

21 Linnaeus and the Love Lives of Plants

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During the eighteenth century, reproduction and associated processes such as heredity and evolution moved to the centre of a new science of life. The large literature on these intellectual and cultural changes concentrates on the zoological and anthropological writings of scholars including Pierre Louis de Maupertuis, Georges-Louis Leclerc de Buffon, Immanuel Kant, Erasmus Darwin and Jean-Baptiste Lamarck.¹ Yet plants also held a place in eighteenth-century thought, notably the doctrine of physiocracy, which identified agriculture as the source of wealth.² Economic historians have demonstrated how the exchange of staple foods such as wheat and potatoes between the New World and the Old facilitated the rise of capitalism.³ Botanical gardens, in Europe and overseas, served as hubs for this global exchange, and the botanists in charge played a significant role in the propagation of Enlightenment ideas of improvement and progress.⁴

One botanist has been much recognized for his contributions to Enlightenment discourses of generation, propagation and the production of wealth: the Swedish naturalist and physician Carl Linnaeus (1707–78).⁵ In 1735, while staying in Holland to complete his medical studies, Linnaeus authored the *Systema naturae* (System of nature), which proposed to classify plants according to the number and arrangement of their ‘male’ and ‘female’ generative organs (stamens and pistils). This ‘sexual system’ made the 28-year-old medical

1 Bentley Glass, Owsei Temkin and William L. Straus, Jr (eds.), *Forerunners of Darwin, 1745–1859* (Baltimore, MD, 1959); Michel Foucault, *The Order of Things: An Archeology of the Human Sciences* (London, 1974); François Jacob, *The Logic of Life: A History of Heredity*, trans. Betty E. Spillmann (New York, NY, 1973); Ernst Mayr, *The Growth of Biological Thought: Diversity, Evolution, and Inheritance* (Cambridge, MA, 1982); Staffan Müller-Wille and Hans-Jörg Rheinberger, *A Cultural History of Heredity* (Chicago, IL, 2012), esp. pp. 15–39.

2 Margaret Schabas, *The Natural Origins of Economics* (Chicago, IL, 2005); Nick Hopwood, ‘The Keywords “Generation” and “Reproduction”’, Chapter 20; Andrea Rusnock, ‘Biopolitics and the Invention of Population’, Chapter 23, this book.

3 Nathan Nunn and Nancy Qian, ‘The Columbian exchange: A history of disease, food, and ideas’, *Journal of Economic Perspectives* 24 (2010), 163–88.

4 Richard Drayton, *Nature’s Government: Science, Imperial Britain, and the ‘Improvement’ of the World* (New Haven, CT, 2000); Emma C. Spary, *Utopia’s Garden: French Natural History from Old Regime to Revolution* (Chicago, IL, 2000); Londa L. Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, MA, 2004); Schiebinger and Claudia Swan (eds.), *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia, PA, 2005).

5 Pascal Duris, *Linné et la France (1780–1850)* (Geneva, 1995); Lisbet Koerner, *Linnaeus: Nature and Nation* (Cambridge, MA, 1999); Staffan Müller-Wille, *Botanik und weltweiter Handel. Zur Begründung eines natürlichen Systems der Pflanzen durch Carl von Linné (1707–78)* (Berlin, 1999).

student famous and founded a career as Europe's leading botanical authority. According to Londa Schiebinger, the sexual system resonated with eighteenth-century audiences because Linnaeus 'brought traditional notions of gender hierarchy whole cloth into science'. Most importantly, she claims, the sexual system emphasized heterosexual marriage, and thus excluded homosexuality, for example.⁶ More recent work has complicated this picture. Ann Shteir found that sexualized botanical representations mattered to eighteenth-century audiences as 'boundaries to be disputed'.⁷ This chimes with the observation by earlier historians that the sexual system challenged the long-held conviction that plants did not propagate sexually at all since they lacked the capacity of animals to sense and move.⁸

This chapter uses the case of Linnaeus to reveal some deeper levels of eighteenth-century discourses on sexuality and reproduction. I first take a fresh look at the sexual system, revealing references to behaviours that most eighteenth-century readers perceived as deviant. Sexuality, the subversive message went, was universal and produced a cornucopia of life forms. Then I turn to Linnaeus's writings on dietetics, physiology and the economy of nature, which portray sexuality as a source not only of new life, but also of struggle, dispersion and death. The final section explores Linnaeus's working life, which saw him engaged in propagating plants from all over the world, and his family life, which presented him and his wife with economic and social challenges. In conclusion, I discuss how eighteenth-century botanists projected onto plants their beliefs in a stable natural order that would foster inexhaustible riches, as well as their fears of an unruly underworld of sexual forces and desires.

Perverting the Scale of Nature

Linnaeus designed the sexual system in the summer of 1730 while teaching medical students at the Uppsala botanical garden. To support his course, he arranged the species that were grown there in manuscript catalogues, some of which were probably sold to students, others given as gifts to potential patrons. Five catalogues survive. Two, dating from spring 1730, use Joseph Pitton de Tournefort's classification system,

6 Londa Schiebinger, *Nature's Body: Gender in the Making of Modern Science* (Boston, MA, 1993), pp. 17 (quotation), 4, 25–6.

7 Ann B. Shteir, *Cultivating Women, Cultivating Science: Flora's Daughters and Botany in England, 1760 to 1860* (Baltimore, MD, 1999), p. 274; also Elizabeth Heckendorn Cook, "'Perfect' flowers, monstrous women: Eighteenth-century botany and the modern gendered subject', in Helen Deutsch and Felicity Nussbaum (eds.), *'Defects': Engendering the Modern Body* (Ann Arbor, MI, 2000), pp. 252–79.

