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Cultivating the Botanical Woman: Rousseau, Wakefield and the Instruction of Ladies in Botany

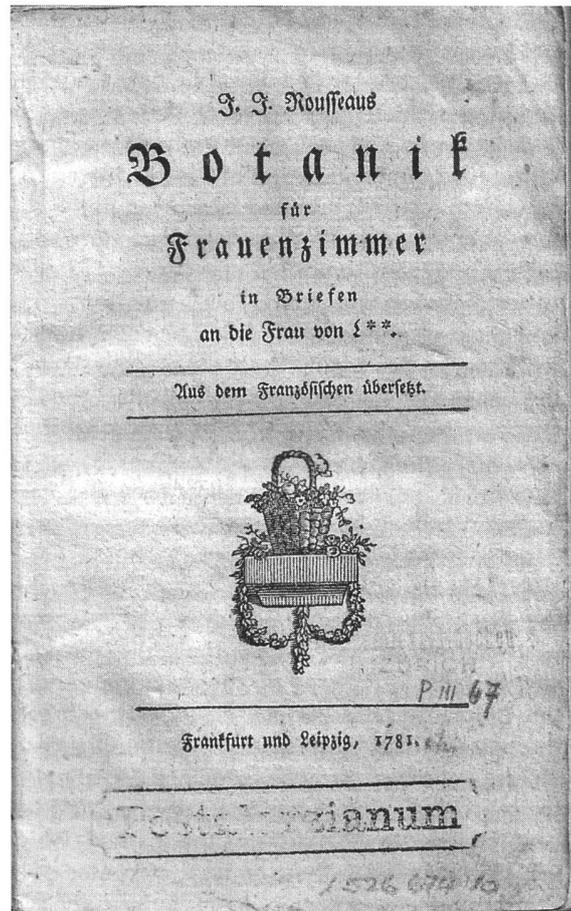
(Red.) Im 18. Jahrhundert kursierten viele botanische Texte, die augenscheinlich auf Frauen ausgerichtet waren. Die auf Reproduktion, Sexualität, Erfahrung und Wissenschaft, Klassifikation und Ordnung, Introspektion und Öffentlichkeit fokussierte Sprache und Argumente der Botanik waren dabei unauflösbar mit Vorstellungen vom intellektuellen und moralischen Vermögen sowie der sozialen Rolle von Frauen verbunden. Sam George beschränkt dabei ihre Argumente und Quellen vorwiegend auf Grossbritannien, wobei die Übersetzung von Rousseaus wenig diskutierten Erziehungsvorschlägen für die Tochter einer Freundin Ausgangspunkt sind.

■ Sam George

In the eighteenth century many botanical texts were specifically addressed to the female sex. The language and arguments of botany, centring around reproduction and sexuality, experience and science, classification and order, introspective solitude and public debate, become inextricably implicated in arguments about women's intellectual and moral faculties and their general social status. This paper will attempt to unveil some of the underlying patterns that involve the cultivation of eighteenth-century women and the feminised discourse of botanical literature.

Cultivating the Botanical Woman

It may not be widely known today, but Jean-Jacques Rousseau was a keen botanist, and one of the most popular eighteenth-century texts on botany in England was a translation of his *Lettres elementaires sur la botanique* (1771–1773).¹ Rousseau wrote the botanical letters for Madame Madeleine Catherine Delessert (born Madeleine-Catherine Boy de la Tour in Neuchâtel in 1747) who was the owner of a famous herbarium and botanical library. Madeleine married Etienne Delessert of Lyon,



a member of a Huguenot family, in 1776. Madame Delessert had written to Rousseau throughout his wanderings and in 1771 asked for his help in introducing her daughter, Marguerite-Madeleine, to botany. Marguerite, born in 1767, was known as Madelon, she married the Genevan Antoine Jean Gautier in 1789. The letters offer guidance to Madelaine, a young mother, over the instruction in botany of her daughter Madelon. The letters were published in the *Collection complète des Œuvres de J.J. Rousseau* in 1781 and translated into German the very same year appearing as *J.J. Rousseau's Botanik für Frauenzimmer in Briefen an die Frau von L***, Frankfurt und Leipzig, 1781. Thomas Martyn, Professor of Botany at Cambridge², translated Rousseau's epistolary botany into English as *Letters on the Elements of Botany Addressed to a Lady* in 1785.

His work was inscribed

«TO
THE LADIES
OF GREAT BRITAIN
NO LESS EMINENT
FOR THEIR ELEGANT AND USEFUL ACCOMPLISHMENTS'
THAN ADMIRÉD
FOR THE BEAUTY OF THEIR PERSONS»
(Rousseau, title-page, 1787)

on the title page. Martyn openly courted female readers, capitalising on Rousseau's address to a young mother, creating a vogue for botany books written for a particular class of enlightened British women and promoting botany as an elegant pursuit for «Ladies».

The familiar letter (employed by both Rousseau and Martyn; Martyn in fact appended some of his own letters to Rousseau's eight) played an important role in the feminisation of botany. The epistolary genre is widely adopted by women in the culture of botany. Priscilla Wakefield's *Introduction to Botany* of 1796 is comprised of a *Series of Familiar Letters* between two sisters, Felicia and Constance. Wakefield recognisably modelled her own botanical letters on Rousseau's. There are obvious similarities between these two texts. Both explain the Linnaean system in a series of letters, one for each class, and centre around an intimate exchange of knowledge between two females. They also each feature a botanising teacher or governess who superintends the letters.

