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Epistemic Images and Vital Nature: Darwin's *Botanic Garden* as Image Text Book

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Abstract

This essay considers the function of images in Erasmus Darwin's *Botanic Garden* (1789, 1791) by drawing on recent work in the history of science. I argue that the full-page intaglio prints of plants in Darwin's book function as "epistemic images" by propounding a visual argument about organic life. The epistemic values embedded in the images of plants—specifically, the appearance of life and motion—are the result of artists' engraving techniques deployed in the service of eighteenth-century aesthetic conventions. These conventions allow the images to align the knowledge claims of Darwin's allegorical verse with those put forward in the prose notes. In conclusion, I suggest this method of unearthing the epistemic values of images could be productively extended to literary texts less obviously engaged with scientific debates of the time.

In recent years Romanticism has, like much of literary studies, experienced a material turn.

Building on earlier studies like Judith Stanton's work on Charlotte Smith's fraught relation to her publishers, new work on authors from Walter Scott to John Clare to Lord Byron consider how books were made and who made them, authors' relations with their publishers, the economics and business of publishing, how printed matter proliferated and circulated, and so on.¹ Studies that tackle the centrality of books and print to Romantic culture more broadly soon followed.² This flurry of bookishness has pushed us to rethink the conceptual orientation of Romanticism, and especially how materiality might be part and parcel of the Romantic celebration of the organic, the ideal, the vital principle, the "indwelling law" of true being (Coleridge 2: 50).³ In tandem with this artefactual turn, we've begun to build on studies of literature's relation to visual culture to consider literature's visual paratext: what exactly are wood block illustrations, engraved frontispieces, aquatints, even printers' flowers, doing vis-à-vis the literary text?⁴ Work

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at the intersection of book history and visual image has long flourished in criticism of Blake, but even here we've been slow to analyze commercial engraving.⁵ As with the material page, Romantic studies long resisted paying heed to illustration, as most visual images we encounter are bound up with that debased world of "getting and spending," a "sordid boon" for which, Wordsworth bemoaned, "we have given our hearts away" (1: 122). Romanticism's own rejection of the market has determined what we see as central and peripheral to Romantic literary production.

There is no doubt that the economics of publishing and book selling were a driving force behind eighteenth and nineteenth-century book illustration practices, as Sandro Jung and Tom Mole have made abundantly clear.⁶ Here, I'd like to shift this focus slightly by drawing on recent work in the history of science. As a growing body of scholarship attests, not all illustrations are created equal: visual images perform distinct functions and occupy widely-varying relations to the texts they appear alongside. For literary scholars, illustration suggests embellishment, but in context of scientific publishing visual images might have "explanatory or argumentative functions" (Fay and Jardine 1); they might be made, as Christoph Lüthy and Alexis Smets argue, "with the intention of expressing, demonstrating or illustrating a theory" (399), or to support a "visual argument," as Sachiko Kusakawa puts it (3). For Lüthy and Smets, such images are "epistemic," a phrase Lorraine Daston defines as an image made "with the intent not only of depicting the object of scientific inquiry but also of replacing it" (17). As Alexander Marr points out, there is little agreement on what, exactly, should count as an epistemic image: "if symbolic representations of theories, such as emblems and allegorical title pages ... are included within the definition, where does it stop?" (1007). Where indeed—and this uncertainty within the history of science is an open doorway for literary scholarship. In this essay, I consider how the

images (literally) bound up with literary texts might function epistemically, putting forward particular knowledge claims that may corroborate—but also extend, displace, or contradict—the import of the printed text. In doing so, I'll argue for both expanding and reorienting how we understand the knowledge work of images in Romantic-era books.