8 François Delaporte, *Nature's Second Kingdom: Explorations of Vegetality in the Eighteenth Century*, trans. Arthur Goldhammer (Cambridge, MA, 1982); John Farley, *Gametes & Spores: Ideas about Sexual Reproduction, 1750–1914* (Baltimore, MD, 1982); Roger L. Williams, *Botanophilia in Eighteenth-Century France: The Spirit of the Enlightenment* (Dordrecht, 2001).

which was based on flower morphology without any reference to sexual functions. The remaining three, dating from summer 1730 and spring 1731 respectively, present the first versions of the sexual system. One, *Adonis Uplandicus* (Garden of Uppland), does so in the form of a diagram which already contains the basic elements of the version in the *Systema naturae* of 1735 (Fig. 21.1).⁹

The diagram, with its heading ‘Classes in our sexual system, named allegorically’, can be read in two ways. From left to right, one is led through a series of progressively finer distinctions pertaining to the ‘marriages of plants’ (*Nuptiae plantarum*). These are either ‘private’ (leading to the class *Cryptogamia*) or ‘public’. The public marriages are conducted in either one or two bedchambers (*Monoclinia/Diclinia*), branches that split further according to differences in the social and legal relationships between the partners involved: kin or not (*affinitas/diffinitas*), married or adulterous (*conjugium/adulterium*) and of equal or unequal social status (*indifferentismus/subordinatio*). Only then does the sexual system turn to the number of male partners to distinguish the first thirteen classes (*Monandria/ ... /Polyandria*). In exploring the metaphor of ‘marriage’, Linnaeus stressed consummation through sexual union, which explains the inclusion of adultery.

The second reading focuses on the twenty-three classes on the right-hand side of the diagram. These form a vertical series, with *Monandria* (literally ‘one-husbanded’) at the top, and *Cryptogamia* (‘secretly married’) at the bottom. The published version in the *Systema naturae*, which accentuated the sexual imagery by adding short explanations, helps us analyse this series. The *Monandria*, that is, plants with one ‘husband’ only, are placed at the top. Below them is a progressive series of perversions of this ideal. Unions involving more and more partners culminate in the *Polyandria*, with ‘twenty or more husbands in the same bed with a woman’. The next two classes involve miscegenation, with females entering relationships with males of different ‘potency’ (*Didynamia*, *Tetradynamia*). Then come five classes that exhibit various forms of incest and male homosexuality: the *Monadelphia*, *Diadelphia* and *Polyadelphia*, where women are wed to one, two or more groups of ‘cognate’ males; the *Syngenesia*, where ‘husbands form a union with their genitals’; and the *Gynandria*, with husbands ‘monstrously cognate’ to the wife. Before arriving at the bottom of the scale – the *Cryptogamia*, which ‘celebrate their nuptials secretly’ – the series progresses through three more classes, the *Monoecia*, *Dioecia* and *Polygamia*, where adultery takes over, reaching across otherwise separate ‘bedchambers’ and ‘houses’. The 1735 version also adds a division of plants with composite flowers, this time from a population perspective. The *Monogamia* display ‘many marriages’, while always ‘contracting pure conjugals’, but ‘prostitutes’ (*meretrices*)

⁹ James L. Larson, *Reason and Experience: The Representation of Natural Order in the Work of Carl von Linné* (Berkeley, CA, 1971), pp. 50–8.