Wakefield's *Introduction to Botany* is arguably the first botanical textbook written by a woman (distinct from the old herbals that relied on local knowledge and focussed on the medicinal properties of plants). Her Preface describes the breakthrough that had taken place as, for the first time, literate but unlearned women gained access to botanical science: «Till of late years, [botany, SG] has been confined to the circle of the learned, which may be attributed to those books that treated of it, being principally written in Latin: a difficulty that deterred many, particularly the female sex, from attempting to obtain the knowledge of a science, thus defended, as it were, from their approach» (Wakefield 1796, p. ii).

Botany in English proved popular and the authors of botanical texts wooed female readers, drawing on familiar analogies between women and flowers to celebrate the virtues of the «British fair» in their prefatory material. Linguistic conventions were already in place whereby flowers were emblems of purity, beauty and fragility, the so-called female virtues, and whose ephemeral beauty was associated with the female body. Such floral imagery proliferated not only in poetry, essays and letters but had extended to philosophic and scientific writing. That traditional pastoralism, looking nostalgically to some lost Eden, employed flowers as symbols of innocence; this was dramatically disturbed when the Swedish botanist and taxonomist, Carl

Linnaeus, focused on the flower in order to detail the sexuality of plants by offering precise descriptions of their organs of generation. In the *Systema Naturae* of 1735, Linnaeus abandoned previous formal systems of classification and founded the «sexual system». In this system, classes are distinguished by the number or proportion of male parts or stamens in each flower, whereas orders in many of the classes are distinguished by the number of female parts or pistils.³

Linnaeus developed an anthropomorphic imagery for flowers which is borne out in English adaptations of his Latin works. James Lee's *Introduction to Botany* (1760)⁴ was the first work to present the sexual system to British readers; here «male» stamens are «husbands», «female» pistils «wives» and sexual union a «marriage». Flowers lacking stamens or anthers are termed «eunuchs» and, not surprisingly, the removal of anthers is «castration». In another Linnaean text, Hugh Rose's *Elements of Botany* (1775), the union of stamens and pistils during fertilisation is likened to «husbands and wives on their nuptial bed [...] the *calyx* then is the marriage bed, the *corolla* the curtains, the filaments the spermatic vessels, the *antherae* the testicles, the dust the male sperm, the *stigma* the extremity of the female organ, the *style* the *vagina*, the *germen*, the *ovary*» (Rose 1775, p. 151). This boudoir version of botany unleashed onto the public imagination the idea that plant reproduction was analogous to human sexuality.

The sexual system teems with marriage metaphors but Linnaeus had made explicit the indiscriminate sexuality of plant reproduction, devoid of modesty, with little or no degree of selection over sexual unions; in this period the order of society was assumed to rest on the order of nature. Controversies surrounding the sexual system in England intensified due to the number of women who were practising the modern system of botany. Charles Alston, former King's Botanist and Keeper of the Royal Garden, complained of obscene names being imposed by sexualists on the fructification of vegetables and branded Linnaeus, «too smutty for British ears», fuelling debates about whether women might be instructed in Linnaean botany without offending female delicacy (Alston 1754, p. 266).⁵ In the 1790s, the reactionary poet, topographer and naturalist, the Reverend Richard Polwhele, was unable to comprehend how an examination of a plant's organs of generation could be conducive to female modesty and warned that botanising girls anatomising the sexual parts of the flower were indulging in acts of wanton titillation:

«With bliss botanic as their bosoms heave,
Still pluck forbidden fruit with mother Eve,
For puberty in sighing florets pant,
Or point the prostitution of a plant;
Dissect its organ of unhallow'd lust,
And fondly gaze the titillating dust»
(Polwhele 1798, lines 29–34).

These sighing, panting girls are partaking in something akin to sexual experimentation: «I have several times seen boys and girls botanising together», exclaimed the outraged Polwhele, before confessing that he had at first written:

«More eager for illicit knowledge pant,
With lustful boys anatomise a plant;
The virtues of its dust prolific speak,
Or point its pistil with unblushing cheek»

(ibid., note to line 29, p. 8).

Polwhele characterises botanic exploration as an uneasy blend of science and voyeurism; the scrutinising gaze of the female botanist penetrates a microscopic world in order to expose the organs of generation.

One of the earliest proponents of women's botany, William Withering attempted to «fair sex» it: «From an apprehension that Botany in an English dress would become a favourite amusement with the ladies, many of whom are very considerable proficient in the study, in spite of difficulty; it was thought proper to drop the sexual distinctions in the titles to the Classes and Orders» (Withering 1776, p. v).

