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Authors: Friis, Ib, and Callmander, Martin W.

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Isert and Thonning's plants and Schumacher's *Beskrivelse af Guineiske Planter* (1827) – A Danish legacy to the study of the West African flora

Ib Friis & Martin W. Callmander

Abstract

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In the late 18th century, the Danish government planned to establish plantations in Danish Guinea (now southeastern Ghana), and detailed botanical studies were initiated for this. Material of more than 600 species was collected, mostly preserved at C, with duplicates at B, BM, FI-W, G, G-DC, K, LE, M, P-JU and S. Duplicates were distributed and studied across Europe long before the publication of a treatment of the entire collection. Examples of research on duplicates at B, C, G and G-DC illustrate how the material was sometimes described under different names during this period, as when Augustin-Pyramus de Candolle in Geneva took up Thonning's intended generic name *Triliceras* Thonn. ex DC. for a new genus, while Schumacher in Copenhagen named the same genus *Wormskioldia* Schumach. & Thonn. This example also illustrates the contacts between Danish botanists and Candolle in Geneva, both directly and via Marc Nicolas Puerari. A manuscript dealing with the entire Guinean collection was ready by 1819, but only published when the Royal Danish Academy of Sciences and Letters took responsibility for it. Archival studies document that, on 30 June 1826, the Academy decided to publish *Beskrivelse* but not when and how a preprint became available. In a range of libraries in Europe and USA there are copies of this preprint entitled *Beskrivelse af Guineiske Planter* and the year of publication given as "1827", while in the regular series of the Academy's publications the first 228 pages of *Beskrivelse* appeared in 1828 and the remaining 236 in 1829. The International Code of Nomenclature for Algae, Fungi and Plants stipulates that the priority of all new names published in a work must be counted from the year indicated as the year of publication on the work itself, unless this can be documented to be wrong, so 1827 must stand as the year of publication. Soon after that, *Beskrivelse* became an important source of information on West African plants.

Keywords

Danish Guinea – Ghana – Paul Isert – Peter Thonning – Heinrich Christian Friedrich Schumacher – Jens Wilken Hornemann – Augustin-Pyramus de Candolle – Marc Nicolas Puerari – Royal Danish Academy of Sciences and Letters – *Triliceras pilosum* – Lectotypification

Addresses of the authors:

IF: Natural History Museum of Denmark, University of Copenhagen, Universitetsparken 15, DK-2100 Copenhagen K, Denmark. E-mail: ibf@snm.ku.dk

MWC: Conservatoire et Jardin botaniques de Genève, chemin de l'Impératrice 1, C.P. 71, 1292 Chambésy, Switzerland.

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Introduction

The Danish-titled work *Beskrivelse af Guineiske Planter* [Description of Guinean Plants] (SCHUMACHER, 1827, 1828, 1829), in the following referred to as *Beskrivelse*, was based on botanical collections and observations made in Guinea in West Africa in the late 18th century and the first years of the 19th century. This paper focuses on the significance of *Beskrivelse* in early West African botany, the reasons behind the long delay before final publication, the relations between the Danish botanists involved in the writing and publication of *Beskrivelse* and botanists elsewhere in Europe, and the consequences these had on the priority of the names involved. A complicating factor is that *Beskrivelse*, when finally published, appeared over a period of three years, first as a preprint dated 1827 and then next as publications in two parts in subsequent volumes of the scientific journal of the Royal Danish Academy of Sciences and Letters, in 1828 and 1829 respectively.

Introductory reviews in this paper explain the background of the interest of the Danish government in the flora of Guinea at the turn of the 18th century, the efforts dedicated to that work and the scientists that played an important role in this regard. Following that, specific emphasis is given to two subjects that have not been studied by earlier researchers, including JUNGHANS (1961, 1962) and HEPPER (1976): (1) the history of the delayed publication of *Beskrivelse*, and (2) the relations between the botanists in Copenhagen and Augustin-Pyramus de Candolle (1788–1841) in Geneva, directly and through the intermediary Marc Nicolas Puerari (1766–1845), student of Martin Vahl (1749–1804), originally from Geneva, but living in Denmark from 1794 to 1822. We examine the case of the genus *Tricliceras* as an example of how the material from Danish Guinea was studied.

The first author has produced a longer and more detailed paper in Danish, which focuses on the Danish cultural background for the activities in Guinea and after. This contribution is specifically addressed to the Danish audience in the humanities (FRIIS, in press).

Danish West African botanical studies

The early botanical exploration in West Africa

The early botanical exploration in West Africa was seriously hampered by the many tropical diseases that hit and often killed the explorers, as pointed out in the introduction to *Beskrivelse* by SCHUMACHER (1827). The following review of early field work on the West African flora is based on BROWN (1818), NEES VON ESENBECK (1825), SCHUMACHER (1827), KEAY (1962), HEPPER (1976, 1991) and SEBSEBE DEMISSEW et al. (2017). The first scientific botanical studies in western tropical Africa were undertaken by French naturalists, with the journey of Michel Adanson (1727–1806) in Senegal between 1749 and 1754 as the pioneering effort, followed by the work of Ambroise Marie

François Joseph Palisot de Beauvois (1752–1820) in Oware and Benin (the former now belonging to Nigeria) in 1790. The British Duchess of Portland dispatched Henry Smeathman to Sierra Leone to help settling released slaves, but Smeathman's expedition should also collect objects of natural history, and this activity was supported by Sir Joseph Banks and other members of the Royal Society; the whole expedition lasting from 1771 to 1775. In 1780, under the order of Sir Joseph Banks, William Brass travelled on behalf of the Royal Botanic Gardens, Kew to areas around the British fort on the Cape Coast in present Ghana. The Swedish botanist Adam Afzelius was sent on two explorative journeys to Sierra Leone by the British Sierra Leone Company between 1792 and 1796.

Although the Dutch and the Portuguese were present in West Africa with perhaps more forts than any other European nation, there is no record of early Dutch or Portuguese work on botany from that part of Africa. The Danish collections were made rather early, between 1783 and 1803, and were relatively numerous, approximately 2000 preserved plants, representing c. 610 species (HEPPER, 1976: 9–10). A few years later, in 1816, the Norwegian botanist Christen Smith travelled with the ill-fated expedition of James Hingston Tuckey along the Congo River; many of the members of the expedition died, including Smith and Tuckey. In 1822, on his way to Brazil, the Scottish botanist George Don visited areas in Gambia and Guinea. British explorers of the inlands of West Africa collected only few plants, as was the case with the Scottish Mungo Park (1771–1806; first journey in the area of the Niger River in 1795–1797, the second in 1805–1806 to the same area, a journey that became fatal), the English Dixon Denham (1786–1828) and the Scottish Hugh Clapperton (1788–1827), who both travelled widely in the inland of West Africa in 1822–1825. Later, the Swiss-French Georges Guérard-Samuel Perrottet (1791–1870) and the French François Mathias René Leprieur (1799–1870) visited Senegal and Gambia in 1824–1829, and the also French Jean-Pierre Heudelot (1803–1837) worked in Senegal in 1825–1831. On an ill-fated British expedition to the Niger River in 1841, more than half of its members died because of diseases; the botanist of this expedition, Theodor Vogel, visited the Danish forts and attempted to build on the Danish knowledge and institutions, as will be mentioned in the section “Early appreciation of *Beskrivelse*...” at the end of this paper. It is in this period of early botanical investigations in West Africa that the Danish exploration in 1783–1803 acquire relevance with its more than 2000 preserved plants and c. 610 species, upon which many new genera and species were described. When it has been possible to establish the number of collections made by previous collectors in West Africa, we have seen that the number of specimens was usually less than 1000, and they rarely represented more than 600 species.

The Danish coastal forts, from which the Danish government employees set out on their field trips along the coast

or inland, were all in what is now south-eastern Ghana and corresponded to, from west to east (HEPPER, 1976: Map 1–2; HOPKINS, 1999: 373): Christiansborg (by Osu near Accra, now Osu Castle; Fig. 1), Fredensborg (by Ningo, about 75 km east of Accra), Kongensten (by Ada, west of the estuary of the Volta River) and Prinsensten (between the Keta Lagoon and the sea). Christiansborg was the seat of the governor of Danish Guinea. However, the Danish observations were also made further to the east, in areas now divided between three West African states, Ghana and the small states of Togo and Benin (formerly Dahomey).

Danish botanical studies to prepare for abolition of the slave trade

Paul Isert (1756–1789), the first who collected plants in Danish Guinea, was originally German, born in Brandenburg and trained as a surgeon in Berlin. In 1783, he took up a position in Danish Guinea and arrived at Fort Christiansborg. He made a trip to the Slave Coast (now part of Togo and Benin), where there were Danish trading lodges in Little Popo (now Anecho) in Togo and in Widah (now Ouida) in Benin. In October 1786, he left Guinea aboard a Danish slave ship, heading for the West Indies. During a revolt on board, he was seriously wounded, but the revolt was overpowered, and via the West Indies he reached Copenhagen. Because of these events, Isert became deeply repulsed by the slave trade and fostered ideas about establishing Danish plantations on the Gold Coast, from which tropical products such as sugar, coffee and cocoa could be exported directly to Europe, which would make the West Indian plantations and the transatlantic slave trade obsolete. Together with the Danish Minister of Finance, E.H. Schimmelmänn, he developed these ideas into a plan that was royally approved in 1788. The same year, he sailed back to Guinea to inaugurate the first plantation, Frederiksnopel in the Aquapim Mountains (north of Accra). But he died only a month later (ISERT, 1790; WINSNESS, 1992).

The next and far more significant plant collector in Danish Guinea was Peter Thonning (1775–1848; Fig. 2A). Son of a Danish surgeon, Thonning followed the teaching at the Surgical Academy in Copenhagen and Martin Vahl's lectures at the Natural History Society. Thonning met Heinrich Schumacher (1757–1830; Fig. 2B) at the Surgical Academy as a teacher of anatomy and at *Naturhistorieselskabet* [The Natural History Society] as a teacher in mineralogy and botany, and the two developed a professional and personal friendship (HOPKINS, 1999: 383).

