PhD Thesis

Erasmus Darwin and the Poetry of Science

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Thesis Abstract

In the late eighteenth and early nineteenth centuries, significant changes occurred in the ways in which the general public engaged with scientific discoveries through popular literature. Poetry in particular brought science to a larger audience, one which included those, such as women and children, traditionally excluded from the more mainstream cultural centres of the “new science,” such as gentlemen’s clubs and friendly societies. This thesis examines the changes that occurred in popular science writing, particularly in terms of that writing’s discourses of morality and gender. It explores why verse was so popular (albeit briefly) as a medium for conveying scientific discoveries and research, and why it moved from being a form of scientific discourse primarily authored by men to one in which female writers dominated, before disappearing as a significant form of science writing in the mid-nineteenth century. To this end, the thesis focuses on the reception of Erasmus Darwin’s scientific poetry. Darwin was the period’s most popular and influential verse science writer. For this reason his initial reception and on-going reputation, traced and analysed in depth in this thesis, shed a good deal of light on the cultural shifts occurring in popular science at this time. The thesis also situates Darwin within a long didactic and scientific literary tradition. In contrast to pioneering and influential studies by Desmond King-Hele, Jenny Uglow and Maureen McNeil, I challenge the critically dominant understanding of Darwin as a unique genius whose novelty was the primary force behind both his early success and ultimate obscurity. I elucidate the links between Darwin and his predecessors and contemporaries, demonstrating the significance of this association of his work with pre-existing genres and literary traditions – particularly those concerned with moral didacticism and public improvement.

In terms of reception, the thesis draws on published reviews, letters from Darwin’s contemporaries, and poems written in praise of his works to examine why the initial
publication of Darwin’s *The Loves of the Plants* (1789) and *The Economy of Vegetation* (1792) were relatively uncontroversial, despite the emphasis placed by many modern critics on their provocative sexual and philosophical content. I argue that contrary to the prevailing critical consensus, the political backlash against Darwin’s work in the 1790s has been overstated and that his works continued to remain popular into the early 1800s. The thesis examines the significance of this in light of Darwin’s liberal political and religious views, and the high-profile nature of satires of his work such as T.J. Mathias’ *The Pursuits of Literature* (1794) and *The Anti-Jacobin, or Weekly Examiner’s The Loves of the Triangles* (1798). I also examine the relatively measured response to Darwin’s final poem, *The Temple of Nature* (1803), in which biological evolution is explicitly described, as suggestive of both greater diversity and less extremism in public opinion than is usually associated with this period.

Lastly, this thesis argues that the presence of a rich tradition of women’s scientific writing in verse in the early decades of the nineteenth century, much of it directly influenced by Darwin, suggests that didactic poetry remained a vital form for much longer than has been previously thought, and that the genre suffered a slow decline and transformation into other related forms rather than a catastrophic and sudden end. The strong presence of female writers within this tradition also suggests that women found a variety of ways to negotiate the increasing restrictions that the institutionalisation of science placed on their participation, that included drawing on traditional religious and moral sources of authority as a way of maintaining their stature as educators - a position that may ultimately have become problematic as disciplines further solidified.
Declaration

This is to certify that

i. the thesis comprises only my original work towards the PhD except where indicated in the Preface,

ii. due acknowledgement has been made in the text to all other material used,

iii. the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Julia List
Preface

This thesis is submitted to the University of Melbourne in support of my application for admission to the degree of Doctor of Philosophy. No part of it has been submitted in support of an application for another degree or qualification of this or any other institution of learning.
Acknowledgements

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Introduction

In the late eighteenth and early nineteenth centuries, significant changes occurred in the ways in which the general public engaged with scientific discoveries through popular literature. The latter decades of the eighteenth century witnessed a greater popularisation of modern science, with new scientific discoveries being reported and discussed outside the relatively closed, elite scientific communities such as the Royal Society. Poetry in particular brought science to a larger audience, one which included those, such as women and children, traditionally excluded from the more mainstream cultural centres of the “new science,” such as gentlemen’s clubs and friendly societies.

This thesis seeks to account for and critically evaluate the changes that occurred in this important form of popular science writing, as well as tracing its development throughout the eighteenth and early nineteenth centuries. Didactic poetry has been treated cursorily in most literary histories; this thesis re-examines the significant role of this genre in English literary culture, explores why verse was so popular (albeit briefly) as a medium for conveying scientific discoveries and research, and seeks to explain why it moved from being a form of scientific discourse primarily authored by men to one in which female writers dominated, before disappearing as a significant form of science writing in the mid-nineteenth century.

To this end, the thesis focuses on the reception of Erasmus Darwin’s scientific poetry. Darwin was the period’s most popular and influential verse science writer. For this reason his initial reception and on-going reputation, traced and analysed in depth in this thesis, sheds a good deal of light on the cultural shifts occurring in popular science at this time. From the mid-nineteenth century onwards, Darwin’s reception history has been described as one of great popularity followed by sudden disrepute, largely brought about by political and religious attacks on his work in the form of
parodies – most notably the *The Anti-Jacobin, or Weekly Examiner’s The Loves of the Triangles* (1798). However, a closer examination of the large number of surviving reviews and commentaries on his work, both published in contemporary periodicals and circulated privately, reveals a very different picture. In fact, the public response to Darwin’s work appears to have followed a very standard trajectory of initial popularity (likely due to the broadly appealing subject of botany), followed by a significant degree of influence on contemporary and younger writers, and finally a long, slow decline in interest as changes occurred in both public taste and in the conventions of scientific print culture.

This reception history would be unremarkable if it were not for its context. Amidst the political and social upheavals following the French Revolution, Britain’s declaration of war with France and a burgeoning evangelical revival, a series of poems dealing with cutting-edge scientific concepts including the Big Bang, the biological evolution of life, and plant sexuality, might reasonably be expected to have challenged and shocked readers. And yet, this does not appear to have been the case. In order to explain the relatively non-controversial status of Darwin’s scientific epics, this thesis situates Darwin within the broader eighteenth-century tradition of physico-theological poetry, as well as considering the fate of the didactic genre after Darwin, examining the ways in which his remarkably capacious, hybrid texts provided models for both political and scientific writings in the early nineteenth century, especially by authors marginalized by their liberal politics, gender or controversial religious views. In doing so, this thesis provides a major reassessment of both Darwin’s reception and the status of the genre of scientific didactic poetry in the late eighteenth and early nineteenth centuries, demonstrating that both Darwin and the form he recreated for the popular scientific culture of the 1790s continued to play an important role in the cultural integration of new and potentially challenging ideas.

Erasmus Darwin, as both a poet and a scientist, has frequently been positioned by scholars in post-Romantic terms as an original genius, largely uninfluenced by other
writers. Darwin’s main biographer and most prolific scholar, Desmond King-Hele, has discussed his literary works primarily in terms of originality and his impact on others, particularly canonical Romantic-period writers such as Wordsworth, Coleridge and Blake. He recognises the influence of Lucretius’ *De Rerum Natura* on Darwin’s poetry, but rejects as unimportant most other literary antecedents.¹ The early body of criticism on Darwin from the mid- to the late-twentieth century focuses on Darwin as a pre-Romantic figure.² Other critics such as Maureen McNeil have sketched loose connections with earlier didactic poets, but not in any detail.³ The emphasis on Darwin’s originality may well be due to the exclusion of his work from the literary canon and its marginalisation for aesthetic reasons, his style in conflict with prevailing tastes and his form placing him awkwardly outside of current genres, somewhere in between poetry and non-fiction prose.

More recent critical challenges to the established Romantic canon have resulted in the scholarly rehabilitation of Darwin’s work and that of writers closely associated with his circle, such as Anna Seward. While earlier criticism still seeks, explicitly or implicitly, to justify attention to his work in post-Romantic terms, much recent scholarship has been devoted to assessing Darwin’s cultural impact and the public response to his poetry in the areas of sexuality and politics.⁴ Most of the criticism published on Darwin’s poetry in the 1990s and early 2000s approaches the texts from a feminist standpoint, seeking to recover evidence of radicalism and subversion in the cultural upheavals of the 1790s, and to link Darwin’s portrayal of sexuality to emerging modern discourses concerning female sexuality in particular.

Feminist criticism has played an important role in uncovering the potential sexual sub-texts of Darwin’s poems and bringing to critical attention the work of a variety

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² See, for example, King-Hele’s *Erasmus Darwin and the Romantic Poets* and “Disenchanted Darwinians: Wordsworth, Coleridge and Blake,” and Richard Matlak’s “Wordsworth’s Reading of Zoonomia in Early Spring.”
³ See Maureen McNeil’s biography *Under the Banner of Science: Erasmus Darwin and his Age*.
⁴ See especially Janet Browne’s “Botany for Gentlemen” and Alan Bewell’s “‘Jacobin Plants’: Botany as Social Theory in the 1790s.”
of female verse science writers in the Darwinian tradition whose work, until recently, has been neglected and largely unknown to scholarship. Building upon these recent studies, and an increasing body of literature on the popular scientific cultures of the late eighteenth century, this thesis places Darwin’s poetry in a broader literary and socio-cultural context. This context, which includes the little-studied but large and influential body of didactic poetry popular throughout the century, reveals the features of the literary culture of the late Enlightenment that rendered a work largely acceptable to a mainstream readership, contrary to contemporary scholarly interpretations of it as radical. Rather than considering Darwin as a pre-Romantic writer, this thesis argues that Darwin’s popular science writing and the public’s response to it needs to be understood as the product of certain long-established Enlightenment discourses and genres in which science and largely conservative religious and political worldviews were deeply intertwined. In particular, these include generic factors such as the English scientific poem’s long association with religion and anti-Lucretian viewpoints, which may have contributed to more conservative readings of Darwin’s work.

The difficulties inherent in such an approach have been noted by Jon Klancher, who has observed that

to gain access to their world, however, means giving up the frequent methodological double standard that encourages interpreting or theorizing about canonical texts, but counting or averaging popular texts. It also means refusing any premature judgments of taste, since what is at issue is precisely the historical forming of taste as well as readers’ interpretive modes.5

Thus, this thesis is not concerned with making a case for Darwin’s inclusion in the broader Romantic canon, an implicit aim of recent studies by Michael Page and Noel Jackson, or to further explore the extent and nature of his influence on Romantic poetry, the project undertaken by Desmond King-Hele, David Worrall and others.6

5 Klancher, Making of English Reading Audiences, ix.
6 For example, Page, “The Darwin before Darwin”; Jackson, “Rhyme and Reason”; King-Hele, Erasmus Darwin and the Romantic Poets; and Worrall’s “William Blake and Erasmus Darwin’s Botanic Garden.”
Instead, this thesis explores what the composition and reception of Darwin’s work, immensely popular and influential in its day, can tell us about readers’ and writers’ engagement with potentially challenging new scientific theories about the creation of the universe, the development of human life, and the functioning of sexuality in nature at a time of both increasing religious uncertainty and revival, radicalism and reaction, and what this might mean for our understanding of the later nineteenth-century scientific literature which grew out of the prose and verse of this tumultuous period.

This project draws upon a range of methodological approaches. A central concern of the thesis is the reception of popular science writing and the on-going standing of Darwin’s work in the early nineteenth century. The study is informed by reception theory, as formulated by Wolfgang Iser and Hans Robert Jauss, in particular Jauss’s notion of the “horizon of expectations” (Erwartungshorizont). The discussion of trends in late-eighteenth-century scientific discourses is based on the literary analysis of primary sources including a wide range of didactic and scientific poems and essays, all of which were concerned with the role of science and knowledge in society. These were published for the most part in periodicals such as the Monthly Review, periodical reviews of literature, scientific primers and texts aimed at a popular audience, the proceedings of the Royal Society, and letters from key scientific and literary figures.

The analysis of these sources is informed by recent key works in the cultural history of science, including Roy Porter’s studies of the British Enlightenment.7 These studies emphasise the uniquely conservative features of the Enlightenment in England, in which a culture already having passed through its major religious and scientific revolution sought to consolidate and maintain its progress rather than overthrow an ancien régime. Largely for this reason, close ties remained between scientific, religious and moral discourses in this period, a trend which persisted strongly in works aimed at a popular or general audience. The association is foregrounded in much didactic

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7 For example, Porter’s Creation of the Modern World.
verse, especially anti-Lucretian works of physico-theology. However, rather than being limited to a particular genre or poetic form, this concern with the social function of didactic literature was tied to the inclusive nature of its intended readership, and the educational rather than purely entertaining focus of its content.

The links between Darwin and his predecessors and contemporaries demonstrate the significance of this association of his work with preexisting genres and literary traditions – particularly those concerned with didacticism and public improvement. The reader response theories of Hans Robert Jauss provide a key to understanding the operation of these generic associations. Jauss’s key concept, the horizon of expectations, is defined as “the set of cultural, ethical, and literary (generic, stylistic, thematic) expectations of a work’s readers ‘in the historical moment of its appearance.’ These expectations are the basis on which the work was both produced and received.”8 While Jauss goes on to use this theory as the basis for making aesthetic evaluations of texts, this thesis suggests that in order to understand the ways in which the late eighteenth-century public engaged with literary works of popular science, these works need to be interpreted through the lens of their readers’ expectation that the neo-Classical didactic poem conform to Classical models of aesthetics and contemporary Enlightenment standards of usefulness.

The thesis begins by examining the literary and scientific context of late eighteenth-century didactic writing. The first chapter establishes the social function and status of didactic poetry and its relationship to the “new science.” I argue that didactic poetry is, historically, a moral genre, one which while reflecting certain progressive elements of Enlightenment thought, such as an optimistic view of human nature and the possibility of social progress through learning, has a tendency towards religious conservatism and emphasises the morally improving and spiritual benefits of studying the natural world. This trend continues throughout the period in which Darwin was publishing, particularly in works targeted at an audience which included women and children. This chapter also explores the background and

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popular influence of late-eighteenth-century prose science writing, including the scientific primer or “textbook” and the periodical essay. I will discuss the relationship of these to both didactic poetry and the prose of more “closed” realms of scientific discourse such as those embodied by the publications of the Royal Society. This chapter will argue that popular prose science writing was positioned midway between the institutionalised empiricism of the Royal Society and the popular reach of the didactic poem. In particular, popular prose science writing maintained some of the “socially improving” emphases of the genre of didactic poetry. While these popular science primers targeted a mixed audience which included women and their families, they remained a predominantly masculine discourse in which feminine voices are rare and distinctive until the late 1790s.