«Withering» omitted the sexual distinctions that defined Linnaeus's classes and orders, producing a decorous botany that young women could be exposed to with safety, whereas his arch rival and fellow member of the Lunar Society in Birmingham, Erasmus Darwin, specifically focused on the Linnaean sexual content to create a provocative poetic account of the sex life of plants. *The Loves of the Plants* (published in 1789) was to form part of the epic poem, *The Botanic Garden* in 1791. Darwin cast himself in the role of a flower painter displaying the «Beaux and Beauties» of the vegetable world before the eyes of his female readers as if they were «diverse little pictures suspended over the chimney of a Lady's dressing-room, connected only by a slight festoon of ribbons» (Darwin 1791/1973, p. vi). He restored the sexualised nomenclature which Withering had deliberately erased, initiating female readers into the secret world of «vegetable loves» and encouraging women to engage with their own sexuality through botany.

Many literary women were inspired to write on botany after reading *The Botanic Garden*: Charlotte Smith's *Flora* was a virtuous re-working of Darwin's poem for young persons and Frances Arabella Rowden took Darwin as the model for her *Poetical Introduction to The Study of Botany* in 1801. Another Darwin-inspired study, Sarah Hoare's *Poem on the Pleasures and Advantages of Botanical Pursuits*, was appended to later editions of Wakefield's *Letters*. However, these women choose to remain silent on the issue of plant sexuality and purposefully downplayed Darwin's colourful descriptions of the sex life of plants.

Darwin's libidinous work proved profoundly influential in exciting women's interest in botany and this in turn increased those sexual anxieties that

were already surrounding the female botanist. In 1790, the philosopher and naturalist John Berkenhout wrote to his son: «The lady who asked the question whether women may be instructed in the modern system of botany consistently with female delicacy? was accused of ridiculous prudery; nevertheless, if she had proposed the question to me, I should have answered – they cannot» (Berkenhout 1790, p. 307).

Botany was suddenly at the forefront of debates on female education. Mary Wollstonecraft, opposed the threat by Berkenhout and his followers to limit women's access to botanical knowledge. Wollstonecraft argued in *A Vindication of the Rights of Woman*, that, contrary to Berkenhout's «gross idea of modesty,» female reserve was «far from being incompatible with knowledge» (Wollstonecraft 1792/1975, p. 123). Fortunately, the «fair book» of botanical knowledge was not to be «shut with an everlasting seal» as Wollstonecraft feared. Darwin's *A Plan For The Conduct of Female Education in Boarding Schools* (1797) recommended a number of titles on botany, including the Martyn/Rousseau *Letters*, Maria Jacson's *Botanical Dialogues* (1797), Curtis's *Botanical Magazine* and the *Botanical Society* at Lichfield's translations from Linnaeus. Darwin, then, advocated that women acquire a broad botanical knowledge, and apparently saw this knowledge as compatible with his opinion that: «The female character should possess the mild and retiring virtues rather than the bold and dazzling ones; great eminence in almost anything is sometimes injurious to a young lady whose temper and disposition should appear to be pliant rather than robust; to be ready to take impressions rather than to be decidedly mark'd» (Darwin 1797, p. 10).

Though threats to female modesty were discerned in Darwin's *Loves of the Plants*, his educational «plan» was unlikely to «decidedly mark» or make bold any young woman's character. His views on women's education were not remarkably liberal, although he is unusual in suggesting that women should receive training in physical education and science.

Linnaeus in Letters

I now wish to focus on the two most widely-read introductions to botany in the eighteenth-century, which I introduced earlier: Martyn's translation of Rousseau's *Letters on the Elements of Botany Addressed to a Lady*, and the Quaker educationalist, Priscilla Wakefield's, *An Introduction to Botany; in a Series of Familiar Letters*. The Martyn/Rousseau *Letters* were read extensively and reprinted eight times over the next thirty years. Wakefield's *Introduction* went through eleven editions and was last reprinted in 1841. It was also translated into French in 1801.

In the first of the Martyn/Rousseau letters we learn that «maternal zeal» has driven a young wo-

man to embark on a course in botany so that she may teach her daughter about plants. The tone is one of mutual improvement brought about by the intimate exchange of knowledge between a mother and daughter. The relationship between the mother and her male instructor is understated here but it is played out in a flirtatious botanical dialogue in the remaining letters.

Rousseau was influenced by popular science dialogues such as Fontenelle's *Entretiens sur la Pluralité des Mondes* (1686) where a cultured Parisian philosopher instructs the «most amiable creature in the universe» – a Marchioness – in the mysteries of Cartesian astronomy.⁶ Through Aphra Behn's English rendering of it in 1688, it became a widely read and influential text for women.⁷ Fontenelle unveils the secrets of astronomy to an enlightened «lady» and Rousseau similarly initiates a young woman in the «mysteries of vegetation»: «When you have examined this petal, draw it gently downwards, pinching it slightly by the keel, for fear of tearing away what it contains. I am certain you will be pleased with the mystery it reveals when the veil is removed» (Rousseau 1787, p. 36).

In Rousseau's Linnaean disclosure, botanical knowledge is made to seem illicit. The young woman is instructed to proceed with caution when it comes to her daughter and to «unveil to her by degrees no more than is suitable to her age and sex» (ibid., p. 26). This element of erotic pleasure is understandably missing from Wakefield's text. It is not difficult to see, however, how Rousseau's botanising activities in *Reveries* are in some sense related to the kind of illicit pleasures hinted at in the *Letters*. There, Rousseau is so anti-utilitarian and so neglectful of the God proved by order and wonders argument for botany, that he seems determined to use it as an illustration of his own errant pleasures.⁸ The open book of nature was both concealed from and unveiled to women in varying degrees during the eighteenth century; few, however, considered a study of sex life of plants to be quite so conducive to female character building as Rousseau.