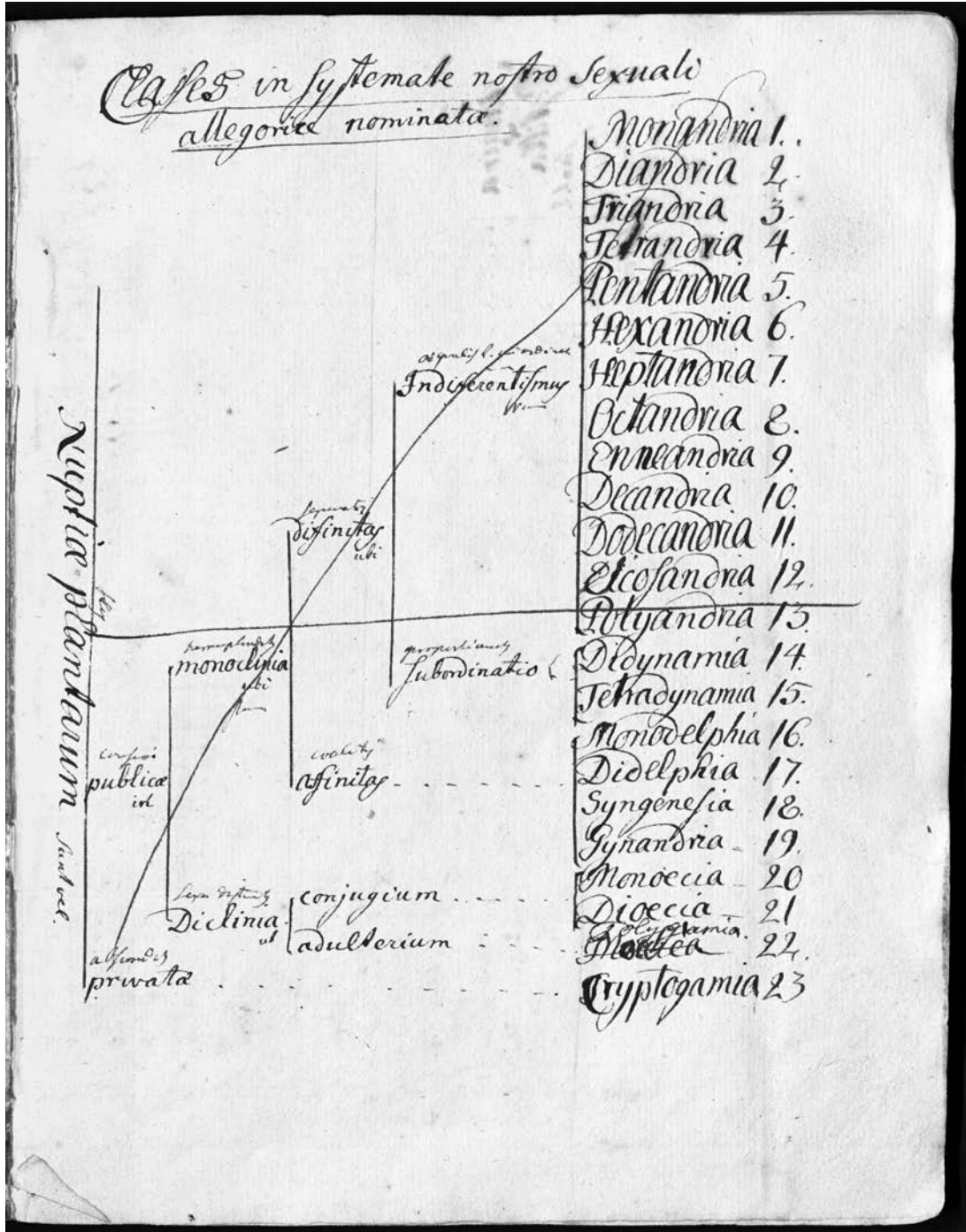


Figure 21.1 'Classes in Systemate nostro Sexuali allegorice nominatae (Classes in our sexual system, named allegorically)', page from Carl Linnaeus, *Adonis Uplandicus*. Ink on paper, 20 × 16 cm. Uppsala University Library, Department of Manuscripts and Music, Leufsta MS 6.

enter the picture in the *Polygamia*. Some of these prostitutes are sterile, while others are fertile and replace sterile wives ‘in order to propagate the family’,¹⁰

Schiebinger noted the rich allusions to eighteenth-century practices – unsanctioned (‘secret’) marriages, marriage among close kin and prostitution. Yet if one takes into account the full range of practices portrayed, it seems implausible that Linnaeus simply reflected existing custom.¹¹ The sexual system rather stood in a long tradition of using pornography to entertain medical students.¹² And eighteenth-century audiences understood this, both the many, now infamous critics who denounced the sexual system for its immorality, and those like Jean-Jacques Rousseau, Maupertuis, Julien Offray de La Mettrie and Erasmus Darwin who endorsed its vivid imagery.¹³

The target of the witticisms in the sexual system becomes clear once one realizes its relation to what the historian of ideas Arthur O. Lovejoy called the ‘Great Chain of Being’, the ancient notion that all beings, from humble mosses to humans, could be arranged on a linear scale of perfection.¹⁴ Only the *Monandria*, the top of the series of twenty-four classes of the sexual system, displays what was deemed a morally acceptable, that is, heterosexual and monogamous, union. From there, one descends into an abyss of deviations and perversions, ending in the unfathomable world of the *Cryptogamia*. Once one reads the sexual system like this, two subversive messages emerge. First, whatever ‘rank’ plant species may occupy on the scale of perfection, they *all* propagate sexually. This was an affront to conceptions of the scale of nature, since sexual procreation seemed to presuppose the ability to sense and move, which had been considered the prerogative of the more ‘noble’ animals. Second, the exuberant nuptial arrangements of the sexual system highlighted nature’s production of an ostensibly redundant array of variations upon one universal theme. Sexual relations both unified and dispersed plant (and metaphorically human) life. They held these forms together in an apparently stable, ‘natural’ order of rationally accessible distinctions while at the same time exploding order through illicit transgressions and permutations. This fundamental ambivalence, and the humorous associations it elicited, account for the success of the sexual system.

10 Carl Linnaeus, *Systema naturae, sive Regna tria naturae systematice proposita per classes, ordines, genera, & species* (Leiden, 1735), ‘Clavis systema sexualis’ (unpaginated).

11 Schiebinger, *Nature’s Body*, pp. 25–6.

12 Julie Peakman, *Mighty Lewd Books: The Development of Pornography in Eighteenth-Century England* (New York, NY, 2003), pp. 71–8; Sarah Toulalan, *Imagining Sex: Pornography and Bodies in Seventeenth-Century England* (Oxford, 2007), pp. 21, 53.

13 Schiebinger, *Nature’s Body*, pp. 40–74. These debates extended into the nineteenth century: Theresa M. Kelley, *Clandestine Marriage: Botany and Romantic Culture* (Baltimore, MD, 2012).

14 Arthur O. Lovejoy, *The Great Chain of Being: A Study of the History of an Idea* (Cambridge, MA, 1936); also Laurence M. V. Totelin, ‘Animal and Plant Generation in Classical Antiquity’, Chapter 4, this book.

Sexuality and the Balance of Nature

Does this mean the system was only a joke? Far from it, but to see what concerns lay at its core we need other sources. Linnaeus had a ‘hidden philosophy’, entangled in the premodern world of symbols and allegories, that idiosyncratically reflected contemporary preoccupations with the roles of the sexes in procreation.¹⁵ This philosophy came to the fore in his writings on medicine and physiology, where sexual relations were a central theme, but in a strikingly different way from the combinatorial logic of the sexual system.

In 1733 Linnaeus prepared a manuscript, *Diaeta naturalis*, on the occasion of private lectures he gave on dietetics, or ways to avoid disease and keep healthy.¹⁶ The lectures followed a conventional Galenic division into ‘things natural’, that is, the given parts, functions and virtues of the body, and the ‘non-naturals’, those factors affecting health that regimen can control.¹⁷ Beginning with the former, the manuscript observes that ‘all living beings give birth to [beings] similar to them’; conception, pregnancy and birth were seen as the source of bodily constitution and temperament. The rest of the lecture was about the influence on health of the non-naturals: climate, clothes and housing, food and drink, sleep and sexual activity, and the passions.

