Phycological Trailblazer No. 23 Franz Carl Mertens (father) and Karl Heinrich Mertens (son)

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Franz Carl Mertens (1764-1831) of Bremen, Germany, and his son Karl Heinrich Mertens (1796-1830) made a number of early contributions to phycology, but for various reasons their names are somewhat in the shadows. The illustrious Dawson Turner (1808) seconded the compliment earlier given by Weber and Mohr to Mertens by calling him "the most able algologist of our times". The fact that the junior Mertens was responsible for the original description of the giant kelp *Nereocystis luetkeana* is alone a sufficient reason to include his name also in this series of "phycological trailblazers". More about that later.

Franz Carl Mertens. Based on a sketch by his son. Courtesy of the Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, PA.

F. C. Mertens came from a noble but impoverished background. Because of their poverty, the family at first home-schooled Franz, their only son. It was his mother who was determined to get the best education for him; and so she sought out aid from city officials. It was arranged that Franz could attend classes with the son of a city official (Karg, 1999). Soon he showed his remarkable intelligence and a strong ambition. He received financial support that allowed him to attend the University of Halle, where he earned a degree. Soon he was appointed to a teaching position at Bremen Polytechnic College. But Franz had an overriding desire to pursue botany. In his youth, through a friend, Mertens had met Albrecht W. Roth, a physician and botanist in Oldenberg (Karg, 1999). The pair went on collecting trips together, and Roth (1797) honored him with the generic name *Mertensia* nom. cons. of the Boraginaceae. For the third volume of Roth's *Catalecta botanica* (1806), Mertens illustrated all of the algal plates and also provided the descriptions for some new algae, including such familiar species as *Colpomenia sinuosa* (Mert. ex Roth) Derbès & Solier, *Liagora distenta* (Mert. ex Roth) Lamouroux, and *Chondracanthus teedei* (Mert. ex Roth) Kütz. He also provided the descriptions of many new algal species appearing in Jurgens' exsiccata (1816-1822). Mertens traveled over much of Europe, visiting botanical gardens and meeting fellow botanists; He also carried on an active correspondence with contemporary scientists, including C. Agardh, Bory de Saint-Vincent, A P. De Candolle, Adelbert von Chamisso, Rene Desfontaines, and A. Palisot de Beauvois.

Owing to Mertens stellar reputation as an authority on marine algae, he received many collections from around the world. He shared specimens, from his herbarium with Turner and contributed two sketches, which were published in vol. Ill of Turner's (1809-1811) *Fuci*. Pl. 165 is *Fucus langsdorffii* [= *Coccophora langsdorffii* (Turner) Grev.], collected by Dr. Georg H. von Langsdorff on board Capt. Krusenstern's *Nadeshda* from "the coast of Japan" Pl. 193 (Fig. 1) is *Fucus fraxinifolius* [= *Neurymenia fraxinifolia* (Mert. ex Turner) J Agardh], the exquisite figure made by Mertens based on a specimen from the "East Indies" and

Fig. 1. *Fucus fraxinifolius* Mert. ex Turner [= *Neurymenia fraxinifolia* (Mert. ex Turner) J. Agardh]. Pl. 193 in Turner (1809-1811).

in Vahl's herbarium in Copenhagen. Turner's pl. 169 of *Fucus hemiphyllus* [=*Sargassum hemiphyllum* (Turner) C. Agardh] was based on a specimen loaned to Turner by Mertens. The single specimen in Mertens' herbarium was collected by Dr. Horner in Nagasaki, Japan.

Mertens made two trips to Paris to examine specimens brought back by the French expeditions. In 1814, he visited Paris with his younger son [Karl] Heinrich, and at that time they met many of the major French scientists, such as Lamarck, Antoine de Jussieu, Desfontaines, and Mirbel (Lütke, 1835-1836). They also met several other visitors including Alexander von Humboldt, Dawson Turner, W. J. Hooker, and another German visitor, August F. Schweigger from Königsberg (Ducker, 1981b). In 1816, Mertens returned to Paris, along with Schweigger, to continue their study of the French collections. According to Ducker (1981a) Mertens and Schweigger were the first German botanists to work on Australian algae. Mertens next step on this trip was to London to examine specimens in the herbaria of Turner and Sir Joseph Banks. Mertens had shipped ahead from Bremen to London his more interesting algal specimens along with sketches and his manuscript notes. But when he arrived in London, he discovered that his shipment had been ransacked and destroyed (Ducker, 1981b).

Fig. 2. *Fucus platylobium* Mert. = *Cystophora platylobium* (Mert.) J. Agardh. [Part of pl. 14, Mertens (1819)].