Wakefield and Rousseau's botanical texts are exemplary in that they indicate the ambivalence in the process of the feminisation of botany: whilst they are open to a liberationist reading, offering women access to scientific knowledge for the first time, they also have a conservative function in that they can reaffirm conduct book constructions of femininity. Gender-coded representations of botany often depicted it as a genteel amusement for «ladies» within a familial setting. Rousseau, for example, was concerned that his botanical «ladies» did not consider botany to be a «great undertaking»: «You must not [...] give more importance to Botany than it really has; it is a study of pure curiosity» (ibid., p. 71).

As a rational, industrious study botany was thought highly beneficial to female minds. Thus, Wakefield promoted botany as «a substitute for

some of the trifling, and not to say pernicious objects, that too frequently occupy the leisure of young ladies of fashionable manners, and, by employing their faculties rationally, act as an antidote to levity and idleness» (Wakefield 1796, p. iii).

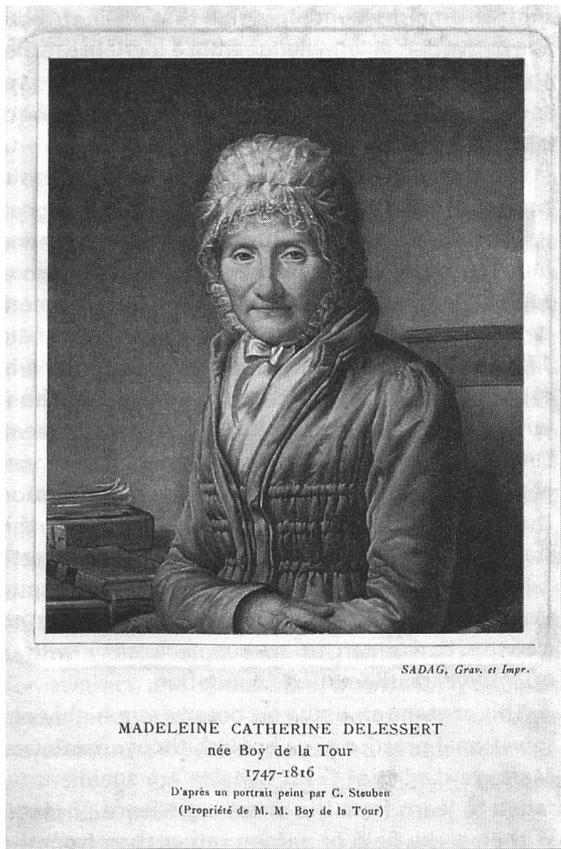
Botany and no other natural science has thus been singled out to act as an antidote to «feminine» faults such as idleness and frivolity. It is these traits, along with insubordination, which Rousseau warned are «most dangerous» and «very hard to cure once established» in girls.⁹ He reassures the young mother who features in *Letters On the Elements of Botany* that botany can supply an alternative focus for these wayward urges: «the study of nature abates the taste for frivolous amusements, prevents the tumult of passions, and provides the mind with a nourishment which is salutary» (Rousseau 1787, p. 19).

I now want to develop my exploration of the specific way in which Wakefield and Rousseau promote botany as a feminine pursuit. To begin with, I will discuss the use of Linnaean methodology in these texts, demonstrating how it became a means of encouraging women (who were imagined to lack discipline) to engage with order and regularity.

Wakefield takes the reader through each Linnaean class in turn emphasising the importance of classification. Rousseau's letters expound what he believed to be the «true» study of botany in a similarly methodical manner. There is an – understandable – misconception that Rousseau, who in the *Discourse on the Sciences and Arts* famously linked the advancement of the arts and sciences to the spread of luxury and the corruption of morals, was antipathetic to the scientific frame of mind.¹⁰

In fact, Rousseau was driven to study plants systematically in spite of his hostility to academic science. He had begun notes towards a dictionary of botanical terms in the year 1764 which was eventually abandoned; however, from it remained a history of the «rise and progress of botany» which celebrated Linnaeus's contribution to the advancement of the science. Martyn's translation of this essay formed the introduction to the *Letters*, when the work appeared in English in 1785. What is striking about Rousseau's essay is that, contrary to the expectations we have noted, it shows a typical Enlightenment concern with methodology and systematic thought. From the wealth of material uncovered by voyages of discovery «it was necessary to invent new [names, SG] for the new plants that were discovered. Lost in this immense labyrinth, the botanists were obliged to seek a thread to extricate themselves from it; they attached themselves therefore at last seriously to method» (ibid., p. 9).

Rousseau lionises Linnaeus for supplying the «Ariadne thread in botany», a universal system which led botanists out of the labyrinth of local knowledge and instigated botany's departure from herbalism and superstition – a break with apothecaries, herbalists, infusions and poultices.¹¹ Accord-



ing to Rousseau, Linnaeus's simple binomial nomenclature had created a new language for botany «which is as convenient and necessary for botanists, as that of algebra is for mathematicians» (ibid., p. 12).