In the section on things natural, Linnaeus mentions hereditary diseases (*haereditarii morbi*), a topic to which doctors were only beginning to pay attention. Tellingly, he did so in the context of dietetics, since like most contemporaries, Linnaeus blamed the circumstances of conception, rather than dispositions transmitted from generation to generation, for inherited disease. To avoid such diseases, parents should themselves be healthy, neither too old nor too young, and avoid sexual intercourse during menstruation.¹⁸

15 K. Rob V. Wikman, *Lachesis and Nemesis: Four Chapters on the Human Condition in the Writings of Carl Linnaeus* (Stockholm, 1970); Gunnar Broberg, *Homo sapiens L.: Studier i Carl von Linnés naturuppfattning och människolära* (Stockholm, 1975).

16 Arvid Hj. Uggla (ed.), *Diaeta naturalis, 1733: Linnés tankar om ett naturenligt levnadssätt* (Uppsala, 1958). Further notes served as the basis of eight public lectures at the University of Uppsala, but the manuscripts were never published, probably because of the sexually explicit content; see Axel Otto Lindfors (ed.), *Linnés dietetik på grundvalen af dels hans eget originalutkast till föreläsningar: Lachesis naturalis quae tradit Dietam naturalem och dels lärjungeanteckningar efter dessa hans föreläsningar Collegium diæticum* (Uppsala, 1907), p. iv.

17 On early modern dietetics, see William Coleman, ‘Health and hygiene in the *Encyclopédie*: A medical doctrine for the bourgeoisie’, *Journal of the History of Medicine and Allied Sciences* 29 (1974), 399–421; and Steven Shapin, ‘Descartes the doctor: Rationalism and its therapies’, *British Journal for the History of Science* 33 (2000), 131–54.

18 Uggla, *Diaeta naturalis*, pp. 32–4; in Lindfors, *Linnés dietetik*, p. 31. Linnaeus even used the Latin noun *haeredit[as]*. On heredity in eighteenth-century medicine: Carlos López Beltrán, ‘The medical origins of heredity’, in Müller-Wille and Rheinberger, *Heredity Produced*, pp. 105–32.

Sexual intercourse was also a theme in the section on the non-naturals, but now with a view to the effect on individuals. Here, Linnaeus stressed that sexual activity was a natural necessity. 'It is certain that the first law was to grow and multiply', and this law, Linnaeus claimed, 'is so ingrained in all bodies, that it is hard to describe ... Love is what all wish most, and most enjoy, the most general, necessary, and certain [thing].' Above all, this removed the sexual drive from psychological and moral control. As he told his students:

Lewdness (*Kåtthet*) is no affect [of the soul], hence nothing foul in girls. No dropsical person will be called drunkard, even if always thirsty. No child greedy and avaricious because it wants to eat. Hence no girl unchaste that wants men, since once the egg (*ovum*) swells she feels desire, and it would be a miracle should she not feel it.¹⁹

If sexual desire is natural, its suppression will have negative consequences for health, especially mental health. But a balance needed to be struck, Linnaeus warned, since '[s]emen is the flower and quintessence of the blood, hence not to be exhausted.' 'One should not give life to others to such a degree', he continued, 'that one shortens one's own.' Twice per month, or at most twice per week, was his concrete advice, not forgetting to reassure his listeners once more that '[a]ll excellent fellows, enlightened by great reason, ... have been lewd'.²⁰

This conception of sexuality as a system of regenerative, if potentially exhausting, natural forces also informed Linnaeus's philosophy of nature. Endorsing a 'natural magic' that built on sympathies, antipathies and action at a distance, Linnaeus conceived of organic bodies as composed of two sexualized, dynamically interacting substances, the 'medulla' (pith) and 'cortex' (bark). As he put it in *Generatio ambigena* (Two-sided generation, 1759) with reference to plants:

Vegetables consist of medullary and cortical substances; the medullary, the chief life of the vegetables, is of a wonderful disposition, which has the power to multiply indefinitely ... This medullary [matter] is as it were imprisoned within the cortical substance, which makes every effort to keep it in ... But when, owing to height, heat, lack of moisture or nourishment, or disease, it is not strong enough, then the marrow exerts outward pressure, and bursts the cortical substance; and then the plant undergoes a transformation, the fruit-body is perfected, and the marrow is granulated into seeds.²¹

¹⁹ Uggla, *Diaeta naturalis*, pp. 111, 109. In mentioning the *ovum*, Linnaeus follows William Harvey and the ancient two-seed model of generation; see Carl Linnaeus, *Sponsalia plantarum* (Stockholm, 1746); and Rebecca Flemming, 'Galen's Generations of Seeds', Chapter 7, this book.

²⁰ Uggla, *Diaeta naturalis*, pp. 111–12.

²¹ Carl Linnaeus, 'Generatio ambigena', in *Caroli Linnaei Amoenitates academicae, seu Dissertationes variae physicae, medicae, botanicae antehac seorsim editae* ..., vol. 6 (Stockholm, 1763), pp. 2–3. I owe the translation to Stephen Freer.

It is striking that these two substances are portrayed as bearing antagonistic forces: one of indiscriminate proliferation, acting from the inside out, which Linnaeus associated with the maternal line, and one of containment and control, which he associated with the male (Fig. 21.2). The constant struggle for balance sustains life. When maternal powers take over, the luscious forms of the flower arise, and if in excess, monstrosities appear, like double flowers. If paternal powers predominate, plant life dwindles. Moreover, it is the male substance that gives plants their specific form, a supposition that Linnaeus exploited to explain the origin of new species from hybridization.²²