To work through this point, I'll take up an obvious case, Erasmus Darwin's two-part annotated philosophical poem *The Botanic Garden*, comprised of *The Economy of Vegetation* (Part 1, 1791) and *The Loves of the Plants* (Part 2, 1789). In its first edition (and many of the subsequent editions on both sides of the Atlantic), Darwin's poem-note composite was laden with images of various kinds, including those worrisome allegorical frontispieces but also "naturalistic" images of plants, two charts depicting Linnaean taxonomic categories, a decorative curio of cupid, an image of Josiah Wedgwood's anti-slavery medallion, additional allegorical scenes by Blake, four high-contrast engravings of the Portland Vase, and a line drawing of a geologic cross section of the earth.⁷ As attested by the multiple extant binding instructions for each of the first three editions of *Loves*, Darwin changed his mind many times about where these images ought to appear in relation to the text. He also revised the text for each printing: *Loves* gains 18 extra pages in the second edition including a "Catalogue of the Poetic Exhibition," "Contents of the Notes," and an "Index of the Names of the Plants" along with various additions to the footnotes and endnotes throughout. In what follows, I'll read the illustrations in Darwin's book as epistemic images to suggest that the most vexing conundrums posed by this poem-note composite—particularly the conceptual tension between Linnaean taxonomy, which structures the poem's specimen-based series of heroic couplets, and Enlightenment vitalism, which underwrites the scientific project of the notes—can be resolved by pinpointing the images' epistemic function.

There has been an explosion of scholarship on Erasmus Darwin in the past 20 years: conference papers, articles, and book chapters—along with Martin Priestman’s edition of *The Temple of Nature* (2006) and Allison Dushane and Adam Komisaruk’s edition of *The Botanic Garden* (2016)—have proliferated with a critical fervor not unlike that sparked by the first appearance of Darwin’s work in print. In this later day outpouring, there has been little sustained attention to the images; instead, critics have honed-in on the sexual politics of Darwin’s use of Linnaean taxonomy, and the odd tension—visible on almost every page of the printed book—between the modes of knowing displayed in Darwin’s detailed scientific notes and the allegorical poem above them. In recent criticism, this epistemological question has often been resolved by underscoring the relationship between Darwin’s science and the aesthetic aims of the verse. In *Romantic Rocks, Aesthetic Geology*, for example, Noah Heringman proposes that *The Botanic Garden* displays a “deep structural identity between scientific and aesthetic principles” and “presumes a confidence in the epistemological function of poetry, its ability to provide an *organon* of the modes of knowledge” (199, 211). In tracing Darwin’s debt to Lucretius, Noel Jackson makes a similar argument: Darwin’s approach to the philosophical poem “promotes poetry not as subordinate to philosophical ratiocination but as its unlikely ground” (182).

Heringman and Jackson posit poetry as fundamental to Darwin’s philosophical project, a claim easier to swallow when reading *The Economy of Vegetation* than *The Loves of the Plants*. Alan Bewell aptly summarizes the issue: “Believing that poetry amuses, while prose instructs, Darwin continually undercuts the importance of his ‘Poetic Exhibition’” (29-30). If we are to believe Darwin’s prefatory commentary to *Loves*, the poem is merely a means to an end. The poem is comprised of a series of discrete descriptions of individual flowers, beginning with three couplets on *Canna* (Indian Reed), three couplets on *Callitriche* (ie. Stargrass), and so on. These

specimen-based poetic units align neatly with Darwin's stated objective of representing the Linnaean sexual system of classification in verse. However, as the Advertisement to *Loves* relates, the poem is intended to "lead" the reader "from the looser analogies, which dress out the imagery of poetry, to the stricter ones, which form the ratiocination of philosophy" (1789: n.p.).⁸ These "stricter analogies" populate the extensive prose notes, which compile the most up-to-date observations and experiments in physics, galvanism, chemistry, geology, medicine, mechanics, botany, and natural history, quoted from current scientific dictionaries, articles in the *Philosophical Transactions of the Royal Society*, travel narratives, books translated from Italian and French, and Darwin's personal correspondence with leading scientific figures of his day, including James Watt, Joseph Banks, and Linnaeus. Linnaean botany opens into the much larger milieu of late eighteenth-century experimental and life science.