Carrying on from Isert and Schimmelmänn's plans, a Royal Danish order regarding the abolition of the slave trade was issued in 1792, to be fully implemented during the following ten years. To study the possibilities for plantations and by order of the Danish government, Thonning was sent out to Guinea from 1799 to 1803. Thanks to his liberal instructions, written by

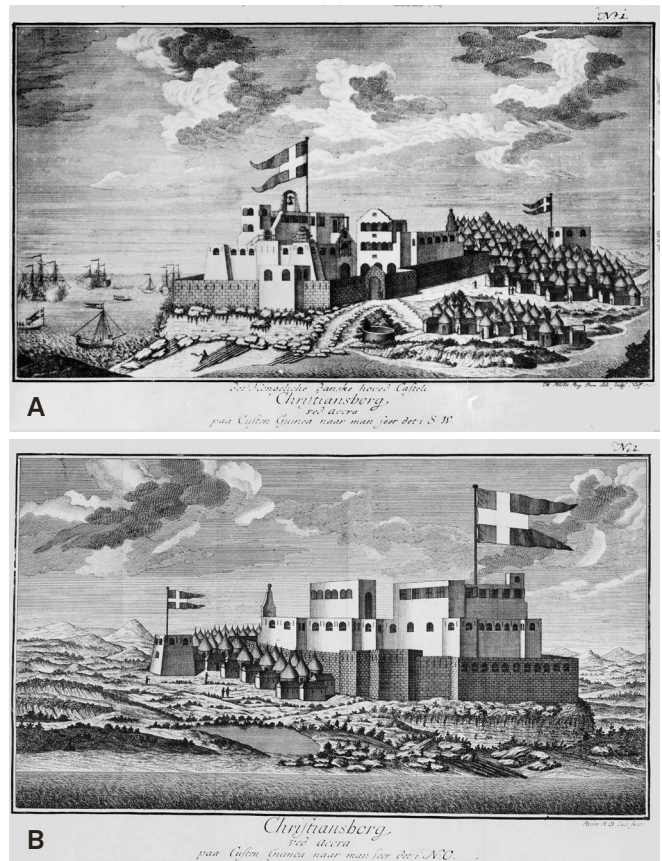


Fig. 1. – The Danish Fort Christiansborg at Osu near Accra. A. View from south west. B. View from north east. [Engravings by Michael Rössler, published in RÖMER (1760)].

the natural history-knowledgeable General Customs Deputy Niels Tønder Lund (1749–1809), Thonning was able to make detailed studies of the flora (HOPKINS, 1999: 380, 385–392; 2013), and when he returned to Denmark, he brought with him large plant collections and botanical observations in the form of manuscripts.

Returned from Guinea in 1803, Thonning became involved in building and reconstructing the Danish Royal natural history collections (HOPKINS, 1996: 150) and, together with his botany teacher, Martin Vahl, he began to work on his West African collections. Parts of Thonning's material and observations were included in the first two volumes of Vahl's work *Enumeratio plantarum* (VAHL, 1804–1805), the second volume posthumously published by Tønder Lund and others, and VAHL (1810; posthumously published by Tønder Lund) named a remarkable new genus of chlorophyll-less parasitic plants after Thonning, who had collected it in the forests of Aquapim, calling it *Thonningia* Vahl, with its type species, *T. sanguinea* Vahl (*Balanophoraceae*).

Thonning's own set of his Guinean collections was destroyed by the British bombing of Copenhagen in 1807, but he had previously given numerous duplicates to teachers and friends. Figure 3 shows an example of a Thonning



Fig. 2. – A. Portrait of Peter Thonning; B. Portrait of Heinrich Christian Friedrich Schumacher.

[A: lithograph by Emil Bærentzen & Co., Copenhagen, after an oil painting dated 1841 by E. Bærentzen, in private possession; B: lithograph by Moses Mendel, Copenhagen, after an undated oil painting at Rigshospitalet [Danish National Hospital], Copenhagen, possibly by Christian Horneman] [© Statens Museum for Kunst, Copenhagen]

duplicate given to Jens Wilken Hornemann (1770–1841) for his herbarium and now kept at C. In 1811, Thonning became secretary of the General Customs Chamber, under which the Danish colonial administration belonged, and when in 1816, after the Napoleonic Wars, there was a major reorganisation of the Danish administration of trade, customs and colonies, Thonning continued working at the reorganised institution. Here he remained as a high-ranking civil servant and administrator until his retirement in 1840, elaborating plans to improve the economy of Danish Guinea. However, the plans attracted little interest, and virtually none of Thonning's ideas on how to develop Guinea were undertaken (HOPKINS, 2009, 2013). Finally, after the Danish transition to democratic rule in 1848, it was quickly decided to end Danish involvements in Guinea, and, in 1850, the forts were handed over to the British government. After the British takeover, the area developed the world's most important cocoa export and a significant production of palm oil and cola nuts from plantations, as had been in Thonning's plans (HOPKINS, 1999, 2009, 2013).

Thonning remained deeply interested in natural history and, during the period 1829–1848, he was member of the board of the Royal Danish Museum of Natural History, a museum

that took over the collections from *Naturhistorieselskabet* and later became part of today's *Statens Naturhistoriske Museum* [Natural History Museum of Denmark] in Copenhagen.

The importance of the Danish Guinean collections in the early knowledge of the West African flora

Beskrivelse presented for the first time an important part of the flora of Guinea. Its significance as a pioneering work has been emphasised, for example by ASCHERSON (1879): "einer der wertvollsten Beiträge zur Kenntnis der damals noch fast unerforschten Flora des tropischen Afrika" [one of the most valuable contributions to the knowledge of the then almost unexplored flora of tropical Africa], and by KEAY (1962: 58): "The very important *Beskrivelse af Guineiske Planter*, which described over 300 new and 200 previously known species." HEPPER (1976: 10) further established that 474 new species names were proposed on the Danish Guinean collections, 203 epithets of these names being still in use. A count using both APD (2020) and IPNI (2020) has resulted in 367 new names recorded as published in *Beskrivelse*: 19 genera, 346 species and 2 varieties. Among the twelve new genera proposed in *Beskrivelse*, two are

still in use, i.e. *Benzonia* Schumach. (*Rubiaceae*) and *Deinbollia* Schumach. (*Sapindaceae*).

Most species observed in Guinea, both the new ones and those already named, were described in a manuscript by Thonning, partly drafted in the field. During his subsequent work on the collections, Schumacher supplied additional names, amended the diagnoses and descriptions and added taxonomic notes, mostly with carefully attributed authorship to each paragraph by concluding with “Th.” or “S.” The title page of *Beskrivelse* indicates only Schumacher as the author, but the current attribution of new names to Schumacher or Thonning, or of joint authorship, is based on the initials “Th.” or “S.” in *Beskrivelse* (HEPPER, 1976: 11). The manuscript, which provided the numbers of Thonning's collections, cannot now be found at the Natural History Museum of Denmark but was used by JUNGHANS (1961, 1962) and HEPPER (1976).

Schumacher becomes first author of Beskrivelse, finishing the manuscript before 1819

Heinrich Christian Friedrich Schumacher had an interest in anatomy and natural history from his childhood and early years in Glückstadt, Holstein. In 1777 he moved to Copenhagen to study at the Surgical Academy. The following year, he became a “prosector” (an assistant to the professor at anatomical dissections) at the University of Copenhagen and graduated from the Surgical Academy in 1779. He wrote a flora for a region of the Danish island of Sjælland (SCHUMACHER, 1801–1803) and was a pioneer in the exploration of Danish fungi, producing approximately 400 watercolors of fungi for the work *Flora Danica*. He became professor of anatomy at the University of Copenhagen in 1819 (SNORRASON & NORRIE, 1983).

We do not know exactly when Thonning gave up the idea of a scientific career and handed over his botanical manuscripts to Schumacher for editing and publication, but it must have been between the loss of his collections in 1807 and the time when he became deeply involved in colonial administration, which was in 1811 or possibly as late as 1816 (HOPKINS, 2009: 785–788). We do not know either when Schumacher finalised the manuscript for *Beskrivelse*, but in 1818, Hornemann (professor of botany at the University of Copenhagen from 1808 and director of the university Botanic Garden from 1817) mentioned the work in a letter to Candolle dated 27 December 1818, and stated: “Mons[ieur] Schumacher s'occupe à présent de publier la description des plantes que Mons[ieur] Thonning, actuellement Conseiller de Justice, a trouvé en Guinée. Je ne doute qu'il se trouve parmi ceux beaucoup de celle que le Profess[eur] Smith trouvait au bord de la rivière Zaïre, que vous connaissez peut-être déjà. Mons[ieur] Brown en a publié un aperçu après les ordres naturelles dans le journal du Capt. Toukay et de Mons[ieur] Smith. [Mr. Schumacher is currently occupied with the publication of the description of the plants

that Mr. Thonning, currently councilor of justice, has found in Guinea. I have no doubt that many of them have already been found by Prof. Smith on the bank of the river Zaire, which you will probably already know. Mr. Brown has published a review of those in the order of the natural classification in the journal of Captain Tuckey and Mr. Smith.]” (HORNEMANN 1809–1838).

In the following year, 1819, Hornemann used Isert's and Thonning's collections and Thonning's and Schumacher's unpublished manuscripts in a paper for the annual program of the University of Copenhagen (HORNEMANN, 1819), stating that the work with the Guinean plants had been finished and was ready to be printed, but it could not be published due to the lack of a publisher. In this long Latin paper from 1819 on plant geography, Hornemann commented on the species from Isert's and Thonning's Guinean collections, and gave a plant-geographical characterization of the region in relation to what was otherwise known about West Africa, including the information from the river Zaire (Congo) from Hornemann's Norwegian student, Christen Smith. Smith's material was with Sir Joseph Banks in London, not in Copenhagen, but the British botanist Robert Brown had identified it and produced a geographical analysis (BROWN, 1818). HORNEMANN (1819) bewailed that the Danish collections from Guinea had not been published and thus not available to Brown. Hornemann's analyses from Guinea were later compiled with those of Brown by NEES VON ESENBECK (1825: 167–336) in his translation into German of Brown's botanical works.

However, four years later, and then together with Joakim Frederik Schouw (1789–1852, extraordinary professor of botany at the University of Copenhagen from 1821, later ordinary professor and director of the Botanic Garden), Hornemann again referred to the important unpublished botanical material from Guinea and expressed regret that no publisher had been found (HORNEMANN & SCHOUW, 1822). And yet again, this time two years later, SCHOUW (1824: 284–285) gave the same depressing message about regrettable delays in the publication of the Guinean material and studies.

