Journal of Global History (2016), **11**, pp. 3–23 © Cambridge University Press 2016
doi:10.1017/S1740022815000327

True rhubarb? Trading Eurasian botanical and medical knowledge in the eighteenth century*

Matthew P. Romaniello
Department of History, University of Hawai'i, 2530 Dole Street, Sakamaki A203, Honolulu, HI 96822-2383, USA
E-mail: mpr@hawaii.edu

Abstract

Early modern Russia sat at the intersection of Eurasian trade networks, which allowed both commodities and information to move from east to west and north to south. Rhubarb exported from China had held a prominent position in Western medical treatments since the classical era, but improved transportation and communication between Europe and Asia through Russia enabled the growth of the medicinal rhubarb trade to unexpected heights after 1760. Earlier studies of rhubarb have focused on European interests in uncovering 'true' medicinal rhubarb, but this article will situate the plant as a part of the broader process of scientific exchange across Eurasia. Russia's unique position in Eurasia ultimately allowed its specialists to contribute to the development of Western science through the importation of information from Asia and its own expeditions in Siberia, Russia's internal 'Asian' territory.

Keywords bioprospecting, botany, drug trade, knowledge networks, medicine, rhubarb

The dissemination of botanical and medical knowledge across cultures is one of the hallmarks of early modern globalization. Botany was a central component of both Western and Eastern medical traditions, and the discovery of new plants brought the promise of the discovery of cures for both old and new illnesses.[1] While this pursuit was scientific in principle, the

* An earlier version of this article was presented at the Critical Silk Road Seminar at Georgetown University in January 2015. I thank the participants of that forum, as well as the editors and the reviewers for the *Journal of Global History*, for their comments.

1 Among the works that have influenced my thinking on the colonial drug trade are Teresa Huguet-Termes, 'New world materia medica in Spanish renaissance medicine: from scholarly reception to practical impact', *Medical History*, 45, 2001, pp. 359–76; Londa Schiebinger, 'Prospecting for drugs: European naturalists in the West Indies', in Londa Schiebinger and Claudia Swan, eds., *Colonial botany: science, commerce, and politics in the early modern world*, Philadelphia, PA: University of Pennsylvania Press, 2007, pp. 119–33, 302–7; Pratik Chakrabarti, *Materials and medicine: trade, conquest and therapeutics in the eighteenth century*, Manchester: Manchester University Press, 2010; Patrick Wallis, 'Exotic drugs and English medicine: England's drug trade, c. 1550–c. 1800', *Social History of Medicine*, 25, 2011, pp. 20–46; the special issue of *Social History of Medicine*, 26, 3, 2013, on 'Mobilising medicine: trade and healing in the early modern Atlantic world'; Ines G. Zupanov and Angela Barreto Xavier, 'Quest for permanence in the tropics: Portuguese bioprospecting in Asia (16th–18th centuries)', *Journal of the Economic and Social History of the Orient*, 57,

possibility that *materia medica* could stimulate a profitable drug trade made any discoveries as much a commercial opportunity as a medicinal one; Londa Schiebinger termed this process 'bioprospecting'.[2] One of the prominent medicinal plants of the early modern world was Chinese rhubarb, which reached its peak as a trade good in the period between 1760 and the first quarter of the nineteenth century. Though this plant had been included in Western pharmacopoeias since the classical era, it would take a combination of improved diplomatic relations with Russia and an era of peace among the Baltic trading nations for it to thrive as a valuable commodity. In a century when the popularity of traditional Western herbal treatments declined, rhubarb reached its apex.[3]

Currently, medicinal rhubarb, which was gathered for its roots, is classified as *Rheum palmatum*, while the rhubarb available in grocery stores is the stems of the related species, *Rheum rhaponticum*. *R. palmatum* was a native product of northern China and Mongolia, where the roots were ground into a powder to prepare the drug for export and eventual consumption; *R. rhaponticum* was a native plant in Siberia, where the population harvested its stalks for consumption as a vegetable. These botanical designations, however, were developed in the eighteenth century and only became fixed in the nineteenth. It is assumed by scholars of rhubarb that the first reference to the plant in the West, in the work of Dioscorides in the first century CE, was probably to the medicinal variety from China. Dioscorides identified rhubarb as a cathartic drug, with beneficial properties for digestion. When, in the twelfth century, Europeans adopted the Arabic idea that rhubarb was also an effective purgative, it served as a drug with both emetic and purgative effects on the body, making it one of the most valuable remedies for numerous conditions.[4]

Without the benefit of modern botanical classifications, identifying 'true' medicinal rhubarb was a challenge for Western medieval and early modern medical authorities. Until the sixteenth century, the drug was transported overland through the Middle East to the Ottoman empire, arriving in the West as 'Turkish rhubarb'. With the advent of Portuguese merchants in India in the sixteenth century, Europe started to receive supplies of 'Indian' rhubarb, transported by ship around Africa. While supplies may have increased owing to the ease of transportation, exposure to moist air was undesirable for medicinal rhubarb, as early modern medical authorities believed that this diminished the drug's effectiveness and, as a result, its price.[5] Indian rhubarb may have increased demand for an alternative land route for exporting rhubarb, which was served by Russia beginning in the sixteenth century. When it reached Western markets, the Russian transported rhubarb was known as 'Chinese' or 'Russian'

2014, pp. 511–48; Stefanie Gänger, 'World trade in medicinal plants from Spanish America, 1717–1815', *Medical History*, 59, 1, 2015, pp. 44–82.

2 Londa Schiebinger, *Plants and empire: colonial bioprospecting in the Atlantic world*, Cambridge, MA: Harvard University Press, 2004.

3 For comparison, see Stefan Halikowski Smith, '"Profits spout like tropical plants": a fresh look at what went wrong with the Eurasian spice trade, *c.*1550–1800', *Journal of Global History*, 3, 2008, pp. 389–418.

4 For the history of rhubarb, see Clifford M. Foust, *Muscovite and mandarin: Russia's trade with China and its setting, 1727–1805*, Chapel Hill, NC: University of North Carolina Press, 1969, pp. 164–85; Clifford M. Foust, *Rhubarb: the wondrous drug*, Princeton, NJ: Princeton University Press, 1992; Chang Che-Chia, 'Origins of a misunderstanding: the Qianlong emperor's embargo on rhubarb exports to Russia, the scenario and its consequences', *Asian Medicine: Tradition and Modernity*, 1, 2, 2006, pp. 335–54; Erika Monahan, 'Locating rhubarb: early modernity's relevant obscurity', in Paula Findlen, ed., *Early modern things: objects and their histories, 1500–1800*, New York: Routledge, 2013, pp. 227–51.

5 For example, see Jean-Baptiste Tavernier, *Collections of travels through Turky into Persia, and the East-Indies*, vol. 1, London, 1684, p. 182.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

rhubarb, even though it was the same product as that being moved over water (Indian) or along the southern caravan route (Turkish).

While the Western pursuit of 'true rhubarb' has been the focus of excellent histories of the commodity, these earlier works do not position the rhubarb investigations as a part of Russia's broader role in Western scientific exchanges with Asia, not only of medicinal drugs, but also of therapeutic treatments and knowledge of health and illness.[6] Though Russia had extensive contact with both East and West, its scientific community was composed largely of Western immigrants. Many of the prominent figures in the eighteenth-century medical community were Scottish, resulting in the Royal Infirmary and Royal Botanic Garden of Edinburgh becoming important recipients of Russia's Asian knowledge.[7]

Despite close connections with the West, Russia's role in global medical exchanges has been neglected by historians of medicine even as interest in European investigations of Asian medicine has increased.[8] All of Russia's embassies to China included Western doctors, who took note of medical treatments and smuggled seeds, plants, and drugs back to the West. These included not only ground rhubarb roots, but also other exotic products such as ginseng, *Ferula asafetida*, and *Rhododendron chrysanthemum*.[9] In this way, Russia acted as a pivotal route of East–West exchanges even in the era of expanding maritime networks. This article will 're-orient' the global scientific community along a neglected northern route.

The Russian connection

The territory of modern Russia had been part of the overland Eurasian trade since antiquity. The process of Russian expansion from Moscow to the east, ultimately reaching the shores of the Pacific in the seventeenth century, corresponded with Chinese expansion toward the north, which brought the two empires into direct contact. There was never a moment when the

6 For Russia's drug trade, see Janet Martin, *Treasure of the land of darkness: the fur trade and its significance for medieval Russia*, Cambridge: Cambridge University Press, 1986, pp. 42–3, 90–1, 93. Natalie Kunkel, *Wissenschaftsaustausch zwischen Rußland und Westeuropa, insbesondere Deutschland, in der Botanik and Pharmazie vom 18. bis zum frühen 20. Jahrhundert*, Munich: Institut für Geschichte der Naturwissenschaften, 1999, pp. 144–5, discusses rhubarb; and B. Z. Nanzatov and M. M. Sodnompilova, 'Lekarstvennye sredstva v torgovo-obmennykh operatsiiakh mezhdu Rossiei, Mongoliei i Kitaem v XVII–XIX vv. (Medicine in trade and exchange transactions among Russia, Mongolia and China in the seventeenth to nineteenth centuries)', *Vestnik BNTs SO RAN*, 16, 4, 2014, pp. 92–3, mentions rhubarb.

7 J. H. Appleby, 'British doctors in Russia, 1657–1807: their contribution to Anglo-Russian medical and natural history', PhD thesis, University of East Anglia, 1979; Rebecca Wills, *The Jacobites and Russia, 1715–1750*, East Linton, East Lothian: Tuckwell Press, 2002, pp. 40–67.