We might argue that Darwin's claim reverses the text-paratext relation: the ostensible text, the poem, is actually "dedicated to the service of something other than itself that constitutes its *raison d'être*" (Genette 12). The same might be said for the full-page images of plants that accompany the text, which seem designed simply to show the characteristics of the plant [Fig. 1]. However, Darwin's allegorical poem, in which stamens and pistils are transformed into love-lorn maids and swains, does more than simply represent Linnaeus's system. The poem's animated plants—plants that sigh and swoon, laugh and bow and flirt—constitute a philosophical statement in their own right, drawing on and elaborating what Peter Reill has called "Enlightenment vitalism," an insistence on seeing nature as "a teeming interaction of active forces vitalizing matter" that emerged in the wake of Buffon's *Histoire Naturelle* (Reill 6-7). For example, in the verse Meadia holds five beaus in "soft chains" while "alike to all, she bows with wanton air / And rolls her dark eye, and waves her golden hair" (1791: ll. 62-5). Meadia's

coquettish behavior is illuminated by the note: Darwin explains that the “elegant bend” of the flower stalks is occasioned by the relative lengths of the pistil and stamen, and that the petals are “so beautifully turned back to prevent the rain or dew drops from sliding down and washing off this dust [from the anthers]” (1791: 6). The personified *Meadia* in the verse thus “bows with wanton air” and “waves her golden hair” precisely *because* she is composed of elegantly bending stems, a downward hanging stigma, and beautifully turned petals. By animating a taxonomic description with prosopopoeia, Darwin’s text thus combines two of the most prominent—and often diametrically opposed—ways of comprehending nature in the period, Linnaean taxonomy and Buffonian vitalism.

But what of the image? At first glance, the full-page illustration appears merely ornamental, or at best illustrative: it shows the bend of the stem and turn of the petal, reiterating visually information provided in the note. In relation to the verse, we might say the image translates Darwin’s playful allegory into botanical science by visually representing a plant, not a golden haired, dark-eyed harlot. I’d like to suggest it does something more: by functioning as an epistemic image, the illustration replaces the botanical specimen as the object of scientific knowledge in order to make a visual argument about organic life that goes beyond the subject of botanical classification. By conforming to the aesthetic conventions of botanical illustration in the period, the images of plants, including *Meadia*, authorize the entire project of Darwin’s book, from the allegorical mode of the verse and the aesthetic language of the notes (the “beautifully” turned back petals and the “elegant bend” of the stem), to the overlay of vitalism and taxonomy, to the speculative claims about organic life that Darwin’s text gestures to repeatedly but does not fully articulate.

When Darwin began composing *Loves* in 1781, he was also hard at work on large-scale translations of Linnaeus's *Systema Vegetabilium* (*A System of Vegetables*, Lichfield, 1783-5) and *Genera Plantarum* (*The Families of Plants*, London, 1787), both advertised in the front matter of *Loves* as productions of the Botanical Society of Lichfield, where Darwin lived and worked. Darwin was intimately familiar with the current debates within botanical science, and with the major botanical publications and collections of the time. He had corresponded with many botanists, including Linnaeus and Joseph Banks (then president of the Royal Society), whose specimen collections from the *Endeavor* voyage to Tahiti, New South Wales, and New Zealand had garnered international attention in the 1770s and 1780s, and arguably transformed the study and public perception of botany in the period.⁹ Darwin first mentions a poem designed “to induce ladies and other inemploy'd scholars to study Botany, by putting many of the agreeable botanical facts in the notes” in a 1781 letter to Banks concerning his translations (*Letters* 116-17). As early as 23 May 1784, Darwin had entered into negotiations with radical publisher Joseph Johnson to print *The Loves of the Plants*, and he sent the published book, printed in Lichfield, to Josiah Wedgwood on 22 February 1789 (*Letters* 139-40, 185). Evidence internal to the book—specifically, the multiple sets of binder's instructions for placement of the plates, one set printed on the final pages of the book and another printed on small disposable slips—suggests that Darwin commissioned the images late in this process, probably after most of the poem and notes were written.¹⁰