Wakefield is also indebted to Linnaeus, «the great master of method and arrangement,» for making the acquisition of botanical knowledge easier for the novice. She urged her readers to embrace Linnaean systematics, «for it is by method only that it is possible to obtain a knowledge of so many particulars» (Wakefield 1796, p. 26) and endeavoured to explain the importance of the new system of botany.

Martyn, however, feared that the introduction of method would lose him the attention of his female readers and made the following plea: «Do not suffer yourself to be terrified at the word *System*. I promise you there shall be little difficulty in it to you who have patience and attention and as little parade of hard words as possible, only allowing me to name my classes and orders» (Rousseau 1787, p. 86).

Passages such as this point to one way in which women as consumers of science were perceived; here, in a somewhat patronising way.

However, the authors of these introductory, but systematic, texts encouraged radically different levels of engagement for their female readers; from gentle exercise and plant collecting in Rousseau, to empirical science, dissection and microscopy in Wakefield: «confirm your knowledge by practice and do not suffer a day to pass without amusing

yourself in dissecting some flower or other» (Wakefield 1796, p. 25). «Apply your microscope, and you will be pleased with the beauty and variety discernible in this little-regarded flower» (ibid., p. 136).

Withering advocated the use of instruments such as the magnifying glass, dissecting knife and needle, even advertising a portable botanical microscope invented by himself. The portable microscope subsequently became fashionable with many British women; Swift is known to have purchased one for Stella (see Hope Nicholson 1956, p. 157). Lessons on the use of the microscope were often directed towards women: «Investigations of this kind particularly recommend themselves to the attention of the ladies, as being congenial with that refinement of taste and sentiment, and that pure and placid consistency of conduct which so eminently distinguish and adorn those of this happy isle» (Adams 1798, p. 666) wrote George Adams in a popular text on microscopy. However, despite all this, both Rousseau and Wakefield's texts gave botany a familial setting and discouraged much beyond simple classification and plant collecting. Wakefield introduces the female reader to scientific classification but avoids using scientific terms in the body of the text, substituting common names such as «Lungwort», «Houndstongue», «Goosefoot», and «Henbane» where possible and placing botanical nomenclature in footnotes.

Whilst she is committed to the cultivation of female minds and the development of female reason, she delimits this with many gender- and class-specific boundaries. In *Reflections on the Present Condition of the Female Sex*, for example, she advocates that women should be educated according to their social position in society and warns against women moving into «masculine» spheres. In a similar way, she derives social implications from the Linnaean hierarchy of orders and classes. We learn that the class *Cryptogamia* is made up of vegetables «of the lowest kinds» and her fictional governess, Mrs Woodbine considers the members of this class – Mushrooms, Lichens and Mosses – to be «uncouth» and unworthy of attention.

Richardson's *Clarissa* had dramatised the often-minute regulation of young women's letter writing; similarly, we learn from Felicia that the botanising governess «superintends my letters and points out what I should write», that she is «incapable of methodizing accurately» without her assistance, for she «will not allow me to do anything without some degree of regularity». This regulation can be authorised by botany: Felicia is encouraged to observe the «beautiful regularity in most of nature's works» (Wakefield 1796, p. 29, p. 32). For Rousseau, too, as Martyn emphasises, botany was a means by which women could become acquainted with – and implicitly, socialised into – an ordered system: «you must go forth into the garden or fields, and there become familiar with that beauty, order, regularity and inexhaustible variety which is to be found in

the structure of vegetables» (Rousseau 1787, p. ix). This concern with order enables that familiar slide from the natural to the social, making botany an ideal discipline for women and children.

«Recreation for the Eyes»

Now want to look at how both Wakefield and Rousseau insist that book learning in itself is inadequate and substitute lessons in outdoor exploration and direct observation; methods which, it can be argued, discouraged women from the solitary pursuit of scientific knowledge – though this is ambiguous. Rousseau is famously antagonistic towards book learning a contradiction, given his role as an educationalist and writer.¹² Books, he argues «lead us to neglect the book of the world» (Rousseau 1780/1950, p. 414) and book learning comes into conflict with the idea of «an education according to nature» (ibid., p. 147) in *Emile*. Given Rousseau's hostility to books it comes as no surprise to find that his botanising ladies are encouraged to study botany in nature herself and not from the pages of a book.

Wakefield's approach to the study of nature is informed by those Dissenting notions of immediacy, utility and fidelity to observed facts; it is similarly closely connected with that tradition of fieldwork in natural history which emphasised direct observation and visual perception. «Remember to use your eyes, writes Wakefield, «and let none of nature's beauties escape your attention» (Wakefield 1796, p. 77). The Martyn/Rousseau letters present botany for women as a lesson in outdoor observation, warning, in Martyn's preface, that «Botany is not to be learned in the closet: you must go forth into the garden or fields, and there become familiar with Nature herself» (Martyn 1787, p. xi). Wakefield similarly implies that outdoor botanical activity is more beneficial to the female mind and body than book learning: «my fondness for flowers has induced my mother to propose Botany, as she thinks it will be beneficial to my health, as well as agreeable, by exciting me to use more air and exercise than I should do, without such a motive; because books should not be depended upon alone» (Wakefield 1796, p. 2).