8 By comparison, among the many works on East–West medical knowledge are the special issue of *Journal of the Japan–Netherlands Institute*, 3, 1994, on science and technology; Robert E. Bivins, *Acupuncture, expertise and cross-cultural medicine*, Basingstoke: Palgrave, 2000; Harold J. Cook, *Matters of exchange: commerce, medicine, and science in the Dutch golden age*, New Haven, CT: Yale University Press, 2007; Kapil Raj, *Relocating modern science: circulation and the construction of knowledge in South Asia and Europe, 1650–1900*, Basingstoke: Palgrave, 2007; Iris Bruijn, *Ship's surgeons of the Dutch East India Company: commerce and the progress of medicine in the eighteenth century*, Leiden: Leiden University Press, 2009; Anne E. Winterbottom, 'Of the China root: a case study of the early modern circulation of *materia medica*', *Social History of Medicine*, 28, 1, 2015, pp. 22–44.

9 For Russia's botanical exchanges with the West, see Margery Rowell, 'Medicinal plants in tsarist Russia', *Janus*, 63, 1976, pp. 85–93; Margery Rowell, 'Russian medical botany before the time of Peter the Great', *Sudhoffs Archiv*, 62, 4, 1978, pp. 339–58; Appleby, 'British doctors', pp. 337–65; J. H. Appelby, 'Daniel Dumaresq, D.D., F.R.S. (1712–1805) as a promoter of Anglo-Russian science and culture', *Notes and Records of the Royal Society of London*, 44, 1, 1990, pp. 25–50; Rachel Koroloff, 'Seeds of exchange: collecting for Russia's apothecary and botanical gardens in the seventeenth and eighteenth centuries', PhD thesis, University of Illinois, 2014.

Russian government did not consider China's medical knowledge as valuable as its commodities. Russia's embassy to China in 1675 included a physician, Jan Han, dispatched alongside the Russian ambassador 'to learn about local medicines and herbs from apothecaries'.[10] Russia and China signed the Treaty of Nerchinsk (1689) to establish a regular exchange of goods, providing Russian merchants with access to Beijing, unlike other Western traders who were kept at the border.[11]

Russia's imports from China grew steadily after 1675, especially after the efforts of Tsar Peter the Great (r. 1682–1725) to stabilize and expand his country's trade connections. In the 1690s Peter dispatched embassies to the Safavid and Qing dynasties and then conquered the Ottoman fort at Azov to provide the Russians new access to the Black Sea. These early, if short-lived, successes certainly inspired Peter's decision to embark on his 'Grand' Embassy to Europe, visiting Prussia and Denmark on the way to a longer stay in the Netherlands and England. While the embassy may best be remembered for Peter's study of navigation and medicine, or perhaps for the hiring of hundreds of Western specialists in those fields, trade negotiations were an integral part of the embassy, including lengthy negotiations with Britain's King William III in 1697.[12]

While Tsar Peter invested time in the expansion of European trade, Russia had its potential routes to the East well established. Philippe Avril (1654–98), a French Jesuit who travelled across Siberia in the 1690s to begin his mission in China, documented the possibilities of assisting future travellers. From the Caspian port of Astrakhan, reached by journeying down the Volga from Moscow, there were five potential routes to China. The southernmost was through India, 'which the great number of Robbers, and the vast Deserts that are to be cross'd, render very dangerous, and almost impracticable'.[13] The next option was a route through Central Asia, 'which the Merchants of Bocara [Bukhara] take', travelling through the 'Cities of the Yousbecs [Uzbeks]'. Avril knew the Russians would take this route regularly, but he suggested that it was no better than the Indian route because of the danger posed by steppe nomads and 'the Sands that are to be cross'd'.[14] The remaining three options were various routes through Siberia. After travelling from Astrakhan to Tobolsk, one option was to journey 'along the Lakes that yield great quantities of Salt near Irticks [Irtysh] and Kama, after which you Travel for some time by Water upon the first of these two Rivers as far as a City call'd Sinkame [Omsk]'.[15] From Omsk this route went overland south through the territory of the Dzungars until one of the gates of the Great Wall was reached. The second Siberian route involved continuing by river, until reaching the outpost of Seleginsk to the east of Lake Baikal, from where overland travel would be south through Mongol territory. A third option was to continue to the east from Seleginsk overland to Russia's 'official' entrance to China through Nerchinsk. A final possibility was to continue past Nerchinsk until the Amur river was reached,

10 H. F. Demidova and V. S. Miasnikov, eds., *Russko-Kitaiskie otnosheniia v XVII veke (Russian–Chinese relations in the seventeenth century)*, vol. 1, *1608–1683*, Moscow: Nauka, 1969, no. 182, 28 February 1675, p. 336.
11 For an overview, see Mark Mancall, *Russia and China: their diplomatic relations to 1728*, Cambridge, MA: Harvard University Press, 1971; Peter C. Perdue, *China marches west: the Qing conquest of Central Asia*, Cambridge, MA, Belknap Press, 2005, pp. 94–173.
12 For the trade negotiations, see George Barany, *The Anglo-Russian entente cordiale of 1697–1698: Peter I and William III at Utrecht*, Boulder, CO: East European Monographs, 1986.
13 Philippe Avril, *Travels into divers parts of Europe and Asia*, London, 1693, p. 142.
14 *Ibid*., pp. 142–3.
15 *Ibid*., pp. 143–4.

and then travelling down the river until arriving at the coast.[16] Avril suggested that the safest route was that via Nerchinsk, as the number of merchants and security of the outpost offered the best chance of reaching China.

Despite the praise for Russia's excellent route to China through Nerchinsk, Peter the Great invested resources in maintaining his relationship with China, dispatching an embassy in 1696.[17] When the China trade declined shortly after the turn of the century, it was a result of increasing tensions along the Chinese border. China's conflict with the Dzungars in Mongolia disrupted trade, but Russian authorities avoided joining either side of the dispute. When rumours of gold near Lake Iamysh spread after 1710, Russian fortune-hunters encroached on Dzungar territory, raising alarms in China about possible Russian involvement in the conflict. To salvage the important trade relationship, Peter's government dispatched embassies to China in 1715 and 1718, but still failed to prevent the Chinese government from banning a Russian caravan from entering Beijing in 1719. In 1721 Peter sent another embassy, beginning the long negotiations that would result in the Treaty of Kiakhta (1727), moving China's border to the north and assigning Kiakhta the role of serving as the primary entrepôt for the Russo-China trade.[18]

While Peter the Great's government negotiated for the continuation of the caravan trade with Beijing, he maintained the seventeenth-century tradition of including physicians to investigate Chinese medical practices as part of the embassies. The Scottish physician Thomas Garvine joined the 1715 embassy to China for that purpose. It is unclear how much he may have been able to accomplish, as the record of his trip is rather short, perhaps unsurprisingly, since he only remained in China from September 1716 to June 1717.[19]

The tsar's second embassy to China, in 1718, also included a doctor as part of the entourage. This doctor, John Bell (1691–1780), was another Scot in Russian service, who first participated in an embassy to Safavid court that occurred at the same time as the 1715 embassy to China. Upon his return to St Petersburg from Isfahan, Bell joined the 1718 embassy. He published a lengthy narrative of all of his travels after his return to Scotland in the 1760s, including various details from his medical investigations (see Figure 1).[20] In Isfahan, he had a series of interviews with the chief physician of the court, with whom he exchanged information about European innovations in chemical medicine and from whom he received advice in turn about the proper dosages for medical uses of opium.[21] On the trip to China, Bell primarily focused on rhubarb, becoming the first European to document the cultivation practices among the Mongols who produced this valuable product.

Once the embassy crossed the Chinese border, he noted that rhubarb was gathered by the Mongols 'without any culture', letting it grow wild and harvesting it in the fall, to exchange the product for Chinese 'gold, damasks, and other silk and cotton stuffs, tea, and

16 *Ibid*., pp. 144–6.
17 For a summary of the seventeenth-century trade relations with China, see Jarmo Kotilaine, *Russia's foreign trade and economic expansion in the seventeenth century: windows on the world*, Leiden, Brill, 2005, pp. 484–93.
18 Foust, *Muscovite and mandarin*, pp. 15–18; Mancall, *Russia and China*, pp. 208–13; Perdue, *China marches west*, pp. 133–299.
19 Renate Burgess, 'Thomas Garvine: Ayrshire surgeon active in Russia and China', *Medical History*, 19, 1975, pp. 91–5.
20 Bell also wrote a short biography of Peter the Great, focused on his Caucasian blunders. National Library of Scotland, MS 189, Carmichael and Gordon Papers, 'Sundry anecdotes of Peter the first', ff. 10–29.
21 John Bell, *Travels from St. Petersburg in Russia to divers parts of Asia*, 2 vols., Glasgow: Robert and Andrew Foulis, 1763, vol. 1, pp. 110–11.