This setback and a later estrangement from his English colleagues may have contributed to his diminished overall productivity. A letter exists in which Mertens wrote to W. J. Hooker, by then Director of the botanic garden in Glasgow, complaining that he had not received any letters from his English colleagues for six years (Ducker, 1981b). Mertens 1819 publication was the only work on Australian algae that he completed (Fig. 2).

The son, Heinrich Mertens, was a student at the University of Göttingen and then studied medicine at the University of Halle. Professor Kurt Sprengel, one of his mentors at the latter university, offered to obtain a spot for Heinrich as naturalist-botanist on board the *Vostok*, under the command of Capt. Thaddeus von Bellingshausen, on its voyage to the Antarctic Seas (1819- 1821) (Lütke, 1835-1836). The Captain was fully expecting to pick up two non-Russian naturalists, the young Mertens of Halle and Dr. Kuntze of Leipzig, at the stop-over of the two ships, the *Vostok* and the *Mirnyi*, in Copenhagen with the idea that one of the naturalists would be assigned to each ship (Debenham, 1945). But instead, letters of regret from both Mertens and Kuntze were awaiting

the Captain at the stop-over, with explanations that the lack of time and the journey to Copenhagen precluded them from participating. Also, the senior Mertens was against the idea, insisting that his son complete his medical degree. The lack of naturalists on the two ships caused van Bellingshausen to realize that his expedition would be at a disadvantage.

So Heinrich went on to earn his degree and began practicing medicine in Bremen. But by 1824 his strong interest in natural history prompted him to travel to St. Petersburg in the hope of joining Kotzebue's expedition to the South Seas. But there was no space for him on that voyage (Ducker, 1981b). So he remained living in St. Petersburg until the opportunity arose for him to serve as a naturalist on a different voyage of exploration, that of the Russian expedition of 1826-1829 under the sponsorship of Tsar Nicholas I. Peace treaties had been signed with Great Britain and the United States, and thus warships were no longer needed to patrol the shores of Russia. The expedition consisted of two sloops, the *Moller* under the command of Capt.-Lieut. M. N. Staniukovich and the *Seniavin* under the command of Capt. Fedor Petrovich Lütke [sometimes transliterated as "Litke"]. For his part of the expedition, Lütke was charged with surveying the coasts of the Chukotsk [=Chukchi] Peninsula (eastern Russia) and the Alaska Peninsula, the north and south shores of the Okhotsk Sea, and the Shantarskie Islands (Pierce, 1987). The results of the two voyages were strikingly different in that Staniukovich had little interest in science, while Lütke had a great interest and stimulated the naturalists on board the *Seniavin* to pursue their inquiries with vigor. So it was fortunate that Heinrich was assigned to the *Seniavin*. He was primarily interested in plants and invertebrates. The second naturalist on the *Seniavin* was Baron F. K. von Kittlitz, an artist-ornithologist. Also along was the geology student Alexander Postels, originally from Estonia, who was assigned to make observations on mineralogy and geology (Alekseev, 1996). But Postels quickly revealed his great talent making sketches. So he became the primary draftsman and painter for the voyage. In fact, all three naturalists were skilled at making sketches of the biota during the long voyage.

On Aug. 20, 1826, the two corvettes sailed from the port of Kronstadt, making a quick stop in Portsmouth before sailing across the mid-Atlantic to Rio de Janeiro. The ships then sailed around Cape Horn to Chile, making stops and spending time at Concepcion and Valaparaiso. Next, the *Seniavin* sailed in a northwestwardly direction (toward, but not reaching, Hawaii) and then northeastwardly, reaching the sheltered harbor of "New Archangel"[= Sitka, Alaska] , on June 11, 1827 (Pierce, 1987). Mertens made use of a *baidarka* to reach nearby rocky islands and soon began collecting seaweeds and invertebrates. It was in this area that he encountered a new giant kelp, floating luxuriantly offshore. The sea otters were often seen contentedly resting, even sleeping, among the surface fronds. The Russians at the colony of Sitka had their own name for this seaweed: "sea otters' cabbage". In a letter back to his father, Heinrich described his observations including an account of this interesting new species of algae to which he gave the name *Fucus luetkeanus*. He also noted that the local peoples used the long stipes as fishing line and the hollow parts as a siphon to pump water out of their *baidarkas*. The senior Mertens communicated his son's observations of this and other "*Fuci*" to von Schlechtendals journal *Linnaea* (Mertens, 1829a). In this way *Nereocystis luetkeana* (Fig. 3) was first described. Mertens' detailed description of *Fucus luetkeanus* was repeated in English in Hooker's *Botanical Miscellany* (Mertens, 1829c), and this latter translation was repeated in full by Harvey (1852). Another account from a letter to a friend in St. Petersburg was also published (Mertens, 1829b, d). In describing his ascent of a mountain near Sitka, climbing through the "lofty forests", Mertens showed his deep knowledge of the plant species (ferns, conifers, and flowering plants). The natives around Sitka (now known as the Tiingits) were called "Kaloches" by the Russians. Unlike the Kaloches of Nootka Sound in the south, the Kaloches of Sitka were not cannibalistic, but