Women are dissuaded from the solitary pursuit of scientific knowledge and from closeting themselves away with books and specimens. This can be seen as a way of diverting women away from masculine knowledge, embodied in books and «learned languages»; at the same time, however, Enlightenment modernists tended to see the way forward for science as being precisely this turning away from books towards experience. Thus, Bacon had argued against the appeal to canonised texts such as those of Aristotle, proposing a new, inductive science; Newton had applied this method with spectacular success in his experimental science in the fields of optics and mechanics; Locke had provided Newton

with an empiricist underpinning that again stressed the derivation of knowledge from experience rather than written authority. Hence, to encourage women to actively derive botanical knowledge from observation and experience was, in some way, to invite them to participate in the whole modernist project of experimental science.

Wakefield's Felicia does retire from company and indulge in some private botanising («suppose me seated in our dressing room, with many specimens before me of the class *Tetradynamia*» (Wakefield 1796, p. 113)), but perhaps somewhat subversively, can only do this because it is assumed that she is writing letters at her desk. The Martyn/Rousseau *Letters* are clearly an introduction to a subject more concerned with observation and plant description than scientific theory or academic study; at this stage, botany had not yet developed the theoretical backing that, in particular, physics had. Despite Linnaeus' monumental system of classification, no Newton had emerged to supply botany with a quantitative, mathematical foundation.

This contention between botany as a highly observational practice or as bookish theory continues. Martyn's «Ladies of Great Britain» are again encouraged to learn from the direct experience of plants in the nearby field or garden rather than from the pages of a book: «I beg leave to protect against these letters being read in the easy chair at home; they can be of no use but to such as have a plant in their hand; nor do they pretend to anything more, than to initiate such as, from their ignorance of the learned languages, are unable to profit by the works of the learned, in the first principals of vegetable nature» (Martyn 1787, p. x).

Observation of the natural world, it is suggested, is a source of self-regulation for the unlearned – notably, women excluded from formal education, but also the labouring classes.¹³

«Botany is not a Science of Parade»

However, despite being enticed out of studious isolation into the fields and gardens, these women were not expected to «parade» their scientific knowledge in public; we can now see the feminisation of botany in relation to the gendered dichotomy of the public and private spheres. Sarah Fitton sought to justify botany's suitability as a scientific pursuit for women by announcing in the preface to her *Conversations on Botany* (1817) that «botany is not a science of parade» (Fitton 1820, p. viii–ix).¹⁴ Rousseau advocated that botany remain in the feminine domestic sphere, shielded from the vanity of authors and professors; when self-interest comes into play, Rousseau argues, «the woods become for us merely a public stage where we seek applause». Fitton and Rousseau agree that botany is conducive to «the mild and retiring virtues» and can be pursued in private. Propriety dictated that women should use their botani-

cal knowledge with discretion, to guard against provocatively parading any knowledge of Latin, or scientific terms, in public. Rousseau endorsed Linnaeus's binomial system of assigning universal Latin names to species yet he obviously felt that women were not an appropriate audience for such language: «Nothing is more pedantic or ridiculous, when a woman, or one of those men who resemble women, are asking you the name of an herb or a flower in a garden, than to be under the necessity of answering by a long file of Latin words that have the appearance of a magical incantation; an inconvenience sufficient to deter such frivolous persons from a charming study offered with so pedantic an apparatus» (Rousseau 1787, p. 13).

A female audience, it seemed, called for a more familiar, domestic approach to scientific study. Rousseau's theory of gendered complementarity is notoriously articulated in the final section of *Emile* (1762).¹⁵ Here, discussing women's acquisition of scientific knowledge, Rousseau writes: «The search for abstract and speculative truths, for principals and axioms in science, for all that tends to wide generalisation is beyond a woman's grasp: their studies should be thoroughly practical» (Rousseau 1780/1950, p. 370).

Why then does Rousseau recommend botany to women so vehemently and what is the reason for this apparent contradiction in his thought? As a nascent science, botany had not yet achieved the status of other disciplines but this is not the reason for thinking it suitable for the female sex. In the *Reveries of the Solitary Walker* and the *Confessions*, Rousseau's more intimate style offers an insight into how he reconciles his belief in women's lack of ability to «grasp» science with his advocacy of botanical study for girls. Women represent a desired closeness to nature: via this, they are also objects of adulation and an inspiration to virtue. To Rousseau, the «true» study of botany was «understanding plants in their natural state, before they had been cultivated and denatured by the hands of men» (Rousseau 1995, p. 539). Unlearned women, closer to a state of nature, had a special affinity for this kind of exploration, which even Linnaeus lacked: he was criticised by Rousseau for studying botany «too much in herbaria and in gardens and not enough in nature herself» (ibid., p. 538).

In Rousseau's complex dialectic of the relationship between reason and nature, femininity is close to nature but it is also a potential source of disorder which needs to be tamed by reason.¹⁶ The study of botany, therefore, is ideally suited to undisciplined women; as a form of self-regulation, it employs their faculties rationally and acts as an antidote to feminine faults («dissipation, frivolity and inconstancy») which need to be held in check.¹⁷

Rousseau's renewed enthusiasm for botany came in the wake of his exile and persecution, his isolation from books and authorship. His dialogue with plants came only after he lost his dialogue with hu-

manity. In a letter to Malesherbes, Rousseau writes: «botany is the only occupation left to a wandering machine such as me to indulge in, after having been warned off from thinking again and again».¹⁸ Botany's main virtue is that it takes place outside of public life.