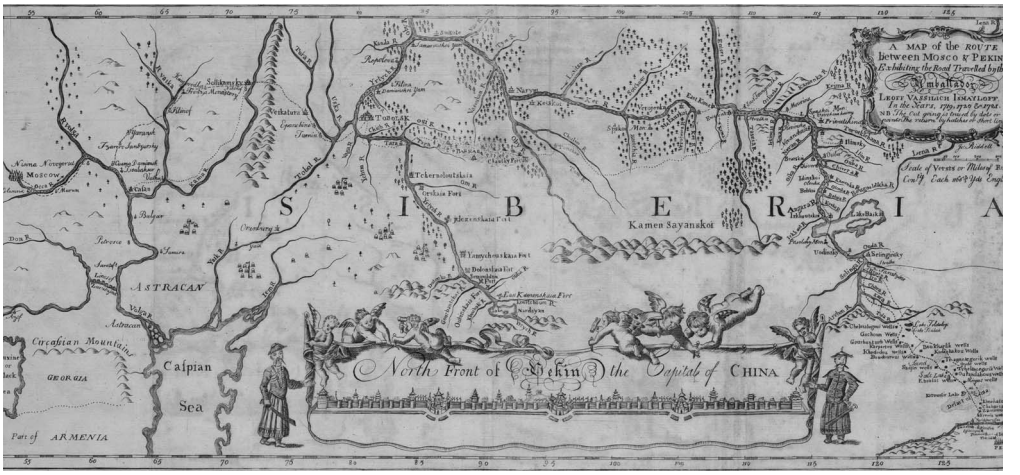

Figure 1. 'A map of the route to Mosco & Pekin', from John Bell, *Travels from St. Petersburg in Russia to divers parts of Asia*, vol. 1. Source: Archives and Manuscript Department, University of Hawai'i at Mānoa.

some porcelain'.[22] As the embassy travelled south toward Beijing, Bell added details, noting that marmots burrowed in the roots of the rhubarb plants, which, he suspected, relied upon marmots' manure to produce hardy plants. The Mongols' role in production was to excavate the roots of mature plants, cut a hole in the middle of the root, and then use that hole to thread a cord which was tied onto a pole for transportation. Unfortunately, in Bell's view, the Mongols made no effort to care for the drying roots, since 'were people rightly informed how to dig and dry this plant, there would be one pound of refuse in an hundred, which would save a great deal of trouble and expence [*sic*]'.[23] Bell suggested that, in the proper soil, any Western country could produce as much as required, predicting his own efforts to export and cultivate the plant in Scotland in the 1760s.

In Beijing, Bell took note to document the drugs available on the local market and his discussions with local physicians. He recorded their interest in checking a patient's pulse and their lack of interest in bloodletting. 'Chymical preparations' were unlike those in the West, but they relied heavily on 'the virtues of plants, which they apply on all occasions, and often with great success'. Chinese doctors were 'much practiced' with cupping, 'for pains in the joints and gouty disorders'.[24] He mentioned the fields of tobacco and its popularity in the city, and the Chinese use of 'beetle' (betel), which was used to keep a body warm in the winter.[25] He was interested in the differences between green and black tea and the ways in which they were prepared.[26]

Garvine and Bell worked for the Russian government, but they were not alone in their pursuit of Chinese medical knowledge. Western merchants may not have had access to Beijing,

22 *Ibid*., vol. 1, p. 281.
23 *Ibid*., vol. 1, pp. 312–13.
24 *Ibid*., vol. 2, p. 141.
25 *Ibid*., vol. 2, pp. 93–4.
26 *Ibid*., vol. 2, pp. 130–1.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

but the Jesuits did, and some were in Beijing while the Russians were there. For example, Father Pierre Jartoux (1668–1720) sent an account to the West in 1711 of the healing powers of ginseng; it was published in the *Philosophical Transactions of the Royal Society of London* two years later. According to Jartoux, ginseng was the Chinese panacea:

> It is a sovereign remedy for all weakenesses occasioned by excessive fatigues, either of body or mind; that it dissolves pituitous humours; that it cures weakness of the lungs, and the pleurisy; that it stops vomitings; that it strengthens the stomach, and helps the appetite; that it disperses fumes or vapours; that it fortifies the breast, and is a remedy for short and weak breathing; that it strengthens the vital spirits, and increases lymph in the blood; in short … that it prolongs life in old age.[27]

Jartoux then detailed the proper preparation of ginseng as a tea (from no more than one-fifth of an ounce, sliced thinly, put into an earthen pot, and filled with one quarter of a pint of boiling water). He found this remedy was effective when he used it to restore himself after several days of riding on horseback. He ended his account with a detailed description of the environment in which ginseng was grown, the characteristics of the leaves, roots, and berries, and the mechanism by which it was delivered to the court.

Another Jesuit, Jean-Baptiste du Halde (1674–1743), published a lengthy study, *Description géographique, historique, chronologique, politique, et physique de l'empire de la Chine* (1736), which had one chapter on Chinese medical practices. While Halde was concerned primarily with analysing Chinese body types, he also explained traditional diagnostic practices, which emphasized the balance among the four elements, rather than the Western humours. In addition, he positively assessed the ability of Chinese doctors to develop new medicines from simple herbal ingredients, though he did not specify which herbs were most important (see Figure 2).[28]

From their publications, Jartoux and Halde emerged as specialists in Chinese medicine, but the 'Russian' scholars, or at least those Westerners in Russian employ, possessed equally valuable information about new drugs and medical practices. James Mounsey (1710–73), another Scottish doctor, entered Russian service in 1736 and served for two decades as an army doctor before becoming Tsarina Elizaveta Petrovna's personal physician and a councillor of state in 1760. Throughout his career, he gathered seeds from medical plants in China, Siberia, and the Middle East to support the ongoing efforts of the official botanical garden in St Petersburg. He corresponded with Carl Linnaeus for his advice over the classification of some of these plants, and shared his insights with the Royal Society in London, publishing some of his findings in the *Philosophical Transactions*.[29] Even after Mounsey retired and returned to Scotland, he continued to pursue the export of seeds from Russia to begin their cultivation at home.[30] John Bell's later publications continued this exchange. He became the first Western

27 Father Jartoux, 'The description of a Tartarian plant, called Ginseng; with an account of its virtues', *Philosophical Transactions of the Royal Society of London, Abridged*, eds. Charles Hutton, George Shaw, and Richard Pearson, vol. VI, from 1713 to 1733, London: C. and B. Baldwin, 1809, pp. 56–61, here 56.

28 J. B. du Halde, *Description géographique, historique, chronologique, politique, et physique de l'empire de la Chine et de la Tatarie*, vol. 3, La Haye: Henri Scheurleer, 1736, pp. 461–7.

29 Margery Rowell, 'Linnaeus and botanists in eighteenth-century Russia', *Taxon*, 29, 1, 1980, pp. 15–26, esp. 23–4; John H. Appleby, '"Rhubarb" Mounsey and the Surinam toad: a Scottish physician-naturalist in Russia', *Archives of Natural History*, 11, 1982, pp. 137–52.

30 Graham C. G. Thomas, 'Some correspondence of Dr. James Mounsey, physician to the empress of Russia', *Scottish Slavonic Review*, 4, 1985, p. 19.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

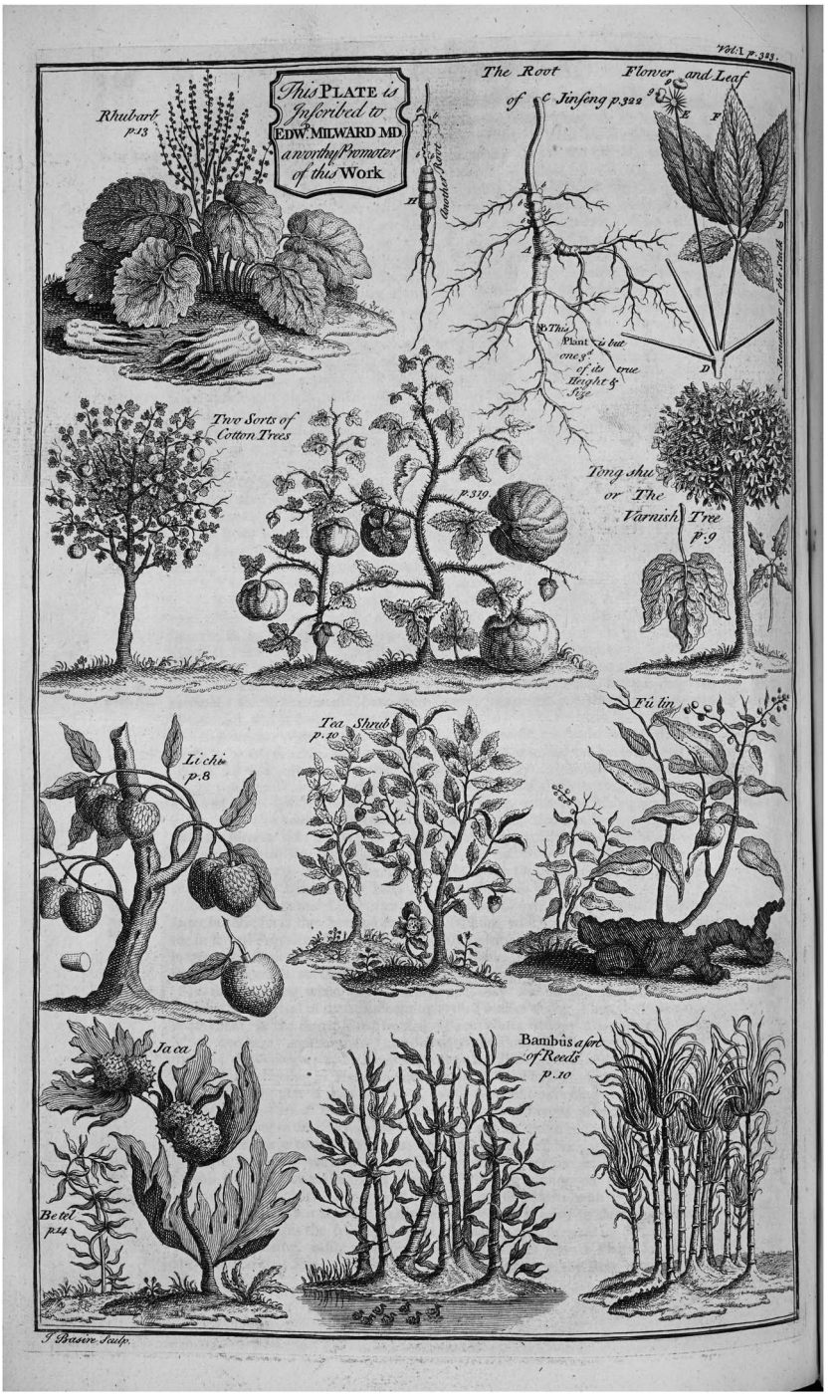

Figure 2. 'Plate by Edward Milward, MD', from J. B. du Halde, *A description of the empire of China*, London, 1738. Source: Archives, University of Alaska Fairbanks.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

physician to record the details of rhubarb cultivation in northern China and Mongolia, making him a rhubarb expert, though not all of his observations were noteworthy. Like Jartoux, he included information on the proper way to prepare ginseng tea, though he 'could never learn from their physicians what specific qualities this plant possessed, only that it was of universal use'.[31]

