until the auction material in 1880.

In general, therefore, Günther's type designations for Bleeker species should be seriously investigated in the following fish groups:

Clupeoids	Labrids
Cyprinoids	Scarids
Siluroids	Plectognaths
Muraenids	

It must be emphasized that confirmation of type status depends also on a review of the Bleeker material in Leiden and that the 870 Bleeker specimens in Melbourne (Dixon & Huxley, 1982) should not be neglected. The clupeoids, the only group to have been thoroughly investigated (Whitehead *et al.*, 1966), show that Günther's designations cannot be wholly trusted and that in some cases neither the letters nor the specimens can fully resolve the problem.

THE LISTS

In the Keeper of Zoology's letterbooks and the archives of the Rijksmuseum, Leiden, there are lists of fishes and reptiles requested by Günther and sent by Bleeker. Most of these lists can be matched to the 7 lots of specimens acquired and registered by the British Museum between 1862 and 1867. In most cases the lists contain comments by Bleeker or Günther and ticks and crosses to convey specimens checked against the lists.

22 January 1862. "List of desiderata of East Indian fishes in the British Museum" (RM). This list of labrids is in Günther's hand and contains 178 species, the majority being Bleeker's own species. It was probably sent with, or shortly after, Gray's letter to Bleeker on 22 January 1862 stating that "He [i.e. Günther] will send you shortly the list of Labridae". Bleeker marked those available.

20/21 February 1862. "List of specimens of fishes for the British Museum" (Z). A list of 131 species, dated 20 February 1862, in Bleeker's hand. Another copy of this list (RM) is attached to Bleeker's draft letter of 21 February (B18) which stated that he was dispatching the specimens that day. This list matches the register of specimens on 28 February, which are labrids and scarids. Both copies of the list are marked.

25 May 1862. "List of Pleuronectidae, desiderata for the British Museum" (RM). A list of 36 species in Günther's hand, enclosed with a letter of 25 May 1862 (G10) to Bleeker. Bleeker crossed all but seven, which he could not supply, and then added two specimens of *Echiichthys viper* and one of *Labrus merula*, bringing the final number of specimens sent to 32. They were registered on 3 June.

8 November 1863. "Espèces de Silures envoyées au British Museum par P. Bleeker" (Z). There are 87 specimens listed in Bleeker's hand and sent with his letter of 8 November 1863 (B28). Also on the same sheet are "Espèces de Reptiles, envoyées au British Museum par P. Bleeker", being 101 specimens, mostly Bleeker's own species. They were registered on 4 December. All the siluroids but only some of the reptiles are ticked.

29 March 1864. List of 13 species (22 specimens) of hydrophidioid and other snakes, enclosed in Bleeker's letter of 29 March 1864 (B30) to Günther (Z). They were registered on 7 April.

13 April 1864. "Poissons envoyés au British Museum par P. Bleeker (Avril 1864)" (Z), enclosed with Bleeker's letter of 13 April 1864 (B31) to Günther. This list contains 6 species of siluroids and 41 species of labrids. They were registered on 15 May.

21 April 1866. "Catalogue de poissons adressés au British Museum (Avril

1866)" (Z). In Bleeker's hand and later checked off by Günther, this list being sent with Bleeker's letter of 21 April 1866 (B36). It contains 220 specimens of cyprinoids, scombrosocids etc., registered on 2 May.

28 October 1867. "Specimens of Fish from Dr Bleeker's Collection, desired for the British Museum. The numbers are taken from Dr Bleeker's 'Enumeratio Specierum'" (RM). Probably enclosed with Günther's letter of 28 October 1867 (G17) to Bleeker. It gives Bleeker's serial numbers for 331 specimens plus 7 extra cyprinoids and Bleeker marked most of them. A copy of this list was made (Z) and the numbers for 17 Japanese fishes were added, as mentioned in Günther's letter of 9 November (G18).

16/17 November 1867. "Catalogue de Poissons emballés pour le British Museum" (Z). This list of 367 specimens in Bleeker's hand was either sent with his letter of 16 November 1867 (B39), or enclosed with the specimens dispatched on 17 November. It contains most of the fishes asked for in Günther's *desiderata* of 28 October, which are plagiostomes, cyprinoids, syngnathids, ostraciodonts, balistids, gymnodonts, clupeoids, muraenids and leptocephalids. The collection was registered on 28 November and the list is checked off accordingly.

2 undated lists. In Bleeker's hand, with his revised names and synonyms (Z); one list of 141 specimens has additions and marks by Günther (*Amia*, ambassids, gobioids, lutjanids, mullids, etc.), while the other list of 227 specimens is unmarked (serranids, lethrinids, holocentrids, sparids, etc.). One of these lists may have been enclosed with Bleeker's letter of 21 November 1872 (B44), where he offered further specimens to the Museum and supposedly enclosed a list of disposable specimens.

Finally, there is a list of 120 reptile species in Bleeker's letter to Günther of 8 November 1863 (B28), which were apparently not sent.

CONCLUSION

Throughout his retirement from service in the Dutch East Indies, Bleeker persevered in his endeavours to complete his grand *Atlas*. There were years when no parts were published. Indeed, in 1874 he published a short article explaining the difficulties and delays (Bleeker, 1874). By 1877 Bleeker, then aged 58, was negotiating with the Leiden Museum for the disposal of his entire collection to subsidize the *Atlas*. Sadly he died on 23 January 1878 before the negotiations were complete and his collection was subsequently catalogued and auctioned on 1 December 1879. The sale catalogue and disposal of specimens is dealt with by Whitehead *et al* (1966) and Boeseman (1973b). At the

auction the British Museum purchased *via* London dealers, 209 fishes, 244 marine crustaceans and several small collections of invertebrates. This was the ninth major Bleeker collection bought by the Museum (seven during the period of the letters, plus one before through the dealer G. A. Frank, plus the auction material).