Isert and Thonning's plants

Distribution of the botanical collections from Danish Guinea

The collections from the Danish botanical activities in Guinea are now kept in a range of herbaria in Europe (HEPPER, 1976: 9–10). Hepper counted 1484 specimens in C, collected by Isert, Thonning and a few other Danes. Hepper also traced duplicates at B-W (71 sheets, collected by Isert and all given to Willdenow in 1799, before Thonning's material came to C), BM (2 sheets), FI-W (66 sheets, given as duplicates from Vahl's herbarium to P and transferred with Desfontaine's collections to the Webb herbarium), G-DC (30 sheets, see below), K (2 sheets, one came as a duplicate from Candolle

in Geneva, another was a duplicate of the type material of *Thonningia sanguinea* sent from Copenhagen by F.M. Liebmann), LE (8 sheets, the history of which has not yet been documented), M (3 sheets, all collected by Isert and duplicated from Berlin), P-JU (172 sheets, these collections were not given directly by Thonning to Antoine Laurent de Jussieu (1748–1836), but were, as some of the collections now in G and G-DC, duplicates from Vahl's set, presumably sorted out by Tønder Lund; they are not labelled as collected by Thonning, but mostly marked “miss. Vahl 1804” or “e Guinea.”) and S (55 sheets, including sheets collected both by Isert and Thonning). The main set of Thonning's plants was destroyed by the British bombing of Copenhagen in 1807, but his collections in C were reconstructed by combining the duplicates he had given to friends and colleagues in Copenhagen, particularly Vahl, Schumacher, Hornemann and Johannes Colsmann (SCHUMACHER, 1827, 1828; HEPPEL, 1976).

HEPPER (1976: 9) suggested that a full history of how the Isert and Thonning duplicates came to be lodged at their present herbaria throughout Europe would be a study in itself. Reconstructing the full history of the duplicates is indeed complicated, as can be seen from the history of duplicates now in Geneva (G, G-DC), which is presented below.

Candolle and the Puerari herbarium

By far, the largest number of plants from Danish Guinea seem to have come to Geneva with Marc Nicolas Puerari in the 1820s, and indeed they cover more than the 30 sheets listed by HEPPEL (1976). As mentioned below, other collections must have come earlier, but there are no exact counts. Puerari had fled from his home town of Geneva in 1794 in connection with revolutionary turmoil, settled in Copenhagen and obtained a position with Frédéric de Coninck, one of Denmark's most important ship-owners with extensive overseas trade, who resided at the large Dronninggård estate north of Copenhagen. Like Thonning, Puerari attended the teaching of natural history by Martin Vahl at *Naturhistorieselskabet*, and was professor of French language and literature at the University of Copenhagen from 1809 to 1822 (HØYBYE & SPANG-HANSEN, 1979). Puerari was in contact with Candolle. In a letter to Candolle dated 2 March 1819, he mentions a number of botanical books to be sent to Geneva, specimens from Greenland, the West Indies, from Wallich in Calcutta, and “un assez grand nombre [de plantes] de Guinée (mais dont je ne puis disposer qu'avec la permission du donateur qui les a cueillies lui-même, c'est Mr. Thonning, élève de Vahl et un des éditeurs du second volume de l'*Enumeratio plantarum* de son illustre maître). [A large number of plants from Guinea (which I cannot send without the permission of the donor, who has collected them himself, he is Mr. Thonning, a student of Vahl's and one of the editors of the second volume of the *Enumeratio plantarum* by his famous teacher)]” (PUERARI, 1819).

Returning to Geneva in 1822, Puerari brought with him his herbarium consisting of a total of c. 6000 specimens, partly his own collections, partly gifts from Danish friends. All this material was given to A.-P. de Candolle in 1824 (CANDOLLE, 1830). The Puerari herbarium was registered with standard abbreviations for the various sources of material: “DGd”, from the surroundings of Dronninggård, Frédéric de Coninck's estate; “ex h. D. Gd.”, from the garden of Dronninggård; “H. V.”, “confrontée avec l'herbier du Vahl”, apparently material compared with Martin Vahl's herbarium in Copenhagen; “Wch”, “Wallich”, apparently duplicates of Indian and probably also Nepalese collections sent from the Danish surgeon Nathaniel Wallich (1786–1854, based in the Danish trading-post at Serampore north of Calcutta, later became superintendent of the botanical garden of Calcutta and finally compiled the large Wallich herbarium now at K); “H. Vahlum” apparently refers to duplicates from Vahl's herbarium in Copenhagen, sorted out by Tønder Lund after Vahl had died in 1804 and a decision of dissolving *Naturhistorieselskabet* was eventually made. On sheets at G and G-DC, the abbreviation “H. Puer. 1824” stands for “Herbarium Puerari 1824” (CANDOLLE, 1830). Original Puerari sheets are of small format with label information written at the bottom of the verso. This was common practice among the Copenhagen botanists that had studied under Vahl. Some original sheets have been trimmed to show this information (Fig. 4).

Candolle named a new genus of Indian legumes after Puerari, *Pueraria* DC. (CANDOLLE 1825a: 97) including *P. tuberosa* (Roxb. ex Willd.) DC. and *P. wallichii* DC. Two specimens of *P. tuberosa* are kept in G-DC [G00497894, G00497924], which were contributed by “M. Puerari, qui les avoit eus sous le même nom du jardin de Calcutta [who had received them under the same name from the Calcutta garden]” (CANDOLLE, 1826a: 254). The second species, *P. wallichii*, was described based on a specimen now in G-DC [G00497853] collected in Nepal by Wallich, and according to CANDOLLE (1826a: 254) “a été envoyée avec plusieurs autres plantes de ce pays par M. Wallich [it has been sent with several other plants from that country by Mr. Wallich]”. This collection was thus received directly from Wallich in May 1821 (CANDOLLE, 1830). A probable duplicate of a similar unnumbered Wallich collection from Nepal is deposited in C [C10012332]. Wallich's career has been studied by KRIEGER (2017) and detailed information about the relation between Wallich and Candolle, continuing long after Wallich went into British service, has been published by CANDOLLE & RADCLIFFE SMITH (1981).

HEPPER (1976: 208) traced and listed c. 30 duplicates of collections made by Thonning in Candolle's *Prodromus* herbarium [G-DC] but we have to assume that much more are to be found and that some of them probably are also kept in the general herbarium (G); this might especially occur with the monocotyledons because they were not treated in

the *Prodromus*, and therefore, are preserved in G. Figure 4 shows original material of *Strychnos scandens* Schumach. & Thonn. (= *Ancylobothrys scandens* (Schumach. & Thonn.) Pichon; *Apocynaceae*) in G [G00015118], with the annotations “e Guinea / dedit cl.[arissimus] Thonning” and “Herb. Puerari 1824”. This plant was originally described in *Beskrivelse* (SCHUMACHER 1827: 127) and collected by Thonning in the forests at Aquapim. Original material of the same species, preserved in C [C0004623], came from Hornemann's herbarium (Fig. 3). The collection number 281 is not written on very many of the specimens, only recorded in the now lost manuscript, from which it was registered by JUNGHANS (1961, 1962) and HEPPER (1976). Hepper occasionally overlooked a specimen in G-DC, for example one of *Momordica foetida* Schumach. (*Cucurbitaceae*) [G00489866], which was given by Thonning to Puerari. HEPPER (1976: 52) did however record a duplicate deposited at C [C10004194], which originated from Vahl's herbarium and numbered 85 in Thonning's manuscript.

Candolle and Hornemann; typification of Tricliceras pilosum

The connection between Candolle and the botanists in Copenhagen starts long before the arrival of the Puerari herbarium and was of long standing, as a noteworthy correspondence between Hornemann and Candolle testifies (21 letters; HORNEMANN, 1809–1838). In the first of these letters, dated 7 April 1809, Hornemann reintroduces himself by mentioning how originally he had met Candolle in Paris, probably being introduced by Martin Vahl, who was also in Paris at that time. In a letter, dated 2 June 1838, Hornemann recollected how he and Niels Hofmann Bang, a Danish gentleman botanist, had met Candolle with René Desfontaines in Paris in 1799 (Fig. 5). This is the last preserved letter from Hornemann to Candolle, and they both died in 1841. By 1819, there had also been personal contact between J.F. Schouw and Candolle; in this line CHRISTENSEN (1924–1926) recorded how Schouw spent the months of September and October of 1819 in Geneva, while he studied in the herbarium and library and discussed ideas about plant geography with Candolle.

HORNEMANN (1829) was interested in Candolle's treatment of the Guinean plants and recorded in his review of *Beskrivelse* this about the Copenhagen-Geneva connection: “that Professor De Candolle [sic!], who by the Puerarian Herbarium has had occasion to examine many of Thonning's discoveries, does not always have the same view as the present editor [Schumacher]; for example, De Candolle considers *Indigofera ferruginea* to be identical to Jacquin's *Indigofera hirsuta* [...]”. This statement can be traced in G-DC, but it seems that Hornemann here confused references to two different Thonning collections of *Indigofera* L. (*Fabaceae*) in G-DC, both received from Thonning via Puerari, and cited in the *Indigofera* treatment of the second volume of the *Prodromus*

(CANDOLLE, 1825b): under the entry number 65 for “*I. hirsuta* (Linn., syst. Spec. 1062. non Jacq)” is cited the specimen “Thonning in herb. Puer.” (G-DC [G00497702]) (CANDOLLE, 1825b: 228) and under the entry number 86 for “*I. pulchra* (Willd. spec. 3 p. 1239)” is cited the specimen “*I. ferruginea* Thonn. In herb. Puer.” (G-DC [G00497610]) (CANDOLLE, 1825b: 230).

These early links between Copenhagen and Geneva are well exemplified by the establishment of the generic names *Tricliceras* Thonn. ex DC. in Geneva and *Wormskioldia* Schumach. & Thonn. in Copenhagen (formerly in Candolle's family *Turneraceae*, now *Passifloraceae*). ING indicates that Thonning is the authority of *Wormskioldia*, but normally the authority of a name proposed in *Beskrivelse* is attributed to the author that has contributed to the protologue of that name, and in the case of *Wormskioldia* both Thonning and Schumacher did. Here we follow this criterion, although SCHUMACHER (1827: 166) stated the following words in Danish at the end of the protologue: “I have named this genus after Morten Wormskiold ... known for his journeys in Greenland, the Kamchatka Peninsula and the Pacific.”