Linnaeus's speculations about medulla and cortex belonged to the genre of 'animal economy', physiological writings that portrayed organic bodies as machines composed of vessels and percolating fluids, or, in more vitalist terms, 'fibres' and 'springs'.²³ Stephen Hales had advocated this model in his *Vegetable Staticks* (1727). Mapping a gendered dualism onto this economy seems to be Linnaeus's addition. There is no evidence that contemporaries adopted it, but the medulla–cortex theory echoed in his far more influential concept of an 'economy of nature' (*oeconomia naturae*) at large.²⁴ Plant and animal species, he proposed, were interconnected by a web of relationships preserved through a precarious balance between destruction and production. This economy built on a dichotomy of two orthogonal processes: over time, individuals within each species produced more individuals, growing in number from generation to generation; but this process depended on synchronic relationships of consumption and production that curtailed growth so that it remained proportionate to the available means of subsistence.²⁵ Unlike Buffon, Linnaeus did not use the word 'reproduction', but instead the expression '*generatio continuata*', literally 'continued generation', or generation as a continuous process extending throughout a species and transcending any particular moment – conception, birth or death – in the life of individual beings.²⁶

- 22 P. F. Stevens and S. P. Cullen, 'Linnaeus, the cortex-medulla theory, and the key to his understanding of plant form and natural relationships', *Journal of the Arnold Arboretum* 71 (1990), 179–220.
- 23 Philippe Huneman, "Animal economy": Anthropology and the rise of psychiatry from the *Encyclopédie* to the alienists', in Larry Wolff and Marco Cipolloni (eds.), *The Anthropology of the Enlightenment* (Stanford, CA, 2007), pp. 262–76.
- 24 Trevor Pearce, "A great complication of circumstances": Darwin and the economy of nature', *Journal of the History of Biology* 43 (2010), 493–528.
- 25 Camille Limoges, 'Introduction' to Linné, *L'équilibre de la nature*, ed. Limoges, trans. Bernard Jasmin (Paris, 1972), pp. 7–24; Frank N. Egerton, 'Changing concepts of the balance of nature', *Quarterly Review of Biology* 48 (1973), 322–50.
- 26 Müller-Wille and Rheinberger, *Cultural History*, pp. 31–2; Hopwood, 'Keywords'.

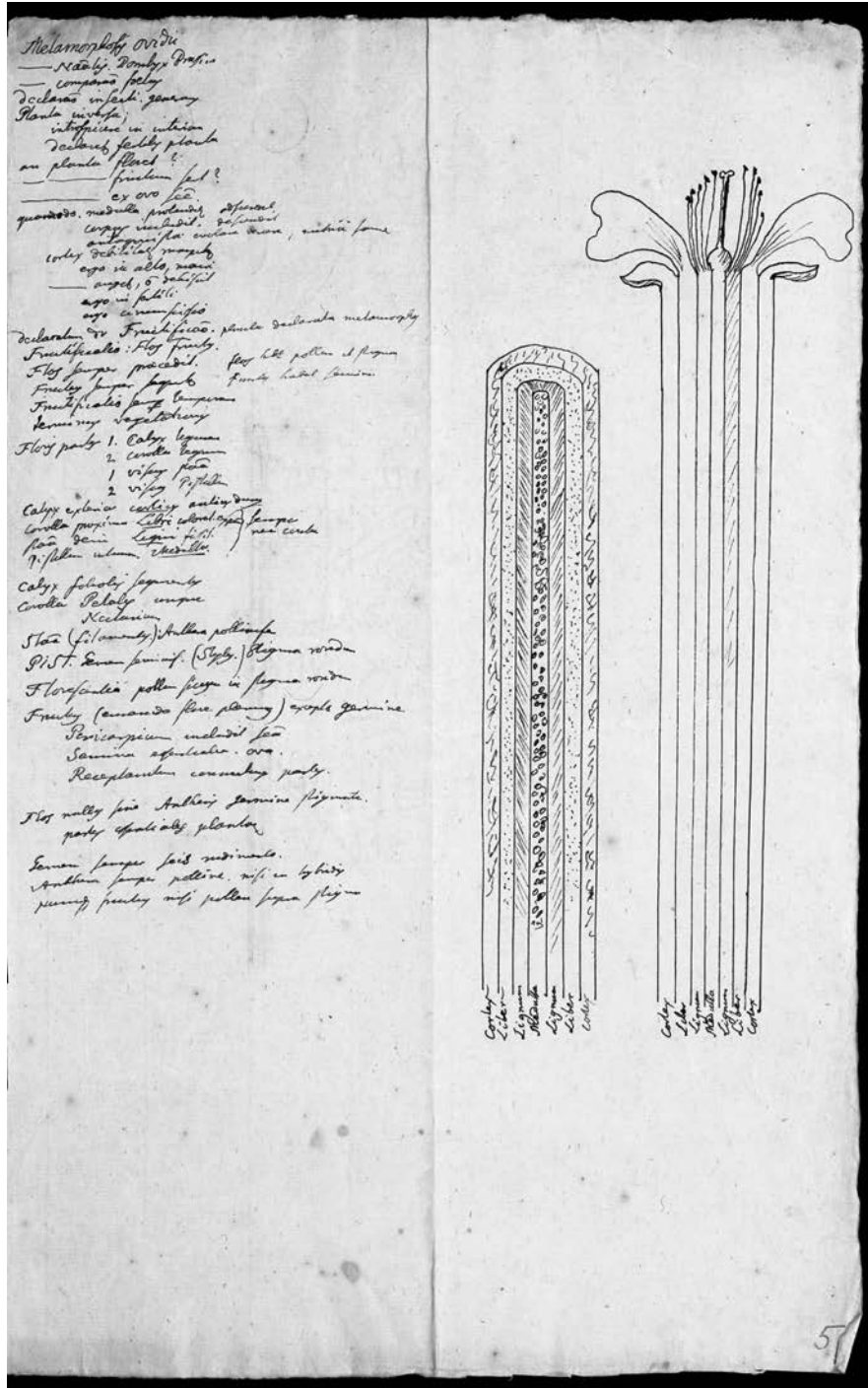


Figure 21.2 Late manuscript containing a drawing by Linnaeus showing the relationship between layers of the plant stem ('cortex' outside, 'medulla' in the centre) and male and female flower parts. Ink on paper, 21 × 8.5 cm. Linnaean Manuscripts, 'Notes on the ontogeny of flowers and leaves' (c. 1770), MS GB-110/LM/LP/BOT/6/21, p. 5, reproduced by permission of the Linnean Society of London, Library and Archives, www.linnean.org.