Furthermore, while the Russian scholars were inquisitive about different medical practices in Asia, there was no point at which they favoured the wholesale adoption of these treatments. Johann Georg Gmelin (1709–55), for example, the botanist on Russia's Second Kamchatka Expedition (1733–43), recorded numerous medical treatments throughout his journey across Siberia, making extensive notes on the application of 'Arab and Persian' treatments by the steppe nomads. But he was not an admirer of their medical practices, remarking that the Muslims 'were as ignorant as they had ever been'.[32]

Though unimpressed by non-Western medical practices in the region, Gmelin still recorded information on local diseases and indigenous treatments. Along the Volga among the Chuvashes, he noted that, when one of his party was struck with a pain in his side, a Chuvash healer attempted to alleviate the discomfort by rolling tobacco for the patient to smoke and reading from the Qur'an, a suggestion ignored by Gmelin.[33] In Nerchinsk, the Russians and Tungus suffered from a parasite called 'volosse', 'a species of worm that perfectly resemble hair', which would form an abscess under the skin that needed to be excised. The wound would be treated daily with a mixture of 'hot lye' and silver nitrate, though Gmelin remarked that the Tungus preferred to let the abscess fester and avoided seeing the patient entirely.[34] While the parasite of Nerchinsk seemed to be found in its waters, abscesses were common throughout Siberia. In Tara near Omsk, Gmelin observed a young Siberian Tatar man with a hard abscess on his chin. The abscess was 'pierced with a needle, covered with *sal ammoniac* and Ukrainian tobacco, and covered by a plaster bandage', as the local Tatars believed that the cure would be most effective working in the dark, again providing Gmelin with evidence of local superstitions.[35] *Sal ammoniac*, a native product in Italy, was a common medicinal ingredient in the West, but Central Asia had its own supplies. In each case, Siberian medicine had developed a mixture of local and imported remedies for a variety of ailments. Gmelin may have questioned the success of non-Western treatments, but his extensive records transmitted knowledge of these illnesses and cures to Europe, with his work being published in Latin, German, French, and Dutch.[36]

The rhubarb trade

The Russian government was committed to extracting knowledge from China, including doctors to investigate medicines and treatments in all of its trade missions. This was not a disinterested pursuit but rather Russian 'bioprospecting', a search for *materia medica* that could become valuable commodities. Without the revenue generated by the drug trade,

31 Bell, *Travels from St. Petersburg*, vol. 2, pp. 142–3.
32 Johann Georg Gmelin, *Voyage en Sibérie*, 2 vols., Paris: Desant, 1767, vol. 2, p. 183.
33 *Ibid*., vol. 1, p. 32.
34 *Ibid*., vol. 1, pp. 257–8.
35 *Ibid*., vol. 2, pp. 204–5.
36 His major study of Siberian plants was published in Latin, *Flora Sibirica sive historia plantarum Sibiriae*, 4 vols., St Petersburg, 1747–69. His travel journals were first published in German, followed by Dutch and French translations; J. G. Gmelin, *Reise durch Sibirien vom dem Jahr 1733 bis 1743*, 4 vols., Gottingen: Abram Bandenhoect, 1751–52.

particularly for rhubarb, it would be difficult to know whether the state would have provided as much support for these efforts. Rhubarb was first recorded in Russian trade records in 1568, but it only became a regular export by the middle of the seventeenth century. In 1654, a peak year, the plant sold for 15 roubles per pud (1 pud = 36 lbs) in Tomsk but 18 roubles per pud in Tobolsk, indicating a steadily rising value as the distance from China grew.[37] The first rhubarb exports recorded at the Danish Sound Toll, the exit from the Baltic into the North Sea, occurred in 1654, with two shipments leaving from the Swedish port at Narva. After 1660 there would be hardly any rhubarb leaving Russia via the Baltic until after 1700, though some was exported via Arkhangelsk to the West in that period.[38] Russia's Thirteen Years' War with Poland (1654–67) disrupted trade with the West, as the conflict limited the transportation of goods through Polish or Swedish territory to the Baltic ports. Furthermore, ongoing conflicts among the Baltic powers in the late seventeenth century produced a general decline in shipping in the region, which only regained the level of the first half of the seventeenth century at the beginning of the eighteenth.[39] With such limited opportunities for export, it is not a surprise that the value of rhubarb in Russia in the seventeenth century was less than half the value it would hold as an export product a century later.[40]

In the eighteenth century, Russia's control over its new Baltic ports, acquired during the Great Northern War (1700–21), led to the transformation of the rhubarb trade. In 1727, Russia's College of Commerce loosened its monopoly over the China trade to allow 'private trade' in some of the most valuable commodities, including rhubarb.[41] The new law had an immediate effect. In 1728, the Sound Toll recorded that there were twenty-three shipments of rhubarb leaving the Baltic Sea, with fourteen departing from St Petersburg, five more from Russia's other ports (three from Riga and two from Reval, modern Tallinn), three from Königsberg (modern Kaliningrad), and one from Stockholm. The final port-of-call for twelve of these ships was Amsterdam, with the remaining eleven travelling to London. Even as the numbers of shipments increase in the following years, the data remains similar. In 1729, there were twenty-nine shipments, with nineteen leaving from St Petersburg, five from Riga, three from Reval, and one each from Königsberg and Dantzig; of those twenty-nine, sixteen went to Amsterdam, nine to London, three to Hamburg, and one to Rotterdam. The following year there were thirty shipments, with twenty-one leaving from Petersburg, three from Riga, two from Narva, one from Reval, and three from Königsberg; twenty were headed to Amsterdam, nine to London, and one to Hamburg.[42]

This was, however, a brief peak in the trade created by Russia's relaxed regulations and a peaceful moment among the Baltic powers. In the spring of 1731, the Senate reversed its policy

37 The Tomsk number is in Richard Hellie, *The economy and material culture of Russia, 1600–1725*, Chicago, IL: University of Chicago Press, 1999, p. 191; that for Tobolsk is from Foust, *Rhubarb*, pp. 46–7. For the first appearance, see T. S. Willan, *The early history of the Russia Company, 1553–1603*, Manchester: Manchester University Press, 1956, p. 82.

38 'The Sound Toll register', http://www.soundtoll.nl/index.php/en/over-het-project/str-online/ (consulted 30 October 2014). For a brief discussion of rhubarb imports in the seventeenth century, see Wallis, 'Exotic drugs', pp. 31–2.

39 R. W. K. Hinton, *The Eastland trade and the common weal in the seventeenth century*, Cambridge: Cambridge University Press, 1959, p. 104.

40 Foust, *Rhubarb*, pp. 47–55; Hellie, *Economy*, pp. 191–2.

41 *Polnoe sobranie zakonov Rossiiskoi imperii (The complete collection of the laws of the Russian empire)*, Series 1, 45 vols, St Petersburg, 1830, vol. 7, no. 5110, 26 June 1727, pp. 819–21. Foust, *Rhubarb*, pp. 55–7, details the decree.

42 'Sound Toll register'.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

on the private rhubarb trade, once again claiming the product as a state monopoly.[43] The historian Clifford Foust argued that this decision was an attempt by the Russian government to fix the export price.[44] While the price may have been controlled, the beginning of the monopoly coincided with a dramatic decline in rhubarb exports. Between 1732 and 1761, when the volume notably rose, there was a meagre average of 1.9 shipments per year. There was only a short interval when the trade improved, from 1738 until 1740, with each year witnessing five or six shipments through the Sound.[45]

The depression in the trade that began in the 1730s found its origins in the actions of the British 'Russian Company'. In 1735, one of the Company's members, a Joseph Chitty, accused the head of operations in St Petersburg, Baron Jacob Wolff (1698–1759), of colluding with another merchant, Matthew Shiffner, to keep control of the rhubarb export monopoly, even though Chitty's agent had secured a two-year contract for the trade.[46] The current British consul in Russia, Claudius Rondeau, duly reported the controversy to the Foreign Office in December of that year, informing them of his investigation into the matter. He found Chitty's accusations to be 'intirely groundless'. Rondeau contended that, while Chitty's agent offered the highest bid for the contract at 83 roubles per pud, the Russian College of Commerce concluded, as it had the previous year, that the offer was not high enough for the College to sell it. Therefore Chitty did not have a signed contract and, when the College subsequently offered a contract to Shiffner and Wolff at 80 roubles per pud later that year, any merchant would have signed it, despite Chitty's earlier interest.[47]