In the treatment of the genus *Raphanus* L. (*Brassicaceae*) for his *Systema Naturale*, CANDOLLE (1821: 662) transferred *Raphanus pilosus* Willd. (WILLDENOW, 1800: 562), a Guinean plant collected by Isert, to the genus *Cleome* L. (*Cleomaceae*) under the illegitimate name *Cleome raphanoides* DC. HORNEMANN (1819: 19) approximately suggested the same taxonomic position, which he referred to as *Capparides*, and stated that the plant represented a unique new genus with siliqua-like capsule with three valves, but he did not propose a name for it, probably because the note appeared in a phyto-geographical context. In 1821, 3 years before he received the Puerari herbarium, Candolle had seen a collection with an immature fruit which convinced him that Willdenow's name does indeed not belong to a *Brassicaceae* species. The exact identity of this specimen is not certain, but it may be one of the Isert collections mentioned below. Candolle had received collections from Hornemann as early as 1808 (100 collections) and 1813 (100 collections) (CANDOLLE, 1830). The collections of 1813, mentioned by Candolle as “*plantes étrangères* [foreign plants]”, most likely included collections from Guinea as a Hornemann letter dated 12 January 1811 notes “vous me ferrez un grand plaisir en faisant échanges avec moi; je pourrais vous donner quelques de la Guinée, des Antilles [you will give me great pleasure by making exchanges with me; I can give you some from Guinea, the Antilles]” (HORNEMANN, 1809–1838). In another letter dated 7 December 1821, Hornemann wrote “je vois dans le second volume de votre prestigieux *Systema* [...] que vous avez décrit quelques unes des plantes que j'avais l'honneur de vous envoyer de l'herbier Vahl et de mes propres collections. [...] Comme les plantes de l'herbier de Vahl n'appartiennent pas à moi, je vous prie de me les renvoyer



Fig. 3. – Original material at C of *Stychnos scandens* Schumach. & Thonn. (= *Ancylobotrys scandens* (Schumach. & Thonn.) Pichon). [Thonning s.n. [281], C] [C10004623; © Museum Botanicum Hauniense, University of Copenhagen]



Fig. 4. – Original material at G of *Stychnos scandens* Schumach. & Thonn. (= *Ancylobotrys scandens* (Schumach. & Thonn.) Pichon). [Thonning s.n. [28]], G [G00015118; Conservatoire et Jardin botaniques de Genève]

bientôt comme aussi les plantes de mon propre herbier [I see in the second volume of your prestigious *Systema* [...] that you have described some of the plants that I had the honor to send you from Vahl's herbarium and from my own collections. [...] As the plants of Vahl's herbarium do not belong to me, please send them back to me soon, as also with the plants from my own herbarium]. It is thus clear from this that Candolle was able to study collections from Guinea before 1824, but it is not always possible to conclude if such specimens that were sent on loan are now to be looked for at G, G-DC or at C.

After studying Thonning's collections received through Puerari, CANDOLLE (1826b: 56) finally described Hornemann's intended new genus and named it *Tricliceras*. This name followed an annotation by Thonning on the verso of a sheet in G-DC [G00207149] collected by Thonning (see note below) but not mentioned in the manuscript of *Beskrivelse* (JUNGHANS, 1962: 93); Thonning's diagnosis of *Tricliceras*, which Schumacher used to characterise the genus *Wormskioldia*, is cited from the verso of the same sheet [G00207149] (Fig. 6). A collection at G [G00341941] (Fig. 7) must have been made by Isert, as it was collected at the fortress of Ada [Kongensten] in 1784, at a time when Isert was commander of the fortress, and 15 years before Thonning arrived in Africa. A second specimen in G-DC [G00207172] (image available in the CHG, 2021) is also said to have been collected by Isert and did not come through Puerari; its origin is unknown, but it may possibly have come through Hornemann. Both Isert collections in Geneva are most likely duplicates of original material studied by Willdenow in Berlin but not traced by HEPPER (1976: 126) in B-W (see above), and not discovered at Berlin since. The currently accepted name for the species is *Tricliceras pilosum* (Willd.) R. Fern. Original material of *Wormskioldia heterophylla* Schumach. & Thonn. (SCHUMACHER, 1827: 165), collected by Thonning, is also extant at C [C10004721]. Thonning's collections of this plant were numbered 297, but the number only appeared in the lost manuscript, not on the specimens G00207149 or C10004721 (Fig. 8). A duplicate of either an Isert or a Thonning collection is also extant in P [P04766699] originating from Adrien de Jussieu herbarium although it is not recorded by HEPPER (1976).

ING (2021) records both *Tricliceras* [1826] and *Wormskioldia* [1827] as based on the same specimen, but does not specify on which or how. *Tricliceras raphanoides* (DC.) DC. (= *Cleome raphanoides*), the illegitimate type species of *Tricliceras*, is based ultimately on *Raphanus pilosus*, an Isert collection at B-W (WILLDENOW, 1800), while SCHUMACHER (1827: 165) based the diagnosis of the only species in *Wormskioldia* on material collected by Thonning. However, by citing both *Raphanus pilosus* and *Cleome raphanoides* as synonyms of *Wormskioldia heterophylla*, this latter name is illegitimate for being superfluous as the type of *W. heterophylla* is thus the same as that of *Raphanus pilosus* (TURLAND et al. 2018:

Art. 7.5 and 52), not the Thonning collection, as LEWIS (1954: 11) and GILBERT (2000: 72) have indicated. Likewise, the generic name *Wormskioldia* is illegitimate because it includes the type of the previous validly published name *Tricliceras*. The type specimen of Willdenow's *Raphanus pilosus* has not been traced at B-W. LEWIS's (1954: 11) indication of the Thonning specimen at C as holotype of both *Wormskioldia pilosa* (Willd.) Schweinf. ex Urb. and *W. heterophylla* cannot be accepted as an implicit lectotypification. FERNANDES (1975) did not typify *Tricliceras pilosum* when she proposed the new combination. This is done below:

Tricliceras pilosum (Willd.) R. Fern. in Bol. Soc. Brot., sér. 2, 49: 23. 1975.

= *Raphanus pilosus* Willd., Sp. Pl. 3(1): 562. 1800.

Lectotypus (designated here): GHANA: "Ada" [Kongensten], 1784, *Isert s.n.* (G [G00341941]!; isolecto-: G [G00207172]!). Holotypus: B-W†.

Notes. – The Isert collections at G [G00341941] (Fig. 7) and G-DC [G00207172] are considered duplicates of the now lost original material at B-W. The specimen in G [G00341941] has an annotation in an unknown hand "lecte Ada Guinea 1784", indicating that it was collected at Ada [Kongensten] 16 years before Willdenow published the name and before Thonning came to Guinea; another annotation, almost certainly in Schumacher's hand (compare HEPPER, 1976: Plate 2c), "*Wormskioldia heterophylla* in Collectan. Pentandria trigyna." "Collectan.[ea]" almost certainly refers to a preliminary title of one of the manuscript versions of *Beskrivelse* (see HEPPER, 1976: Plate 2 for other examples of references to "Collectan."). The final title in Danish for *Beskrivelse* was caused by the statutes of the Royal Danish Academy, requesting that its publications used Danish language (LOMHOLT, 1950, 1962). The annotation "*Cleome raphanoides* DC." has been added by Candolle. On the verso there is an annotation in what is probably Hornemann's hand "est Pentandria trigyna teste Thonning". The specimen in G-DC [G00207149] (image available from the CHG, 2021) bears on the verso (Fig. 6) the name "*Tricliceras coronopifolia* Thonning" in Thonning's hand and Thonning's generic diagnosis, which is identical with the one used in the protologue of the genus *Wormskioldia* in *Beskrivelse*; further annotations are "g.[enus] n.[ovum] 5^{ia} trigynia habitu Cleomes" and "e Guinea dedit Inventor cl.[arissimus] Thonning". The only old annotation on Thonning's specimen at C [C10004721] (Fig. 8), which has at some point been kept in Vahl's herbarium, states "*Novum genus Pentandrium monogyna. Capsula trivalvis. Thonning a Guinea.*". This annotation is in Vahl's hand and thus indicates that already in 1804, before Vahl died, he and Thonning were aware that the specimen represented a new genus. Instead of following Thonning's intended genus *Tricliceras*, which Candolle did,

Mon Ami Monsr. Hofmann Bang, que vous avez connu a Paris
 en 1799 chez Monsr. Desfontaines, se proposant de vous aller voir a Geneve,
 je profite de l'occasion pour vous faire mes compliments et pour me
 renouveler dans votre souvenir. -- Monsr. Hofmann vous racontera mes mal-
 heurs du dernier temps et combien j'ai été malade, mais que je suis a present un
 peu retabli, et que je m'interesse tant qu'auparavant a notre science commune.
 -- J'ai lu dans les journaux que vous étiez aussi bien malade mais que vous
 êtes a present retabli, ce que m'a fait beaucoup de plaisir. J'espere que votre
 santé se prolongera tant que votre renommée s'accroit et que vous jouirez le plaisir
 d'achever vos ouvrages importantes et considerables.

Vous m'avez, il y a long temps recommande de vous envoyer les cahiers de la flora da-
 nica, comme ils paraîtront et c'étoit aussi mon intention, mais j'ai toujours
 manqué d'occasion faire. Il y en a a present 38 cahiers, de maniere que toute l'ouvrage
 contient 2280 tables et plus que 3000 figures des plantes différentes. Vous verrez
 aussi, s'ils viennent chez vous, que l'execution et l'illumination est devenu meilleure. --
 J'ai recu beaucoup de plantes rares pour la fl. dan., principalement du Grönlande. Monsr. J.
 Vahl, un fils du celebre Prof. Vahl, y a voyagé pendant 7 ans et a trouvé plusieurs plantes nou-
 velles et quelques unes de celles qu'ont decouvert Messr. Parry, Franklin, Ross etc. en Amerique.
 Monsr. Vahl est a present allé en Norvege pour rejoindre l'expédition française qui va a Spitsber-
 gen -- On cultive a present ^{beaucoup} la Botanique en Dannemark. Nous avons des Botanistes aux
 Antilles, Cap, en Bresil et un jeune Homme se prepare pour un voyage ~~en~~ a Mexico jusque
 aux Californie. -- Savez vous si les collections de Monsr. Scopernont sont arrivees en France.
 C'étoit grand dommage pour les branches différentes d'Histoire naturelle qu'il est mort aussi
 tot. J'ai lu avec interet ses lettres qui sont imprimees apres sa mort, mais qui
 peut être, n'auront été publiées s'il n'avoit fini sa carrière aussi tot. Espere en publiera
 quelques unes de ses manuscrits ?