Following on from this literary and cultural context, the second chapter of the thesis provides a detailed analysis of Darwin’s use of, and departures from, the conventions of these pre-existing genres. Rather than attempting to uncover direct lines of influence between Darwin and particular authors or works, which has been a primary concern of Darwin’s leading critic Desmond King-Hele, this chapter aims to uncover associations that were influential on the reading public’s understanding of the genre and aims of Darwin’s texts. I argue that Darwin was providing something genuinely new in the composition of epic poems in which man’s relationship with nature was restructured according to materialism and the “new science.” He was also innovative in his successful targeting of women, children and novices as readers. I suggest, however, that his success relied on several points of continuity with previous forms, particularly those which enabled his readers to situate his work within existing, more orthodox discourses.

The third chapter focuses on the effects of increasingly clear disciplinary boundaries on the reception and influence of Darwin’s work both during his lifetime, and in the early nineteenth century. I suggest that a lack of clear boundaries between the recreational naturalist and those engaged in the new, institutional sciences such as botany and geology in the 1790s was an important factor in the success of Darwin’s
works, especially *The Loves of the Plants* (1789). However, I argue that Darwin’s initial decision to publish anonymously and his casual, even dismissive, attitude to his success as an author indicates the differing status that these pursuits held even at this early stage, particularly the association of popular botanical works with a feminine readership. I suggest that the criticism attracted by the highly speculative elements of *The Temple of Nature* (1803), when such features were praised in *The Botanic Garden* (1789-92), shows a clear shift in the perception of the role of the public scientist. I also examine attempts made by writers already on the margin of scientific discourses on account of their female gender, for example Maria Jackson, to distance themselves from this style.

The fourth, fifth and sixth chapters focus on the reception of Erasmus Darwin’s didactic poems in the context of scientific challenges to religious orthodoxy in the 1790s and early 1800s. I draw on published reviews, letters from Darwin’s contemporaries, and poems written in praise of his works, with a view to examining why the initial publication of Darwin’s morally and sexually provocative *The Loves of the Plants* (1789) and theologically ambiguous *The Economy of Vegetation* (1792) were relatively uncontroversial. In order to analyse the impact of Darwin’s choices of genre, subject-matter and language on female as well as male readers, I discuss in detail criticism by contemporary female poets such as Anna Seward and the works of those female science poets most closely influenced by his style, such as Charlotte Smith, Maria Montolieu and Frances Rowden, all of whom focused on issues of morality and social improvement. I devote particular attention to the ways in which their work engages with Darwin and with the didactic tradition as a whole, and the impact on their own reception through being associated with Darwin’s mode of writing.

Recent work by Ann Shteir and Sam George has focused on the censorship of Darwin’s botanical works by women poets. While it is certainly the case that these

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9 See, for example, Shteir, *Cultivating Women, Cultivating Science* and George, *Botany, Sexuality and Women’s Writing.*
poets do not deal with plant sexuality as explicitly as Darwin does, and that in many cases this element of botany is entirely erased in texts by female writers, I suggest in chapter four that the relationship of influence between Darwin’s The Loves of the Plants and his feminine imitators is not as simple as the watering down of a provocative and subversive text. This chapter situates the negotiation of plant sexuality by female writers within two contexts. The first is the early reception of The Loves of the Plants which viewed it as an essentially unprovocative text. The second is the later backlash against female participation in such discourses, seen in texts such as Polwhele’s The Unsex’d Females (1798). I will argue that writers such as Charlotte Smith retain some of the sexualised elements of Darwin’s work as well as other potentially inflammatory topics such as his anti-slavery views, with the degree of “censorship” determined not only by gender roles per se, but also by intended audience (children, adults or both) and the extent of the text’s engagement with discourses of domesticity, family and the home as the realm of botanical education.

The sixth chapter analyses in detail the reception of The Temple of Nature (1803), Darwin’s final, posthumously published poem, which appeared in a literary, religious and political culture that was rapidly moving away from the Enlightenment enthusiasm which had greeted both parts of The Botanic Garden (1789-1792). The criticism attracted by the highly speculative elements of The Temple of Nature, features which had been praised in The Botanic Garden, particularly shows a clear shift in the perception of the role of the popular science writer. Darwin’s use of elements that linked his work to fictional and speculative genres rendered the scientific status of his work increasingly problematic for reviewers.

The seventh chapter examines the causes and contexts of the politicized responses to Darwin’s work in the late 1790s and early 1800s, focusing on the attacks which portrayed his work as “Jacobin,” as politically, religiously and sexually dangerous. It has become a commonplace of Darwin criticism to attribute the apparent backlash to increased conservatism and the politicisation of culture during and after the
Revolution, exemplified by the work of Darwin scholar Desmond King-Hele. This chapter agrees, in essence, with that view. However, I argue that the complexities of the reaction as they relate to issues of class, popular readership and politics have been neglected in favour of a very simple narrative of increasing conservatism, one which obscures certain anomalous features of Darwin’s reception. These include the reasons, mostly religious rather than political, for the more severe responses to texts such as The Temple of Nature, against which Darwin’s earlier pro-Revolution work The Economy of Vegetation remained to an extent insulated, and for the relatively late singling out of Darwin as a dangerous literary force among many “questionable” authors. Furthermore, this chapter suggests that the reception of Darwin’s work in the late 1790s was not uniformly negative.

The seventh chapter also traces Darwin’s short-term influence by considering a sample of his imitators from the late 1790s and early 1800s, focusing on those who critique or adopt his style and characteristic themes. I chart the growing tendency to criticise Darwin on aesthetic rather than on religious or political grounds, and discuss the influence of Wordsworth’s Preface to Lyrical Ballads, which has been interpreted as a direct challenge to the Darwinian school of poetry. I will question the seminal importance of Lyrical Ballads for changing attitudes towards Darwin’s verse in the short term, and aim to draw a broader picture of shifts in literary value by examining didactic texts which did retain their status, such as Thomson’s Seasons.

The eighth chapter concludes the thesis with a discussion of the didactic poem in the early nineteenth century, focusing on poems which combine verse with prose natural philosophy such as Shelley’s Queen Mab (1813), Eleanor Anne Porden’s The Veils (1815) and Elizabeth Kent’s Flora Domestica (1825) and Sylvan Sketches (1831). The moral and social function and authority of these texts are examined in the light of hardening disciplinary boundaries and Victorian reviewers’ growing defence of Darwin’s religious orthodoxy while maintaining their criticism of his style. The chapter aims to ascertain whether such poems retained or were perceived to retain

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10 See, for example, King-Hele, Erasmus Darwin: A Life.
their role as “legislators of society,” the basis – this thesis argues – for their influence and controversial status in earlier decades.
Chapter One: Science and Didactic Poetry
in Eighteenth-Century England

Didactic poetry has long been recognised as a significant eighteenth-century genre, both for belles lettres in general and for the transmission of new scientific ideas and discoveries. However, the nature of didactic poetry’s place in the burgeoning market for scientific books and its role in popularising new scientific discoveries and the worldviews and cultural practices associated with them have never been thoroughly examined.

The most comprehensive study of scientific ideas in eighteenth-century poetry remains William Powell Jones’ The Rhetoric of Science (1966), which surveys the use of scientific ideas and imagery in a wide variety of poetic genres. Jones sketches a genealogy of scientific verse, charting the rise and fall of particular authors and subgenres. While he provides illuminating analyses of particular poems, he considers these works largely in isolation from both their cultural context and from popular science writing in genres other than verse. Similar broad surveys of popular scientific writing and its readers, such as Patricia Phillip’s The Scientific Lady (1990) do not establish whether didactic poetry was in any way unique as a form for disseminating scientific ideas. Nor do they consider its relative importance compared to other genres. Works on the Georgic genre such as John Chalker’s The English Georgic (1969) tend to focus on political concerns and the author’s use of Virgil. Studies of Lucretian poetry remain a developing area, with the recent Cambridge Companion to Lucretius (2007) containing excellent but necessarily synoptic accounts of the poet’s eighteenth- and nineteenth-century reception, and only brief accounts of his imitators. A relative wealth of literature exists on the influence of Newton and Newtonianism on verse in this period, beginning with Marjorie Nicolson’s Newton Demands the Muse (1966). This work establishes that poetry was a major medium for
the dissemination of Newton’s ideas, but is limited in its discussion of the context and implications of this, an approach largely followed by later studies which build on Nicolson’s work such as Patricia Fara and David Money’s “Isaac Newton and Augustan Anglo-Latin Poetry” (2004).11

Understanding the historical and literary contexts of science poetry is critical for any attempt at explaining the genre’s unusual history, rising slowly in the late seventeenth century, achieving great popularity in the 1700s, before petering out and disappearing almost entirely by the end of the nineteenth century. This chronology does not closely match that of either the scientific and industrial revolutions, or the popularisation of parallel prose genres which conveyed the new sciences to the masses. Over the first half of the eighteenth century, the expanding publishing industry and increasing rates of literacy allowed for the dissemination of popular educational, introductory and “how to” books in unprecedented numbers and varieties. Among these were many different types of publications which can be categorised, somewhat anachronistically, as “science books,” in that they were educational in intent and contained substantial amounts of information on fields of study which now fall under the umbrella of the natural sciences, such as astronomy, chemistry, physics, biology and geology.

This chapter will focus on the genre of the scientific poem, while endeavouring to articulate its similarities to and differences from other popular forms such as the “literary” prose natural history. Defining which works and types of verse fall within the scope of the category of verse natural history is challenging, given the wide variety of verse-forms that included natural history and philosophy, and had to some extent didactic aims. Such a grouping might encompass works as diverse in style and content as the physico-theological poem, intended to show the design and perfection of God’s creation by describing and celebrating the physical universe and its animal and vegetable inhabitants; the Georgic – both translations of Virgil and

11 See Jones, Rhetoric of Science; Phillip, Scientific Lady; Chalker, English Georgic; Cambridge Companion to Lucretius; Nicolson, Newton Demands the Muse; and Fara and Money, “Isaac Newton and Augustan Anglo-Latin Poetry.”
contemporary works in a similar style, which used a detailed account of agricultural labour and methods as a vehicle for wider social and political commentary; the prospect poem, in which a rural landscape was described; the “self-help” poem which taught various skills such as Armstrong’s medical *The Art of Preserving Health* (1744); and the humorous didactic poem – usually brief and with a satirical edge, published in periodicals such as the *Gentleman’s Magazine*.

The type of didactic poetry focused on here includes texts which seek to convey, as an explicit aim, serious information, usually comprehensive and systematic, about a topic which would now be considered to fall within the realm of the natural sciences. To this extent, such classification is anachronistic, and excludes many popular didactic texts about subjects such as painting which share many common features with the works discussed. Nonetheless, the two most prominent genres included within this grouping - the physio-theological poem and the Georgic - do tend by definition to deal prominently with scientific subjects. These works tend to be broad in their scope, discussing scientific ideas within the context of broader moral, theological and social questions. While short, humorous works also played an important role in popularising ideas, their function was primarily satirical, and thus they fall beyond the scope of this discussion.

While scientific verse undoubtedly played a substantial role in popularising new scientific ideas, theories and discoveries, readers do not seem to have understood these texts as designed primarily, or at least exclusively, to impart information. A common topos in reviews and discussions of didactic verse in this period is that its effects should be two-fold – to entertain and to improve. The emphasis in reviews on the enjoyment derived from reading didactic verse is significant. Reviews of such works strongly stress the importance of the aesthetic features, and harshly criticise didactic authors who write bad poetry. In his introduction to Virgil’s *Georgics*, John Martyn argues that Virgil “never sinks into anything low and mean; but by a just distribution of Grecisms, antique phrases, figurative expressions, and noble
allusions, keeps up a true poetical spirit through the whole composition.”¹² A focus on literary style also pervades Joseph Warton’s notes to his own translation of the Georgics, where he observes “is not Proteus too great a poet in this simile? But the lines are some of the most exquisite in Virgil. To heighten the pathetic, the birds are not only in plumis, but taken from the nest. Nor are they simply taken, but dragged out of the nest.”¹³

Discussion of the actual utility of a didactic poem is usually also present, but takes something of a back seat to discussions of style. Compared to his lengthy analysis of Virgil’s style in the Georgics, Martyn’s discussion of its actual usefulness is strikingly lacking in detail:

But the work is not only beautiful, but useful too. The precepts contained in it are so just, that the gravest prose writers among the Romans have appealed to Virgil, as to an oracle, in affairs of Husbandry. And though the soil and climate of Italy are different from those of England; yet it has been found by experience, that most of his rules may be put in practice, even here, to advantage.¹⁴

Which rules still apply in England are not specified, nor are examples of successes and failures given, greatly limiting the utility of the work to anyone attempting to use it as an actual agricultural guide. Anna Laetitia Barbauld, in her preface to the 1794 edition of Mark Akenside’s didactic poem The Pleasures of the Imagination (1744) more explicitly undercuts the idea of verse as a source of practical education, arguing that

whosoever…reads a didactic poem ought to come to it with a previous knowledge of the subject: and whoever writes one, ought to suppose such a knowledge in his readers. If he is obliged to explain technical terms, to refer continually to critical notes, and to follow a system step by step, with the

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¹² Martyn, Georgics, ix.
¹³ Warton, Eclogues and Georgics, 388.
¹⁴ Martyn, Georgics, xiv-xv.
patient exactness of a teacher, his poem, however laboured, will be a bad poem.\textsuperscript{15}

This conception of didactic poetry also renders its purpose of instruction as an objective distinct from merely educating the reader about scientific ideas. Repeatedly, the emphasis falls on the morally improving qualities of didactic works, rather than their informational content, unlike in reviews of “textbooks” and lecture handbooks in which the reviewers are primarily concerned with the accuracy, accessibility and practical usefulness of the text for its target audience.