As a botanist, Rousseau is a feminine figure in a sense through his rejection of generality; on a plant-collecting expedition in *Reveries*, he exclaims «my understanding cannot transcend the objects which form my immediate surroundings» (Rousseau 1782/1979, p. 112).¹⁹ Attached to the local, he «excels in details», rejoicing in the minutiae of grasses and wild flowers growing on the Island of St. Pierre and fantasising about compiling a flora of the island which would occupy his entire life (Rousseau 1995, p. 537). He no longer has any affinity with the «masculine» sublime and relies solely on empirical knowledge.²⁰ Where previously he acquired knowledge of the world from books and men, now, in his exile, he relies only on his own senses. In this feminised state he can virtuously enjoy the study of botany as a science of observation: «Attracted by the charming objects that surround me, I look at them, observe them carefully, compare them, and eventually learn to classify them, and lo and behold, I am as much a botanist as anyone needs to be who only wants to study nature in order to discover ever new reasons for loving her» (Rousseau 1782/1979, p. 115).

Botany is a pastime which can educate via the experience of a series of «pleasant impressions» in a state of «pure» contemplation. This passive impressionism seems to indicate how botany can be accommodated with the feminine (and this positive valuation suggests a certain ambivalence about Rousseau's apparently uncompromising attitude to the feminine and to women). Darwin, too, was keen that the minds of young women should be ready to «take impressions» and saw botany as the kind of activity that was conducive to female character building. As a form of study that relies primarily on the senses botany is immediately accessible to the unschooled and, of equal importance, it is a science that thrives in the feminine private sphere outside of public life.

By the nineteenth century, botany was feminised to such an extent it was thought «unmanly»; Wakefield and Rousseau's letters on botany, addressed primarily to women, mark the beginning of this process. Rousseau sought to protect botany from the taint of ambition, and yet it was botany which gave women such as Wakefield entry into professional writing. In publishing and allowing her name to appear on the title page instead of the obligatory «by a Lady», Wakefield paraded her botanical knowledge on the «public stage». Sensitive to accusations of immodesty, she apologised in her preface for «obtruding» her work «upon the public» despite its moralising intentions. The emphasis on «proper» feminine roles in botanical texts demonstrates that,

while popular translations from Linnaeus led women out of the labyrinth of ignorance and local knowledge, they were still bound by the cords of propriety. Linnaean botany acted as a form of containment, regulating and ordering supposedly undisciplined women.

Despite these limitations and contradictions, Wakefield and Rousseau's botanical letters were unique in giving women access to botanical knowledge for the first time. They demonstrate sociability and the desire for self-education, declare the advantages of the new language of botany, and advance the new empiricist science.²¹ What is more, they epitomise Enlightenment botany; moving away from the particularised knowledge of the old herbals and embracing the universal systematising of Linnaeus. Botany, here, is dialogic and exploratory; the medium of familiar conversation lures women into deriving botanical knowledge from their own observations – allowing them to participate in experimental science.

Given that botany grew out of an alliance of herbals, healing and gardening, areas in which women had long been active, it does not seem surprising that botany was thought to be an appropriate study for women.²² These associations alone, however, do not sufficiently account for the feminisation of botany in works intended for the education of women in the eighteenth-century. I have attempted to identify some of the other determinants in this process.