Oeconomia, Work and Family Life

Linnaeus's economy of nature – with species as populations of determinate number and scope engaging in relations of exchange – fits well with his outlook on the human economy.²⁷ Linnaeus subscribed to the doctrine of cameralism, which aspired to turn territorial states into self-sufficient communities through rational administration of natural resources. In contrast to the economy of nature, however, this ideal had to be enforced through a system of legal 'pulleys and levies' – especially to restrain women's indulgence in imported luxuries.²⁸ As Linnaeus's philosophy of nature contained a curious antagonism of medulla and cortex, so in his economic views he conceded the potential for imbalance and struggle. To gain a better understanding of this position, one has to turn to the economic projects and practices in which Linnaeus engaged.

A good entry point is *Musa Cliffortiana* (1736), a slim volume to celebrate success in bringing a banana plant to flower and fruit in the hothouse of George Clifford, a merchant banker and botanical amateur, who supported Linnaeus financially during his last two years in Holland. With the help of Clifford's gardener, Dietrich Nietzel, Linnaeus had managed to 'imitate the most productive native locations of Musas [bananas] in every respect, to wit, in temperature, quality of the soil and quantity of water.'²⁹ Their efforts were rewarded with a flower exhibiting 'a peculiar ... sort of polygamy' in which 'one wife, married to useless husbands, embraces the husbands of the other female, while these husbands are united with a sterile and incapable wife' (Fig. 21.3).³⁰ Linnaeus lured Nietzel to Uppsala several years later, in 1742, when he took over the chair in medicine and botany there and became director of the botanical garden. He eventually served the royal family fresh bananas.

This episode reminds us that Linnaeus cultivated and propagated plants throughout his career, routinely in the botanical garden, but also in trying to acclimatize exotic plants like tea and mulberry to the harsh Swedish conditions in order to turn his home country into a 'miniature mercantile empire' (Fig. 21.4).³¹ Many of these attempts failed, however, and Linnaeus's relations with gardeners were fraught.³² Moreover, success

27 On eighteenth-century conceptions of population: Rusnock, 'Biopolitics'; on Linnaeus's influence on contemporary economic thought: Paul P. Christensen, 'Fire, motion, and productivity: The proto-energetics of nature and economy in François Quesnay', in Philip Mirowski (ed.), *Natural Images in Economic Thought: 'Markets Read in Tooth and Claw'* (Cambridge, 1994), pp. 249–88.

28 Koerner, *Linnaeus*, p. 102; Lisbet Koerner, 'Women and utility in Enlightenment science', *Configurations* 2 (1995), 233–55.

29 Carl Linnaeus, *Musa Cliffortiana: Clifford's Banana Plant*, trans. Stephen Freer (Ruggell, 2007), p. 157.

30 *Ibid.*, p. 167. 31 Koerner, *Linnaeus*, p. 114.