Following botanical identification guides of the period, such as Pierre Bulliard's *Dictionnaire Elementaire de Botanique* (1783), which Darwin mentions as his model in the Preface to *Loves*, Darwin included two visual charts depicting the 24 classes of Linnaeus's taxonomic system. These illustrative charts were etched by E. Stringer, a local Lichfield artist.

Stringer had designed a “View of Mr. Greene’s Museum at Lichfield” published in *Gentlemen’s Magazine* (1788) and would later design the image of Barton under Needwood Church, eight miles from Lichfield, published in *Bibliotheca Topographica Britannica* in 1790. Both of these images were engraved by “Cook,” probably Thomas Cook, who produced many engraved portraits for book publishers and the *Gentleman’s Magazine* in the 1770s-1810s. Stringer also designed and etched the small image of cupid at the end of the Proem and the image of *Meadia* in the 1789 edition of *Loves* [Fig. 2]. As the thick, uneven lines with blunted ends indicate, these are etchings, not engravings.¹¹ Excluding the ornate frontispiece designed by Emma Crew and engraved by Samuel Alken, these four images by Stringer are the first to appear in *Loves*; the rest of the images of plants in the 1789 first edition were engraved (rather than etched) by Frederick Polydor Nodder, a botanical artist best known for his drawings of specimens collected by Banks on the first *Endeavour* voyage. In the second edition of *Loves*, published by Johnson in 1790, Darwin had the plates of Stringer’s etched charts and image of *Meadia* remade by Nodder—a decision that would have cost a considerable sum. Darwin’s decision was likely spurred by the criticisms of his friend Josiah Wedgwood, who complained that “the two first plates, besides being so wretchedly engraved, are blundered in the numbering; in short I have no patience in seeing them where they are, & the Meadia is as bad as bad can be. Let me prevail upon you to have these things renew’d & made what they ought to be” (Wedgwood 91-2). Wedgwood also supplied Darwin with the design for a cupid with a black background, an engraving of which replaced Stringer’s shakily-etched line drawing in the second edition. Despite Wedgwood’s lack of knowledge about illustration processes (he calls the etchings engravings), his comments make it obvious that the motivation for replacing Stringer’s etchings was both aesthetic (“bad as bad can be”) and about ensuring scientific accuracy (the chart is misnumbered, thus confusing the

taxonomic categories). That said, Darwin's decision to replace these poorly executed etchings with engravings by Nodder—and his choice of Nodder as the engraver—has further implications for how we understand the function of the images vis-à-vis the composite text and the philosophical project of the book.

Before producing engravings for other botanical books, including Thomas Martin's *Thirty-Eight Plates with Explanations, intended to Illustrate Linnaeus's System of Vegetables* (1788), Nodder had been employed by Banks on the enormous project of producing watercolour drawings and engraved plates of plant specimens collected on the *Endeavour* voyage. Of the 30,000 specimens collected on the voyage, Sydney Parkinson (the botanical artist who accompanied Banks) made 269 finished watercolours and 674 outline drawings of plants; 272 of the outline drawings were finished or remade by Nodder after the expedition had returned to London—sadly without Parkinson, who died on the way to Cape Town on the return voyage. The combined labor of five artists and eighteen engravers, at the reputed expense of £10,000, eventually yielded 738 engraved plates, the culmination of the expedition's contribution to botanical science and a substitute for the knowledge contained in Banks' specimen collections. This expensive and extravagant project was not published in Banks' lifetime, but its fame had demonstrable impact on the artists involved. The project clearly established Nodder's reputation: the engraving of *Apocynum androsæmifolium* in Darwin's *Botanic Garden* announces, “*Drawn & Engraved by F. P. Nodder, Botanic Painter to her Majesty*” (1789: facing p. 182). Choosing Nodder as his illustrator thus affiliated Darwin's book with the most important botanical collecting and illustration project of the later eighteenth century, thereby legitimizing Darwin's contribution to botanical science.