Classicist Alexander Dalzell has distinguished didactic poetry with a moral or philosophical orientation from verse dealing with technical subjects such as Hesiod’s \textit{Works and Days}, arguing that while the distinction is not absolute, the two types of poetry

interpret the poet’s role differently and demand a different response. A poem on a technical subject implies that you want to go out and do something: plough a field, or cast a horoscope, or curse snake bites. A philosophical poem argues a case and has, therefore, a good deal in common with other kinds of reflective verse.\textsuperscript{16}

However, classifying didactic poems in this way becomes increasingly problematic in the eighteenth century. It is clear that some readers and writers did take classical didactic poetry seriously as an important source of information for technical matters. Richard Bradley in \textit{A Survey of the Ancient Husbandry and Gardening} (1725) cites the \textit{Georgics} as a serious source on historical gardening practices, while Jethro Tull devotes an entire chapter of \textit{The Horse-Hoeing Husbandry} (1733), a prose work on agricultural techniques, to criticising in detail mistakes in the farming advice given by Virgil.\textsuperscript{17}

\textsuperscript{15} Barbauld, \textit{Essay on Akenside’s Poem}, 3.
\textsuperscript{16} Dalzell, \textit{Criticism of Didactic Poetry}, 11.
\textsuperscript{17} See, for example, Bradley, \textit{Survey of the Ancient Husbandry}, 7; and Tull, \textit{Horse-Hoeing Husbandry}, 86-94.
Nonetheless, in several of the eighteenth century’s most prominent works of literary criticism on didactic poetry, this purpose is marginalised. Joseph Addison and Joseph Trapp, whose essays on didactic poetry remain the most widely cited contemporary accounts of the genre, present it primarily as dressed-up information, with Addison suggesting that one of the central *raisons d’etre* of the genre is to display the poet’s skill in portraying a “low” subject in a pleasing manner. Early on in his essay, he defines the Georgic genre as poetry in which “some part of the Science of Husbandry [is] put into a pleasing Dress, and set off with all the Beauties and Embellishments of Poetry.” 18 Trapp, meanwhile, emphasises the risks of the work becoming too philosophical, arguing that “Poetry and Philosophy, indeed, were both to be join’d together, but the one ought to be as the handmaid to the other.” 19

The same interpretative trends play out in translations of the *Georgics*. A small number of translators emphasised the usefulness of Virgil’s work for farmers, and produced translations designed to express the technical precepts and advice as clearly as possible. Significantly, two of these translations were in prose. By far the most popular translation, however, was Dryden’s, going through more than seven editions before the end of the eighteenth century. Dryden’s translation is notorious for its additions, although some critics such as John Chalker have argued that these are essentially faithful to the sense of the original text. There is a tendency throughout the work, however, to play up certain elements. In particular, Colin Burrow has demonstrated that Dryden highlights the political connotations of Virgil’s military metaphors, while Chalker has pointed out that Dryden’s use of the mock heroic for “straight” passages of the original text emphasises the potential for human parallels and satirical social commentary. 20

The emphasis on the poetic features of the work is even more pronounced in translations of Lucretius, in which translators often feel compelled to defend

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themselves against any suggestion that they are endeavouring to promote Lucretius’ religious ideas. A common refrain is that the merits of the poem justify its translation despite the less than salubrious topic. Thomas Creech prefaced his translation with extensive notes criticising Lucretius’ philosophy and defending the moral sections of his work, an approach approved by Thomas Brown who responded in verse that “thy charitable Hand has greate[s]t wonders Done/And has Lucretius his own Errors shown.”

Nonetheless, eighteenth-century criticism of didactic poetry classifies such works as those which aim to instruct or provide “precepts.” If poetry is not conceived of as a medium for imparting new knowledge, then what exactly is the reader being instructed in? Comments such as Barbauld’s suggest that the most important feature of the works is not their informational content but the social and often religious context within which it is explained and situated. In other works, didactic poetry’s most important function as a genre was the role it played in the socialisation of new ideas, and their adaptation to existing frameworks.

As an English literary tradition, didactic poetry is primarily conservative, providing a way in which potentially challenging ideas can be integrated into existing cultural forms, rather than being used to disrupt them. The epic scale of the task undertaken in these works, which continually reinscribe not just a set of concepts but frequently an entire religious and socio-cultural worldview, makes them unique among sources of scientific knowledge in this period. In this sense, the genre in the eighteenth century maintains important lines of continuity with its classical antecedents, which were considered to be a subgenre of epic poetry.

The classical epic and its numerous subgenres covered a diverse array of subject matter, but were united by the function of telling the story of a culture and defining its people. In the English didactic manifestation of this tradition, Paradise Lost (1667)

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21 See Lucretius trans. Creech, Of the Nature of Things, 3-18; and Brown, “Upon Mr. Creech’s Translation,” 334.
has a central, early role, placing new scientific discoveries in a Christian context. Concern with humanity’s place and role in the rapidly changing early-modern world permeates the text, and the relationship between human knowledge and the divine forms a central concern. The text asserts a pre-modern understanding of this relationship that limits the capacity for human understanding, incorporating the technological developments and insights of the scientific revolution into a worldview similar at its core to the one which preceded it. These developments, however, sit uneasily with many of the doctrinal messages of the text, and continue to challenge the easy integration of the traditional Christian understanding of the purpose of natural enquiry with the discoveries of the “new science.” As the genre developed over the seventeenth and eighteenth centuries, the struggle to define the role of science within British religion and culture became a central theme.

The English Didactic Poem

Lucretius’ *De Rerum Natura* wielded a strong influence on didactic poetry in England throughout the eighteenth century, but in ways far more complex than provoking simple imitation. In both form and content, the *De Rerum Natura* was widely used as a model for epic explorations of the nature of the universe, as well as providing evocative images of human life and the natural world that echo through numerous poems of this period. However, the poem’s unacceptably close association with atheism led to radical transformations of content, in which Lucretius’ sublime images of creation and the cycles of life were reworked by many writers in a Christian context. Henry More, in his “The Infinity of Worlds” (1647), directly addresses the conflict felt by many Christian writers between the appeal of the visionary passages of the *De Rerum Natura* and its Epicurean philosophy:

> And to speak out; though I detest the sect
> Of *Epicurus* for their manners vile,
> Yet what is true I may not well reject.
> Truth’s incorruptible, ne can the style
Of vitious pen her sacred worth defile.²²

The form and imagery of Lucretius underlies the type of scientific verse that was at once the most successful and the most explicitly religious - the long physico-theological poem. This verse genre attained a great degree of popularity and cultural prestige and was by far the most widely-read type of scientific verse across the century, including well-known works of enduring popularity such as Pope’s Essay on Man, (1733-4) Thomson’s The Seasons (1730) and Akenside’s The Pleasures of Imagination (1744), as well as many other minor poems by authors such as Richard Blackmore, Henry Brooke and Richard Savage. The genre is frequently epic in its scale, and is notable for the human, social, spiritual and cosmic context in which it places its informative content and descriptions of the latest scientific discoveries. The dual scientific and theological concerns of such works are exemplified by passages such as the following from Richard Savage’s The Wanderer (1729), in which new scientific knowledge enabled by technologies such as the telescope is portrayed as a gateway to understanding God’s presence and design, with practical and commercial applications acknowledged but subsumed under this ultimate goal:

If Tubes perspective hem the spotless Prize;
Thro’ these the Beams of the far-lengthen’d Eye
Measure known Stars, and new remoter spy.
Hence Commerce many a shorten’d Voyage steers,
Shorten’d to Months, the Hazard once of Years;
Hence HALLEY’S Soul ethereal Flight essays;
Instructive there from Orb to Orb she strays;
Sees, round new countless Suns, new Systems roll!
Sees God in All! and magnifies the Whole!²³

A certain degree of anxiety is apparent in the proliferation of texts which seek to rewrite Lucretius’s cosmology and scientific ethics in a way that is compatible with

²³ Savage, Wanderer, 11.
Christianity. Indeed, these poems can be understood as engaging in a conscious dialogue with the *De Rerum Natura* and its readers, drawing on the power of verse to reinforce the still-persistent Newtonian vision of a natural order designed with great care by the divine, seeking to draw with their embellishments and digressions a vision more persuasive, more sublime, and infinitely more orthodox. In some cases, this purpose is explicitly stated, as in the Cardinal de Polignac’s response to the *De Rerum Natura* - *Anti-Lucretius* (1745) - which seeks to use Lucretius’s form and style of argument against him, and was translated mid-century. In other instances, such as Henry Brooke’s *Universal Beauty* (1735), Lucretian episodes such as the invocation to Venus of Book One are imitated but reworked to refer to Christian theology. Beginning with an invocation in the style of Lucretius’ original, Brooke calls on Venus as the source of beauty in the natural world:

VENUS URANIA! Born the babe of smiles,
When from the deep thy bright emergence sprung,
And Nature on thy form divinely hung.

From these, however, he quickly shifts into an anti-Lucretian mode, ending a passage styled after the *De Rerum Natura*’s discussion of creation and the elements with a strongly Christian message:

Sure demonstration of thy heavenly race,
Derived from that, which is derived from none,
Which ever is - but of HIMSELF alone! (1.70-2.6)

That this particular type of scientific poem dominates in the eighteenth century suggests that the poets’ efforts to naturalise the ties between Christianity and the new science were appealing and in-step with public sentiment, and that the context in which new discoveries were being understood remained strongly religious, despite the scientific method’s increasing acceptance and association with secular forms of knowledge.

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The physico-theological poem is also the style of scientific verse most utilised by female poets such as Elizabeth Carter and Mary Leapor, whose science-oriented work tends to be celebratory and devotional. In Leapor’s poem The Enquiry, the common physico-theological theme of the ultimate inability of human reason to encompass the divine is explored:

May I not ask how moves the radiant Sun?
How the bright stars their pointed circuits run?
What warms those worlds that so remotely shine?
And what can temper Saturn’s frozen clime?

But there we pause, - not Newton’s art can show
A truth, perhaps, not fit for us to know
How great the power who gave those worlds to roll
The thought strikes inward and confounds the soul
Fall down, O Man, ah fall before the rod
Of this Almighty, all creating God.26

The religious conservatism surrounding poetic explorations of science may in fact have worked as an enabling factor for female participation in public scientific discourse during this period, rather than one which repressed their efforts. As poems on this subject were judged substantially in terms of their morality and theological correctness, as well as for the quality of the writing, physico-theology became a topic on which women could decorously express themselves while cultivating a traditionally feminine persona of piety and modesty.

The actual scientific content of Lucretian poetry is deployed with this religious context in mind. Advances in astronomy had lead to a greater sense of the enormity of the universe, with the Earth’s environment presented as part of a comprehensive picture of the cosmos, vast in its scope, and frequently sublime. In the De Rerum Natura, however, such vistas have an impersonal quality, being employed to demonstrate the actions of atoms in infinite space:

Therefore the nature of space and the extent of the deep is so great that neither bright lightnings can traverse it in their course, though they glide onwards through endless tracts of time; nor can they by all their travelling make their journey any the less to go: so widely spreads the great store of space in the universe all around without limit in every direction.27

While sublime, these images are also potentially unnerving, depicting a universe of almost incomprehensible scale in which the movement of particles and their resulting formations are essentially random, and in which humanity occupies no privileged position. Indeed, the world generated by the collision of atomic particles is seen as at best inhospitable, with Lucretius arguing that

although I might not know what first-beginnings of things are, this nevertheless I would make bold to maintain from the ways of heaven itself, and to demonstrate from many another source, that the nature of the universe has by no means been made for us through divine power: so great are the faults it stands endowed with.28

When images of infinite space and astronomical knowledge are employed in physico-theological poetry, these claims are directly responded to by the explicit insertion of divine involvement and order into the cosmological system. Brooke asserts the primacy of God in creation, observing that while the scale of the universe is incomprehensible to the human mind, the divine is nonetheless present throughout:

Just so as when sublime the fancy soars,
And worlds on worlds illimited explores;
No end of thought, or time, or space, is found,
And each immense, are each, in either drown’d:
So when the mind to central beauty tends,
And strict to fix some certain period bends,
In vain its ultimate contraction’s sought,
And still delusive, shuns the labouring thought;

27 Lucretius, *De Rerum Natura*, 1.1002.83.
28 Ibid., 2.167.109.
While THAT IMMENSE! Whence every essence came,
Still ENDLESS reigns in each minutest frame. (4.229-238.81)
The use of images of greatness at this point is seen to be awe-inspiring rather than terrifying, relativising humanity but not interpreting the seeming smallness and insignificance of human life as having problematic theological implications.

At the same time, an emphasis on minutiae demonstrates design and the active involvement of God in the creation of life and the function of natural processes and systems. The poems respond to the Lucretian explanation of a system in which life arises from the coming together of particles of a particular shape and size in the correct arrangement – an arrangement which is generated purely by random chance – through which “nature changes all foods into living bodies, and from them brings forth all the feelings of animals, very much in the same way as she expands dry sticks into flames and turns them all into fire.” Brooke seeks to refute this position by emphasising the design present in even the lowest forms of life, observing that

Since even the smallest from the GREAT ONE springs,
Great and conspicuous in minutest things!
The reptile first, how exquisitely form’d,
With vital streams thro’ every organ warm’d!
External round the spiral muscle winds,
And folding close the interior texture binds,
Secure of limbs or needless wing he steers,
And all one locomotive act appears. (5.71-78.94)

While in broad terms retaining the structure of the *De Rerum Natura* in which a position is put forward and supported by logic and evidence, Brooke draws in detail on contemporary zoology and other biological sciences to support his assertions, recruiting the scientific method of observation-based evidence for his theological purpose.

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29 Ibid., 2.865.165.
This approach incorporates discussion of the human, prefiguring the perspectives of modern sociology, psychology and economics, attempting to demonstrate humanity’s place in the world and to extrapolate ethical and religious principles from observations of human and animal behaviour. A key text in this area is Pope’s *Essay on Man*. Pope places humanity’s position in the “great chain of being” within the realm of possible human knowledge, calling on reason and empirical observation to establish the relationship of mankind both to God and the wider universe:

Say first, of God above or Man below
What can we reason, but from what we know?
Of Man what see we, but his station here,
From which to reason, or to which refer?
Thro’ worlds unnumber’d tho’ the God be known,
’Tis ours to trace him only in our own.\(^{30}\)

Like Brooke, however, Pope’s explicitly stated aim is to make a case for the perfection of God’s design and providence, addressing the flaws perceived in the human condition and justifying them:

Then say not man’s imperfect, Heav’n in fault;
Say rather man’s as perfect as he ought;
His knowledge measured to his state and place,
His time a moment, and a point his space.
If to be perfect in a certain sphere,
What matter soon or late, or here or there?
The blest to-day is as completely so
As who began a thousand years ago.\(^{31}\)

Brooke also takes human behaviour as his subject, comparing the constant complaints of mankind to the contentment and industry of the animal world, and suggesting that those who disdain to learn from their maker should be guided by “insects, birds, and brutes” (5.332.112):

The social friendship, and the firm ally,

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\(^{31}\) Ibid., 1.69-76.23.
The filial sanctitude, and nuptial tie,
Patience in want, and faith to persevere,
The endearing sentiment, and tender care,
Courage o’er private interest to prevail,
And die all Decii for the public weal. (5.334-339.113)

Associated with the use of animal and agricultural models as examples of social harmony is a tendency for Georgic elements to creep into eighteenth-century Lucretian works. Brooke’s *Universal Beauty* is an early hybrid case, making important developments in form and content which will later be taken further by Darwin. Book VI of *Universal Beauty* involves a lengthy analogy in which Bees are held up for their virtue, in imitation of Georgics IV, although with a more serious tone than the mock-heroic which prevails in large parts of Virgil’s poem.

Eighteenth-century didactic poetry that drew on Virgil, similarly, inclined towards a conservative stance where scientific ideas were integrated into traditional social and political structures. Central concepts include suspicion of luxury and the importance of hard work, the significance of traditional farming and land-owning structures as pillars of a stable society, and the importance of maintaining civilisation and “cultivation” against the threat of war and civil disturbance.