Fig. 3. *Nereocystis luetkeana* (K. Mert.) Postels & Rupr. [Postels & Ruprecht, 1840, pl. 9.]

captured prisoners of war were often turned into slaves. At communal celebrations a slave might be sacrificed (Pierce, 1987). Such a “celebration” involving the strangulation of a slave had occurred just before the *Seniavin* had arrived at Sitka. Mertens learned that the victim’s body lay in a thicket near the shore, and so with an assistant he located the body and severed the head. They placed it inconspicuously in Mertens' satchel for botanical specimens and took it back to the safety of the ship. Examples of the "natural history" collections enumerated included 100 species of amphibians, 300 species of fish preserved in alcohol, 700 species of insects, 150 species of crustaceans, and “some skulls of savages" (Pierce, 1987). So this would explain the provenance of at least one of those skulls. It was certainly not a "politically correct" age.

After staying at Sitka for about 6 weeks, the *Seniavin* set sail for Unalaska, then south to the Pribilofs, westward to St. Matthew Island, and then over to the port of Petropavlovsk, Kamchatka. The winter of 1827-1828 was spent in the Caroline Islands in the South Pacific, discovering, surveying, and describing a number of atolls. The ship returned to survey the east coast of Kamchatka and the northern part of the Bering Sea during the summer of 1828. They returned to the western Carolines to spend the winter of 1828-1829. The *Seniavin* returned to Kronstadt on August 23, 1829. The *Moller* had arrived at Kronstadt two days earlier. During their three years at sea, the two ships had spent more time apart than together.

By the end of the voyage Mertens' herbarium contained more than 2,500 seed plants and ferns, complemented by a collection of seaweeds. Some of Heinrich’s algal specimens, in the freshly collected condition, had been painted by Postels, and these plates (e.g. fig. 3) were included in the *Illustrationes algarum* of Postels & Ruprecht (1840). Collections made by G. Kastalsky, naturalist on the *Moller*, were also included in this magnificenf tome (Setchell & Gardner, 1903). Mertens had painted at least 100 crustaceans from living specimens, and he had also painted molluscans, annelids, radiata, and acalephs (jellyfish). Some of these invertebrates are extremely delicate, and so it would have been impossible to preserve them. All three naturalists, Mertens, Postels, and Kittlitz, also did more general landscapes to capture the vegetation, and these sketches comprised the Atlas for the French version of Lütke’s (1835-1836) account of the voyage.

Mertens' collections of algae, plants, animals, and artifacts (native handicrafts) were deposited in museums in St. Petersburg, including the Komarov Institute. According to Shetler (1967), many of Mertens' collections made from Sitka, Alaska in 1827 did reach St. Petersburg, unlike many of the other collections made in Alaska in that period, and those specimens were the basis for one of the earlier publications on the Alaska flora, namely "Observations sur le Végétation de l’Ile de Sitcha” by H. G. Bongard (1833). One such new species described by Bongard was *Picea mertensiana*, now *Tsuga mertensiana*, the mountain hemlock.

Later, in 1830 Lütke was ordered to command some maneuvers of three frigates as training exercises for naval cadets. Heinrich Mertens, who by that time was associated with the Academy of Sciences and the naval department, willingly agreed to participate in these maneuvers in the Baltic sea and the North Atlantic (around the British Isles, to the shores of Iceland, then to Brest, France, and back to

Kronstadt) (Alekseev, 1996). An outbreak of typhoid hit the frigate *Prints Oranskii*, and seventy of the cadets became ill. Without any regard to his own health, Dr. Mertens worked to fight the epidemic. Then unknowingly infected, he left the ship and traveled to St. Petersburg, where he also came down with typhoid and died soon afterwards, on Sept. 17, 1830, at the age of 34.

Around 1960, thanks to the alertness of Dr. Mildred Mathias of UCLA, a bound volume of 263 letters of F. C. Mertens correspondence was found to be in the possession of Mertens' two elderly great-granddaughters living in Los Angeles, California. This treasure trove was purchased by Mr. and Mrs. Roy A. Hunt and was deposited in the Archives of the Hunt lnstitute for Botanical Documentation (Karg, 1999).

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