Nodder brought his mastery of the conventions of botanical illustration to Darwin's book, deploying an integrated set of technical, scientific and aesthetic practices he had developed working for Banks. Nodder's work for Banks had been, by and large, an artistic conversation with a dead man. Parkinson's unfinished drawings often include only enough information—colour added to part of a stem, one leaf, one flower—to serve as a guide for later completion [Fig. 3]. When Nodder (we can imagine) sat down to produce the finished watercolour of *Sophora tetraptera*, for example, he had Parkinson's sketch and the dried, pressed specimen collected by Banks and Daniel Solander. Nodder's painting both reproduces and transforms Parkinson's image, following the overall form and lines of the drawing while incorporating elements of the specimen (seed pods and young leaves on the top of the plant) missing from the original sketch [Fig. 4]. The resulting image is a good example of the *picturua absolutissima* or complete image desired by botanists from the sixteenth to the eighteenth century: it shows all stages of a plant's development at once (leaves, flowers and seed pods on the plant simultaneously), and thus does not represent any living plant (Kusukawa 114-15).¹² While the image conveys the information essential to determining its Linnaean classification—note the pronounced pistil surrounded by equal numbers of stamen of alternating heights—it is not an “accurate” representation of the plant as we would understand it.¹³ This point is amplified by Nodder's positioning of the seed pods of the kōwhai, which do not grow straight up into the air as Nodder represents them, but rather hang down in the same manner as the flowers. Lacking guidance from Parkinson's sketch but having the physical specimen with its seed pod at hand, Nodder was forced to improvise. While various reasons for his decision to insert the pods in this way might be examined—limits set by paper size, the relative unimportance of the pods'

direction for identifying the plant in the Linnaean system—I'd push for intention over circumstance.

As I have argued elsewhere and will summarize here, in this image and many others Nodder follows a set of aesthetic conventions that are particularly pronounced in Parkinson's botanical drawings and watercolours.¹⁴ Along with a parcel of poetry books and a copy of Linnaeus, Parkinson carried one aesthetic treatise with him on the *Endeavour*, William Hogarth's *Analysis of Beauty* (1753). Hogarth supplied Parkinson and his contemporaries with a practical method of—and theoretical justification for—imbuing images of plants with apparent life. As he indicates in the Preface, Hogarth derives the lines of beauty and grace from the tradition of *Figura serpentinata* practiced by Renaissance painters Leonardo da Vinci and Michelangelo and theorized by Giovanni Paolo Lomazzo. Hogarth quotes Lomazzo to affirm that the “greatest grace and life that a picture can have, is, that it expresse Motion: which the Painters call the spirite of a picture” (vi). Hogarth then quotes seventeenth-century painter Charles Alphonse du Fresnoy on the “large flowing, gliding outlines” of antique statuary, which have the illusion of “life and seeming motion in them” (vi-vii). Drawing on this tradition, Hogarth exemplifies his theory of waving and serpentine lines—the lines of beauty and grace respectively—with various forms, including those of flowering plants. In a set of figures “taken from the life,” he employs the graceful, curving forms of the Lily and calceolion Iris (numbers 43 and 44 on accompanying plate) to exemplify the vitality imbued by serpentine lines (44).