The “Georgian” Georgic is notorious for its patriotism and support of empire, advocating political stances that are relatively conservative even in its more Whiggish manifestations. While studies by modern classicists have complicated readings of Virgil as unproblematically supportive of the rise of Augustus, political interpretations of the poem by its eighteenth-century readers and imitators were largely more straightforward. Recent critics such as Karen O’Brien have illustrated the genre’s strong ties to imperialist discourses in this period. She argues that the georgic form

proved highly attractive to poets wishing to communicate the elation of empire, the moral dangers which it could bring, and the mechanics of its
implementation. Many poets viewed georgic, which, unlike pastoral, was written in the poet’s own voice, as a personal act of homage to the source of an expanding British civilisation.\textsuperscript{32}

The widespread use of the genre for this kind of political homage significantly shaped the kind of science articulated in Georgic poems and the purposes for which the scientific content was used within the poem.

Juan Pellicier has argued that as a vehicle for new scientific ideas, the eighteenth-century Georgic inclines towards consensus views, a feature of the genre that weakened its appeal as time went on and the level of general knowledge among the reading population increased.\textsuperscript{33} The relative absence of cutting-edge scientific debate or progressive techniques from such works is closely tied to the employment of technical detail in order to celebrate the historical successes of the British in scientific - and especially agricultural - domains, as well as highlighting the superiority of current best practice. Rather than educating readers in new techniques, such works emphasise the integral role of existing British practices in the fertility and stability of rural communities.

Science in the English Georgic, whether cutting edge or traditional, is always applied. It is thus inextricably linked to ideologies of work. In his edition of the \textit{Georgics} (1741), John Martyn seeks to idealise the role of Virgil’s farmers by elevating them to the highest positions of state, asserting in the preface to his translation that

\begin{quotation}
The poet wrote for the delight and instruction of a people, whose Dictators and Consuls had been husbandmen. His expressions accordingly are everywhere so solemn, and every precept is delivered with such dignity, that we seem to be instructed by one of those ancient farmers, who had just enjoyed the honours of a triumph.\textsuperscript{34}
\end{quotation}

In valorising the efforts of the rural labourer, the effect of Martyn’s assertion that the Roman aristocracy were husbandmen is not so much democratising as a

\begin{footnotesize}
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\item \textsuperscript{32} O’Brien, “Imperial Georgic,” 163.
\item \textsuperscript{33} Pellicier, “Georgic at Mid-Eighteenth Century,” 79.
\item \textsuperscript{34} Martyn, \textit{Georgics}, ix.
\end{itemize}
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reinforcement of the increasing participation of English landed gentry in agricultural improvement of their lands. It also echoes contemporary discourses linking interest in agricultural improvement to patriotism. While most works in this genre were concerned with agriculture, one of the most successful Georgics from the last quarter of the century – William Mason’s *The English Garden* (1772-1782) – was concerned explicitly with ornamental horticulture, and is an important predecessor of Darwin’s poetry. Mason similarly emphasises the importance of hard work and human initiative in agricultural improvement, linking rural labour to its moral and Biblical imperatives:

For tell me, where’s the desert? there alone
Where man resides not; or, if ‘chance resides,
He is not there the man his Maker form’d,
Industrious man, by heav’n’s first law ordain’d
To earn his food by labour.\(^{35}\)

The patriotic implications of successful cultivation are inseparable from Christianity in this passage, which depicts labour both as the cornerstone of British civilisation but also as that which distinguishes the people of God from those cultures of the “desert” who have strayed.

While religion is not foregrounded in the Georgic in the same way that it invariably is in physico-theological works, morality and the correct role of citizens in civic society form central concerns. Virgil’s model swain, living a simple and contented life through subsistence agriculture and providing a foil for the decadence of the urban wealthy, becomes a model for similar characters in the English Georgic. These provide exemplary figures who modelled traditional ideals of the virtuousness of a simple, hard-working rural life. Mason draws on Virgil’s depiction of the virtues of the simple life to critique the excesses of the wealthy and the artificiality of transient fashions when compared to nature:

Ev’n then, perchance, some vain fastidious eye
Shall rove unmindful of surrounding charms

\(^{35}\) Mason, *English Garden*, 1.102-106.5.
And ask for prospect. Stranger! ‘tis not here.
Go seek it on some garish turret’s height;
Seek it on Richmond’s or on Windsor’s brow;
There gazing, on the gorgeous vale below,
Applaud alike, with fashion’d pomp of phrase,
The good and bad, which, in profusion, there
That gorgeous vale exhibits. Here meanwhile,
Ev’n in the dull, unseen, unseeing dell,
Thy taste contemns, shall Contemplation imp
Her eagle plumes; the Poet here shall hold
Sweet converse with his Muse; the curious Sage,
Who comments on great Nature’s ample tome,
Shall find that volume here.36

As in his earlier discussion of labour, Mason returns ultimately to religion and the book of nature, allying a simple rural existence not only with contentment and morality but also with clarity of insight into the nature of the divine.

Science in the English Georgic also takes on the epic role of nation building. Similar to its use in more Lucretian didactic works, the scientific context is employed in order to advance a particular socio-cultural worldview, in this case frequently centred on the role of technological innovation in the advancement of the British people, the productive organisation of the body politic, and their economic power in the wider world of trade and empire.

Other works by English writers borrowed the classical didactic form, but did not draw significantly on either Lucretius or Virgil. These writers tend to focus on imparting information on a single technical subject, and increasingly augment their verse with explanatory notes. As with their classical predecessors, the intent and level of seriousness varies. Abraham Cowley’s History of Plants (1689), one of the earliest botanical poems, and also one of the earliest to focus on public health and

36 Ibid., 1.142-156.7.
medicine, combines satire, mock-heroic and more serious didactic modes, switching between amusing vignettes and passages on the disease-treating properties of flowers. Medical poetry later developed into a subgenre in its own right, with successful works by Samuel Garth and John Armstrong. Other poems are more descriptive, using scientific details to highlight the beauty of nature, such as James Ralph’s Night (1728).

Desaguliers’ poem The Newtonian System of the World (1728) typifies several trends in English didactic poetry. Adapting the didactic form, he presents a treatise on Newtonian physics as a model for the ideal form of constitutional monarchy. Combining an accessible introduction to the Newtonian model of the universe with British patriotism, the poem both naturalises the British political system as an ideal while at the same time suggesting that Newton’s physics is a religiously and politically orthodox model of stability. In the preface, he notes that

I have consider’d Government as a Phaenomenon, and look’d upon that form of it to be most perfect, which did most nearly resemble the Natural Government of our System, according to the Laws settled by the All-wise and Almighty Architect of the Universe.37

The reign of George and Caroline is not only depicted as being in alignment with the divine creation, but is also suggested to be a return to the stability and balance of a previously disrupted natural order in Desaguliers’ remark that

the limited Monarchy, whereby our Liberties, Rights, and Privileges are so well secured to us, as to make us happier than all the Nations round about us, seems to be a lively Image of our System; and the Happiness that we enjoy under His present MAJESTY’s Government, makes us sensible, that ATTRACTION is now as universal in the Political, as the Philosophical World.38

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38 Ibid., 68.
While British didactic poems generally retain the patriotic and religious messages of the translations, those which diverge beyond Virgil and Lucretius in their choice of topic tend to present more cutting-edge scientific topics in greater detail. Desaguliers’ poem is also typical in this respect, emphasising the philosophical elements of his work over its political allegory. The verse functions primarily to illustrate and present in an accessible manner the basic principles of Newtonian physics, including fairly complex concepts such as the relative movements of planets in orbit and different theories of the movement of particles and vacuums. The extensive annotations which accompany these, including a four-page illustrated footnote explaining planetary motion in the solar system, provide up-to-date information in a clear and accessible format which in practical detail goes far beyond the notes usually appended to translations of Virgil and their imitations. In part, this can be attributed to the fact that the choice of a topic unrelated to farming or husbandry relieves Desaguliers of the need to engage with the content of Virgil’s poem and that of other classical authors. Nonetheless, generic similarities with the didactic works of classical poets provide verse on more contemporary scientific topics with the prestige of a classical lineage and an association with political and literary orthodoxy.

**What did the reader expect from a didactic poem?**

Didactic poetry was only one of a wide variety of print genres to present scientific ideas to the general public. Precursors to modern textbooks, DIY guides and manuals provided clear, concise information about cutting-edge developments in simple, straightforward prose. Generally, these differ from didactic poems by focusing solely on imparting technical information. Also popular were the new encyclopaedias and dictionaries, many of which went far beyond the definition of technical terms to provide a general digest of knowledge on a subject.

Another highly popular group of publications were the handbooks and ‘how-to’ guides published as accompaniments to public lectures on scientific topics,
frequently held in forums such as clubs and coffeehouses. The contents of these books varied widely depending on the interests of the lecturer, but generally focused on the practical aspects of how experiments were performed or equipment used so that the reader could revise or repeat the demonstrations at home. Similar to articles published in periodicals, these works aimed to report the facts in a clear and accessible manner, usually without concern for their wider implications. While these works were more ephemeral, being reprinted less frequently and having content that became more rapidly obsolete due to technological and procedural improvements, they were published in large numbers and it is unclear that they were less popular or influential than more ‘literary’ works as far as the general reading public’s understanding and acceptance of scientific ideas is concerned.

However, didactic poetry was not the only genre to treat science in the context of religious, moral and social questions. Other types of popular science writing, notably encyclopaedic prose works such as those of Goldsmith and Buffon, also contextualise in this way. The fact that these works are among the most popular literary texts of any kind in the eighteenth century suggests that works which systematized science in a reassuring way filled a strong cultural need. As with didactic poetry, it is not necessarily a stated intention of these texts to approach the wider scope of epics. While they differ greatly in style from the technically focused, straightforward manuals, their primary focus is on imparting factual knowledge rather than using it to instruct in virtue or religious ideas.

The emphasis on the religious context of scientific understanding of the world is nonetheless substantially present in major prose popularisations of natural history such as Goldsmith’s History of the Earth and Animated Nature (1774), and Buffon’s Histoire Naturelle (1749-1788). Believing science could stand alone as a method of explanation and understanding, Buffon argued against mixing physics and theology, emphasising instead the logical progression of proofs in his work. However, Otis Fellows and Stephen Milliken have suggested that
there were clearly many components of faith in Buffon’s makeup. There was, above all, the awe before the mystery and grandeur of the universe which he expressed with sweeping poetic fervour in the great ‘Prayer’ that closes the first ‘Vue de la Nature,’ a reverent invocation to the ‘Great God, whose sole presence sustains nature and maintains the harmony of the laws of the universe.’”\textsuperscript{39}

This passage, serving as a kind of post-script to the *Histoire Naturelle* contains language reminiscent of the psalms, praising the divine with a poetic enthusiasm that to the modern reader seems almost jarringly out of place with the empiricism generally found in his work:

Omnipotent God! by whose presence Nature is supported and harmony among the laws of the universe maintained ... and who alone governs in profound peace an infinite number of heavens and of earths, restore, restore tranquillity to a troubled world! Let the earth be silent! Let the presumptuous tumults of war and discord be dispelled by the sound of thy voice! Merciful God!\textsuperscript{40}

The cosmic scope of these works, in which the results of experiment, observation and classification are depicted as pieces within a larger system of natural laws and processes, ultimately governed by God and celebrated for their beauty and design, is either less present or absent altogether in other forms of popular scientific publishing. While physico-theological poems and encyclopaedic prose works like Goldsmith’s clearly eclipse their competitors in terms of the length of their popularity and number of reprints, scientific information was also available from other widely-read sources.

Many eighteenth-century periodicals regularly published scientific articles which, in many respects, have the features a modern reader would expect. Facts derived from observation or experiment are usually presented without religious commentary or

\textsuperscript{39} Fellows and Milliken, *Buffon*, 84.

\textsuperscript{40} Buffon, *Natural History*, 10:341-2.
discussion of their social implications. Where such articles contain ‘applied’ science, the applications are usually practical, agricultural or industrial. However, the periodical itself provided this wider context through contributors’ occasional verse and letters to the editor commenting on particular scientists or discoveries, essays on the relationship of religion and science, and on the moral and social benefits of scientific study. While these pieces are separate from the articles which contain ‘facts,’ the poems and contributors’ comments can be seen as expressions of a similar concern – that science education has a value and purpose beyond the mere acquisition of worldly knowledge, despite its ultimate limitations. These concerns are expressed in two epigrams on the death of Newton, published in the Gentleman’s Magazine in 1731:

Confes’d supreme of Men, his country’s pride
And half esteemed an angel – till he dy’d
Who in the eye of heaven like Enoch stood
And thro’ the paths of knowledge walked with God
Who made his fame a sea without a shore
And but forsook one world to know the laws of more

More than his NAME were less – twou’d seem to fear
He, who increas’d HEAVEN’s fame, could want it here
Yet---------, when the SUNS he lighted up, shall fade,
And all the WORLDS he found, are first decay’d
Then void and waste ETERNITY shall lie
AND TIME and NEWTON’s NAME together die!41

Works which highlighted these themes appear to be the most accessible and popular science texts for the whole family. The value universally attached to books which promoted virtue made them suitable to promote as introductory works for women and children as well as men. The emphasis on the study of science as one which promotes morality becomes even more pronounced in works, translations and

41 “Design’d for the Monument of Sir Isaac Newton” and “Sir Isaac Newton,” 169.
abridgements specifically targeted at women and children rather than just general audiences. A concern for the moral impact of access to scientific information is obvious in the introduction to an abridgement of Buffon’s *Histoire Naturelle* (1792) aimed at young people, especially “the fair sex,” the title page of which bears a quotation from Bishop Watson: “the books of Nature and of Revelation equally elevate our conceptions, and…our piety; they naturally illustrate each other, they have an equal claim to our regard, for they are both written by the fingers of the one eternal, incomprehensible God.” The framing of works with biblical and other religious quotations, however, is not limited to science books targeted at families, with the choice of religious epigraphs common in this period.

It has been asserted by scholars of eighteenth-century science publishing, particularly G. S. Rousseau, that didactic poetry was in large part responsible for disseminating knowledge about Newtonianism to much wider audiences than works which stayed truer to the technical details of the system they followed. Rousseau states that these works were able to effect a degree of cultural secularisation, although as we have seen, this is rather debatable. Similar claims to profound and widespread influence have been made about the works of particular authors, particularly that of Erasmus Darwin on female science writers and readers. Unfortunately, no concrete evidence has yet been provided to support these claims. A preliminary survey of studies of the records of circulating libraries, most notably those by Paul Kaufman, suggests that the prose works of Goldsmith and Buffon, rather than any of the poets, were by far the most popular and widely read scientific works of the century. The publications of the Royal Society also prove extremely popular, according to his analysis of borrowing from Cathedral libraries. It is especially difficult to make specific claims for influence given that it is unclear how much poems were read for their factual content. Nevertheless, their strong popularity and almost universal appeal makes it likely that didactic poetry played a major role in shaping people’s attitudes towards scientific ideas.