32 Staffan Müller-Wille, 'Introduction' to Linnaeus, *Musa Cliffortiana*, pp. 63–5.

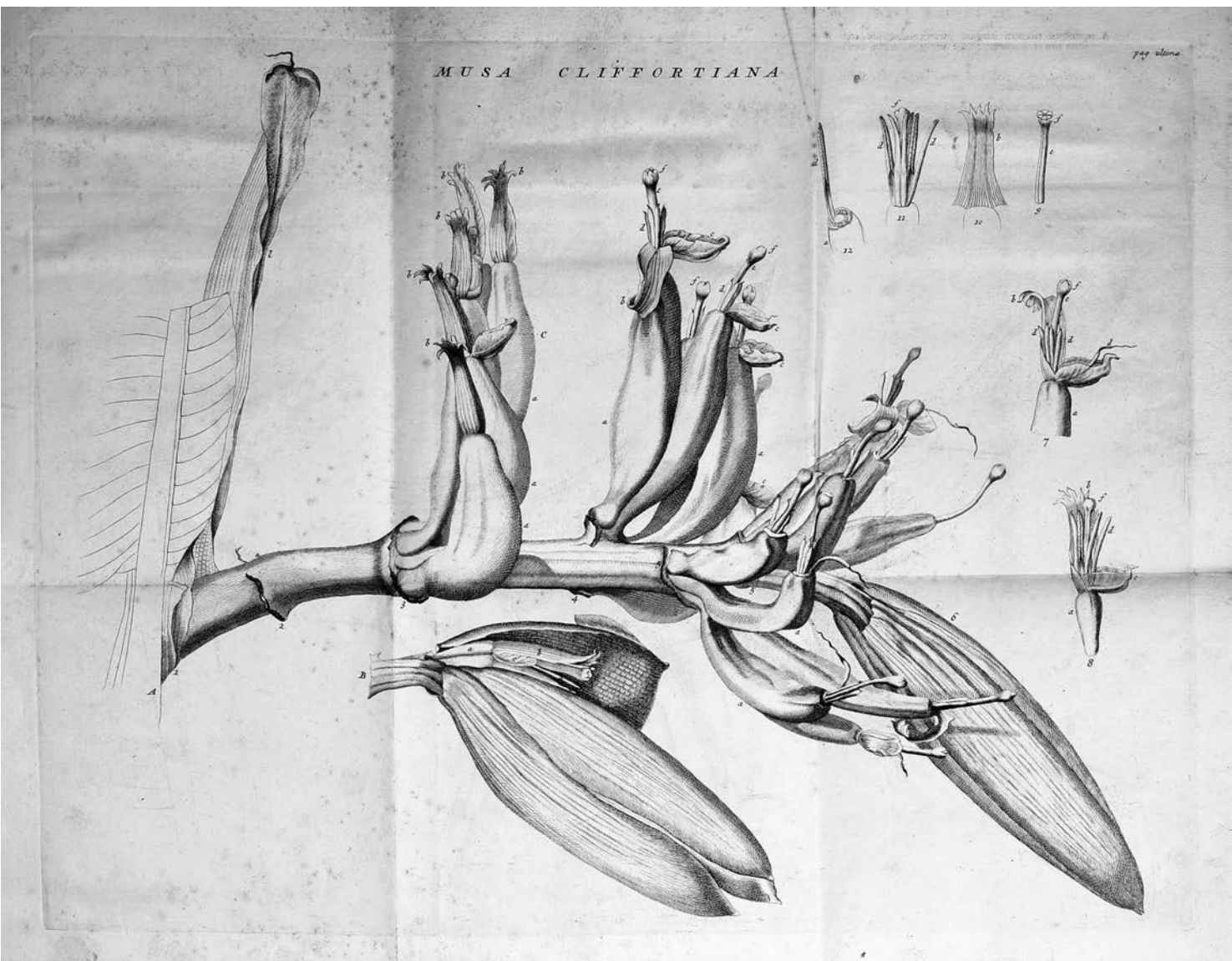


Figure 21.3 Plate showing banana flower with male flower bud at right and female flowers arranged in ‘hands’ further left. Copper engraving by A. van der Laan produced from a drawing by Martin Hofmann. Foldout from Linnaeus’s *Musa Cliffortiana florens Hartecampi 1736 prope Harlemum* (Leiden, 1736), www.BioLib.de. 37 × 52 cm.

often relied on the capacity of plants to reproduce asexually, which was troublesome for someone convinced of the universality of sex. In other cases, which Linnaeus noted with increasing curiosity from the early 1750s, the closeness of species in the beds seemed to foster hybrid unions and the appearance of new ‘constant’ varieties. Originally destined

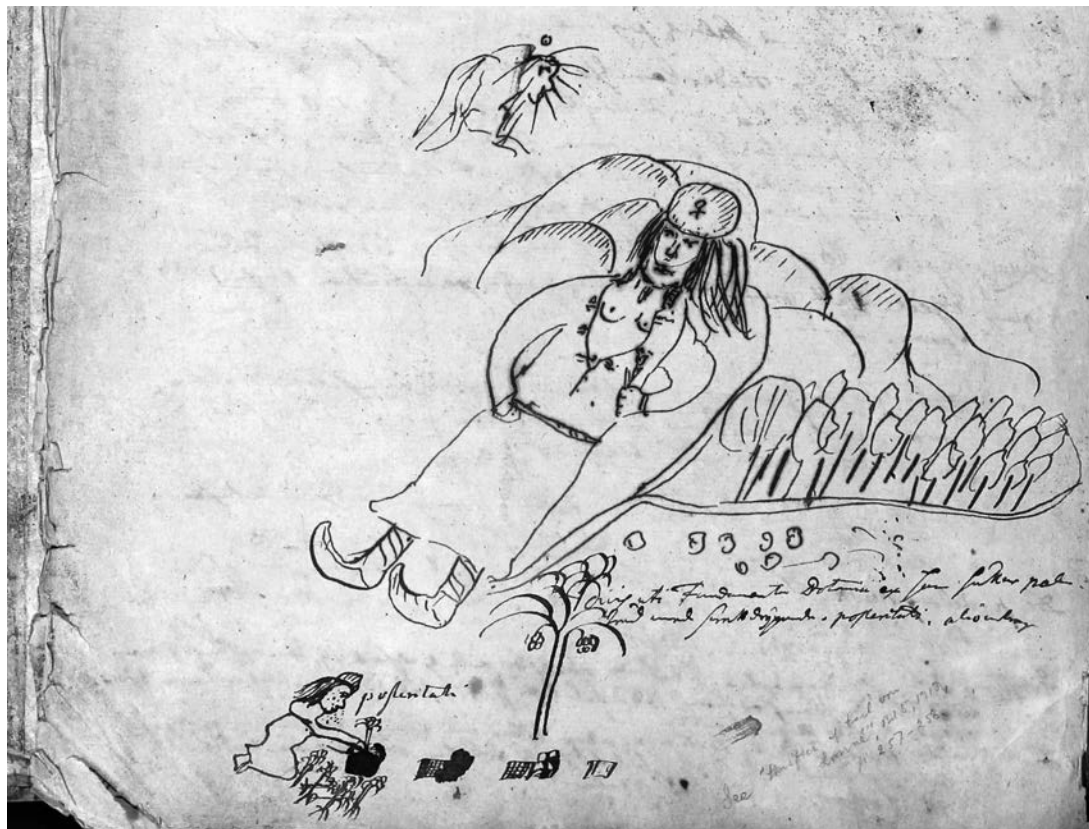


Figure 21.4 Drawing from Linnaeus's Lapland journal, imagining palm planting there. The note by the full-grown palm tree reads, in part, 'one who plants palm trees wet with sweat – For posterity'. The large female figure is dressed in a Sámi costume. Ink on paper, 14 × 18 cm. Linnaean Manuscripts, 'Original cover to *Iter Lapponicum*', MS GB-110/LM/LP/TRV/1/2/2, by permission of the Linnean Society of London, Library and Archives, www.linnean.org.

to restore the pristine order of Creation, the botanical garden turned into a laboratory of plant reproduction.³³

If cultivating specimens in the garden was burdensome, so was the associated paperwork. For most of his career, Linnaeus used interleaved copies of *Genera plantarum* (*Genera of plants*, 1737) to register new species and amend previous descriptions. Other botanists followed, and fed him their own observations in letters, often accompanied by dried specimens or seeds. This collective system of writing natural history proved productive for Linnaeus, including financially. His correspondents' feedback allowed him to prepare updated editions of his major taxonomic publications, each providing a fresh starting