For Parkinson and Nodder, as for Hogarth, a plant's aesthetic appeal was lodged in the carefully constructed appearance of liveliness and motion. This is apparent in the pronounced serpentine line of Nodder's image of *Sophora tetraptera* and concomitant perception of a twisting motion produced by the placement seedpods to accentuate the upward sweep of the line,

thereby balancing the forward and downward arc of the flowers on the other side of the stem. Nodder's improvisation thus conformed to a specific convention of botanical illustration, one that gave preference to the illusion of movement and consequently vitality over conveying whatever knowledge he, Banks or Solander may have had about how the plant grew in the world. This practice aligns with, but also exceeds, the epistemic value of "truth to nature" that Lorraine Daston and Peter Galison locate in the eighteenth-century atlas: eighteenth-century botanists aimed to present an idealized image that eliminated accidental traits or idiosyncrasies of individual specimens (55-59). This epistemic position finds its corollary in eighteenth-century aesthetic theory beyond Hogarth: as Joshua Reynolds argues in his 1771 *Discourse* to the students of the Royal Academy of Art, to attain "a just Idea of beautiful forms" it was necessary to "discover what is deformed in nature" and to purify it of "accidental deficiencies, excrescences and deformities" (7). For Reynolds as for eighteenth-century botanical illustrators, close examination and innumerable comparisons between actual objects allow the artist to craft "forms more perfect than any one original" (8). A lack of information about the plant allows Nodder to take this aesthetic ideal even farther, producing an idealized image that deviates from nature as it purifies it.

This combination of epistemic and aesthetic values informs Nodder's botanical illustrations later in his career. Returning now to Nodder's illustration of *Meadia* for Darwin's *Loves* [Fig. 1], we immediately notice the serpentine line, the composed variety, and the intricacy of form that give the image liveliness and motion. Nodder's application of Hogarthian aesthetics becomes striking when compared to J. Sowerby's design for *Meadia*, probably engraved in 1787 or 1788, in William Curtis's *The Botanical Magazine, or Flower-Garden Displayed* (1790) [Fig. 5]. While Sowerby's straight stem conveys the form of the living plant, Nodder adds a sinuous

curve to his *Meadia*, capturing the emphasis on motion and vitality embedded in the aesthetic tenets of botanical illustration he developed under Banks. Stringer's etching of *Meadia* [Fig. 2] achieves a rough approximation of Nodder's smooth, serpentine stem, but Nodder amplifies the curvature of the line and adds a greater profusion of overlapping buds and flowers (seven open flowers instead of six, three buds instead of two). Nodder also employs specific techniques of engraving to enhance the seeming motion and vitality of the image. As Meghan Doherty suggests, the illusion of three-dimensions in portraiture and scientific illustration is produced by the artist's manipulation of depth and contrast: sinuous lines convey contours, while varied density of lines—thickly hatched lines suggest depth while sparse lines suggest a crest where light hits—create the illusion of three-dimensions on a two-dimensional plane ("Discovering" 212, 219). In Nodder's image of *Meadia*, the bend and curve of the petals—a characteristic described in Darwin's note—is accentuated by varying the density of lines in the engraving. The overlapping leaves and flowers and the varied shading on both enhance the perception of depth and movement in the image. As these comparisons suggest, Nodder's objective was to imbue the image of *Meadia* with motion and vitality, not to convey what it looked like in field and vale.

Meadia and the other engravings of plants thus bridge the generic and typographic gap in Darwin's *Loves of the Plants* between the personified plants of the verse and the descriptive prose of the notes. Darwin's blushing, bowing plants are the poetic equivalent of Nodder's artfully animated images of plants; verbal prosopopoeia performs the work of the serpentine line; both image and verse uphold the aesthetic claims for the plant's beauty and elegance made in the prose notes. As should be clear, this is not simply a matter of science being trumped or derailed by aesthetic conventions. The epistemic values of botanical science are supported and materialized when artists deploy specific techniques to produce images that accord with a set of

