

# Philipp Franz von Siebold

## *A Medical Pioneer of the 250-Year Holland-Japan Legacy*

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**F**or almost 250 years, the Dutch held exclusive trading rights with Japan from the island of Deshima at Nagasaki. Holland encouraged surgeons on their trading ships to offer medical assistance to Japanese physicians—an act strictly forbidden at the time by the ruling shogun. Nevertheless, beginning in 1625, a long series of physicians persisted in these efforts, the most prominent among them being Philipp Franz von Siebold, who, beginning in 1822 and for the next 6 years, introduced European cataract surgery techniques that used pupillary dilatation from belladonna drops, until then unknown to Japanese ophthalmologists, as well as the sight-restoring optical iridectomy for secluded pupils. In addition, these Dutch physicians educated their fellow Europeans about the then-unknown Japan. Von Siebold and his predecessors have as their legacy the rapid modernization of Japanese ophthalmology and medicine.

Before the brief visit of the Venetian merchant Marco Polo to Japan in the 13th century, European contact with Japan was scant and European influence essentially nonexistent. In 1541, Portuguese vessels landed at Hirado on the island of Kyushu, and their sailors were considered barbarians by the Japanese. Within 3 years, the Portuguese had introduced the gun and, in 1549, Christianity, in the person of Francis Xavier, whose humility and generosity to the poor and sick accounted for his faith being widely accepted by the Japanese. This success led the shogun Hideyoshi to outlaw Christianity in 1589 and reduce further contacts with Europeans—by then, some trade with England, Spain, and Holland had begun. This policy was enforced by successive Tokugawa shoguns, who determined that trade with the West would henceforth be the exclusive franchise of the Dutch, who, unobtrusively, had been trading since 1597 at Hirado as well.<sup>1</sup>

In 1641, a man-made island called Deshima, adjacent to the port of Nagasaki (**Figure 1**), was created. It was

walled and closely guarded at 2 gates to ensure the shogun's ban on European influence in any form, whether books, religion, or culture. Only Japanese translators were allowed access to the island, and the commander of the Dutch East India Company was permitted to leave only every third year, later yearly, to travel to Edo and pay his respects to the shogun. The remainder of the time, he, along with his Dutch compatriots, were restricted to Deshima. This was to be the political and commercial climate within which the Dutch East India Company, headquartered in Java, Batavia (now Indonesia), was to function for almost 250 years. In 1853, the American Commodore Matthew Perry, in command of a flotilla of gunships, forced the shogun to accept open trade agreements with America and Europe. Effectively, this marked the end of the exclusive Dutch influence on Japanese medical teaching. Henceforth, European (primarily German) and American physicians would continue what the Dutch had so successfully begun.

The early Dutch medical tradition was established by the many physicians (each vessel to Deshima had a surgeon on board) visiting Deshima. One was Caspar Schamberg, a German in the employ of the

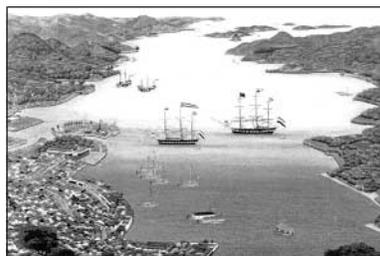
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Dutch East India Company, who from 1625 to 1640 established a school of surgery (Caspar Ryu-Geka) to enhance teaching of “Dutch” or Western medicine (*Namban-Ryu-Geka*). Japanese translators on Deshima were given medical lectures and training and were permitted to add “Surgeon of the Dutch School of Medicine” (*Oranda Ryu-Geka*) to their names.<sup>2</sup> Gempo Nishi, a “translator-surgeon,” was appointed surgeon to the shogun in Edo in 1673. His student, Gempaku Sugita, wrote *Rangaku Koto Hajimete* (*The Beginning of Dutch Medical Study*) in his 1815 chronicle of obstacles in translation from Dutch to Japanese medicine, describing the enormous language barriers he and his colleague Ryotaku Mayeno had in 1771 to translate—without a Dutch-Japanese dictionary—a Dutch rendition of a German anatomy text. The resultant *New Manual of Anatomy* (*Kaitai Shinsho*), 1774, became the basic medical text and the term *Rangaku* or the study of Dutch was used by the Japanese to mean the study of Dutch medicine or Western medicine. Despite 2 centuries of prior Dutch-Japan trade, this was the first Dutch book to be translated into Japanese, with the shogun’s tacit approval, since earlier, even reading or possessing Dutch books was punishable by death. With the advent of the Tokugawa shogun in 1720, who believed Holland to be the center of science and medicine in Europe, Dutch books were freely permitted to be translated.