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42 *Buffon’s Natural History Abridged*, title page epigraph.
44 See Kaufman’s *Community Library and Reading Vogues.*
Late Eighteenth-Century Readers

Establishing the nature of the eighteenth-century readership of such texts is key to understanding to what extent different types of science writing helped disseminate new knowledge – presented as secular or otherwise – and understanding the reading public’s response to such texts. The centrality of print culture to the Enlightenment in general and to the increasing cultural reach of the new sciences in particular is well established:

by the beginning of the eighteenth century, the conjunction of coffee and print had established the foundations for a different age – an age characterized not by court masques, royal prerogative, and sectarian intransigence but by Newtonianism, public reason, and rotten boroughs.45

In terms of the population as a whole, however, audiences for introductory science books are likely to have been small, despite their targeted breadth relative to more specialised books and journals. William St Clair argues that

it seems likely that, by the middle of the romantic period more than half the adult population had the ability to read...Even if we include a generous allowance for multipliers, from what we know of the numbers of copies produced, there is no arithmetical way that the readerships even of authors who were well known at the time, can turn out to be more than a small fraction of the reading nation and a tiny fraction of the nation as a whole.... On the other hand, the reading nation was not so much a scatter of individuals reading this and that, but a group of reading constituencies, with cohorts joining and leaving, a reading class which was geographically well spread and which was not commensurate with social class, income, gender, or with age, and which only in part coincided with the economic and social elites.46

45 Johns, “Coffeehouses and Print Shops,” 322.
46 St. Clair, Reading Nation, 266-7.
The importance of considering audience in terms of constituencies is apparent when the “marketing” of introductory science works in their prefaces and advertisements is considered. A strong emphasis on the religious and social implications of scientific learning does seem to be linked to the breadth of the intended audience, appearing most prominently in accessible ‘literary’ works aimed at beginners, women and children, regardless of whether that work is in verse or prose. In these works, scientific knowledge is not pursued purely for knowledge’s sake, but for its morally and socially improving effects. In this popular scientific publishing conforms to a wider cultural trend identified by St Clair in which “reading itself, especially reading by young people and women, is seen primarily not as a means to knowledge but as an aspect of conduct that needs to be regulated.”47 While religious commentary on science is still present in more specialist publications, such as those found in periodicals and lecture manuals, it is more likely to be detached from the informational content. Klancher has highlighted the ideological importance of audience, noting that “it is this connection between reader and audience that so-called reception theory has never deduced – the vital but by no means simple relation between an act of reading and a location with a collective realm, an audience (social, ideological, historical).”48 The explicit religious ambiance of most scientific books aimed at an audience which included women and children sheds light not only on the preferences and expectations of particular groups of readers, but more broadly on their understanding of the purpose of such enquiry.

St Clair points out that “the foundation text of the English, Scottish, and later of the British state, was the version of the English-language Bible first published in 1611.”49 This is certainly true of scientific texts, despite the association of this sector of the publishing industry with secularisation by scholars such as Rousseau. One important consequence of publishing scientific works considered by both their publishers and readers as morally and religiously didactic works is that the strain of conservatism

47 St. Clair, Reading Nation, 280.
48 Klancher, Making of English Reading Audiences, 11.
49 St. Clair, Reading Nation, 270.
already present in much eighteenth-century didactic poetry is continually reinforced by the dominant publishing and reading culture. These texts pursue an Enlightenment agenda of progress and societal improvement, but do so without substantially challenging the basic religious and political assumptions of most of their readership.
Chapter Two: Darwin and the Scientific Epic

Darwin’s didactic poems draw on many strands of both the Classical and British traditions. Anna Seward cites Akenside and Mason as among Darwin’s favourite authors, while the influence of Lucretius, Milton and Pope is obvious throughout his oeuvre. Along with parallels in style and subject matter, however, Darwin embraces another key feature of the didactic tradition – that scientific poetry is never just about science. Beneath the cornucopia of factual information, speculation and entertainment in his works lies a far-reaching attempt to systematize the current state of late-Enlightenment knowledge, and to create an audience both capable of understanding technological progress and manifesting Darwin’s utopian vision. Jon Klancher has argued that “no single, unified ‘reading public’ could be addressed in such times….This inchoate cultural moment compelled a great many writers to shape the interpretive and ideological frameworks of audiences they would speak to. They carved out new readerships and transformed old ones.”50 To some extent, Darwin can be seen as explicitly trying to carve out or at least develop a new audience for popular science – that of women, children and male amateurs.

Simultaneously, Darwin retains to a large degree an eighteenth-century sense of the author as one who can be all things to all readers, creating texts which seek to draw in both the young girl and the newly institutionalized (male) scientist. A viable stance for most of the century, during which “professional” natural historians and philosophers were few and publications were rarely less accessible than the proceedings of the Royal Society, this was beginning to change by the 1790s with growing specialist expertise and the increasing inclusion of natural science in the school curriculum, particularly in Dissenting academies. At the time of their publication, *The Botanic Garden* (1789-92) and *The Temple of Nature* (1803) were

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becoming somewhat anachronistic in their marketing pitch as accessible works of science. Considered as utopian moral texts, however, this breadth of target audience remains not only logical but necessary, with the playful vignettes and complex, empirically-based essays seeking to draw different kinds of readers into works which seek as much to persuade as to inform. In these poems, Darwin engages with the central concerns of his predecessors Milton, Pope, Brooke – and most importantly Lucretius – in seeking to define the role of knowledge and reason in creating human happiness and a just society, and grapples with the place of humankind in a vast universe. Darwin’s vision is radically more progressive and challenging to traditional religious views than most of his predecessors and contemporaries, but still works within the fundamental constraints of the Christianity-infused Enlightenment ethos of late eighteenth-century England and of the moral genre in which he writes.

The Loves of the Plants

Darwin’s first didactic poem, The Loves of the Plants (1789), is the most focused in its scope. Designed as an introduction to the Linnaean system of plant classification, the poem personifies the male and female parts of plants – the number and arrangement of which form the basis of the system - and defines the class and order to which each plant belongs. The poem was groundbreaking in terms of its focus on applied science, and in its refusal to downplay the sexual elements of the Linnaean system, despite explicitly including young women within the target audience of the work. The poem also takes the didactic genre in English in new directions, combining elements of the epic with a focused, detailed exploration of a single scientific subject and set of skills. While this approach is not unique within the classical tradition, English didactic works tended to be more local in their scope. Darwin’s expansive range even in this early work positions his writing within the tradition of Milton, with both volumes of the Botanic Garden showing the influence of Paradise Lost.
The topic of the poem was significant for its originality and for its detailed focus on a contemporary scientific issue. Plant classification was an original topic for a didactic poem, without classical models. Although didactic verse on farming, horticulture and gardening was commonplace by this time, poems on botany in English were relatively rare. The only major botanical poem by a British writer, Abraham Cowley’s *History of Plants* (1662), was composed in Latin and later translated by well-known literary figures such as Nahum Tate and Aphra Behn. In terms of light-hearted humour mixed with wide-ranging useful and factual information, this poem is *The Loves of the Plants*’ closest antecedent. Like Darwin, a physician by training, Cowley is frequently concerned with the medicinal uses of plants, devoting a substantial portion of the first two books to this subject. The plants are considered individually, in the form of vignettes in which each useful plant and flower is personified in a way that illustrates its most important qualities and practical applications. While adopting a similar form employing personification, Darwin’s content substantially departs from Cowley’s in terms of the level of scientific detail employed. Cowley’s episodes provide memorable accounts of the medical applications for which a plant is renowned, as well as some details of its physical appearance and habitat. Footnotes are employed primarily to provide clarification of the verse, and/or brief references. For example, in the section on betony, Cowley describes the plant’s use as a cure for a variety of illnesses:

> But in the head my chief dominions are,
> The soul commits her palace to my care:
> I all the corners purge, refresh, secure,
> Nor let it be, for want of light, obscure:
> That soul that came from heav’n, which stars adorn.51

This passage is accompanied by a brief note explaining that “betony is hot and dry in the second degree: wine or vinegar impregnated with it is excellent for the stomach and sight. The smell of it alone refreshes the brain….It is used in cases of madness, phlegmatic disorders, gout, &c.”52 As with many Virgilian works, however, the

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51 Cowley, *History of Plants*, 3. (The edition cited does not include line numbers.)
52 Ibid., 3.
treatment of botany is primarily celebratory and educational only on a fairly superficial level; the poem is unlikely to successfully instruct otherwise ignorant readers in the practice of physic, due to its lack of instructions for preparing the plants for their medicinal uses.

While employing the same basic vignettes-with-notes model as Cowley, Darwin takes this model in a significantly different direction with the pedagogical purpose of the work playing a far more important role, overshadowing the more traditional aims of didactic poetry such as displaying the poet’s skill in applying the ornamentation of verse to an unpromising subject and entertaining the reader. While other authors such as William Mason, in another important Virgilian forerunner, The English Garden (1772-1782), argued in their prefaces that the primary purpose of their works was to provide instruction, in practice this tended not to translate into a text aimed at the acquisition of useful skills. For example, Mason’s text focuses on correct taste and aesthetics rather than nuts and bolts advice for laying out flowerbeds and planting – the horticultural knowledge required for putting his advice into practice must be acquired elsewhere. In the first book, the reader is advised to avoid straight lines, and favour more “natural” curves when designing a landscape garden. However, this may involve the cutting down of ancient trees:

Such sentence past, where shall the Dryads fly
That haunt yon antient Vista? Pity, sure,
Will spare the long cathedral aisle of shade
In which they sojourn; Taste were sacrilege,
If, lifting there the axe, it dar’d invade
Those spreading oaks that in fraternal files
Have pair’d for centuries, and heard the strains
Of SIDNEY’s, nay, perchance, of SURREY’s reed.53

To avoid this undesirable step, Mason suggests moving the trees:

Yet must they fall, unless mechanic Skill,
To save her offspring, rouse at our command;

53 Mason, English Garden, 1, 318-25, 15.
And, where we bid her move, with engine huge,
Each ponderous trunk, the ponderous trunk there move.54

The commentary on this section, however, is concerned wholly with issues of Art and Taste – nowhere are detailed instructions provided for achieving this “work of difficulty and danger.”55 Similarly, the classical and literary references appear only for ornamentation and entertainment, and do not contribute any explanatory value to the landscaping instructions.

Darwin, in contrast, employs mnemonic devices and notes that focus on the practical applications of the principles he describes, employing classical digressions not just for ornamentation but to render abstract scientific principles more accessible to general readers. In the passage on hellebores, for example, Darwin presents an accessible analogy in the verse of flirtatious girls and their beaux:

The fair HELLEBORAS attractive shone,
Warm’d every Sage, and every Shepherd won. –
Round the gay sisters press the enamour’d bands,
And seek with soft solicitude their hands.
- Ere while how chang’d! – in dim suffusion lies
The glance divine, that lighten’d in their eyes;
Cold are those lips, where smiles seductive hung,
And the weak accents linger on their tongue;
Each roseate feature fades to livid green –
- Disgust with brow averted shuts the scene.56

The “enamour’d bands,” italicised in later editions, function as an order-class key, referring to a note that explains that this plant has “many males, many females.” The reader is further informed that

after impregnation the flower undergoes a remarkable change, the nectaries drop off, but the white corol remains, and gradually becomes quite green.

54 Ibid., 1, 326-29, 15.
55 Ibid., 1, 330, 15.
56 Darwin, The Loves of the Plants, 1st ed, canto 2, lines 199-208, pp.65-6. Hereafter, citations of the verse sections of this work will appear in-text in the form (canto.lines.page numbers). Quotations of prose notes will be referenced with a parenthetical page number only.
This curious metamorphose of the corol...seems to shew that the white juices of the corol were before carried to the nectaries, for the purpose of producing honey; because when these nectaries fall off, no more of the white juice [is] secreted in the corol, but it becomes green and degenerates into a calyx. (65)

The level of anatomical detail here is designed to not only educate the reader in plant anatomy at a high level, but also takes care to explain the processes underlying observable changes. The reader is being instructed not only in a series of interesting or useful facts, but in line with the increasing institutionalisation of the modern scientific method is being asked to understand why phenomena occur. The use of a stereotypical conduct-book story of the decline of beauty after a seduction-induced pregnancy provides an easy way to remember this feature of the plant, and an accessible entrée into a level of scientific knowledge otherwise largely restricted to articles in periodicals aimed at a far more specialised and well-educated (male) audience.

The stress on application comes even further to the fore in the description of the medicinal applications of digitalis, which is accompanied by a note explaining its preparation in detail:

the method of administering it requires some caution, as it is liable, in greater doses, to induce very violent and debilitating sickness, which continues one or two days, during which time the dropsical collection, however, disappears. One large spoonful, or half an ounce, of the following decoction, given twice a day, will generally succeed in a few days. But in more robust people, one large spoonful every two hours, till four spoonfuls are taken, or till sickness occurs, will evacuate the dropsical swellings with greater certainty, but is liable to operate more violently. Boil four ounces of the fresh leaves of purple Foxglove (which leaves may be had at all seasons of the year) from two pints of water to twelve ounces; add to the strained liquor, while yet warm, three ounces of rectified spirit of wine. (78)

For further information on the treatment, the reader is referred to an earlier pamphlet by Darwin’s son Charles, published posthumously by his father. While it is
difficult to say how many of Darwin’s readers would have tried this at home rather than consulting their local physician, the instructions are certainly specific enough to have allowed a reader to prepare and administer the treatment themselves, and may have been employed by families accustomed to making use of remedies from popular household herbals.

This focus on applied science is unprecedented in a poem of this kind, and reflects wider shifts taking place in both literary and scientific culture. The great popularity of introductory science books for general readers and children had helped to create a reading public both more knowledgeable about and more interested in the processes and mechanisms underlying the “facts” presented in educational works. More broadly, the Enlightenment’s embrace of the scientific method and “natural religion,” in which understanding how and why natural processes worked was not only not seen as hubristic but was widely considered to be a pious activity leading to greater appreciation of divine design, provided the impetus for literature which went beyond merely describing to explaining the workings of the “book of the world.”