Copenhague. le 2^m Juin 1838

Salut Respect et Amitié!
 J. W. Hornemann.

Si vous pourriez vous procurer un commisnaire a Hambourg, j'enverrai volontier les cahiers
 de la Flora danica jusque la. -- vous souhaiter sans douter les cryptogames seulement illumines.

Fig. 5. – Latest preserved letter from Jens Wilken Hornemann to Augustin-Pyramus de Candolle, dated 2 June 1838. [Archives, Conservatoire et Jardin botaniques de Genève]

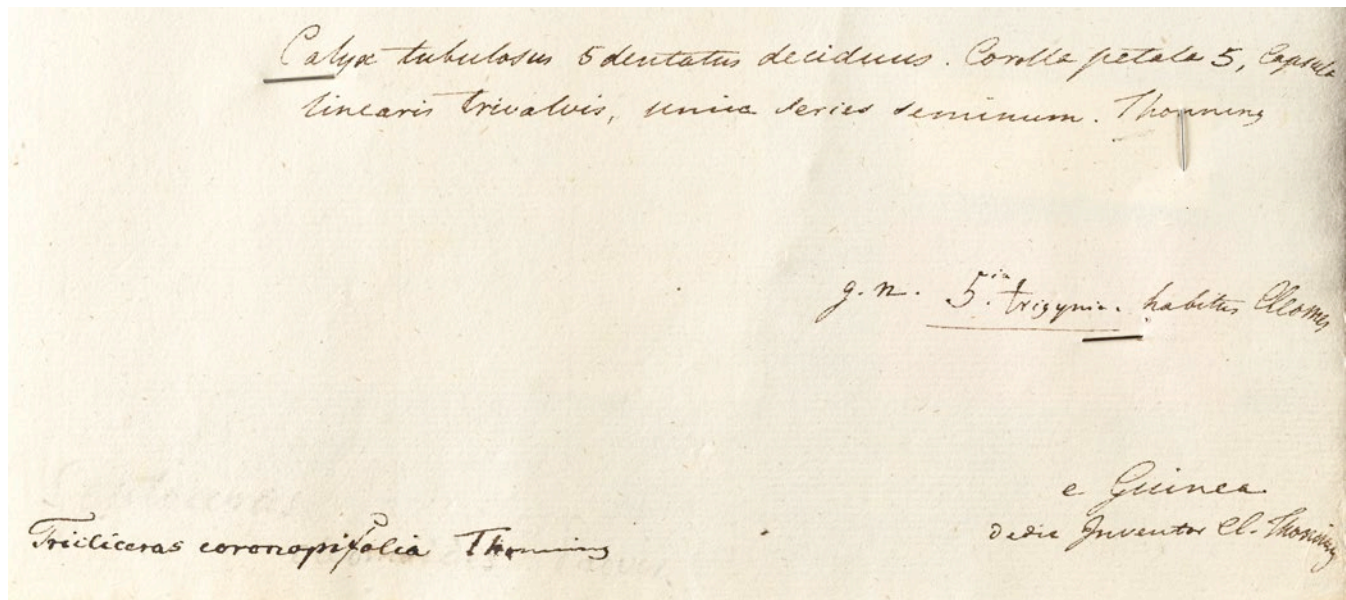


Fig. 6. – Annotations on the verso of the original material of *Wormskioldia heterophylla* Schumach. & Thonn. (= *Triliceras pilosum* (Willd.) R. Fern.) at G-DC showing “*Triliceras coronopifolia* Thonning” in Thonning’s hand. [Thonning s.n. [297], G-DC] [G00207149; Conservatoire et Jardin botaniques de Genève]

SCHUMACHER (1827: 166) preferred the name *Wormskioldia* in order to keep the sequence of new genera named after prominent Norwegian and Danish botanists: *Benzonia*, *Buelowia* Schumach., *Deinbollia*, *Lundia* Schumach. [non DC.], *Rathkea* Schumach. and *Sommerfeldtia* Schumach. The annotations on G00341941 (Fig. 7) and G00207149 dealing with the nomenclatural changes are late; they are signed and dated “A. DC. [Alphonse Pyramus de Candolle] 1852”, and represent the sequence of proposed names associated with the species up to that year.

Publication of *Beskrivelse*

The Royal Danish Academy of Sciences and Letters decides to publish Beskrivelse

While there was intense activity with regard to the study on the species level of the Guinean plants both in Geneva and in Copenhagen, the large manuscript of *Beskrivelse* was still waiting for a publisher. It was not until 1826, when the Royal Danish Academy of Sciences and Letters, after a vacancy of four years, appointed J.F. Schouw as the new editor of the Academy’s *Skrifter* [“Writings”, in the following referred to as *Skrifter*] that some progress was made with the publication of the Guinean plants. From that year we have the first and only mention of Schumacher and Thonning’s work in the Society’s minutes of meetings through a note by the Academy’s Secretary, H.C. Ørsted from 30 June 1826: “3010. The Secretary proposed that Prof. Schouw should be elected Archivist [editor of the publications] [...], receiving for this 200 Rix Dollars in salary. Accepted. [New paragraph.] (93v) 11 [corrected to 3011].

Proposal to include Schumacher’s *Beskrivelse* of Thonning’s Guinea Plants in the publications of the Academy. Accepted” (VIDENSKABERNES SELSKAB, 1779–1982: Parcel 811889). The same day, one of the officials at the Academy drafted a note for its annual report about the decision to publish *Beskrivelse*, which was included in the Academy’s *Oversigt* ... [“Review”] covering the time from 31 May 1825 to 31 May 1826 [sic! – not delaying the information about the decision to the *Oversigt* for the next year, although it dealt with a note from a meeting in June 1826, which was after the formal closing date of the report for the year 1825–1826] (ANONYMOUS, 1826). The text about this decision in *Oversigt* is almost identical with part of Schumacher’s introduction to *Beskrivelse*. It seems that the original text must have been Schumacher’s for his introduction to *Beskrivelse*, but the wording in *Oversigt* is slightly modified, probably either by the secretary of the Academy, Ørsted, or by the Academy’s new editor, Schouw.

It was a rule of the Royal Danish Academy of Sciences and Letters that papers published by the Academy should be formally presented in a session of the Academy (LOMHOLT, 1950, 1962), but the archival studies have not revealed that such a formal presentation ever took place. Schumacher suffered from failing health and died in December 1830, just over one year after the second part of *Beskrivelse* appeared in the serial version. Schumacher’s portrait in Fig. 2B shows him in formal, but civil outfit, frock or tail coat and cravat, wearing the cross of the Royal order of Dannebrog, which he received in 1811, and the portrait is therefore probably from the long years while he was working on *Beskrivelse*.

Preprints from the Royal Danish Academy of Sciences and Letters in the early 19th century

The sheer size of *Beskrivelse* was apparently a serious problem for the Academy: in print, it would be almost twice as large as the annually published volumes of the Academy's *Naturvidenskabelige og Mathematisk Afhandlinger* [Papers on Natural Sciences and Mathematics], a new series started in 1819 on the initiative of H.C. Ørsted (LOMHOLT, 1950: 29–30), and no other paper published by the Academy during the first decades of the 19th century was so large. A further complicating factor was that almost throughout the 19th century the publication of papers in *Skrifter* had to await completion of the entire yearly published volume before formal distribution (LOMHOLT, 1950: 103). One way by which the Academy could alleviate the long waiting time caused by this was to allow the distribution of preprints. LOMHOLT (1950: 137) wrote: “The question of actual preprints, that is earlier printed copies of the papers for the authors, was first mentioned in the Academy meeting on February 7, 1800.” The Academy decided: “that the authors of papers in the Academy's *Skrifter*, who would wish to obtain preprints of their papers, may, when they request it, take from 20 to 30 impressions of them.” The history of the preprint of *Beskrivelse* (Fig. 9), to be published over two years later in *Skrifter*, represents a particularly complicated example of this problem.

Despite searches in the Academy's archives for the relevant period (VIDENSKABERNES SELSKAB, 1779–1982) nothing further could be found about the printing of *Beskrivelse*. The publications of the Academy were, at the time when *Beskrivelse* was published, sold in commission through the still existing publishing house Gyldendal (mentioned by PETETIN, 1829), but the archives from Gyldendal do not provide any information regarding publication or sale of *Beskrivelse* (GYLDENDALS BOGHANDEL, 1985). Neither the catalogue from the printer, Hartvig Friderich Popp's Bogtrykkerie, provided any additional information (ANONYMOUS, 1828). The Academy's preprints were generally not intended for sale, but for distribution as gifts from the authors.

KEAY (1962: 58) wrote that “the date of publication of this work [*Beskrivelse*] is a vexed question amongst botanists” with regard to the long overdue publication of *Beskrivelse* and the consequent problems with the priority of the names of the new species described therein. Another example of competition for priority between names published in *Beskrivelse* and other contemporary works exists in the genus *Combretum* Loeffl. (*Combretaceae*). In March 1826, in the Linnean Society of London, George Don presented a manuscript with a taxonomic revision of all species in *Combretum*, with new species based largely on material collected in West Africa by Smeathman and Afzelius. Don's manuscript was published in December 1827 (DON, 1827; RAPHAEL, 1970) and included the new species *C. smeathmannii* G. Don. The same species was

also described in *Beskrivelse* at an unspecified date in 1827 (see below) under the name *C. mucronatum* Schumach. & Thonn. LAWSON (1871: 426) first synonymised *C. smeathmannii* with *C. mucronatum*, and this latter name is accordingly treated as having priority over the former (TURLAND et al., 2018: Art. 11.5). This taxonomic view has therefore become established usage followed by all the successive flora treatments including HEPPER (1976: 39).