By the following summer, Chitty had written to the British crown with a formal petition that the matter be examined, but now including Rondeau in his complaint as one of the co-conspirators.[48] Rondeau responded by asserting that Chitty acted 'so maliciously, & falsely, accus'd me without the least shadow of reason, of being instrumental in preventing his having a certain parcel of Rhubarb'.[49] The Russian Company's directors in London supported Rondeau, Shiffner, and Wolff, providing testimony at the British Board of Trade that no member of the Russian Company could hold a monopoly that was not shared by all, explicitly accusing Chitty of acting against the Company's interest and simultaneously ignoring Wolff and Shiffner's rhubarb monopoly.[50] By the end of the year, when the British court reached its final verdict, Rondeau was vindicated, and Chitty was reprimanded for having supported his agent in St Petersburg, who was identified as the primary culprit of the affair.[51]

Shiffner and Wolff, the victors over Chitty for the export contract, were in fact responsible for a short spike in rhubarb exports from 1738 to 1740, the peak years in these three decades of

43 *Polnoe sobranie zakonov*, vol. 8, no. 5741, 8 April 1731, p. 450.
44 Foust, *Rhubarb*, pp. 56–8.
45 'Sound Toll register'. Foust, *Rhubarb*, pp. 55–7, also notes this period of increased volume, based on the London port records.
46 Shiffner is 'Sheffner' or 'Sheffer' in the archival documents. For a discussion of Shiffner and Wolff's business operations, see Anthony Cross, *By the banks of the Neva: chapters from the lives and careers of the British in eighteenth-century Russia*, Cambridge: Cambridge University Press, 1997, pp. 55–8.
47 The National Archives, United Kingdom (henceforth TNA), State Papers: Russia (henceforth SP 91), 19, 'Rondeau to Samuel Holden', 27 December 1735, ff. 6–9. Foust, *Rhubarb*, p. 260, n. 62, refers to the Chitty affair as 'somewhat mysterious and seems to have died without resolution', which is not the case.
48 TNA, SP 91/19, 'Copy of Chitty's petition', 24 May 1736, ff. 80–6.
49 TNA, SP 91/19, 'Rondeau's answer to Chitty's petition', 10 July 1736, ff. 143–50.
50 TNA, CO 389/29, 'Report to the Lords of the Commerce Council upon Mr. Chitty's petition', 27 May 1736, ff. 213–14. The Russian government also supported Shiffner and Wolff's innocence: TNA, SP 91/19, 'Memorial from Osterman', in Russian f. 151r., in French translation f. 152r.
51 TNA, SP 91/20, 'Verdict in Chitty affair', 11 August 1736, f. 15r–v.

minimal trade. The two British merchants may also have been responsible for the subsequent decline in the trade in the 1740s and 1750s. In the summer of 1742, the Senate reviewed the current state of the rhubarb trade, based on evidence provided to them by the vice-governor of Irkutsk. The Senate also investigated the role of a Bukharan merchant who was responsible for transporting some of the rhubarb across Siberia. The report revealed that, in 1737, supplies of rhubarb had been increasing owing to the relaxation of quality control in Kiakhta, bringing more rhubarb to St Petersburg for Wolff and Shiffner to export. The Senate concluded that quality needed to be restored, which resulted in less rhubarb available for export.[52] The decline in the volume of exports was immediate, with no rhubarb leaving St Petersburg in 1742, and hardly any for the next two decades.[53] Russia's enforcement of the new rhubarb control was effective to the point that one British merchant in Russia in the 1740s observed that since the 'government has engrossed this article, private persons are forbid [*sic*] to deal it under penalty of death'.[54] This was probably an overreaction, as the Russian government had threatened death for outside involvement in the rhubarb trade in the seventeenth century as well, with no evidence of the law ever having been enforced.[55]

Shiffner and Wolff might have been able to steal the rhubarb contract from Chitty in 1735, but the Senate's belief that the pair had devalued rhubarb had finally caught up with them. When the pair protested the declining stock and rising prices, the Senate's response was to recommit to its decision. It instructed Irkutsk's governor to guarantee quality control in Siberia, requested that Shiffner and Wolff reveal the prices they had received from sales in London, and recommended that the College of Commerce contact a Dutch agent willing to purchase the rhubarb at its higher price.[56]

While this new law imposed restrictions on the export trade, conditions in the Baltic itself hardly facilitated its resumption. Western maritime powers were always competitive but increased piracy during the war between Britain and France in the 1740s brought an end to most of Russia's Western trade. The British ambassador in St Petersburg put pressure on the Russian government for a guarantee that the French would abandon raiding British shipping in the Baltic, frustrated by Britain's inability to resume trade more than once during the 1750s.[57] When this conflict produced the Seven Years' War in Europe in 1756, Russia was at war with Sweden and Prussia, preventing the re-establishment of any Baltic trade. Britain's Board of Trade recorded almost no trade between Britain and Russia between 1733 and 1758, with the exception of a few years (1739–41) which also witnessed the return of the rhubarb trade.[58] It was not until 1761 that the Anglo-Russian trade returned to its 1720s volume, including new sales of rhubarb. This was also the year

52 *Senatskii arkhiv (Senate archive)*, 15 vols., St Petersburg: Senatskaia tipografiia, 1888–1913, vol. 5, pp. 396–411, 20 August 1742. Foust, *Rhubarb*, pp. 66–7, discusses this in greater detail.
53 'Sound Toll register'.
54 Jonas Hanway, *An historical account of the British trade over the Caspian Sea*, 4 vols., London, 1753, vol. 1, p. 127.
55 Erika Monahan, 'Trade and empire: merchant networks, frontier commerce, and the state in Western Siberia, 1644–1728', PhD thesis, Stanford University, 2007, pp. 360–1.
56 *Senatskii arkhiv*, vol. 5, pp. 543–8, 3 March 1743.
57 The British government received this guarantee in 1756, but it was immediately violated as Russia entered the war on the side of the French. See, for example, TNA, SP 91/60, 'Note given to Hanbury-Williams from the Russian Chancellors', 12 March 1756, ff. 164–5.
58 TNA, Treasury, T 64/241, 'An account of the exports of British manufactures from Scotland to Holland Germany and Russia distinguishing each year, and the species of goods and the quantities and values to each of the said countries for forty years, preceding January 1772'.

in which Russia and Britain resumed trade negotiations that led to the second Anglo-Russian Commercial Treaty.[59] With the end of the war in 1763, the Russian government signed new commercial treaties not only with Britain but also with France, Sweden, and the Netherlands, indicating its strong commitment to re-establishing foreign trade as a major source of its revenue.[60] While Foust argued that the Russian government's price fixing slowed the trade in these two decades, geopolitics prevented any shipping in the Baltic, regardless of the price.[61]

The new treaties, alongside peace in the Baltic, fostered the expansion of Chinese rhubarb exports through Russia. From 1761 until well into the nineteenth century, the rhubarb trade was quite strong, supported by a reduction in the tariff on exported rhubarb instituted by the Senate in the spring of 1762.[62] In sum, there were 1,062 shipments of rhubarb in the Baltic from the mid 1650s until the 1850s, with the overwhelming bulk of the trade after 1761. A majority of this trade ran through St Petersburg (54.5% of all shipments) and the largest market for rhubarb was in London, which received 34.4% of the shipments. After London, the second most common destination was Amsterdam (13.5% of shipments). While the early eighteenth-century trade was more likely to travel to Amsterdam than London, after 1760 it was primarily a London-based trade. London became so central to the trade that it became the second-largest origination point of rhubarb travelling through the Sound Toll, transporting 18.5% of all rhubarb, primarily after 1780.[63]

It was also in this period that the processing of rhubarb was streamlined to guarantee quality control at the border. One German doctor in Russian service in the 1770s, Hans Jacob Fries, was the first to write a lengthy description of rhubarb preparation in Kiakhta. When he travelled to Kiakhta in 1774, he was given a tour of the rhubarb warehouse in the city. Once the rhubarb was imported, a physician who worked for Russia's Apothecary Chancellery took responsibility for the root. Fries observed how 'this costly medicine is dried, rasped and divided into superior and inferior types after it has been acquired from the Chinese through barter'.[64] This system stayed in place for the entire peak period of rhubarb exports, with the Russian medical establishment providing a guarantee of quality that assured foreign specialists that its shipments were true rhubarb.

Botanical investigations

With the value of medicinal rhubarb well established in the eighteenth century, it is not surprising that there was an intense effort to locate the correct species, export its seeds, and develop a proper cultivation technique that could be replicated throughout Europe. It was a plan with precedent. One of the most famous American crops, tobacco, had been successfully adapted to grow in northern Europe as far north as Sweden, producing a robust domestic

59 TNA, CO 388/49, 'Bute to Lords Commissioners of Trade', 17 August 1761, f. 92; 'Mr. Wood to Lords Commissioners', 19 September 1761, ff. 124–5; 'Counter-project of a treaty of commerce with Russia', 11 November 1761, ff. 139–51.
60 TNA, SP 91/71, 'Buckinghamshire to Hallifax', 28 February 1763, ff. 117–20.
61 Foust, *Rhubarb*, pp. 63–72.
62 This was part of an extensive review of export taxes. *Senatskii arkhiv*, vol. 12, pp. 150–67, 18 and 22 April, and 20 May 1762, pp. 150–67 (rhubarb is noted on pp. 155–6).
63 'Sound Toll register'.
64 Walther Kirchner, trans. and ed., *A Siberian journey: the journal of Hans Jakob Fries, 1774–1776*, London: Frank Cass, 1974, p. 133.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

production throughout the Baltic region.[65] Inspired by tobacco's success, Carl Linnaeus invested extensive resources in locating tea plants in China in an attempt to cultivate them domestically in Sweden.[66] Though Linnaeus's tea experiment failed, European botanists remained optimistic about the possibility of acclimatizing a wide variety of commercially valuable crops to Europe's climate, many of which found their origins in Asia. Rhubarb's fame as a popular medicine made it the most famous product exported from China via Russia, but it was not alone.