Darwin’s poem embodies this ethos. Passages on the features of plants are chosen not for themselves, but because they provide particularly interesting or salient examples of an underlying system, in which the poem aims to instruct the reader. In the note on Cuscutas, characterised as sly harlots who ruin their victims by disguising themselves in modest clothes, Darwin describes the behaviour of the parasitic strangling plant and then goes on to explain the underlying ecological principle by which

a contest for air and light obtains throughout the whole vegetable world; shrubs rise above herbs, and, by precluding the air and light from them, injure or destroy them; trees suffocate or incommode shrubs; the parasite climbing plants, as Ivy, Clematis, incommode the taller trees; and other parasites, which exist without having roots on the ground, as Mistletoe, Tillandsia, Epidendrum, and the mosses and funguses, incommode them all. (108)
This knowledge will then provide the basis for further study, generating a readership not only better educated, but also one which will have the ability to go on to actively participate in the practice and development of the science. The note goes on – much like a modern scientific paper – to identify areas in which further research is required, observing that “some of the plants with voluble stems ascend other plants spirally east-south-west….others turn their spiral stems west-south-east….The proximate or final causes of this difference have not been investigated” (108). That this observation of something akin to the “survival of the fittest” poses potential challenges to the prevailing view of God’s creation as harmonious and balanced is left implicit; in his notes, Darwin largely adopts the modern convention of an objective tone focused on the facts, without adding commentary on their wider implications.

The composition and layout of the text also reflect the pressures provided by the growing accessibility and popularity of scientific print culture, incorporating features associated with prose texts such as accurate botanical illustrations, charts and diagrams detailing parts of the plants, and extensive prose notes which go far beyond merely explaining the poetic analogies to detailing the underlying anatomical features of vegetation. The buoyancy and respiratory process of the Trapa, for example, are described in great detail:

the lower leaves of this plant grow under water, and are divided into minute capillary ramifications; while the upper leaves are broad and round, and have air-bladders in their footstalks to support them above the surface of the water. As the aerial leaves of vegetables do the office of lungs, by exposing a large surface of vessels with their contained fluids to the influence of the air; so these aquatic leaves answer a similar purpose like the gills of fish; and perhaps gain from water or give to it a similar material. (146)

The footnotes of the poem also include citations of cutting-edge studies, and practical advice for the reader.
The transformation of the role of the notes is key to the ability of the text to provide meaningful instruction in an applied scientific subject. Cowley, for example, also uses notes, but they generally serve the function of explaining on a very simple level the referent of the imagery used in the verse. Where he does cite sources, they are frequently classical rather than modern, and are taken considerably less seriously.

Expressing concern over the public’s willingness to accept the truth-status of verse, Cowley notes, tongue somewhat in cheek, that

I was therefore willing to cite proper witnesses, that is, such as wrote in loose and free prose, which, compared with verse, bears the authority of an oath. I have yet contented myself with two of those, (which is the number required by law). Pliny and Fernelius I have chiefly made choice of, the first being an author of unquestioned Latin, and the latter amongst the Moderns of the truest sentiments, and no ill matter of expression.\\footnote{Cowley, History of Plants, xvii.}

While the underlying motive behind the citations – lending authority to the poem’s claim of factual accuracy – remains the same, the source of that authority undergoes a dramatic shift between the late seventeenth and late eighteenth centuries. Classical authorities, however lightly treated, provide Cowley with a long history of powerful cultural capital – the work does not claim to innovate in terms of its content, but rather rests on the status of its Latin predecessors as an imitation showing the author’s poetic abilities first and foremost. By Darwin’s era, debate had raged for some time over the value of works such as the \textit{Georgics} as scientific sources, which had been discredited in the eyes of many although debates on some agricultural subjects were ongoing. Darwin’s use of footnotes to provide citations to the work of other scientists as well as synoptic accounts of their findings not only lends factual authority to his claims on the basis of contemporary scientific methodologies, with experimental “proof” gaining considerably greater clout than classical precedence, but also allow the work to function as a kind of encyclopaedic digest of the state of knowledge in the field.
The choice of the Linnaean system was potentially controversial, and is discussed at length in chapter three. However, for the most part the poem was well-received. The use of sexual motifs has a lineage in botanical didactic poetry, both in Latin and in English. There are at least two pre-Linnaean poems in Latin that deal with the topic of plant reproduction: *Carmen Elegiacum de Amoribus et Connubis Plantarum* (“Elegaic Songs on the Loves and Marriages of Plants” 1732) by the Dutch professor of medicine and botany Adrian van Royen and *Connubia Florum* (“The Marriages of Flowers” 1723) by the Irish priest Demetrius de La Croix. Of these, *Connubia Florum* was considered sufficiently similar to *The Loves of the Plants* for a reviewer at the *Monthly Review* to suggest imitation.\(^{58}\) However, the poem, despite sharing Darwin’s basic subject matter, is very different stylistically. Written as an epistle, *Connubia Florum* is essentially a versified treatise with very little poetic ornamentation, aside from the figurative language typical of elegant, learned correspondence in both Latin and English during this period.

\[
\begin{align*}
Nunc\ & florum\ sexus\ quae\ monstrent\ signa\ docebo, \\
Forsitan\ & haec,\ Frater,\ tibi\ sunt\ placitura\ legenti. \\
Servat\ & ubique\ suum\ constans\ Natura\ tenorum, \\
Omnia\ & quae\ Prolem\ generant,\ genus\ omne\ virile, \\
Faemineum\ & genus\ omne\ suos\ armantur\ in\ usus. \\
Ergo\ & etiam\ \&\ Plantae\ gaudent\ genitalibus\ armis, \\
Et\ & sunt\ omnigeni\ totidem\ genitalia\ flores.\(^{59}\)
\end{align*}
\]

[I will teach now the signs which demonstrate the sexes of flowers, perhaps reading these things, Brother, will please you.
Nature watches over everywhere her steadfast course,
All that springs from her, all her male descendants,
all her female descendants, are protected by her skill.
Therefore, in a similar manner, Plants rejoice in protecting their procreation,
And there are of every kind as many reproductive parts of flowers.]

\(^{59}\) La Croix, *Connubia Florum*, 45. The English translations accompanying the extracts from this text and the *Carmen Elegiacum* are my own, with the assistance of Fr. William Uren, S.J.
Van Royen’s slightly later poem draws more on classical images to suggest an Arcadian pastoral landscape where the love of plants parallels that of pagan deities. It thus bears a far greater resemblance to Darwin’s work, although there is no indication that he was familiar with either text.

Sola nemus placidum volucrum pia turba frequentat,
Et liquido recinit gutturo dulce melos.
In medio sylvae roseis innixa columnis
E viola surgit versicolore domus,
Lumen habet, radiis coelestis concolor arcus,
Laeta reprecussis cum nitet Iris aquis.60

[Alone, the peaceful forest, the tender tumult of birds repeats often
And it echoes, from the pure throat, the sweet song.
In the middle of the forest, rose-coloured [and] supported by columns,
A violet grows from her multi-coloured home,
There is light, the celestial rays of a matching rainbow,
It blooms, happy, shimmering with the waters of Iris.]

In the new preface to a post-Loves of the Plants edition of Connubia Florum annotated and introduced by Richard Clayton, a religious spin is put on the discovery of plant sexuality, not unlike that which would be read into Darwin’s work by contemporaries such as Richard Polwhele. Clayton concludes the preface with an affirmation of the glory of God revealed in the complexity of the natural world:

& non sine quodam sensu voluptatis evolvas haec anniversaria Dei regnantis argumenta. Non te fugiunt gravissima rationum momenta, quae, sive ex animorum indole deprompta, sive ex insitae hominibus notitiae fontibus derivata, sive ex corporum caelestium perenni, semperque sibi constanti motu, & mirà Universi pulchritudine repetita, sive ex stupendo animalium

60 Royen, Carmen Elegiacum, 11.
mechanismo deducta, sive ex Sacrorum Codicum fide accersita, praeteritorumque saeculorum testimonio confirmata, Deum esse clamant, & nihil aliud quàm esse Deum diu noctuque praedicant. Ego verò Florum etiam artificio & architecturâ tanger, moveorque haud mediocriter: Florum artifex & architectus.\footnote{Clayton, introduction to Connubia Florum, by Demetrius de La Croix, 17-8.}

[not without a sense of pleasure you would be discovering this annual proof of the reign of God. Not from you they flee, the most weighty movements of reason, which, so producing from the genius of the mind, so from the source flow the innate conceptions to men, so from the body of the heavens always and ever remains true to its motions, and of the wonderful Universe beautifully repeating, so deducing from the dumb brutes the mechanism, so deriving from the Sacred Book faithfully and reinforcing the past generation’s testimony, they proclaim the existence of God, and nothing else they preach [but] the existence of God by day and by night. I truly have been touched, yet again, by the art and architecture of the Flowers, and stirred to no moderate degree: by the artist and architect of the Flowers.]

It is not until Cowley’s History of Plants that a poem deploys a large amount of sexualised personification to illustrate plant reproduction and other aspects of botanical science. Cowley’s description of the reproduction of palm trees includes an imitation of the same passage from Claudian’s Epithalamion from which the epigraph to The Loves of the Plants is taken:

Nor chast Acestis so her Husband lov’d,
As does the Female Palm her Male, her Arms
to him are stretch’d with most endearing Charms,
Nor stops their passion here; like Lovers, they
To more retir’d Endearments find the way,
In Earth’s cold Bed their am’rous Roots are found

\footnote{Clayton, introduction to Connubia Florum, by Demetrius de La Croix, 17-8.}
In close Embraces twining under ground.62

Darwin’s choice of personification had the potential to exaggerate the provocative aspect of an already sexually explicit system. In some cases, Darwin deliberately plays up the sexual aspects, with some scenes replete with innuendo, and others involving highly sexualised descriptions:

First the tall CANNA lifts his curled brow
Erect to heaven, and plights his nuptial vow;
The virtuous pair, in milder regions born,
Dread the rude blast of Autumn’s icy morn;
Round the chill fair he folds his crimson vest,
And clasps the timorous beauty to his breast. (1.39-44.3-4)

Weak with nice sense the chaste MIMOSA stands,
From each rude touch withdraws her timid hands;
Oft as light clouds o’erpass the Summer-glade,
Alarm’d she trembles at the moving shade;
And feels, alive through all her tender form,
The whisper’d murmurs of the gathering storm;
Shuts her sweet eye-lids to approaching night,
And hails with freshen’d charms the rising light.
Veil’d, with gay decency and modest pride,
Slow to the mosque she moves, an eastern bride;
There her soft vows unceasing love record,
Queen of the bright seraglio of her Lord. –
So sinks or rises with the changeful hour
The liquid silver in its glassy tower.
So turns the needle to the pole it loves,
With fine librations quivering, as it moves. (1.247-262.25-6)

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The repetition of the innuendo in the final lines here, in addition to the quivering of the needle, is so overdone as to be somewhat parodic in its effect. Despite this, the characterisation of the female in the Canna section is conventionally chaste, though she has been interpreted by commentators such as Alan Bewell as showing evidence of arousal.\textsuperscript{63}

The use of sexual innuendo purely for entertainment value and interest has a precedent in popular science writing, including Fontenelle’s \textit{Conversations With A Lady On The Plurality Of Worlds} (1719) and Francesco Algarotti’s \textit{Sir Isaac Newton’s Philosophy Explained} (1739). In both these cases, the innuendo was additionally targeted explicitly at a female audience. Cheryce Kramer has argued that the flirtatious banter and double entendres employed between male teacher and female student in both works were included purely to spice up an otherwise dry subject and appeal to a popular readership. She posits that the suggestive imagery “does not expound a sexual theory of the universe. Ambiguous repartee is merely a linguistic device to interest Fontenelle’s readers in the text and the natural phenomena described therein.”\textsuperscript{64} Similarly licentious metaphors are employed by Cowley, whose Waterlily serves as a bawdy, Ovidian figure, her tale of woe explaining the cooling properties of the plant:

\begin{quote}
I was a Goddess of no mean degree;
But Love alas! deposed my Deity.
He bade me love, and straight my kindled heart
In Hercules’s triumphs bore a part.
I with his Fame, and actions fell in love,
And Limbs, that might become his Father Jove.
And by degrees Me a strong impulse hurl’d,
That Man t’enjoy, who conquer’d all the World.
To tell you true, that Night I most admir’d,
When he got fifty Sons and was not tir’d.
\end{quote}

\textsuperscript{63} For Bewell’s alternate reading, see “Jacobin Plants.”
\textsuperscript{64} Kramer, introduction to \textit{Science as Polite Culture}, xxix.
Now, blushing, such deeds hate I, to profess;
But 'twas a Night of noble wickedness.
He (to be short) my honour stain'd, and he
Had the first flow'r of my Virginity.
...
I pity Man, whom thousand cares perplex,
And cruel Love, that greatest plague, does vex;
Whilst mindful of the ills I once endur'd
His flames by me are quench'd, his wounds are cur'd.65

The humour evident in these passages is also a characteristic of many of Darwin’s sexualised personifications:

Gigantic Nymph! The fair KLEINHOVIA reigns,
The grace and terror of her wide domains;
O’er her warm cheek the blush of beauty swims,
And nerves herculean bend her sinewy limbs;
With frolic eye she views the affrighted throng,
And shakes the meadows, as she towers along;
With playful violence displays her charms,
And bears her puny lovers in her arms. (1.157-164.16)

Less blatantly, the description of Lychnis makes fun of female stereotypes, such as the cold, scornful object of sincere affection who becomes amorous only when her rejected suitor gives up and leaves.

Five sister-nymphs to join Diana’s train
With thee, fair LYCHNIS! vow, - but vow in vain;
Beneath one roof resides the virgin band,
Flies the fond swain, and scorns his offer’d hand;
But when soft hours on breezy pinions move,
And smiling May attunes her lute to love,
Each wanton beauty, trick’d in all her grace,

65 Cowley, History of Plants, 16-7.
Shakes the bright dew-drops from her blushing face;  
In gay undress displays her rival charms,  
And calls her wondering lovers to her arms. (1.107-116.12)

While *The Loves of the Plants* has strong generic links to the eighteenth-century Georgic and also prominently references Classical poetry, mythology and Milton’s *Paradise Lost*, the texts against which it most explicitly situates itself are Ovid’s *Metamorphoses* and Pope’s *Rape of the Lock* (1712-1717). Darwin’s playful use of Ovid is made possible by the development of increasingly relaxed attitudes towards the morality of the classics over the course of the eighteenth century, departing from Arthur Golding’s 1565-7 translation, an important source for Shakespeare. Golding “is often seen as a willing inheritor of the tradition of the Ovid Moralisé, and in some parts of the work its precepts are accommodated.”

In contrast, the standard translation for Darwin’s era was published in 1717 by Samuel Garth in collaboration with the early eighteenth century’s most celebrated poets, including Pope and Dryden. It “is a translation with great style, and style is a priority throughout. Garth’s Preface makes only a cursory survey of the allegorical and moral potential of the *Metamorphoses*...and spends far more time outlining features of Ovid’s style and the variety of content.”