- 1 I should mention that there are three modern editions of the letters Rousseau 1962; Rousseau 1969; Rousseau 1979. Bernard Gagnabin gives an informative introduction to the 1962 edition of the *Lettres* but there is very little in terms of scholarship on Rousseau as a botanist. Albert Jansen (1885) undertook a study of Rousseau's plant-collecting expeditions. A free translation of some of the passages appears in Sir Gavin De Beer's article (1954). Paul Cantor has written on botany in the *Reveries* (1985). Jane Walling's text (2005) is essentially a study in ecocriticism, though Walling, too is concerned with the interstices between literary and scientific writing. David Scott is also concerned with the ambivalence of Rousseau's attitude towards botany as both a science and a source of imaginative reverie (1979). None of these studies examine Martyn's translation of Rousseau's *Letters on Botany* nor do they discuss gender issues in relation to Rousseau and botany. The comparison between Rousseau and Goethe as botanists, discussed by Walling, is an area formerly explored by Lisbet Koerner (1993).
- 2 Thomas Martyn succeeded his father, John, to the Chair of Botany in Cambridge in 1762. He gave a course of public lectures on the Linnaean sexual system in 1763, his flora, *Plantae cantabrigienses*, was published in the same year. After translating Rousseau's *Letters on Botany* in 1785, Martyn was elected a Fellow of the Royal Society in 1786. His final work, a dictionary of Linnaean terms entitled *The Language of Botany*, appeared in 1793. For Martyn's published works, which are extensive, see Henry 1975, Vol. I, p. 54–57.
- 3 For a description of Linnaean classification based on the fructification of plants, see Morton 1981, p. 263.
- 4 A free translation of Linnaeus's *Philosophia Botanica* of 1751.
- 5 Charles Alston (1685–1760) succeeded George Preston as Professor of Botany at the University of Edinburgh in 1738. Alston had studied under botanist/physician Hermann Boerhaave at the University of Leyden and favoured Tournefort's non-sexual system of classification.
- 6 The *Worlds of Fontenelle* was one of the few books that Rousseau carried into his father's workshop and read to him everyday during his work (Rousseau 1995, p. 8). For the influence of Fontenelle and the familiar way of dialogue in the scientific education of women, see Myer 1955).
- 7 Behn's *A Discovery of New Worlds* appeared in 1688 just two years after the French original.
- 8 I am indebted to the eminent Rousseauvian Prof. Robin Howells here who has offered his comments on Rousseau and botany in response to this research.
- 9 «Idleness and insubordination are two very dangerous faults, and very hard to cure once established. Girls should be attentive and industrious, but this is not enough in itself; they should early be accustomed to restraint. [...] Their childish faults, unchecked and unheeded, may easily lead to dissipation, frivolity and inconstancy. To guard against this, teach them above all things self-control» (Rousseau 1780/1950, p. 332).
- 10 Ann Shteir incorrectly states that Rousseau had been «antipathetic to systemizing and to any focus on names of plants» (Shteir 1996, p. 20).
- 11 Botany, explains Rousseau, in his *Reveries of the Solitary Walker*, involves «pure and disinterested contemplation» and could not be further removed from medicine and anatomy, from «stinking corpses, livid running flesh, blood, repellent intestines, horrible skeletons, pestilential vapours» (Rousseau 1782/1979, p. 114).
- 12 In *Emile*, Rousseau asserts that «when I thus get rid of children's lessons, I get rid of the chief cause of their sorrows, namely their books» (Rousseau 1780/1950, p. 80) and boasts that «Emile, at twelve years old, will hardly know what a book is» (ibid., p. 80). However, he does allow Emile to read *Robinson Crusoe* because it is the one book which «supplies the best treatise on an education according to nature» (ibid., p. 147). Sophy, when she is older, is offered *Telemachus* and selections from *The Spectator*, though she is advised to «study the duties of good wives in it» (ibid., p. 413). The sections on Sophy in *Emile* allow us to see that Rousseau is clearly repulsed by the idea of a «learned lady» («a female wit is a scourge to her husband [...] from the lofty height of her genius she scorns every womanly duty, and she is always trying to make a man of herself after the fashion of Mlle. L'Enclos» (ibid., p. 371)). For his own part he states «I hate books; they only teach us to talk about things we know nothing about» (ibid., p. 147).
- 13 Thomas Martyn, addressing his audience of «fair countrywomen and unlearned countrymen,» claims that a reading of the *Letters* will save the «unlearned» student of botany from becoming «bewildered in an inextricable labyrinth of unintelligent terms», as he imagines might have happened if they had gone straight to the works of Linnaeus (Martyn 1787, p. viii).
- 14 Much of Fitton's work is derivative and this description of the virtues of botany is taken directly from Maria Edgeworth's *Letters For Literary Ladies*. Edgeworth is in fact discussing chemistry in these terms; see Edgeworth 1795/1993, p. 21.
- 15 It is here that Rousseau introduces Emile to Sophy who is to be his «helpmeet» and where he states «man and woman are unlike; and each is the complement of the other» (Rousseau 1780/1950, p. 321). Once this has been established we learn that, as they are unlike in constitution and in temperament, «it follows their education must be different» (ibid., p. 326) and separate spheres are prescribed. For example, «Women's reign is a reign of gentleness, tact and kindness; her commands are caresses, her threats are tears. She should reign in the home as a minister reigns in the state» (ibid., p. 370).
- 16 For a discussion of reason/nature in relation to femininity in Rousseau, see Lloyd 1984 and Steinbrügge 1995.
- 17 For Rousseau's discussion of these feminine traits, see note 8 above.
- 18 Rousseau to Malesherbes, 11th November, 1764, cited in

de Beer 1954, p. 208.

- 19 Rousseau's well-documented (by himself, especially in the *Confessions*) masochism and his fear of and feelings of inferiority towards women could be used to characterise him as, in some way, feminine. For an analysis of Rousseau's gynophobia, see Wexler 1976.
- 20 «My soul, being dead to all sublime impulses, can no longer be touched by anything except through the senses; only sensation is left to me, and it alone can now bring me pleasure or pain in this world» (Rousseau 1782/1979, p. 114). Despite the great influence Edmund Burke's *A Philosophical Enquiry Into the Origin of Our Ideas of the Sublime and Beautiful* (1757) enquiry was to have on Kant, it appears that Burke himself did not have a strongly gendered notion of the reception of the beautiful and sublime. It is true that, for Burke, the feminine is often the cause of the beautiful and the masculine that of the sublime but, unlike Kant (in his *Observations on the Feeling of the Beautiful and Sublime* (1763)), he makes no explicit distinction between the abilities of men and women to respond to these qualities.
- 21 Rousseau, for example, asserted that prior to the introduction of method botanical science failed to advance because «instead of searching for plants where they grew, men studied them only in Pliny or Dioscorides» (Rousseau 1787, p. 3).
- 22 A claim made by Schiebinger 1989, p. 241.

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