Beskrivelse in reviews, bibliographies and libraries; 1827 is the accepted year of publication

Different interpretations of the publication process of *Beskrivelse* have been offered in reviews and bibliographies. The review by HORNEMANN (1829: 315–323) mentioned only the preprint from 1827 and it apparently accepted that the entire preprint was published at once and was to be dated from 1827. A review from the same year by PETETIN (1829: 137–138) again mentioned only the preprint as one comprehensive publication. OKEN (1848: 93–142) reviewed all dissertations in the Academy's scientific series from the 3rd to the 6th volume, and a preprint from 1827 was not mentioned there. PRITZEL (1851: 271) referenced only the preprint as published in 1827, but ERSLEW (1868: 115) began suggesting that the preprint had been issued in two parts, one dated 1827, and one undated. WARMING (1880–1881: 87) seems to suggest that the preprint appeared in two parts, but both dated 1827. In the G library, there is a copy of the preprint dated 1827, originating from the Candolle library; in this volume there is a postcard sent from Kolderup Rosenvinge, librarian at the Botanical Museum in Copenhagen, to Eugène Autran, curator of Boissier's herbarium. This postcard comes from the book in Boissier's library now at the University Library of Basel after the merger of Boissier and Candolle's libraries. On it, Kolderup suggested that the preprint not only was printed in two parts, but that the second part might have been printed as late as 1829 (or perhaps in 1828); however, finding such information in the literature was impossible for him. CHRISTENSEN (1924–1926: 116–117) did not mention this idea but recorded the entire preprint as published in 1827. In his later biographies of Thonning, CHRISTENSEN (1942: 601; 1983: 509) dated only a postulated first part of the preprint from 1827 and gave no information regarding the publication of a second part.

MARSHALL (1953: 280) quoted the librarian at the Botanical Museum in Copenhagen, by then probably Mogens Skytte Christiansen, for a confirmation that the entire preprint had been published in 1827. STEENIS-KRUSEMAN & STEARN (1954: CCXII) quoted via A.W. Exell that Carl Christensen in a letter written in 1936 had considered it highly improbable that the preprint was finished in 1827, being otherwise likely finished in 1829. STAFLEU & COWAN (1985: 399) expressed doubts about the fact that the second part was pre-printed with the first one, but in the absence of evidence to the



Fig. 7. – Lectotypus of *Raphanus pilosus* Willd. (≡ *Triliceras pilosum* (Willd.) R. Fern.) at G. [A. Recto, above; B. Verso, below] [isert s.n., G] [G00341941; Conservatoire et Jardin botaniques de Genève]

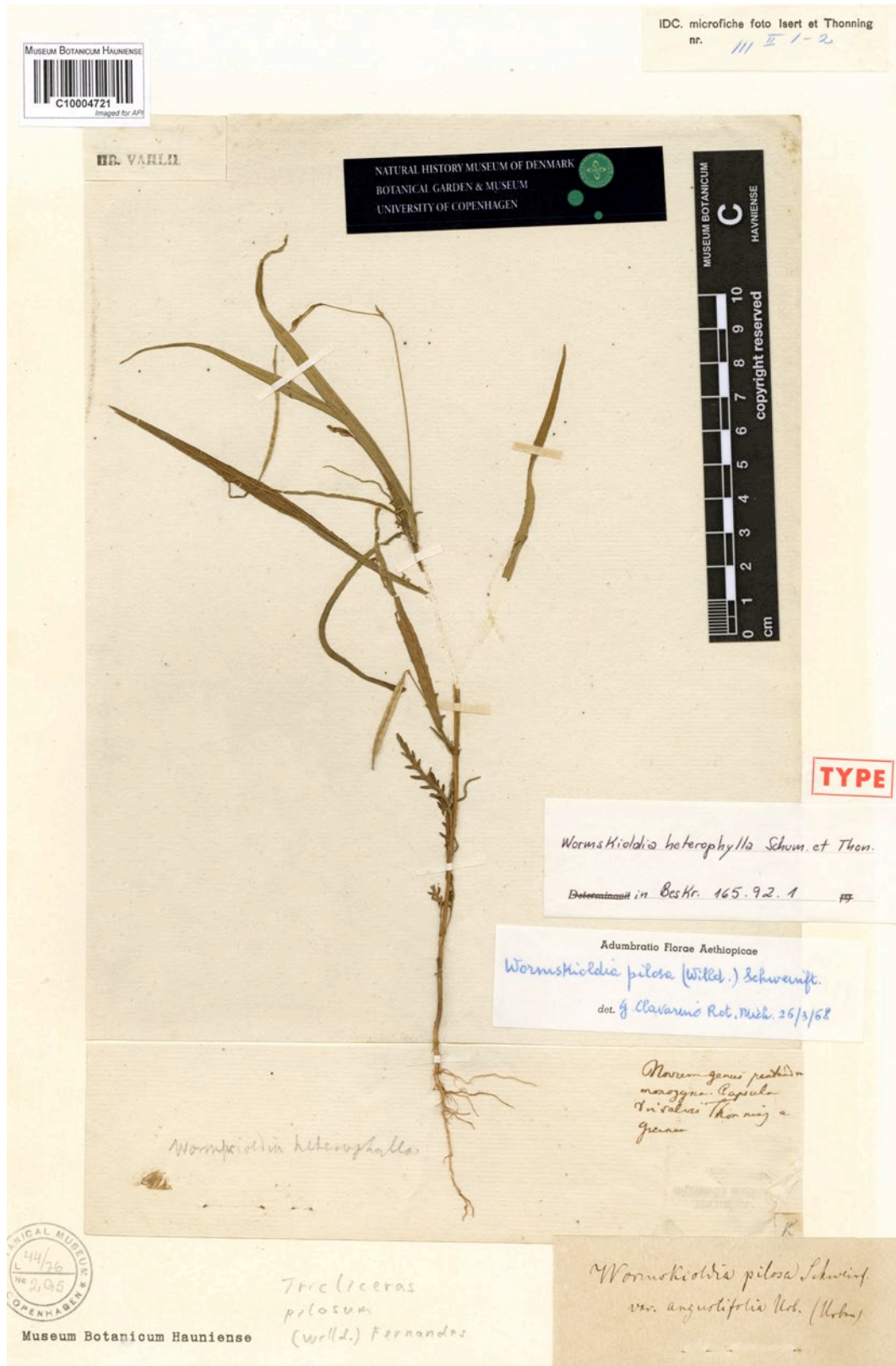


Fig. 8. – Original material of *Wormskioldia heterophylla* Schumach. & Thonn. (= *Triliceras pilosum* (Willd.) R. Fern.) at C. [Thonning s.n. [297], C] [C10004721; © Museum Botanicum Hauniense, University of Copenhagen]

contrary, these authors resolved that 1827 must be accepted as the year of publication.

When the contents of the two versions, the preprint of 1827 and the version in *Skrifter* from 1828–1829, are seen side by side, it appears that they are almost identical, apart from the pagination, the sheet signatures, a few lines rearranged on the first page of the 1829-part in relation to the preprint and the presence of an index to genera in the 1827 preprint. Also the title page of the preprint and the first page of the version in *Skrifter* are almost identical, but, as it can be seen on Fig. 9, the preprint bears at the bottom an indication in Danish stating that it was separately printed from the Royal Danish Academy of Sciences' *Skrifter* in Copenhagen in 1827.

It is hardly to determine from the typography which setup of the text is the original, the one in the preprint or that in *Skrifter*. It seems perfectly conceivable that the page-setting was completed for the entire preprint at once after which the page-setting was divided and provided with new pagination, sheet signatures and decorative border for the two volumes of *Skrifter* in 1828 and 1829. This would agree with the way in which the Academy had promised preprints for authors due to the long publication time of *Skrifter* (LOMHOLT, 1950: 137). In any case, the fact that no library appears to have printed material consisting merely of the first 228 or the last 236 pages of the preprint suggests that the preprint was distributed as an entity, whether this happened in 1827, in 1829, or at an intermediate time.

Copies of the preprint, dated 1827, with 466 pages and index to the entire work, are found in a number of institutions in Europe and the United States: Arnold Arboretum Library in Cambridge, Bibliothèque centrale of the Musée national d'Histoire naturelle in Paris, Conservatoire et Jardin botaniques in Geneva, Library of the University of Illinois in Champaign [available at <https://www.biodiversitylibrary.org/item/109358>], Natural History Museum in London, Royal Botanic Gardens in Kew, Royal Library of Denmark [available at <http://www5.kb.dk/e-mat/dod/130016912175.pdf>] and the library of *Statens Naturhistoriske Museum* [the Natural History Museum of Denmark].

According to the ICN “the date of effective publication of new plant names is the date on which the printed matter or electronic material became available” (TURLAND et al., 2018: Art. 31.1). As it has not been possible in the Academy's archives to find documentation of a date on which the preprint became available, and the many complete copies preserved in scientific libraries indicate that the preprint was distributed as one publication (which would definitely also make the most sense), we are left with a number of questions about the earliest distribution of the text. Also according to ICN, the date or year of publication indicated in a printed work with new species must be accepted as correct, unless there is evidence to the contrary (TURLAND et al., 2018: Art. 31.1), and distributed

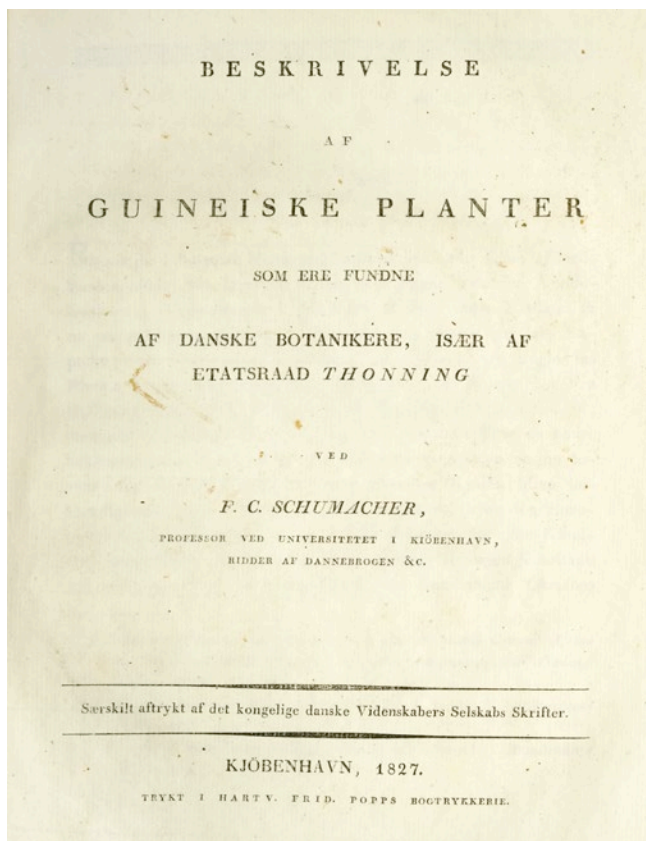


Fig. 9. – Title page of the 1827 preprint of *Beskrivelse af Guineiske Planter*.