Raphael Lyne has argued that the long supremacy of this translation is “not least due to the diminished status of Ovid during this period: he becomes a writer still much read in schools, and one much recalled as a source of stories, but in comparison to Virgil he is judged lacking in moral or artistic seriousness” and “in the eighteenth century in particular, perhaps partly as a reaction to the serious classicism of Dryden, stories from the *Metamorphoses* were given a burlesque treatment which to some extent they had always anticipated.” Darwin’s use of the *Metamorphoses* has both light-hearted and serious aspects. The introduction of the text as an inversion of Ovid’s work in the proem positions *The Loves of the Plants* among texts which

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67 Ibid., 257.  
68 Ibid., 258.
burlesque the *Metamorphoses*, but at the same time the ubiquity of the stories among educated readers provides Darwin with a common language of metaphor that can render complex, new concepts accessible by association with something very familiar.

There are also elements of burlesque in Darwin’s use of Pope’s Rosicrucian machinery from *The Rape of the Lock*, which plays a significant role in establishing the light-hearted tenor of the text. The association with this extremely popular poem is important for situating the romantic and sexual situations in which Darwin’s characters are portrayed. *The Rape of the Lock* is both a playful and satirical text; while certain sexual aspects were considered scandalous by some early reviewers, by the late eighteenth century it had become a very widely read and admired work. Both Pope’s poem and *The Loves of the Plants* feature prominently in Charlotte Smith’s list of good reading material for children. In *Conversations Introducing Poetry* (1804), Mrs. Talbot tells Emily

> there is another species of poem, called usually the mock heroic; in which satire is conveyed under allegoric or imaginary beings, who bring about ludicrous events. Some of these, which are not likely to interest you, I pass over. But there are two which are so elegant, and so much adapted to form the taste of young women, that as soon as you are a little better read in fable, I shall recommend them to your study. These are Pope’s Rape of the Lock, and Hayley’s Triumphs of Temper.”

Darwin’s use of the machinery invites the reader to understand his personifications as at least somewhat satirical in their intent; this adds a positive moral dimension to the work, in passages such as those on the Hellebores and Cuscuta discussed above. The tongue-in-cheek use of Rosicrucian creatures is very much in tune with Pope’s original conception of them, and they playfully mock through being excessively genteel and aggrandising. This allows the text to function as a broad critique of polite manners and society in general, and feminine pastimes in particular.

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Texts which were considered to employ such subject matter for genuinely subversive ends attracted negative responses. John Armstrong, best known for his successful medical didactic poem *The Art of Preserving Health* (1744), found his reputation as a physician damaged by his frequently reprinted earlier didactic work *The Oeconomy of Love. A Poetical Essay* (1736), which contained erotic passages that explicitly deal with human sexuality, including menstruation and masturbation. Much of the work is clearly designed to titillate:

And, sighing, now the Breasts, that to the touch,
Heave amorous. Nor thou, fair Maid, refuse
Indulgence, while thy Paramour discrete
Aspires no further. Thus thou may’st expect
Treasure hereafter, when the Bridegroom, warm,
Trembling with keen Desires, profusely pours,
The rich Collection of enamour’d years,
Exhaustless, blessing all thy nuptial Nights.\(^70\)

The damage to Armstrong’s professional reputation and other incidents like it may have influenced Darwin’s initial decision to publish *The Loves of the Plants* anonymously, despite the success later achieved by Armstrong as the author of *The Art of Preserving Health* (1744). Some later editions, published after he gained literary fame, attempted to characterise the *Oeconomy* as a parody or item of juvenilia that the author later regretted and revised to make less salacious. The title page of the 1795 edition, for example, claims that “this little juvenile performance, was chiefly intended as a Parody upon some of the Didactick Poets; and that it might be still the more ludicrous, the Author in some places affected the stately language of Milton.”\(^71\)

The use of parody as an excuse attempts to link the work to a robust tradition of eighteenth-century risqué satire, in which sexual jokes were widely accepted.

The work’s reception in comparison with Darwin’s is instructive, raising the question of the use of ostensibly educational works as covert pornography. Focused explicitly

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\(^70\) Armstrong, *Oeconomy of Love* (1739), 93-100.8.
\(^71\) Armstrong, *Oeconomy of Love* (c.1795), title page.
on human sexual relations, the work was for the most part treated as serious rather than satirical and was perceived as both licentious and somewhat gauche. An editor of the 1771 edition notes that he has “taken the Liberty to censure [passages] that appear unworthy of the ingenious Author, and the other Parts of the POEM.”72 Ultimately however, the poem was issued in editions bearing Armstrong’s name in order to capitalise on his success as the author of serious didactic poetry, and biographies appended to collections of his work later in the century treat the Oeconomy as a mild, youthful faux pas. The “life of the author” appended to Cooke’s 1796 edition of Armstrong’s collected poems tells the reader that

he produced his celebrated Poem, which has much merit, called “The Economy of Love”; though it partakes in too great a degree of the licentiousness of Ovid, from whose work of the Art of Love, the design appears to have been taken. The Poem passed through many Editions, more, there is reason to apprehend, to the emolument of the bookseller than the benefit of the reader. In justice, however, to the character of the author, it is to be observed, that, when his judgement ripened with his years, it underwent a revision, in 1763, and many of the luxuriencies of youthful fancy were expunged.73

This, combined with the work’s enduring popularity throughout the late eighteenth century, suggests a reasonably high level of tolerance for such material, which is considerably more sexually explicit than anything found in Darwin’s writing.

Aspects of Darwin’s positive depiction of sexual love have to some degree a Miltonic antecedent - portraying sexuality as often existing in a state of natural innocence, an Edenic landscape.74 Lines lifted directly from Paradise Lost further reinforce this connection, with Darwin silently quoting the “sweet, reluctant amorous delay” of Eve in The Temple of Nature. Richard Payne Knight also uses these lines without attribution in The Progress of Civil Society.75 Milton provides an immensely influential,

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72 Armstrong, Oeconomy of Love (1771), prefatory note.
74 My thanks go to Terry Castle for suggesting this connection.
75 See Darwin, Temple of Nature, 2.158.56, and Knight, Progress of Civil Society, 2.227.58.
pious precedent for the use of the natural world to reflect innocent, pre-lapsarian sensuality and eroticism, the bower of Adam and Eve decaying only after the Fall. This draws on a cultural tradition of acceptance — even celebration — of marital sexuality as a part of nature. While Darwin’s plants are not always so united and often push the boundaries of eighteenth-century British conceptions of marriage, the central idea expressed concerning the naturalness of sexuality and sensuality has a history of acceptance in circles of thought which are in other respects conservative. On a deeper level, aspects of the text suggest a belief in sexual forces driving the creative force of nature. Critics such as Alan Bewell have linked Darwin’s use of sexualised personifications to a reading of the text as espousing a view of nature in which unbridled sexuality is pervasive. Whether the sexuality portrayed is unlimited and designed to offer a parallel with human society is less clear. Many passages in the poem can be read as having a strong satirical component, while others play with well-known stereotypes. Certain elements of the personification imply a reverse view – that the regulating human emotion of love also exists in the plant world, rather than simply unbridled sexuality.

The association of sexuality in Darwin’s work with love and human emotional attachments, combined with the use of classical deities and pastoral settings, also provides a re-enchantment of the world. In tension with Darwin’s classification and demystification of nature, the personifications reinject a sense of animation. To some degree this flows directly from Darwin’s scientific ideas about plant life, in which plants are seen as a lower form of sentient creature. However, it also enables a pious or religious reading centred on a celebration of life in the universe, and the manifestation of an almost immanent God as a force of divine love. The “love” of the plants is portrayed positively as a joyous, vital energy and part of an organised, natural order, a theme that comes to the fore in the poem’s closing description of a Tahitian polyamorous marriage ceremony where

Pleased VENUS, in the southern main,
Sheds all her smiles on Otaheite’s plain,

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76 See chapter 4.
Wide o’er the isle her silken net she draws,
And the Loves laugh at all but Nature’s laws. (4.403-6.165)

This passage is frequently chosen by critics as an example of Darwin’s intent to endorse alternative sexual relationships, with Fredrika Teute arguing that “with this celebration of a promiscuous Tahitian marriage ceremony, Darwin signalled rejection of church-sanctioned rituals of monogamous marriage and endorsement of free love. The sexual diversity of plant life had its corollary in human cultures.”77 However, the tendency of early critics to interpret Darwin’s work as illustrating vegetable rather than human behaviour resulted in far more orthodox readings than this, including those that portray the vital energy of plants in a manner more spiritual than sexual. For the Rev. Richard Polwhele, Darwin’s amorous flowers illustrate a common life-force, revealing itself to the enlightened eye of science:

Behold! amid the vegetable bloom,
O DARWIN, thy ambrosial rivers flow,
And suns more pure the fragrant earth illume,
As all the vivid plants with passion glow.
Yes! – and, wheree’er with life creation teems,
I trace thy spirit thro’ the kindling whole;
As with new radiance to the genial beams
Of Science, isles emerge, or oceans roll.78

F.N.C. Mundy, another admirer of The Loves of the Plants, associates Darwin’s Flora with science and related virtues in a similar manner, suggesting divine rather than sexual love:

While here Philosophy and Truth display
The shining-ropes those heaven-born sisters wove,
While Fays and Graces beck’ning smooth their way,
And hand in hand with Flora follows Love.79

For Darwin’s early reviewers and supporters, the potentially spiritual connotations of a vital, loving force inherent in nature and its laws is seen as adding dignity and

78 Polwhele, “To Dr. Darwin,” vii.
79 Mundy, “Address to the River Derwent,” xii.
order to nature and attributing higher qualities to lower forms rather than the other way around.

The Economy of Vegetation

In The Economy of Vegetation, published in 1792 as volume I of The Botanic Garden, Darwin leaves behind the narrow, systematic focus of The Loves of the Plants and returns to the genre’s epic roots, providing a tour through the natural sciences that embraces and celebrates cutting-edge science and technology. An epic for the Enlightenment, the poem endeavours to explain, classify and exalt the natural processes at work within the world as well as humankind’s transformative capacity to understand and improve on nature.

A formative influence for The Economy of Vegetation is Lucretius’ classical epic De Rerum Natura, a poem which provides both formal and philosophical building blocks for Darwin’s attempt to encapsulate both the latest discoveries of contemporary science and a sense of the significance of natural knowledge for humanity in a single poetic work. Darwin’s poem contains many elements which suggest the influence of De Rerum Natura, not least of which is the work’s Lucretian epigraph, from book 5:

It Ver, et Venus; et Venerris praenuncius ante Pennatus graditur Zephyrus vestigial propter; Flora auibus mater, praespergens ante viai Cuncta, coloribus egregiis et odoribus opplet.

“On come Spring and Venus, and Venus’ winged harbinger [Cupid] marching before, with Zephyr and mother Flora a pace behind him strewing the whole path in front and filling it with brilliant colours and scents.”

The choice of this passage at first seems to function primarily as a link to the previously published The Loves of the Plants, in which Flora and Cupid feature prominently and which shares a similar frontispiece illustration of Flora. However, it also sets the tone for the description of Darwin’s botanic garden (lifted from Anna

80 Translation from Lucretius, De Rerum Natura, 5.737-740.434-7.
Seward) and creation sequence with which the poem commences, in which the role of Venus – or more abstractly, divine Love – is given great prominence as an underlying creative principle. This emphasis on creation evokes a sense of possibility; the start of a new era of learning in which not only will creation be understood, but this “spring” of knowledge will bring with it a rebirth of human society.

In practice, divine Love takes on a more significant role in the order of this creation and recreation in *The Economy of Vegetation* than in *De Rerum Natura*, in which the famous and frequently imitated invocation of Venus is followed by a description of a universe in which a divine presence of any kind is largely absent. The creation of matter and its development are of particular significance. Lucretius invokes Venus as the guiding deity of the universe, suggesting a central role for divine Love in creation. However, this does not follow through the mechanics of the Epicurean system; the universe Lucretius describes is essentially random. Darwin takes something of a middle ground position in this text. Martin Priestman has noted the ambiguities in the creation sequence, making the actual degree to which God interferes in the creation of things unclear.81 However, the physical processes which are then set in emotion have an erotic, creative quality. These to some extent take over the role of God, and suggest a joy and teleological purposiveness in creation even if that purpose is the result of natural processes rather than a personal deity.

Like *De Rerum Natura*, *The Economy of Vegetation*’s attempt to explain the “economy” of the universe extends from creation through matter, the physical earth, plant, animal and human life, and society and technology. Darwin’s cosmos is driven by natural processes.

While structurally influenced primarily by Lucretius, *The Economy of Vegetation* differs significantly in the way the physical universe and the interaction of humans with it are explained and positioned. Broadly speaking, the two texts share an

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81 See Priestman, introduction to *Collected Writings of Erasmus Darwin*, viii.
objective to increase the happiness of humanity through education. However, while De Rerum Natura aims to achieve this by instructing its readers in Epicurean philosophy, thus enabling them to attain peace of mind in the midst of a world replete with suffering and death, and devoid of inherent purpose or meaning, Darwin depicts a universe in which the role of humanity is far more active, populating his epic with heroes who are engaged in the practical improvement of the human condition through invention and charity.

Whereas in physico-theological works such as Universal Beauty these epic digressions serve a theological and moral function, in Darwin’s work the connection between human economic progress and nature becomes a question of the extension of natural laws to human society. This is not without a moral dimension, and fits within Darwin’s perception of the world as progressing towards greater happiness and perfection, though without the design gloss given to aspects of this by Brooke. However, the overall effect is to perform a similar erasure of the borders between humanity and the natural world so as to emphasise their subjection to natural processes rather than to the vastness of God.

The Economy of the Economy

One consequence of the greater sense of human agency in The Economy of Vegetation is a strong interest in the text in the amelioration of the human condition and the advancement of society through industrial development and commerce. Darwin’s Economy of Vegetation displays many Georgic elements in its focus on the commercial applications of the new science. Progress in the poem, in addition to being an inherent part of nature, is also a feature of society that frequently finds economic expression, such as the inclusion of a passage about the advantages of Watt’s steam engines. Frans De Bruyn’s depiction of the use of the Georgic genre by those wishing to justify the emerging capitalist, technology-centred economy such as Adam Smith and James Hamilton suggests a conflict between the ideals of the new commerce and
those of Virgil.\textsuperscript{82} From this point of view, the Virgilian discourse is coopted to express a set of values to which it is fundamentally opposed, in order to legitimise the new order through association with classical tradition. However, many aspects of the Georgic tradition naturally suggest its appropriateness to such a use, and the ideological links are in many respects stronger than the conflicts.