As was the case in the early eighteenth century with men such as Bell and Mounsey, Russia's foreign specialists led the way. Peter Simon Pallas (1741–1811), a German botanist with Western medical training, became a professor at the Russian Academy of Science in 1768. He led a scientific expedition into Siberia in 1770, accompanied by another German naturalist, Johann Gottlieb Georgi (1729–1802), who became a member of the Academy in 1783. Each man would subsequently publish his observations, creating an 'official' record of the empire's resources, which would appear in German, French, and English editions within a decade of first publication.[67] Given their interests in botany and medicine, it is not surprising that the health of the empire, as well as the available medical treatments, composed a sizeable portion of each narrative. For example, Georgi observed that the Kalymks exploited the possible trade connections of their locale by relying upon both Chinese and Indian medicines, as well as making 'Chinese teas' an essential part of their diet.[68] For medical treatments, 'they feel the pulse, scarify, open a vein, clyster, cast the water, &c. Their most famous medicines are rhubarb, faba S. Ignatii [cantaloupe seeds], drugs, saffron, moxa of mugwort, the fatt, gall, and brains of animals.'[69] While rhubarb found its origins in China, saffron and moxa were products of India and Southeast Asia, and, as far as Georgi knew, the cantaloupe seeds were imported from the Philippines.[70] The prevalence of imported medicine only confirms the continuing importance of overland Eurasian trade as a mechanism for global exchanges. It was not only Russia's China access but also its exotic goods that intrigued Western doctors. Even though the Russian government hoped for oceanic access to Guangzhou to improve its China trade, the overland route remained a unique opportunity in the eighteenth century.[71]

65 For a discussion of the acclimatization process, see H. K. Roessingh, 'Tobacco growing in Holland in the seventeenth and eighteenth centuries: a case study of the innovative spirit of Dutch peasants', in *The Low Countries history yearbook 1978*, The Hague: Nijhoff, 1979, pp. 18–54. For a British estimate of production levels, see TNA, CO 389/19, 'Report to the House of Commons', 19 November 1707, ff. 181–297, esp. 243–5.

66 Lisbet Koerner, *Linnaeus: nature and nation*, Cambridge, MA: Harvard University Press, 1999, pp. 116–26, 136–9.

67 Peter Simon Pallas originally published his writings in German, as *Reise durch verschiedene Provinzen des Russischen Reichs*, 3 vols., St Petersburg, 1771–76. He later published a complete record of all of his travels across the empire in French, *Voyages de M. P. S. Pallas, en différentes provinces de l'empire de Russie, et dans l'Asie septentrionale*, trans. Gauthier de la Peyronie, 5 vols., Paris: Maradan, 1788–93. Johann Gottlieb Georgi also published his account in German, *Bemerkungen einer Reise im Russischen Reich im Jahre 1772*, St Petersburg, 1775; it was translated into English, as *Russia: or, a compleat historical account of all the nations which compose that empire*, trans. William Tooke, 4 vols., London, 1780–83. Though Pallas' work was not formally translated into English, some of his text was included in William Coxe, *Account of the Russian discoveries between Asia and America*, 3rd edn, London: J. Nichols, 1787, particularly the chapter on rhubarb, pp. 351–63.

68 Georgi, *Russia*, vol. 4, p. 34.

69 *Ibid*., vol. 4, p. 40.

70 The adoption of moxa in Great Britain and the Netherlands has been discussed in George Rosen, 'Sir William Temple and the therapeutic use of moxa for gout in England', *Bulletin of the History of Medicine*, 44, 1970, pp. 31–9; and David S. Lux and Harold J. Cook, 'Closed circles or open networks? Communicating at a distance during the scientific revolution', *History of Science*, 36, 1998, pp. 183–4.

71 For example, see the Russian American Company's plan to improve its Pacific trade options, in Library of Congress, Manuscripts Division, Yudin Collection of Russian-American Company Records, Box 1, folder 11, 'Memo by N. Rezanov', 20 July 1806, ff. 176–85.

Popularizing Asian medical practices and its medicinal plants was not limited to men in Russian service. Doctors and botanists in western Europe were greatly interested in the ongoing discoveries in Russia from China, and particularly in the possibility of cultivating these exotic remedies at home. While the multilingual publications of the Russian experts enabled this process, direct communication was the preferred mechanism.[72] This is perhaps most easily seen in the pursuits of John Hope (1725–86), a physician and professor of botany in Edinburgh, and the director of the newly established Royal Garden in that city. As was the case for his fellow botanists establishing new gardens, Hope maintained a global correspondence, in particular with Joseph Banks, who was supervising the Royal Gardens at Kew outside London, and with Carl Linnaeus the Younger in Sweden. In addition, the prevalence of Scottish doctors trained in Edinburgh who worked in Russia facilitated his communications with St Petersburg.[73]

Edinburgh's port of Leith had direct trade with the Baltic Sea and across the Atlantic Ocean, providing Hope with an opportunity to utilize local merchants to assist his acquisition of foreign plants. The Shairp family of West Lothian, for example, was one of the firms shipping goods from St Petersburg to Leith. In 1749, Walter Shairp in St Petersburg sent a note to his brother Thomas with apologies for Hope, as he (Walter) had failed 'to get for him some plants or seeds of the Transparent Appels that growes in this country'.[74] Russia's 'transparent apples' were quite famous in early travel literature, appearing frequently, but no one ever successfully left the country with such an apple, or its seeds, raising some questions about the fruit's existence.

While the apples may have been difficult to obtain, the return of John Bell to Scotland from St Petersburg in the 1760s provided Hope with local access to a specialist on rhubarb. Bell became actively involved in Hope's attempt to cultivate Chinese rhubarb in Edinburgh, at one point providing seeds from his own garden. Their correspondence began with a letter from Hope asking Bell a series of questions following the publication of Bell's description of the rhubarb plant in his *Travels from St. Petersburg in Russia to Divers Parts of Asia*. In response to Hope's questions, Bell confirmed that 'the true Rhubarb has never been cultivated in any part of Europe excepting a few plants in the physic Garden at St. Petersburg'. Neither he nor his friends to whom he had provided seeds had ever had any success in growing the plant in Europe. Bell's theory was that the difficulty of raising rhubarb was due to improper climate and soil conditions, while it was possible that the time of harvesting and drying would also have an effect.[75] However, only two weeks after this letter, Bell wrote again to Hope, but now in excitement because the seeds that he had provided for Hope had sprouted in the Royal Gardens. Bell had taken the seeds from the Apothecary Gardens at St Petersburg, where one rhubarb plant successfully set seeds. Though the seeds were from St Petersburg, they had originated from 'the frontiers of China', having been provided by the apothecary who lived in Kiakhta for the purpose of selecting and sorting the imported rhubarb. However, cultivating

72 This idea follows from the work of Lux and Cook, who investigated the importance of trust and family connections as part of the exchange of scientific knowledge in the early modern period in their article 'Closed circles and open networks'.
73 Appleby, 'British doctors'; Wills, *Jacobites and Russia*, pp. 41–55.
74 National Records of Scotland (henceforth NRS), Papers of the Shairp family of Houston, West Lothian, GD30, 1583/3, 'Letter from Walter Shairp', 16 September 1749.
75 NRS, Botanical papers of John Hope MD professor of botany and *materia medica* at Edinburgh, GD253/144/5/1, 'Letter from John Bell of Antermony', 1 June 1765.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

rhubarb in Russia was unnecessary, as 'there is a great aboundance of Rhubarb from the frontiers of China and but one thriving plant in St. Petersburg'. Bell suggested that rhubarb produced sufficient profits as a state monopoly to dissuade Russian authorities from replacing Chinese rhubarb with a domestic version. Finally, knowing that Hope desired further information, Bell wrote to the apothecary in Kiakhta for all of the details on the plant that could be provided.[76]

An official report from Russia concerning rhubarb would not arrive in Edinburgh until 1777, when Bell forwarded a letter from Peter Simon Pallas to John Hope. Pallas' letter was a handwritten copy of the description of rhubarb that had been published in his own book. This description includes multiple varieties of the plant, beginning with the small-leaved version that grew in the St Petersburg botanical garden but also wild throughout European Russia, 'Caspian Rhapontik', 'Siberian Rhapontik', and the 'true' version from China. Pallas did not reach a conclusion as to whether they were the same plant that only appeared to be different because of changes in soil and climate, or a different species. The closest domestic version to Chinese rhubarb was the Siberian species, but it had generally entered Russian households as food rather than medicine. Siberian rhubarb tasted 'like unripe apples'. If eaten raw, it would produce 'a choaking or strangulating sensation', which had led most Russians to cook 'the leaves in their hodge podge'. Russia's College of Physicians ordered 'very large quantities of these roots' for their military hospitals, but the Siberians were unskilled at harvesting the roots properly. If correctly done, Pallas suggested, it produced 'a substance so nearly resembling the Chinese Rhubarb in colour, solidity, & virtue, that it could well be employed instead of it'. These results were sufficiently promising for him to speculate that, while 'true' rhubarb (*R. palmatum*) might exist, it was likely that China's medicinal variety was 'the larger variety of our Rheum rhaponticum, or perhaps the Rheum compactum'.[77]

While Hope had no difficulty raising a species of rhubarb in Edinburgh, his long investigation of the plant demonstrated that importing Chinese rhubarb through Russia was more affordable than the alternatives. The British attempts to import rhubarb grown in northern India proved unviable, as this plant reached the market at nearly six times the cost of the Russian transported Chinese rhubarb.[78] A domestic version raised in Scotland would be cheaper, but Hope recommended asking local apothecaries if they would consider using it instead of the Chinese version, as no one had yet proven the local variety's medical efficacy, and Pallas's letter had suggested in fact it would not be the same product.