[Bibliothèque, Conservatoire et Jardin botaniques de Genève]

preprints of articles in journals are accepted as representing valid publications (TURLAND et al., 2018: Art. 31.1, ex. 2). And finally, when separates from periodicals are issued in advance, the date on the separate is accepted as the date of effective publication unless there is evidence that it is erroneous (TURLAND et al., 2018: Art. 31.3). The year 1827 has therefore to be accepted as the year of publication of the entire preprint, which will also serve nomenclatural stability best.

Early appreciation of Beskrivelse in Hooker's Niger Flora in 1849

A small aftermath at a meeting of the Royal Danish Academy of Sciences and Letters in the spring of 1841 shows the respect that Schumacher and Thonning's work already enjoyed at that time. The hand-written minutes of the Academy's meeting report on 26 March 1841 concerning a decision to donate two volumes of *Skrifter* to a British expedition to Africa: “5074. Prof. Schouw petitioned that he, as announced, should send a copy of the two volumes of *Skrifter* with the deceased Prof. Schumacher's treatise on the plants on the coast of Guinea to the English Guinea Expedition, and demanded for this

the Academy's Approbation. Approved" (VIDENSKABERNES SELSKAB, 1779–1982: Parcel 811889).

The "English Guinea Expedition" is "The Niger Expedition of 1841", whose official purpose was to eradicate internal slave trade along the Niger River in West Africa. Though formally coordinated by a private British organisation, "The Society for the Extinction of the Slave Trade and for the Civilization of Africa," the expedition had the support of both Prime Minister, Sir Robert Peel, and the president of "The Society", Prince Albert. The expedition included three steamships, which were sent up the Niger River, but approximately a third of the expedition's European participants had died before the ships reached Lokoja, where the rivers Niger and Benue meet. The expedition turned around and went back to England. The botanist of the expedition, the German Theodor Vogel, for whom the copy of *Beskrivelse* was intended, died during the return journey on the island of Fernando Po (now Bioko) in the Gulf of Guinea, when he was only 29 years old. Not surprising that Schumacher had written in the introduction to *Beskrivelse* (SCHUMACHER, 1827: 6) that "an unfortunate fate seems to haunt those who dare to visit tropical Africa". The Society handed over Vogel's botanical collections to the Royal Botanic Gardens, Kew, where the work of publishing the results was entrusted to the director of the Gardens, William Jackson Hooker, who in 1849 published the next important work on the West African flora, the *Niger Flora* (HOOKER, 1849), with the help of the two younger British botanists, George Bentham and Joseph Dalton Hooker, W.J. Hooker's son.

We do not know if Thonning was aware about this interest in his work from England, but as a member of the board of the Royal Danish Museum of Natural History, he was probably well-informed. He did not live to see the praise of *Beskrivelse* in Hooker's *Niger Flora* in 1849, nor did he experience the frequent mention of his collections and observations in the *Flora of Tropical Africa*, which appeared in many volumes from 1868 until 1919 (STAFLEU & COWAN, 1981: 821–828), but his reputation as a botanist was assured after *Beskrivelse's* publication. Thonning's portrait in Fig. 2A shows him in this phase of his life. Having retired from his office as head of the colonial office, he was still wearing the imposing uniform of a high-ranking Danish civil servant, but in a more relaxed, unbuttoned manner than Schumacher's formal outfit.

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Danish Academy of Sciences and Letters, where Martin Vahl was elected member in 1791, H.C.F. Schumacher in 1808, J.W. Hornemann in 1813, and the three internationally known pioneers in plant geography, R. Brown, A.-P. de Candolle and J.F. Schouw in 1823, all three on the same day. The Danish author of this paper, elected member of that same Academy in 1990, was for many years responsible for the Danish set of the plant collections from Danish Guinea, and wish to thank all that have helped and still help to take care of these collections, particularly Dr. Olof Ryding at C, who scanned the entire Guinean herbarium. The Swiss author has consulted material in the herbarium (G, G-DC), library and archives at the Conservatoire et Jardin botaniques in Geneva and wishes to thank Jean-Philippe Chassot, Nathalie Rasolofoa, and Yvan Zeller for help with providing images of the Genevan collections. The images of scanned specimens and documents are reproduced with permission of the herbaria of C and G-DC; the engravings and lithographs are in public domain. The authors also thank Patrick Bungerner, an anonymous reviewer, and Joel Calvo for improving an earlier version of this text.

Unpublished sources

- CANDOLLE, A.P. DE (1830). *Catalogue de l'herbier d'après les époques et les origines des échantillons qui le composent*. Collection privée de Candolle, Genève.
- GYLDENDALS BOGHANDEL (1985). *Registrant over den Gyldendalske Boghandel, Nordisk Forlag A/S, dets arkiv frem til ca. 1924*. Document in the archives of the Royal Library of Denmark. <http://img.kb.dk/ha/reg/gyldendal.pdf>
- HORNEMANN, J.W. (1809–1838). *Correspondance with Augustin-Pyramus de Candolle*. Archives, Conservatoire et Jardin botaniques de Genève.
- PUERARI, M.N. (1819). *Letter to Augustin-Pyramus de Candolle*. Archives, Conservatoire et Jardin botaniques de Genève.
- VIDENSKABERNES SELSKAB (1779–1982). Archival material of the Royal Danish Academy of Sciences and Letters kept at *Rigsarkivet* [The Danish National Archives]. Parcel no. 809858, *Videnskabernes Selskabs Publikationer, Redaktør, etc.* [Royal Danish Academy of Sciences and Letters, publications, editor, etc.] 1 (1784–1919). Parcel no. 811889, *Videnskabernes Selskabs Mødeprotokoller* [Royal Danish Academy of Sciences and Letters, records of meetings] 4 (1822–1845). Parcel no. 813650, *Videnskabernes Selskabs Regnskaber* [Royal Danish Academy of Sciences and Letters, accounts] 10 (1829–1833). Parcel no. 813651, *Videnskabernes Selskabs Regnskaber* [Royal Danish Academy of Sciences and Letters, accounts] 9 (1810–1828).

References

- ANONYMOUS (1826). [Text without heading, beginning with “Blandt de i botanisk Henseende mindst bekendte Egne af Jordk-loden...”]. *Overs. Kongel. Danske Vidensk. Selsk. Forh. Medlemmers Arbejder. [31 Mai 1825 til 31 Mai 1826]*: 12–13.
- ANONYMOUS (1828). *Fortegnelse over Hartvig Frid. Pops Forlags- og Commissions Skrifter, som faas paa Østergade i Kjøbenhavn*. Copenhagen.
- APD [AFRICAN PLANT DATABASE] (2021). Conservatoire et Jardin botaniques de Genève et South African National Biodiversity Institute, Pretoria. [<http://africanplantdatabase.ch>]
- ASCHERSON, P.F.A. 1879. Botanisch-ethnographische Notizen aus Guinea. Aus den Aufzeichnungen von Thonning in Schumacher's Beskrivelse af Guineiske Planter. *Zeitschrift für Ethnologie* 11: 231–255.
- BROWN, R. (1818). Appendix No. 5. Observations, Systematical and Geographical, on Professor Christian Smith's Collection of Plants from the Vicinity of the River Congo. In: TUCKEY, J. H. (ed.), *Narrative of an Expedition to Explore the River Zaire, usually called the Congo, in South Africa, in 1816*: 420–480. London.
- CANDOLLE, A.-P. DE (1821). *Regni vegetabilis systema naturale*. Vol. 2. Paris.
- CANDOLLE, A.-P. DE (1825a). Notice sur quelques genres et espèces nouvelles de légumineuses, extraite de divers Mémoires présentés à la Société d'Histoire naturelle de Genève, pendant le cours des années 1823 et 1824. Première partie. Genres nouveaux. *Ann. Sci. Nat. (Paris)* 4: 90–98.
- CANDOLLE, A.-P. DE (1825b). Indigofera. *Prodr.* 2: 221–233.
- CANDOLLE, A.-P. DE (1826a). 22. Du genre Pueraria. In: *Mémoires sur la famille des Légumineuses*. Part 5: 252–255. Paris.
- CANDOLLE, A.-P. DE (1826b). *Plantes rares du jardin de Genève*. Fasc. 3. Genève.
- CANDOLLE, R. DE & A. RADCLIFFE-SMITH (1981). Nathaniel Wallich, MD, PhD, FRS, FLS, FRGS, (1786–1854) and the Herbarium of the Honourable East India Company, and their relation to the de Candolles of Geneva and the Great Prodromus. *Bot. J. Linn. Soc.* 83: 325–348.
- CHG [CATALOGUE DES HERBIERS DE GENÈVE] (2021) Conservatoire et Jardin botaniques de Genève [<http://www.ville-ge.ch/musinfo/bd/cjb/chg>].
- CHRISTENSEN, C.F.A. (1924–1926). *Den Danske Botaniks Historie med tilhørende Bibliografi. II. Bibliografi*. Copenhagen.
- CHRISTENSEN, C.F.A. (1942). Thonning, P. In: ENGELSTOFT, P. & S. DAHL (ed.), *Dansk Biografisk Leksikon*. Ed. 2. Vol. 23: 601. Copenhagen.
- CHRISTENSEN, C.F.A. (1983). Thonning, Peter. In: CEDERGREN BECH, S. (ed.), *Dansk Biografisk Leksikon*. Ed. 3. Vol. 14: 509. Copenhagen.
- DON, G. (1827). A review of the genus Combretum. *Trans. Linn. Soc. London*. 15: 412–441.
- ERSLEW, T.H. (1868). *Supplement til Almindeligt Forfatter-Lexikon, for Kongeriget Danmark med tilhørende Bilande indtil Udgangen af Aaret 1853*. Vol. 3, S–Ø. Copenhagen.
- FERNANDES, R.B. (1975). Turneraceae Africanæ: Notulæ systematicæ et taxa nova. *Bol. Soc. Brot., sér.* 2, 49: 13–27.
- FRIIS, I. (in press). Beskrivelse af Guineiske Planter (1827) – en dansk videnskabs- og publikationshistorie af international betydning. *Festskrift til Marita Akbøj Nielsen*. Copenhagen.
- GILBERT, M.G. (2000). Turneraceae. In: EDWARDS, S. et al. (ed.), *Fl. Ethiopia Eritrea* 2(1): 70–72.
- HEPPER, F.N. (1976). *The West African Herbaria of Isert and Thonning. A taxonomic revision and an index to the IDC microfiche*. Bentham-Moxon Trust, Royal Botanic Gardens, Kew.
- HEPPER, F.N. (1991). The Niger and the Nile: Botanical exploration around two African rivers. *Ann. Missouri Bot. Gard.* 78: 81–86.
- HOOKE, W.J. (1849). *Niger Flora; or, an enumeration of the plants of western tropical Africa [...]*. London.
- HOPKINS, D.P. (1996). Peter Thonning and the natural historical collections of Denmark's Prince Christian (VIII), 1806–07. *Nordisk Museologi* 1996: 149–164.
- HOPKINS, D.P. (1999). Danish natural history and African colonialism at the close of the eighteenth century: Peter Thonning's 'Scientific journey' to the Guinea Coast, 1799–1803. *Arch. Nat. Hist.* 26: 369–418.
- HOPKINS, D.P. (2009). Peter Thonning, the Guinea Commission, and Denmark's postabolition African colonial policy, 1803–1850. *William and Mary Quarterly*, Ser. 3, Vol. LXVI(4): 781–808.
- HOPKINS, D.P. (2013). Peter Thonning and Denmark's Guinea Commission: a study in nineteenth-century African colonial geography. In: SCHMIDT, B. & W. KLOOSTER (ed.), *Atlantic World Europe, Africa and the Americas, 1500–1830*. Vol. 24. Leiden.
- HORNEMANN, J.W. (1819). De Indole Plantarum Guineesium Observationes. In: ANONYMOUS (ed.), *Anniversaria in memoriam reipublicae sacrae et litterariae cum universae, tum Danicae nostrae restauratae. Celebranda indicit Regiae Universitatis Hauriensis rector cum senatu academico*: [3]–27. Copenhagen.
- HORNEMANN, J.W. (1829). [Review of] Beskrivelse af Guineiske Planter, som ere fundne af danske Botanikere, især af Etatsraad Thonning, ved F. C. Schumacher, Professor ved Universitetet i Kjøbenhavn R. af D, etc. Kjøbenhavn 1827. 4. 466 S. (Særskildt aftrykt af det Kongelige Videnskabers Selskabs Skrifter). *Maanedsskrift for Litteratur* 1: 315–323.