The Bleeker/Günther correspondence contains much besides useful dates. It includes a great deal of ichthyological discussion (in French and German respectively) which can still prove invaluable to nomenclatural studies and it helps to resolve problems concerning the type status of British Museum specimens. It also provides a very enlightening insight into the way that many aspects of natural history were undertaken a century ago.

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Table 1. Chronology of Bleeker and Günther letters, publication dates of Bleeker's *Atlas* and Günther's *Catalogue* and entries of acquired material in the BMNH register.

Bleeker letters	Günther letters	Dates of Atlas	Dates of Catalogue	Register of specimens
B 1. 29 January 1861 (GL)			Vol. 1. 10 December 1859	
B 2. 29 April 1861 (GL)	G 1. 17 March 1861 (RM)		Vol. 2. 13 October 1860	
B 3. 16 May 1861 (RM draft; GL)	G 2. 9 May 1861 (RM)			
B 4. 16 May 1861 to Gray (RM)	G 3. 22 May 1861 (RM)			
B 5. 28 May 1861 (GL)				
B 6. 8 August 1861 (GL)				
B 7. 26 October 1861 (RM draft; GL)	G 4. 31 October 1861 (RM)			
B 8. 3 November 1861 (RM draft; GL)				
B 9. 17 November 1861 (GL)				
B10. 2 December 1861 (GL)				
B11. 20 December 1861 (GL)			Vol. 3. 14 December 1861	
	G 5. 30 December 1861 (RM)			
	G 6. 5–23 January 1862 (RM)			
B12. 25 January 1862 (GL)				
B13. 29 January 1862 (GL)	G 7. 1 February 1862 (RM)			
B14. 8 February 1862 to Gray (RM)				
B15. 9 February 1862 (GL)				
B16. 14 February 1862 (GL)				

Bleeker letters	Günther letters	Dates of Atlas	Dates of Catalogue	Register of specimens
B17. 21 February 1862 (RM draft; GL)	G 8. 14 February 1862 (RM)			
B18. 21 February 1862 to Gray (RM)				1862.2.28.1-33 (list, Z; draft list, RM)
B19. 14 April 1862 (RM)				
B20. 27 April 1862 (GL)	G 9. 19 April 1862 (RM)	Pts. 1-2. 14 April 1862		
B21. 28 May 1862 (GL)	G10. 25 May 1862 (RM)			
B22. 28 May 1862 to Gray (RM)	G11. 27 May 1862 (RM)			
B23. 21 June 1862 (GL)	G12. 23 June 1862 (RM)	Pt 3. 28 May 1862		1862.6.3.1-31 (list, RM)
B24. 26 June 1862 (GL)	G13. 3 July 1862 (RM)			
B25. 10 July 1862 (GL)	G14. 18 July 1862 (RM)	Pt 4. 8 July 1862		
		Pt 5. 2 October 1862 (or before)		
B26. 24 October 1862 (GL)	G15. 12 October 1862 (RM)			
	G16. 4 November 1862 (RM)		Vol. 4. 8 November 1862	
		Pt 6. 26 November 1862 (or before)		
		Pt 7. 27 January 1863		
		Pt 8. 3 April 1863		
		Pts 9-10. before 8 October 1863		

Bleeker letters	Günther letters	Dates of Atlas	Dates of Catalogue	Register of specimens
B27. 24 October 1863 (GL)		Pt 11. after 24 October 1863		
B28. 8 November 1863 (GL)				1863.12.4.1—186 (list, Z)
B29. 19 January 1864 (GL)		Pt 12. 24 February 1864		
B30. 29 March 1864 (Z)				1864.4.7.1—12 (list, Z)
B31. 13 April 1864 (Z)		Pt. 13. before June 1864		1864.5.15.1—47 (list, Z)
B32. 24 June 1864 (GL)		Pt 14. after 24 June 1864		
B33. 10 August 1864 (GL)		Pt 15. 21 September 1864	Vol. 5. 10 December 1864	
		Pt 16. 19 December 1864		
B34. 28 April 1865 (GL)		Pt 17. 8 February 1865		
		Pt 18. 19 April 1865		
B35. 14 April 1866 (GL)		Pts 19—20. after April 1865		
B36. 21 April 1866 (GL)				1866.5.2.1—220 (list, Z)
B37. 23 May 1866 (Z)			Vol. 6. 13 October 1866	
B38. 7 November 1867 (RM draft);	G17. 28 October 1867 (RM)			

Bleeker letters	Günther letters	Dates of Atlas	Dates of Catalogue	Register of specimens
GL)		G18. 9 November 1867 (RM)	1867	
B39. 16 November 1867 (RM draft; GL)				
B40. 21 November 1867 (Z)				1867.11.28.1—367 (list. Z)
B41. 17 December 1867 (GL)	G19. 29 November 1867 (RM)			
B42. 25 March 1868 to librarian (RM)			Vol. 7. 14 March 1868	
		Pt 21. 1869		
		Pts 22—23. 1870	Vol. 8. 25 June 1870	
		Pt 24. 1871		
		Pt 25. 1872		
B43. 6 April 1872 to Boucard (RM)		Pt 26. before November 1872		
B44. 19—21 November 1872 (RM draft; (RM) GL)	G20. 16 November 1872			
B45. 4 June 1873 (RM draft; GL)				
B46. 9 June 1873 (RM draft; GL)	G21. 6 June 1873 (RM)			
		Pts 27—30. 1875		
		Pts 31—32. 1876		
		Pts 33—35. 1877		
		Pt 36. 1878		