Interest in rhubarb was sufficiently great in Britain for the plant to receive its own chapter in William Coxe's *Account of the Russian discoveries between Asia and America*, first printed in London in 1780 and reprinted at least twice in that decade. Coxe travelled in Russia and eastern Europe, and would later marry the daughter of William Shairp, a member of the Edinburgh merchant family and a British consul in Russia. Coxe's narrative relied extensively upon the work of Peter Simon Pallas and Johann Gottlieb Georgi, based on their scientific expedition for the Russian Academy of Sciences at the beginning of the 1770s.[79] He acknowledged that there were multiple names for rhubarb (including 'Russian, Tartarian,

76 NRS, GD253/144/5/2, 'Letter from John Bell of Antermony', 10 June 1765.
77 NRS, GD253/144/5/5, 'Letter from Professor Pallas', 18 May 1777. Pallas' criticism of Siberian harvesting practices echoed complaints from the government in the 1650s. See Monahan, 'Trade and empire', p. 370.
78 NRS, GD253/144/5/10, 'Price of rhubarb'.
79 Coxe, *Account of the Russian discoveries*, p. 355.

Bucharian, and Thibet'), but only two varieties were sold in Great Britain. The so-called 'Tartarian' rhubarb grown in northern China was 'exported from Russia in large roundish pieces, freed from the bark, with a hole through the middle: they are externally of a yellow colour, and, when cut, appear variegated with lively reddish streaks'. The second kind was known as 'Indian Rhubarb', which was bought in Guangzhou and shipped to Britain, but it was 'longer, harder, heavier; … it is more astringent, and has somewhat less of an aromatic flavour, but, on account of its cheapness, is more generally used'.[80]

Coxe's chapter on rhubarb is quite different from the rest of his text, which is largely a travel narrative of the sights and settlements of Siberia and Russian America. Relying on Pallas, he presents a botanist's analysis of the plant, as the first to offer the Linnaean typology of five rhubarb species (*Rheum palmatum*, *R. rhaphonticum*, *R. rhabarbarum*, *R. compactum*, and *R. ribes*) as a mechanism for identifying the plant, in addition to including its different environments and properties. He was clearly aware of the ongoing debate as to which of these species was 'true' rhubarb with the greatest medicinal benefits, agreeing with John Hope that it was *R. palmatum*, which was the origin of the seeds that John Bell provided to various botanists in Europe. Since these seeds had been supplied by a Bukharan merchant involved in the China trade, Coxe was convinced that it must be the true plant. As he concluded, 'The learned doctor Hope, professor of medicine and botany in the university of Edinburgh, having made trials of the powder of this root, in the same doses which the foreign rhubarb is given, found no difference in the effects'.[81] Coxe ended his assessment with three points that conclusively demonstrated the superiority of Chinese (his Tartarian) rhubarb: first, that the mountains of 'Little Bucharia' were its perfect environment, unlike southern China; second, that the Chinese failed to guarantee the quality of the rhubarb in Guangzhou as the Russians did in Kiakhta; third, that sea travel was undoubtedly detrimental to rhubarb's quality, a theory long believed to be true by Europeans.[82]

Coxe concluded that Russia's exported rhubarb was superior to the other species in terms of its quality, but his investigation of the cost raised doubts about its commercial value. He noted that Bukharan merchants delivered rhubarb at 16 roubles per pud. Following its examination and sorting by the apothecary and customs officials in Kiakhta, it was sold at 25 roubles to Russian merchants leaving the town. When it reached Petersburg, it arrived at 30 roubles per pud. As the Chitty affair demonstrated, however, it was then purchased by British merchants for nearly double that cost. Coxe mentions that the largest export volume was 1,350 puds at 65 roubles per pud in 1765. In the 1770s, the costs escalated, while the volume dropped, with 29 puds exported in 1777 for 91 roubles per pud, and just 23 puds in 1778 at 96 roubles per pud.[83]

Coxe's summary of the scientific debate about true rhubarb reflected how important this product remained, as he expected the literate public to be interested in this episode of botanical espionage. This was a sign of how active the attempt to domesticate the plant had become. In a 1792 publication, William Fordyce (1724–92), a Scottish physician and fellow of the Royal Society, argued that, since true rhubarb had been successfully grown in the British botanical gardens, the Society needed to encourage British farmers to produce the crop commercially.

80 *Ibid*., pp. 351–2.
81 *Ibid*., pp. 354–5.
82 *Ibid*., p. 363.
83 *Ibid*., p. 362.

According to him, it was a medical imperative because Britain suffered from 'the most painful and dangerous diseases [which] proceed from weakness and disorders in the Stomach and Bowels', for which rhubarb was the 'justly celebrated' cure.[84] Fordyce was proud of the role that British doctors had played in exporting the crop from China, mentioning the activities of John Bell and James Mounsey in Russia, who exported the first seeds; he also praised the efforts of another Scottish physician, Sir Alexander Dick (1703–85), and John Hope, who (he said) had successfully cultivated the crop in Britain. In fact, although Dick was the first president of the Edinburgh College of Physicians, and was Mounsey's correspondent about rhubarb, unlike Hope he had not succeeded in cultivating rhubarb. However, facts were not an impediment to Fordyce's assessment. He concluded that the superior methods that the British medical community had developed to cultivate the plant and dry the roots would make British rhubarb 'an article of commerce in our island'.[85]

While much of the British and Russian medical communities' interest in the Eurasian drug trade focused on exporting rhubarb, the plant was not alone as a subject for investigation. John Hope might have become notable among rhubarb enthusiasts for his efforts to cultivate the medical species of that plant in Scotland, but he also investigated the domestication of a wide range of exotic medicinal plants, including Chinese ginseng, lychee, and tea. For ginseng, Hope read Jartoux's account of the crop, and communicated with the Jesuits in Paris for further information.[86] He gathered texts about the harvesting of lychees and tea seeds, though he had concerns about the difficulties of cultivating the plants in Scotland. One of his correspondents even suggested a plan to plant tea seeds in South Africa, and transport seedlings rather than seeds to Britain.[87]

The foreign medical community in Russia continued to support these efforts to export *materia medica* from Eurasia. Matthew Guthrie (1743–1807), a Scottish physician who served in Russia in the 1770s and 1780s, pursued two potential exports: *Rhododendron chrysanthemum* and *Ferula asafetida*. He was in regular communication with British authorities, as a fellow of the Royal Society and Fordyce's brother-in-law, as well as publishing regularly in the Scottish journal *Medical and Philosophical Commentaries*. *R. chrysanthemum* was a Siberian plant that was widely used as a treatment for numerous 'arthretical disorders and in cases of Rheumatism'. Pallas had gathered seeds during his Siberian expedition, which he then cultivated in St Petersburg, and he provided seeds to Guthrie to send to Hope in Scotland. According to Guthrie's information, Siberians brewed a tea from the plant's leaves that produced 'a degree of intoxication resembling the effects of spirituous liquors and a singular kind of uneasy sensation of the parts affected … in a few hours all the disagreeable effects of the dose disappear, commonly with two or three stools, the patient finds himself greatly relieved of his disorder'. Guthrie suggested that the dose currently used in Siberia would be 'too strong for our countrymen' but that small doses would be beneficial.[88]

84 William Fordyce, *The great importance and proper method of cultivating and curing rhubarb in Britain for medicinal uses*, London: T. Spilsbury and Son, 1792, pp. 1–2.
85 *Ibid.*, pp. 11–12.
86 NRS, GD253/144/7b/2/1, 'Extrait d'une lettre du Père Papin, Jésuite, sur les arts et la médecine de la Chine'.
87 NRS, GD253/144/3/25, 'Seeds from China' (author unknown).
88 NRS, GD253/145/7/10, 'Letter from Matthew Guthrie', 20 June 1778. An abbreviated version of this letter was published in *Medical and Philosophical Commentaries*, 5, part 1, 1778, pp. 434–6. Margery Rowell, 'Medicinal plants', p. 88, points out that the chrysanthemum plant was first observed in Wilhelm Steller's notes from the Second Kamchatka Expedition earlier in the century.

Ferula asafetida (or asafoetida) received even more attention. Unlike *R. chrysanthemum*, Europeans had been aware of the plant as a medicine from the Middle East since at least the seventeenth century, though no one had been able to cultivate it until Guthrie supplied seeds to Britain at the end of the eighteenth century.[89] In 1777, Guthrie shipped seeds to Hope and other botanical enthusiasts in Scotland, along with his own notes and a report from Pallas about the qualities of the plant. Pallas provided Guthrie with the seeds from the plants that he had grown in St Petersburg, proudly proclaiming that he was the first European to do so successfully, and that his plants were grown from seeds gathered directly in the Middle East.[90] Pallas also mentioned that the plant had migrated to Siberia, where it had come into use. Guthrie mentioned that in Siberia the roots of the plant were brewed as a beer that 'produced a singular sort of intoxication', but Siberians also roasted the plants seeds as a substitute for coffee.[91] Neither of these uses had appeared in the original medical discourse, demonstrating the ways in which some of these crops were adapted to local interests. In the early 1780s, the Edinburgh asafoetida under Hope's care produced sufficient seeds for him to distribute its seeds to thirty-five botanists in Great Britain, including Joseph Banks at Kew and Linnaeus the Younger in Sweden.[92]

Nor was the exchange dependent only on the medical community in Russia. Samuel Bentham (1757–1831) was director of the Siberian mines and a member of the Russian Academy. In January 1782 he sent his brother Jeremy in London a packet of 'some Siberian seeds, and Chinese Seeds'. The Siberian seeds had been gathered by 'a Mr. Shlangen a Russian of German Extraction, Surgeon Major to the Gold & Silver Mines at Barnaoul', while the Chinese seeds were presented to Bentham by 'an English Lady at Irkutsk; They have none of them any names, except a few whimsical ones.' In addition, Bentham added a few seeds that he had gathered on his trip to Siberia, having been presented with rhubarb seeds at Irkutsk as well, though these were perhaps not as important, as they had been 'bought as the real Rheum Rheubarnum [*rhabarbarum*], but I suspect it to be only Rhafontiuem [*rhaphonticum*]'.[93] It is unclear in Bentham's correspondence if he was unaware that most experts believed medicinal rhubarb to be *R. palmatum* and not *R. rhabarbarum*, or if he was offering a different classification of true rhubarb. In either case, his letters reflected the continuing problems with identifying rhubarb even among enthusiastic scientists.