In 1690, Engelbert Kaempfer (1651-1716), also a German physician in the employ of the Dutch East India Company, arrived in Deshima. In addition to medical teaching, he was the first to document the geology and religions of Japan. His *The History of Japan* became the prime source of information about Japan in the 18th century.<sup>3</sup>

Karl Peter Thunberg, a Swede in the employ of the Dutch East India Company, followed in 1775, continuing in the medical teaching tradition and collecting flora of Japan, described later in *Flora Japonica*.<sup>3</sup>

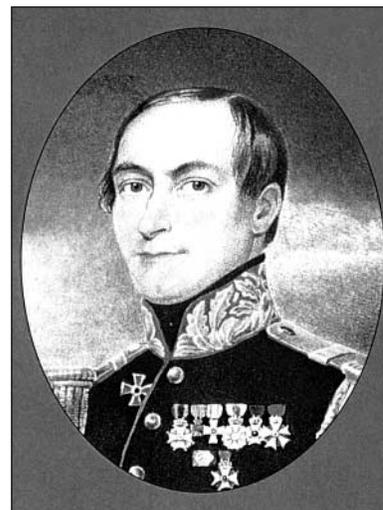
Philipp Franz von Siebold (1796-1866) (**Figure 2**) was the most influential physician employed by the Dutch East India Com-



**Figure 1.** Deshima Island in the Port of Nagasaki, 1823. Reprinted from Kuowenhoven and Forrer.<sup>4</sup>

pany. He may be cited as a paradigm case for genetic predisposition to excellence in medicine. The medical faculty family of Wuerzburg, Bavaria, was called “Academia Sieboldiana”—his grandfather Carl Caspar von Siebold (1736-1807) had been knighted there and was called “first among German surgeons,” and his father, who had died when Philipp was 2, was professor of medicine and surgery there as well. Through family connections, von Siebold received permission from the King of Bavaria to accept a post as surgeon major in the Dutch East India Company. He was determined to “honor the name of Siebold, and if Heaven agrees, maintain it in the manner of Wuerzburg.”<sup>4,5</sup> This he was to do, publishing a 9-volume *Nippon*, and leaving collections of medical, botanical, and anthropological value in Leiden (the Netherlands), Vienna (Austria), and Nagasaki, where they remain to this day. He departed Rotterdam (the Netherlands) on September 23, 1822, arriving 5 months later in Batavia (Indonesia) and later Deshima. There, the Japanese translators (who spoke better Dutch than the German-born von Siebold) were suspicious of this strangely accented Dutchman. At that time, Germany did not exist as a separate country. The various German states had no influence in Japan, a fact that would change dramatically with the advent of the Meiji Revolution of 1867 and the formation of the German empire in 1871.

Initially, von Siebold’s contacts with Japanese physicians from Nagasaki on the mainland and Deshima were minimal, although under the guise of being “translators’ assistants” they would visit Deshima to hear von Siebold give medical lectures.<sup>6</sup> Soon, he too was



**Figure 2.** Philipp Franz von Siebold (1796-1866) in about 1835, after his 6-year stay in Japan. Reprinted from Kuowenhoven and Forrer,<sup>4</sup> with permission from Gemeente Archief, Leiden, the Netherlands.

allowed to attend patients in Nagasaki, a unique and extraordinary concession from the governor of Nagasaki. He gathered medicinal herbs and brought them back to Deshima to establish a medicinal garden.