aesthetic conventions. For Darwin, this confluence also undergirds his book's unstated but omnipresent vitalist conception of nature. Employing an overarching analogical framework, *The Botanic Garden* maps a web of connections unified by the principles of life, growth, and succession akin to those promoted by Buffon.¹⁵ This position was further consolidated in Darwin's later works: his medical treatise *Zoonomia* (1794-6), for example, criticizes the project of trying "to explain the laws of life by those of mechanism," advocating instead for a medical theory grounded in the "laws of organic life" (1-2). The posthumously published *Temple of Nature* (1803) puts forward a full-blown evolutionary theory, a "total vision of life in a continuous sequence" (Priestman, par. 11). Darwin's personified plants are an early expression of this understanding of organic life, and Nodder's illustrations not only support this overarching framework but lodge it in the established conventions of botanical science. In effect, the images suture notes and verse, making Linnaean taxonomy a vehicle for Buffonian vitalism.

In my previous work on botanical illustration, I focused on the way Parkinson's and Nodder's images of plants reanimate the dead, pressed specimen, obscuring the procedures of colonial collecting and print commodification that underwrite Darwin's book and instantiating a practice of aesthetic reanimation that was embraced and resisted by Romantic poets and anthologists. Here, I've emphasized how engravings of plants in *The Botanic Garden* rely on techniques of image making and aesthetic conventions that allow them to function epistemically. These images visually articulate the theoretical framework of the composite text, revealing how the text-image combination is integral to Darwin's intervention in debates over nature's vitality and organic life more broadly at the end of the eighteenth century. In a longer version of this paper, I would extend these observations outward, considering epistemic values embedded in Darwin's allegorical frontispieces and, farther still, in literary and scientific works of his

contemporaries. With this in mind, I'll end by pointing out the methodological import of my argument. Giving sustained attention to who made images and how they were made—alongside the artistic conventions and aesthetic theories that stand behind the diverse kinds of images bound into books of the period—enables a different way of seeing the knowledge-work of Romantic-era literature.

Notes

¹ See, for example, Stanton; Millgate; Suarez and Zimmerman; Mason; St Clair.

² See, again for example, Piper; Lynch.

³ On materiality, see the recent volume of essays on *Romantic Materialities* edited by Guyer and Langan.

⁴ For recent studies of Romantic visual culture, see Calè; Haywood. For illustration of literary texts, see Jung “Visual Interpretations”; Garside.

⁵ See the short bibliography of work on Blake’s “Commercial Book Illustrations” in *The William Blake Archive*.

⁶ See especially Jung, “Illustrated Pocket Diaries”; Mole.

⁷ There is also considerable disagreement over the term “naturalism,” which is often used to describe images that abide by the rules of perspective; “naturalistic” images, however, do not necessarily correspond with observed reality. See Kusukawa 4-8.

⁸ In the in-text citations and captions, I will differentiate editions of *Loves of the Plants* by date (1789, 1790, or 1791), and will distinguish verse from notes with the addition of I. or II. References to individual physical copies are also noted.

⁹ See Gascoigne 107-18.

¹⁰ For binding instructions, I inspected specific physical copies of *The Botanic Garden*, including two copies of both volumes at the University of Virginia and three copies of both volumes at the University of Pennsylvania.

¹¹ I thank Roger Gaskell for this insight.

¹² Here it is worth noting that the flowers of the kōwhai, the native name for *Sophora tetraptera*, appear *before* the leaves.

¹³ As with truth, objectivity, experience, and many other keywords of seventeenth- and eighteenth-century natural philosophy, accuracy did not signify in the modern sense of correctness. As Meghan Doherty argues, standards of accuracy in scientific illustration and experimental practice were produced in the mid-seventeenth century through the lexicon of accuracy shared by engravers and members of the Royal Society. See Doherty, “Creating Standards” 15-36.

¹⁴ See Porter, “Specimen Poetics,” 71-5.

¹⁵ Buffon’s vitalist account of nature relied on analogical thinking while also historicizing nature through the continuity and succession in the reproduction of species. Reill, *Vitalizing Nature*, 6, 55.