With the continuing interest in Russia's ability to supply Eurasian medicinal plants to western Europe, and the ongoing difficulties of classifying plants, it is not a surprise that the publication of the first Russian pharmacopoeia in 1782 and of Pallas's two-volume *Flora Rossica* in 1789 was considered significant.[94] A review in Edinburgh's *Medical Commentaries* praised the authors of *Pharmacopoea Rossica* for including 'several articles which have not yet obtained a place in almost any other Pharmacopoeia', highlighting the inclusion of Chinese and Middle Eastern *materia medica*.[95] The authors demonstrated that Russian apothecaries

89 Appleby, 'British doctors', pp. 358–65.
90 NRS, Letters, various versions of botanical description of asafoetida, GD253/144/2/1, 'Dr. Pallas's notes', f. 2.
91 NRS, GD253/144/2/1, 'Letter from Matthew Guthrie', 16 August 1777, f. 1.
92 NRS, GD253/144/2/7, 'Names of gentlemen to whom seeds of the Asa foetida were sent '82', February 1783.
93 British Library, Additional Manuscripts 33,554, Bentham Papers, vol. 18, Miscellaneous Papers, ff. 29v–30v, 20 January 1782.
94 *Pharmacopoea Rossica*, St Petersburg, 1782; Peter Simon Pallas, *Flora Rossica seu Stirpium Imperii Rossici per Europam et Asiam indigenarum descriptiones*, 2 vols., Frankfurt: Ioannem Georgium Fleischer, 1789.
95 Andrew Duncan, ed., *Medical Commentaries for the Year 1780*, vol. 7, London: Charles Dilly, 1783, p. 228.

were at the forefront of Asian medical knowledge in the West, as British efforts to uncover useful medications in India, for example, had only just begun under the direction of Joseph Banks.[96] The inclusivity of Russian medical practices would not have been a surprise to a figure such as Hope, as Guthrie's supplies of exotic seeds were accompanied by requests for Hope to supply him with Atlantic seeds and plants. In the letter that accompanied the asafoetida seeds, for example, Guthrie mentioned that 'American Plants are much wanted here, if you can send us any'.[97] Nor was he alone in this request, as the new British ambassador to Russia in the 1790s, Charles Whitworth (1752–1825), requested the Foreign Office to arrange for a shipment of 'rare Plants and Seeds' from Kew at the desire of Princess Dashkova, who wished to add these new species to the gardens supervised by the Russian Academy of Sciences.[98] Plant exchange – and, through it, medical knowledge – was a multivalent process, beginning with mutual exchanges between Russia and China, and proceeding across the Baltic to involve Linnaeus and Hope, among others.

Conclusion

The Russo-China rhubarb trade remained robust in the long period between 1760 and the 1830s, before it finally declined.[99] In the nineteenth century, the dominance of chemical medicine and the rise of germ theory in the West diminished reliance on traditional herbal remedies. Furthermore, domesticated rhubarb in the West (either *R. rhaponticum* or a new *R. hybridum*) emerged as an edible crop in the early decades of the century, transforming an imported drug into an ordinary plant.[100] Even so, the persistence of the medicinal rhubarb trade is remarkable. In the seventy-year 'golden age' of the trade, there were only two notable gaps in the Sound Toll register's records of rhubarb exports via the Baltic, the first in the period between 1771 and 1779 and the second between 1807 and 1814. The second disruption arises from the British implementation of the Continental Blockade in the Napoleonic era, but the first requires explanation.

In the earlier period, the relationship between China and Russia was unstable, with the Qing banning the trade three times, in 1764–68, 1779–80, and 1785–92. Each of these bans embargoed the rhubarb trade. While the decline in the trade in 1771 was possibly the result of the decline of supplies from the first ban, the later prohibitions had no effect on rhubarb exports. Following an initial decrease, the trade may have continued to be suppressed with the disruptions to Atlantic shipping accompanying the American Revolutionary War, as the trade resumed following the settlement of the war. Neither the trade's decline nor its resumption can be easily explained. There is no doubt, however, that rhubarb supplies were unaffected by the second and third bans (1779–80 and 1785–92). How did Russia supply the market with medicinal rhubarb in a period of an extended ban on trade? Some historians have suggested that the borders were simply too porous to control the trade, as the Qing enforced separate bans on trading with Russia in places as geographically diverse as Xinjiang, Korea, and the

96 Ray Desmond, *The European discovery of the Indian flora*, Oxford: Oxford University Press, 1992, pp. 202–3.
97 NRS, GD253/144/2/1, 'Letter from Matthew Guthrie', 16 August 1777, f. 1.
98 TNA, Russia: Letters and papers supplementary, FO 97/342, 'Charles Whitworth to Lord Grenville', 19 October 1793, f. 69v.
99 'Sound Toll register'.
100 Foust, *Rhubarb*, pp. 213–20; Monahan, 'Locating rhubarb', pp. 237–41.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press

Ryukyu Islands.[101] While this offers a possible explanation, the period from 1785 to 1800 was the peak of the rhubarb trade, with the volume of exports far outpacing years when the trade was legal. Either smuggling was capable of delivering as much as three or four times the amount of rhubarb yearly as legal exports, or Russia was supplementing rhubarb supplies from an alternative source.

In a regular year, Russian merchants purchased rhubarb at the Chinese border and then prepared the plant by grinding the best roots into a powder, which was then shipped across Russia. When Peter Simon Pallas wrote to John Hope in 1777, he revealed that Russia's army doctors were using *R. rhaponticum* in place of *R. palmatum*, and 'one scruple of was as good a medicine, as half a dram of the Chinese rhubarb [*sic*]'.[102] It is easy to imagine that the Russian pharmacist in Kiakhta, when faced with a lack of Chinese supplies, simply replaced imported rhubarb with the domestic Siberian variety. In St Petersburg's markets, as in London's, merchants and apothecaries paid a premium for 'true' rhubarb because of Russia's guarantee that the product had been properly inspected and prepared at the Chinese border, not that the product was Chinese.

Russia's potential rhubarb substitution should not cast doubt on the importance of the northern route of scientific exchange that extended from Beijing to Edinburgh via St Petersburg. Rather, it confirms the value of Russian medical expertise, as the opinions of Russian specialists were confirmed by Western doctors. Furthermore, rhubarb's commercial value provided an incentive to acclimatize the plant across Europe, but it was hardly the only subject of Western investigation. Ginseng and asafoetida were merely two of the numerous plants pursued by Russian specialists, alongside equally diligent efforts to investigate animals, minerals, and geography.[103] In order for us to fully understand the importance of scientific exploration in the early modern era, the Russian connection must be reintegrated into the narrative. Europeans not only looked for new discoveries along maritime routes but also continued to value the traditional overland connections with the East, facilitated by greater access to China and Siberia, and sustained by improved transportation and communication in a global era. True rhubarb may have been as much a myth as an actual species, but Western knowledge of botany and medicine was increased by the pursuit of the plant.

Matthew P. Romaniello is associate professor of history at the University of Hawai'i at Mānoa. He is the author of The elusive empire: Kazan and the creation of Russia *(University of Wisconsin Press, 2012), and co-editor of four volumes, including* Russian history through the senses: from 1700 to the present (2016).

101 The China side of the ban has been discussed in the work of James A. Millward, *Beyond the pass: economy, ethnicity, and empire in Qing Central Asia, 1759–1864*, Stanford, CA: Stanford University Press, 1998, pp. 178–80; Chang, 'Origins'; and Matthew W. Mosca, 'The Qing state and its awareness of Eurasian interconnections, 1789–1806', *Eighteenth-Century Studies*, 47, 2, 2014, pp. 103–16.

102 NRS, GD253/144/5/5, 'Letter from Professor Pallas', 18 May 1777.

103 In addition to the works on botany cited above, this includes Dorris Posselt, 'Forschungsreisen in Ruβland im 18. Jahrhundert und ihre Bedeutung für die Entwicklung der Biologie', *Wissenschaftliche Zeitschrift: Mathematisch-naturwissenschaftliche Reihe*, 2, 1976, pp. 181–201; Martina Winkler, 'From ruling people to owning land: Russian concepts of imperial possession in the North Pacific, 18th and early 19th centuries', *Jahrbücher für Geschichte Osteuropas*, 59, 2011, pp. 321–53; Ryan Tucker Jones, *Empire of extinction: Russians and the North Pacific's strange beasts of the sea, 1741–1867*, New York: Oxford University Press, 2014.

https://doi.org/10.1017/S1740022815000327 Published online by Cambridge University Press