In 1824 at Narutaki (“murmuring waterfall”) at Nagasaki he established a medical school that is today the site of the Nagasaki-Siebold-Memorial Hall. He taught his Japanese disciples with European-style formal scientific lectures and surgical demonstrations. In 1827, he wrote to a physician relative, “the light of science expands all over Japan from the small valley of Narutaki.”<sup>7</sup> A student there wrote in 1825, “One year studying in Edo is only equal to a fight on tatami, but a mere 6 months in Nagasaki is the same as fighting with real weapons.”<sup>8</sup> The lectures were given weekly and in Dutch, then translated into Japanese by his students. He was never paid in money but in cultural artifacts, clothing, and instruments, all designed to enhance his studies of the Japanese geography, culture, and anthropology.<sup>9</sup> His students were expected to translate modern texts from Dutch into Japanese or write, in Dutch, essays on Japanese medical practices, which von Siebold later presented at European medical meetings.<sup>3</sup> He operated as well, although not all of his techniques were considered effective by the observing, often senior, Japanese physi-



**Figure 3.** Genseki Habu (1726-1848), imperial ophthalmologist, at age 49 years.

cians. The fact that von Siebold was primarily a university-trained physician and not, as was the case for the previous Deshima physicians, a surgeon was of little concern to the Japanese, who, impressed by his unique permission to practice outside the confines of Deshima, a sign of his importance, flocked to see him.

His operations on the eye, especially the cataract operation using the lens-couching technique that he introduced, brought von Siebold the accolade *Wonderdokter*, (miracle doctor). This procedure he performed with the pupil dilated by belladonna drops, which afforded excellent visualization of the lens before couching. Belladonna was unknown to Japanese surgeons, who, without the benefit of adequate lens visualization, had a considerable complication rate from capsular perforations at the time of the posterior lens displacement.

Recently, von Siebold's mydriatic eyedrop prescriptions have come to light.<sup>10</sup> He used "belladonna" and "hyoscyamine" for both antiphlogistic, analgesic, and anticonvulsant effects in patients with eye disease, as well as for mydriasis. von Siebold also performed optical iridectomies for secluded pupils or dense corneal leukoma, popularized by Georg Joseph Beer (1763-1821), professor of ophthalmology in Vienna. To an uncle he wrote, "my doctor's luck has not deserted me, I made an artificial pupil which re-



**Figure 4.** Siebold's Japanese wife Sonogi (left) and daughter O-Ine (right). Reprinted from Kuowenhoven and Forrer, with permission from the National Museum of Ethnology, Leiden, the Netherlands.<sup>4</sup>

stored the vision of a prominent Japanese man."<sup>8</sup>

At Edo, in 1827, on the trip to the shogun's court, von Siebold met the shogun's ophthalmologist, Genseki Habu (**Figure 3**). Habu had been appointed 16 years earlier as personal ophthalmologist to the shogun—a tribute to his unique skills as an inventive surgeon. He had from the onset of his career seen the need to acquire Western medical teachings to supplement the prevalent Chinese folk-medicine traditions of Japan.<sup>11</sup> Thus, he too read Sugita's *Anatomy* translation and later was introduced to ophthalmology via the Dutch version of the German translation of *Doctrina de Morbis Oculorum* by Joseph Jakob von Plenck, professor of medicine and surgery in Vienna, which, published in 1777, was the most outstanding anatomical text and atlas of the 18th century.<sup>12</sup>

By 1808, Habu had perfected a unique surgical optical iridectomy for secluded pupil involving an inferior limbal stab incision combined with prolapse and excision of the iris, which he subsequently performed more than 1000 times by the time he and von Siebold met.<sup>1,11</sup>

Coincidentally, in 1805, Beer, using a cataract knife of his own design with which he made a temporal limbal incision combined with a wedge-shaped scissors excision of the iris, had devised an almost identical "lateral pupil"—an optical iridectomy for secluded pupils or central corneal scars.<sup>12</sup>

In light of this, von Siebold, who had had only 2 years of practical medical experience after graduation from medical school, was astounded at Habu's self-taught