- HORNEMANN, J.W. & J.F. SCHOUW (1822). Oversigt af Botanikens Fremskridt og Tilstand i dette Aarhundrede. [Første del]. *Tidsskr. Naturvidensk.* 1: 127–191.
- HØYBYE, P. & E. SPANG-HANSSSEN (1979). Romansk sprog og litteratur. In: JENSEN, P.J. (ed.), *Københavns Universitet 1479–1979*. Vol. 9 [Det filosofiske Fakultet], Part 2: 231–266. Copenhagen.
- ISERT, P. (1790). *Neue Reise nach Guinea und den Caribäischen Inseln in Amerika, in den Jahren 1783–1787*, nechst Nachrichten von dem Negerhandel in Afrika. Berlin and Leipzig.
- ING (2021). Index Nominum Genericorum. [https://naturalhistory2.si.edu/botany/ing]
- IPNI (2021). International Plant Names Index. [http://www.ipni.org]
- JUNGHANS, J. (1961). Thonning's and Isert's collections from "Danish Guinea" (Ghana) in West Tropical Africa. *Bot. Tidsskr.* 57: 310–355.
- JUNGHANS, J. (1962). Thonning's and Isert's collections from "Danish Guinea" (Ghana) in West Tropical Africa. *Bot. Tidsskr.* 58: 82–122.
- KEAY, R.W.J. (1962). Botanical Collectors in West Africa prior to 1860. In: FERNANDES, A. (ed.), *Comptes rendus de la IVe réunion plénière de l'AETFAT (Lisbonne et Coïmbre, 16–23 septembre, 1960)*: 55–68. Lisboa.
- KRIEGER, M. (2017). *Nathaniel Wallich. Ein Botaniker zwischen Kopenhagen und Kalkutta*. Hamburg-Kiel.
- LAWSON, M.A. Combretum. In: OLIVIER, D. (ed.), *Fl. Trop. Afr.* 2: 416–433.
- LEWIS, J. (1954). Turneraceae. In: MILNE-REDHEAD, E. & W.B. TURRILL (ed.), *Fl. Trop. E. Africa*.
- LOMHOLT, A. (1950). *Det Kongelige Danske Videnskabernes Selskab 1742–1942. Samlinger til Selskabets Historie*. Vol. 2. Copenhagen.
- LOMHOLT, A. (1962). *Lærdoms-mosaik. Samlinger til det Kongelige Danske Videnskabernes Selskabs Historie*. Copenhagen.
- MARSHALL, H.S. (1953). Bibliographical Notes. *Kew Bull.* 8: 279–280.
- NEES VON ESENBECK, C.G.D. (1825). Systematische und geographische Bemerkungen über die von Herrn Professor Christian Smith in der Nachbarschaft des Congo-Stroms gesammelten Pflanzen. [Translation from English to German and commented by Nees von Essenbeck, based on data from Hornemann (1819)]. In: NEES VON ESENBECK, C. G. (ed.), *Robert Brown's vermischte botanische Schriften, in Verbindung mit einigen Freunden ins Deutsche übersetzt und mit Anmerkungen versehen*. Vol. 1: 167–226. Leipzig.
- OKEN, L. (1848). Det kongelige danske Videnskabernes Selskabs naturvidenskabelige og matematiske Afhandlinger. Dritter Theil – Sechster Theil. *Isis* 1848: 93–142.
- PETETIN, A. (1829). Beskrivelse af guineiske Planter, etc. – Description des plantes trouvees sur la côte de Guinée par des naturalistes danois, et principalement par M. Thonning, conseiller d'Etat, publiée par M. F. G. Schumacher, professeur a l'Universite de Copenhague. Copenhague, 1827; Gyldendahl. In 4° de 466 pages. *Rev. Encycl.* 44: 157–158.
- PRITZEL, G.A. (1851). *Thesaurus Literaturae Botanicae*. Leipzig.
- RAPHAEL, S. (1970). The publication dates of the Transactions of the Linnean Society of London, Series I, 1791–1875. *Biol. J. Linn. Soc.* 2: 61–76.
- RÖMER, L.F. (1760). *Tilforladelig Efterretning om Kysten Guinea*. Copenhagen.
- SCHOUW, J.F. (1824). Botanische Nachrichten aus Dänemark. *Flora (Regensburg)* 7: 284–285.
- SCHUMACHER, H.C.F. (1801–1802). *Enumeratio plantarum in partibus Sællandiae septentrionalis et orientalis*. Vol. 1–2. Copenhagen.
- SCHUMACHER, H.C.F. (1827). *Beskrivelse af guineiske planter som ere fundne af danske botanikere, isaer af Etatsraad Thonning*. Copenhagen.
- SCHUMACHER, H.C.F. (1828). Beskrivelse af guineiske planter som ere fundne af danske botanikere, isaer af Etatsraad Thonning. *Kongel. Danske Vidensk. Selsk. Naturvidensk. Math. Afb.* 3: 21–248.
- SCHUMACHER, H.C.F. (1829). Beskrivelse af guineiske planter som ere fundne af danske botanikere, isaer af Etatsraad Thonning. Andet Stykke. *Kongel. Danske Vidensk. Selsk. Naturvidensk. Math. Afb.* 4: 1–236.
- SEBSEBE DEMISSEW, H. BEENTJE, M. CHEEK & I. FRIIS (2017). Sub-Saharan botanical collections: Taxonomic research and impediments. *Scien. Dan.*, B 6: 97–115.
- SNORRASON, E. & G. NORRIE (1983). Schumacher, Heinrich Christian Friedrich. In: CEDERGREN BECH, S. (ed.), *Dansk Biografisk Leksikon*. Ed. 3. Vol. 13: 246–248. Copenhagen.
- STAFLEU, F.A. & COWAN, R.S. (1985). Taxonomic Literature. Vol. V: Sal–Ste. *Regnum Veg.* 112.
- STEENIS-KRUSEMAN, M.J. VAN & W.T. STEARN (1954). Dates of Publication. In: VAN STEENIS, C.G.G.J. (ed.), *Fl. Malesiana, Ser. 1*, 4(5): CLXIII–CCXIX.
- TURLAND, N.J., J.H. WIERSEMA, F.R. BARRIE, W. GREUTER, D.L. HAWKSWORTH, P.S. HERENDEEN, S. KNAPP, W.-H. KUSBER, D.-Z. LI, K. MARHOLD, T.W. MAY, J. McNEILL, A.M. MONRO, J. PRADO, M.J. PRICE & G.F. SMITH (2018). International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. *Regnum Veg.* 159.
- VAHL, M. (1804–1805). *Enumeratio plantarum, vel ab aliis, vel ab ipso observatarum, cum earum differentiis specificis, synonymis selectis et descriptionibus succinctis*. Vol. 1–2. Copenhagen
- VAHL, M. (1810). Beskrivelse over nye Planteslægter. *Skr. Naturhist.-Selsk.* 6: 84–128.

WARMING, J.E.B. (1880–1881). Den danske botaniske Litteratur fra de ældste Tider til 1880. *Bot. Tidsskr.* 12: 42–131, 158–247.

WILLDENOW, C.L. (1800). Raphanus. *Sp. Pl.* 3: 560–562.

WINSNESS, S.A. (1992). *Letters on West Africa and the Slave Trade: Paul Erdmann Iser's journey to Guinea and the Caribbean Islands in Columbia (1788)*. London.