33 Staffan Müller-Wille and Vitezslav Orel, 'From Linnaean species to Mendelian factors: Elements of hybridism, 1751–1870', *Annals of Science* 64 (2007), 171–215.

point for further annotations.³⁴ There was a drawback, however: Linnaeus received ever more species to describe and assign. Complaints already pepper his correspondence from the late 1740s, when he was working on the manuscript of his opus magnum, the *Species plantarum* (Species of plants, 1753). He confided to a close friend that he was compelled to sit at the desk ‘like a broody hen on her eggs, hatching species’. Letters in the late 1760s added an air of doom. ‘I am bedridden’, Linnaeus wrote in 1769, ‘and make observations in my dead science each day’. His last taxonomic works carried the title *Mantissa*, or makeweight, a worthless addition to keep customers happy.³⁵

While writing the *Musa Cliffortiana* Linnaeus was already engaged to Sara Lisa Moraea – daughter of the city physician of Falun, a mining town Linnaeus had visited in 1734 – with whom he would experience the pleasures and pressures of reproduction more directly. Posterity has not treated her well. One student, Johan Christian Fabricius, described her as ‘a tall, large woman, imperious, egoistic and without any culture’. Sara Lisa brought with her a considerable fortune, and the couple expanded this when they established a household in Stockholm, where Linnaeus set up a practice specializing in the treatment of venereal disease, and then during his years as a university professor, by acquiring no fewer than three large agricultural estates. Sara Lisa, not Carl, managed this small empire of early agricultural capitalism.³⁶ Linnaeus had this in mind when in a manuscript autobiography he thanked God for having provided him with a wife ‘who kept house while I worked’.³⁷

Their relationship seems to have been stable, albeit fraught with conflicts over expenses for books and collections, experiments to grow Siberian plants on their estates, and consumption of luxuries like china ware and tea, as well as social events involving dancing and playing cards.³⁸ It was a productive marriage, however. Sara Lisa bore seven children, five of whom survived into adulthood, four daughters and one son. The daughters were a constant worry, since they needed to be equipped with

34 Staffan Müller-Wille and Isabelle Charmantier, ‘Natural history and information overload: The case of Linnaeus’, *Studies in History and Philosophy of Biological and Biomedical Sciences* 43 (2012), 4–15; Bettina Dietz, ‘Contribution and co-production: The collaborative culture of Linnaean botany’, *Annals of Science* 69 (2012), 551–69.

35 Isabelle Charmantier and Staffan Müller-Wille, ‘Carl Linnaeus’s botanical paper slips (1767–1773)’, *Intellectual History Review* 24 (2014), 215–38. The quotations are from *The Linnaean Correspondence: Carl Linnaeus to Abraham Bäck*, 4 Mar. 1752, linnaeus.c18.net/Letter/L1371, and 15 Aug. 1769, linnaeus.c18.net/Letter/L5952, last accessed 18 Sept. 2016.

36 Mariette Manktelow and Petronella Kettunen, *Kvinnorna kring Linné* (Ryd, 2007). Linnaeus and his wife were thus representative of what demographers call the northwest European system of household formation: Richard M. Smith, ‘Marriage and Fertility in Different Household Systems’, Chapter 24, this book.

37 Carl Linnaeus, *Vita Caroli Linnaei: Carl von Linnés självbiografier*, ed. Elis Malmeström and Arvid Hj. Uggla (Stockholm, 1957), p. 146.

38 Wilfrid Blunt, *Linnaeus: The Compleat Naturalist* (London, 2004), pp. 180–1.

dowries to stand a chance on the marriage market. The son, also Carl, caused concern too. Linnaeus doubted his son's botanical capabilities, and although he inherited the chair, Linnaeus's will excluded Carl the Younger from his botanical collection. The son survived only another five years, during which time he turned his father's stray notes for another *Mantissa* into his own *Supplementum plantarum* (1781).³⁹

Conclusion

The static image of nature that *Systema naturae* held up, and its apparent pretension to read the Creator's mind – with respect to plants, a dirty mind, as many contemporaries observed – contrasts markedly with the ideas of obscure vital forces sustaining life that Linnaeus expressed in many other places. The full picture of his life and work challenges previous explanations of his outlook as informed by an outdated, religiously motivated metaphysics of essentialism and species fixism. Linnaeus may have occupied a position at the fringes of the European Enlightenment, but he played a central role in the global networks of exchange through which botanists recruited plants for patriotic and imperial projects of improvement. The sexual system, with its more than 900 genera neatly tabulated under their respective classes and orders, was emblematic of the material riches the plant world offered – foods, medicines, dyestuffs, fibres and timbers – and hinted at the hitherto secret means by which these riches might be multiplied beyond their natural habitats and hence exploited.

Botanists thus engaged in plant reproduction long before they used the term in the modern sense, and Linnaeus was no exception to this rule. Crucially, these practices not only aimed to produce plant specimens that could stand in for their conspecifics all over the world, but were also entwined with botanists' ways of reproducing themselves, of carving out a space to make their own living in the botanical world. Linnaeus serves as a prime example. He was no metropolitan, but the largely self-taught son of a parson from the very poor region of Småland, who came to scientific fame as an outsider. His success depended on developing an acute sense of the social and cultural mechanisms that allowed one to produce, and reproduce, individual standing in the Republic of Letters. In equal measure, however, he developed fears of degeneration and exhaustion over his long career. That the sexual system managed to capture this aspect of reproduction as well, and to portray plant life as an underworld of exuberant sexual drives and desires, may have contributed as much to its long-lasting fame as its more overt messages of order and progress.

³⁹ Charmantier and Müller-Wille, 'Linnaeus's botanical paper slips', 11–13.