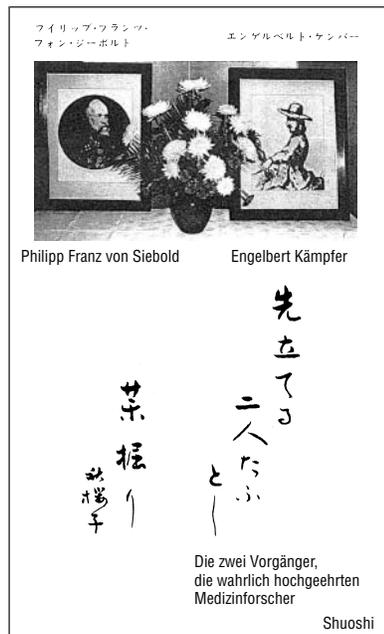
surgical skills that paralleled those of Europe's greatest eye surgeon. Before a complicated eye operation, von Siebold would ask for practice pigs' eyes, which astounded his Japanese observers, for whom such practice would have been appropriate for a student but not a revered *Sensei* (teacher).

Nevertheless, Habu, eager to improve his own cataract experience, desperately wanted access to the iris-dilating medication, belladonna, that von Siebold used so effectively in his cataract operations and which could expedite his own cataract-couching surgical results.

von Siebold gave Habu the requested belladonna preparation. Although forbidden to do so under pain of death, Habu agreed to furnish von Siebold with a *kosode*, a ceremonial kimono decorated with the seal of the Tokugawa shogun at Edo.

The arrangement was discovered by the authorities, with dire consequences for all parties. von Siebold, who had also acquired from the court mapmaker maps of Japan, an act of treason also punishable by death, was imprisoned and ordered by the shogun to commit suicide. Only through the diplomatic intervention of Ludwig I of Bavaria was he permitted to leave after 1 year in prison, but he was banished forever from returning to Japan. Habu lost his post of imperial physician at the shogun's court. His son was banished to an off-shore island. The mapmaker, Takahashi Sakuzaemon, was forced to commit suicide and his son, too, was banished.<sup>4,8</sup>

von Siebold had married Ku-sumoto Taki (Sonogi) and had a daughter, O-Ine. As von Siebold's



**Figure 5.** Tribute to Engelbert Kaempfer and Philipp Franz von Siebold by Haiku poet Mizuhara Shuoshi (see text). Reprinted from Ishibashi.<sup>13(p22)</sup>

ship departed Nagasaki's harbor in 1829, it was accompanied by a small ship in which his wife and child tearfully observed his banishment. He carried their images with him to Holland (**Figure 4**), along with locks of their hair, and took them wherever he went.<sup>4</sup> In 1859, von Siebold received an amnesty and after 30 years was able to meet his former wife (both he and she had remarried) and O-Ine, whose career he helped further. von Siebold returned to Munich after 1 year, where he died 5 years later. O-Ine became the first Japanese female obstetrician and was invited to Edo to practice at the Imperial Court. She died in 1902 at 76 years of age.

The "von Siebold affair" set back Western medical influence in Japan, but ultimately the selfless efforts of Schambergen, Kaempfer, Thunberg, and von Siebold, which had succeeded in reorienting Japanese medicine from traditional Chinese to Western medical practice, prevailed.

Kaempfer, in 1690, stayed 2 years and explored the geography, history, and culture of Japan; Thunberg, in 1775, stayed 1 year and cataloged Japan's fauna; and 48 years later, von Siebold, within a period of 6 years, further exposed the world to the botany, zoology, geography, and anthropology of Japan. With time, the importance of "Dutch medicine" or "Western medicine" (*Rangaku*) was recognized by the Tokugawa court. At Edo and Nagasaki, medical schools along Western lines were established, as was a forerunner of the Tokyo Medical School. With the end of the shogunate and the beginning of the Meiji restoration in 1867, Japanese medicine would, by the end of the 19th century, achieve parity with the West.

Today, the Japanese recognize and honor the physicians who, despite great obstacles, persisted in imparting European medical and surgical knowledge to Japan, as well as exposing the world to Japan's unique culture. Perhaps the Haiku poet Mizuhara Shuoshi<sup>13</sup> (**Figure 5**) expressed his nation's gratitude best when he wrote of Kaempfer and von Siebold, "The two predecessors/the truly deeply esteemed/medical pioneers."

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