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Figures

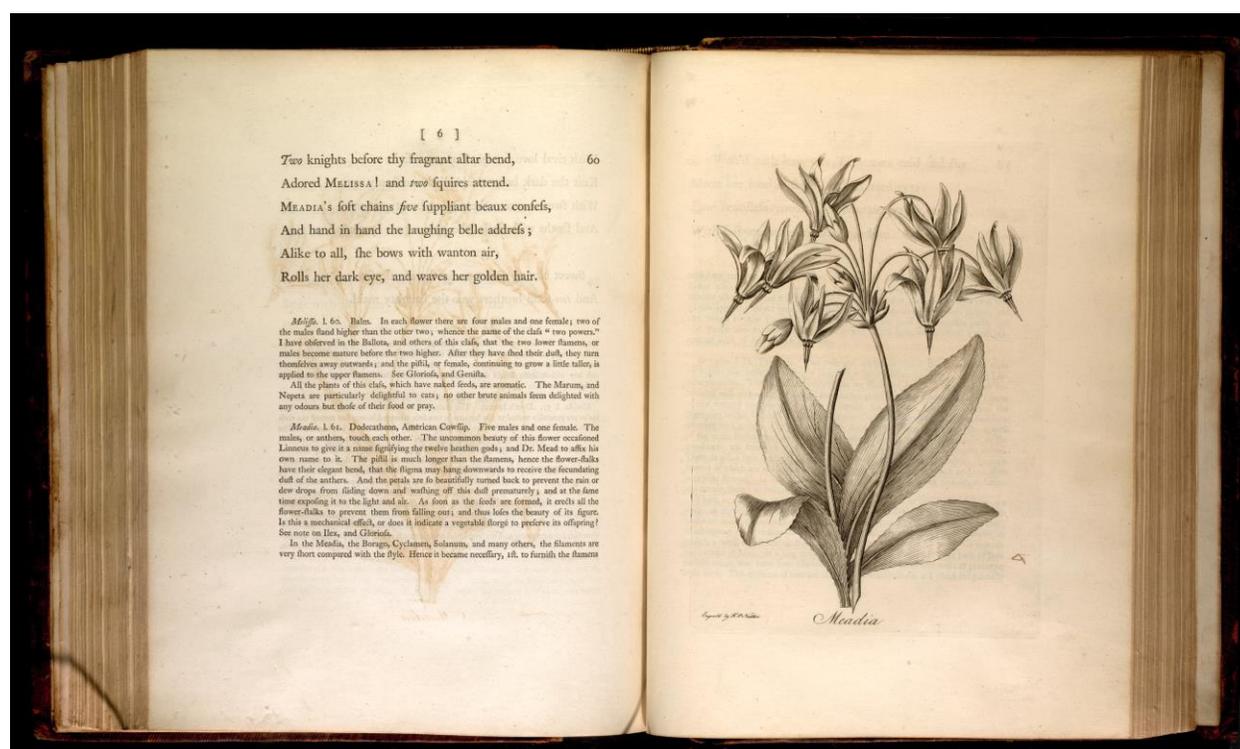


Figure 1. Erasmus Darwin, *The Botanic Garden; A Poem in Two Parts. Part II. The Loves of the Plants* [3rd ed.]. (London: J. Johnson, 1791), p. 6 and facing place. Courtesy of Kislak Center for Special Collections, Rare Books and Manuscripts, University of Pennsylvania.



Figure 2. Erasmus Darwin, *The Botanic Garden, A Poem in Two Parts. Part II containing The Loves of the Plants* (Litchfield, 1789), plate facing p. 6. Courtesy of Albert and Shirley Small Special Collections Library, University of Virginia.



Figure 5. William Curtis, *The Botanical Magazine; or, Flower-Garden Displayed*, vol. 1 (London, 1790), plate 12. Courtesy of The Huntington Library, San Marino, California.