In Darwin’s work, new discourses of political economy are employed in a largely abstracted fashion. Maureen McNeil has observed the absence of actual workers within Darwin’s depictions of industry, and his idealised view of factory labour.\textsuperscript{83} From this point of view, Darwin’s poem functions as industry propaganda.

\begin{quote}
Hence dusky IRON sleeps in dark abodes,
And ferny foliage nestles in the nodes;
Till with wide lungs the panting bellows blow,
And waked by fire the glittering torrents flow;
- Quick whirls the wheel, the ponderous hammer falls,
Loud anvils ring amid the trembling walls,
Strokes follow strokes, the sparkling ingot shines,
Flows the red flag, the lengthening bar refines;
Cold waves, immersed, the glowing mass congeal,
And turn to adamant the hissing Steel. (2.183-192.76-77)
\end{quote}

Similarly, market forces are absent. Labour and invention improve endlessly without relying on trade and commerce. Darwin’s depiction of industrial labour, or its elision thereof, also has a broader significance. Industry is presented as an expression of a particular set of British values, and is tied closely to discourses of patriotism and nationalism. Chief among the values celebrated by Darwin is British invention, and an Enlightenment sense of the power of human ingenuity. While the origin of particular products or ideas mentioned is not always British, it is usually the local populariser or improver who is held up as the hero responsible for bringing about the betterment of the British people:

\textsuperscript{82} See Bruyn, “From Georgic to Agricultural Science.”
Last MICHELL’s hands with touch of potent charm
The polish’d rods with power magnetic arm;
With points directed to the polar stars
In one long line extend the temper’d bars;
Then thrice and thrice with steady eye he guides,
And o’er the adhesive train the magnet slides;
The obedient Steel with living instinct moves,
And veers for ever [sic] to the pole it loves. (2.193-200.77-79)

Pottery in particular is co-opted for British glory, with its history beginning in China, passing through Italy but ending with Wedgwood, who produces not just the finest clay (in the note, his intaglios are described as surpassing those of ancient Rome through the invention of a new technique allowing two colours), but also transforms pottery into a political and religious tool. The emphasis placed on Wedgwood’s anti-slavery medallion and the Eleusinian mysteries of the Portland vase cast the industrialist not only as one who improves the material conditions of life, but as employing industrial production in order to advance Enlightenment ideals of liberty and rational religion. The politics of the passage are critical but also nationalistic.84

The social and environmental costs of these transformations are largely absent or sublimated in the text. The question of enclosure, for example, is skated over, with the private, commercial use of land depicted as a natural evolution and part of the landscape, rather than as a disruption of traditional values. Industry is further naturalised through Darwin’s characterisation of the Nymphs as a benign, semi-divine force who actively guide and transform processes which are otherwise understood to be natural:

AQUATIC MAIDS! you sway the mighty realms
Of scale and shell, which Ocean overwhels;
As Night’s pale Queen her rising orb reveals,
And climbs the zenith with refulgent wheels,
Car’d on the foam your glimmering legion rides,

84 See Darwin, Economy of Vegetation, 86-8.
Your little tridents heave the dashing tides,
Urge on the sounding shores their crystal course,
Restrain their fury, or direct their force. (3.57-64.118-119)

While the note explains in scientific terms the laws by which tides operate, the Nymphs perform the ideological function of softening and bringing under human control this powerful natural system.

It is in *The Economy of Vegetation* that the heritage of Milton most strongly emerges. The poem seeks, if not to explain the ways of God to man, then to explain man’s place within the world-system, a place which is celebrated and imbued with epic grandeur. Milton’s story of mankind is ultimately a story of redemption, one which celebrates earthly toil and ends on a note of hope that mankind’s resilience and gifts of the mind will equip them well for the journey ahead. Unlike most of Milton’s didactic antecedents in the Lucretian tradition, Milton’s man is an active man, engaging with the world both physically and intellectually – within the limits imposed by the poem’s Christian framework. Indeed, the poem’s central concern with hubris can be seen arising out of a milieu in which man’s potential knowledge was becoming increasingly able to transcend limitations. Darwin’s transformation of the relationship established in *Paradise Lost* between man, Earth and cosmos is perhaps one of the most radical and significant aspects of *The Botanic Garden*. In *Paradise Lost*, nature is “The Book of the World,” a source of inspiration and knowledge of the divine. Science thus becomes a method of contemplation. This is in tune with the method of Milton’s classical antecedent, Lucretius, although the intended insight is naturally quite different. Written at an important moment of transition in the history of science, *Paradise Lost* evidences the growing sense of science as something that can be applied to transform the world for the benefit of humanity, but reveals a deep ambivalence about the implications of this, both social and theological.

For Milton, technology is the preserve of the fallen and has no place in the harmonious stasis of the pre-lapsarian world. Before her temptation, Eve conducts
her daily work using “such gardening tools as art yet rude,/Guiltless of fire had formed, or angels brought.”85 Fire, indeed, has no place at all in Eden where Eve prepares only vegetarian food that does not require cooking:

She gathers, tribute large, and on the board
Heaps with unsparing hand; for drink the grape
She crushes, inoffensive must, and meaths
From many a berry. (5.343-6.122)

Diane McColley points out that more intrusive modification of the natural world and its resources is perpetrated only by Satan’s legions in the building of Pandaemonium and in the war in heaven, making them the “technocrats” of Paradise Lost. 86 The sciences they employ include metallurgy and chemistry:

turned
Wide the celestial soil, and saw beneath
Th’ originals of nature in their crude
Conception; sulphurous and nitrous foam
They found, they mingled, and with subtle art,
Concocted and adjusted they reduced. (6.509-14.151)

When flame does appear, it is the product of the sublime terror of Satan’s cannons that engulf all of heaven in modern technological warfare, a far cry from the contained, civilising warmth of Darwin’s hearth:

Immediate in a flame,
But soon obscured with smoke, all heav’n appeared,
From those deep-throated engines belched, whose roar
Emboweled with outrageous noise the air. (6.584-7.153)

McColley notes that heaven having “ignitable minerals corresponds with the principle…that the matter of good and evil are the same. As in Eden, the same soil, depending on its use, can bring forth fruit or death.”87 The Earth is able to provide

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87 Ibid., 170.
raw materials for the development of technology not so that technology can benefit God’s created beings, but so that they can exercise free-will by choosing not to use it.

While Satan’s technological arsenal is infinitely more powerful than soft breath on kindling leaves, the philosophical framework of the poem ensures that the products of his science are infinitely less effective. His character, long associated with the sublime by commentators such as Addison who describes the scene of his awakening in Book I as “very apt to raise and terrify the Reader’s Imagination,”⁸⁸ is acting within a hierarchy that subordinates all agents to the will of an omnipotent God, and must ultimately be out-sublimed by Christ, who

> Into terror changed
> His count’nance too severe to be beheld
> And full of wrath bent on his enemies

> ....
> Gloomy as night; under his burning wheels
> The steadfast empyrean shook throughout,
> All but the throne itself of God. (6.824-34.159-160)

**A Gendered Nature**

In both texts, nature is feminised and eroticised, portrayed as an object of control and also as a potential threat to that control. As the object of the scientist’s or contemplative’s gaze, this has a number of implications.

The relationship of humanity to nature underlies the different characterisations of nature in *Paradise Lost* and *The Economy of Vegetation*, characterisations which are highly gendered. The portrayal of feminine nature also has the function of naturalising their divergent views on the purpose of scientific enquiry, and is further reinforced by a projection of certain “feminine” qualities onto nature itself. For

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⁸⁸ Quoted in Moore, *Beautiful Sublime*, 100.
Milton, the pre-lapsarian world is marked by a sublime, almost hostile wildness. Edén is surrounded by
A steep wilderness, whose hairy sides
With thicket overgrown, grotesque and wild,
Access denied; and overhead up grew
Insuperable height of loftiest shade. (4.135-8.88-9)
Even within the garden, the plant-life is oppressive in its fertility, growing faster than Adam and Eve are collectively able to garden:
What we by day
Lop overgrown, or prune, or prop, or bind,
One night or two with wanton growth derides
Tending to wild. (9.209-12.203)
This reflects a universe in which man – while nominally master over the Earth and its creatures – is limited in his knowledge of the natural world, and is thus restricted in his ability to act on it. Darwin’s global garden, on the other hand, is far more responsive to cultivation, with the Goddess declaring that:
If prouder branches with exuberance rude
Point their green gems, their barren shoots protrude;
Wound them, ye SYLPHS! With little knives, or bind
A wiry ringlet round the swelling rind. (4.461-464.197-8)
The success of Darwin’s spirits in controlling their environment lies not only in their possession of post-lapsarian fire-dependent tools such as knives and wire, but in their superior botanical knowledge gained from close study of their plants’ component parts:
Closed in the Style the tender pith shall end,
The lengthening Wood in circling Stamens bend;
The smoother Rind its soft embroidery spread
In vaulted Petals o’er their fertile bed. (4.469-472.199)
The feminised, sexualised elements of Darwin’s botanical discourse – the tender pith and fertile bed – emphasise again the degree to which the natural world is feminised in The Economy of Vegetation, a depiction which is tied inextricably to knowledge and
the power to control that knowledge brings. The beautiful, feminine landscape is antithetical to sublime creative processes: in the words of Burke, “we submit to what we admire, but we love what submits to us.”

While the Earth is also feminised in *Paradise Lost* and endowed aesthetically with aspects of the beautiful, these are used to emphasise nature’s transience and inferiority in relation to the transcendent sublimity of God. The fading of the garland Adam has made for Eve (“down dropped, and all the faded roses shed” 9.893.221) when he learns of her temptation casts the shadow of mortality and sin over the “pansies, and violets, and asphodel,/And hyacinth, earth’s freshest softest lap” (9.1040-1.225) where they take “their fill of love” (9.1042.225), a lap that is beautiful but also vulnerable to the wound they have caused by their actions:

   Earth felt the wound, and nature from her seat
   Sighing through all her works gave signs of woe,
   That all was lost. (9.782-4.218)

The fragility of Earth’s flowers is foreshadowed by the description of even pre-lapsarian growth as “wanton” (9.211.203), an ominous word that recalls an earlier description of Eve’s hair as “dishevelled…in wanton ringlets waved/As the vine curls her tendrils” (4.306-7.94). While ecology-oriented critics such as Ken Hiltner have argued that the Earth’s wounding at the time of the Fall has “delivered Christianity to the fold of environmentalists who hold that our foolish acts have brought ecological devastation to the Earth,” Milton’s portrayal of Eve and the garden before the Fall suggests an inherent weakness in both rather than an act of flawed humanity upon a perfect natural world. In emphasising this characteristic of the creation, Milton is drawing on a very specific aspect of the beautiful that highlights its close relationship “to deformity, weakness, imperfection, and sickness…it induces a love which is very close to contempt.”

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89 Burke, “from A Philosophical Inquiry,” 801.
91 Furniss, *Edmund Burke’s Aesthetic Ideology*, 37.
In contrast, Darwin’s feminine Earth is beautiful without being in any way dangerous, flawed, or debased by sin. When the “ardent troops” (2.29.61) of gnomes come to watch the formation of the ocean bed, the Goddess-narrator describes the process in terms that are highly sexualised without containing any trace of Milton’s “wanton” value judgements:

You trod with printless step Earth’s tender globe,
While Ocean wrap’d it in his azure robe;
Beneath his waves her hardening strata spread,
Raised her Primeval Islands from his bed,
Stretch’d her wide lawns, and sunk her winding dells,
And deck’d her shores with corals, pearls, and shells. (2.33-8.62-3)

The Earth is “tender,” not because of any vulnerability to wounding by sin, but because of a persistent eroticism in Darwin’s depiction of natural processes that here transforms the Earth’s generation of landmasses into an act of sexual congress with the masculine Ocean. While this passage may be read as reinforcing the passivity of the feminine in its elision of the Earth as a grammatical subject and actor, it also portrays “feminine” forces of creation with a positive exuberance that reflects Darwin’s belief in the “markedly progressive character” of cosmic, geological and biological evolution.92 Developing towards increasingly greater perfection, Darwin’s Earth incorporates many of the creative functions of Milton’s God but retains a concrete sensuality that is antithetical to the sublimity of a transcendent deity.

Despite this fairly traditional identification of nature and the body of knowledge with the feminine, Darwin’s vision of the industrial and scientific future is fairly progressive in its conception of the roles women might adopt. Many of the passages describing the acquisition of knowledge are gender neutral; others include female participants. The female gender of the Sylphs and other Rosicruician entities which populate the text also suggests a comfort with female involvement in technological development and progress, even though these figures are personifications of nature itself. The characterization of women, men and even nature itself in Economy of

Vegetation as combining their forces to transform and develop the material world for the benefit of humanity has implications for the role of British imperialism within the text. Rather than technology being a source of temptation for man’s hubris, the naturalisation of this development as part of an understanding of the universe as continually developing towards greater perfection also naturalises the British imperial project.

This sits uneasily with the ethical stance of the poem, in which avarice and greed by colonising powers are denounced. Aside from the anti-slavery passages, the poem has the tendency to deflect attention away from the human costs of industrialization and expanding markets. For the most part, The Economy of Vegetation presents a utopian worldview that is full of hope for human potential, viewing the expansion of British culture and technological dominance as essentially unproblematic and of benefit to humanity. In this the text is very much a product of its immediate historical moment, riding high on a wave of liberal optimism following the very early years of the French Revolution, a sense of security which would soon be badly shaken.

The Temple of Nature

Erasmus Darwin’s final scientific poem The Temple of Nature (1803) contains one of the earliest detailed descriptions of biological evolution, considerably predating his grandson’s The Origin of Species (1859). In this work, Darwin anticipates many of the theories of his grandson regarding the biological evolution of life, as well as the impact of natural processes and the competition for resources on human society. These ideas, however, remain combined with the Enlightenment optimism and sense of order found in his previous works. The poem is broad in its scope, covering the evolution and reproduction of living organisms, and the development of human society. Many passages are visionary in their account of natural processes for which convincing evidence would only be gathered decades and in some cases over a century later. The passages on human society, too, deal with their subject in a way
that foreshadows the development of modern sociological and anthropological ways of thinking about how societies emerge and change. The text is thoroughly a product of the Enlightenment, reflecting ideas about the great chain of being, the social contract and the created natural order that had long been in circulation by the time of the poem’s composition. However, it extends these ideas in materialist directions that were not widely accepted at the beginning of the nineteenth century.

The poem is more closely modelled on *De Rerum Natura* than *The Economy of Nature*, presenting a far more explicitly materialist model of the Universe. While the great ‘first cause’ is frequently referenced, far more emphasis is placed on the role of organic forces in the production and reproduction of life. The evolutionary sequences explicitly include human life. Recent interest in the poem has centred on its detailed account of the evolution of life from simple aquatic organisms into more complex forms, including human beings. In the first Canto, Darwin describes the Great First Cause initiating the process that will produce living filaments, which will then reproduce and multiply, becoming increasingly complex as they do so. Although God is implicated as the origin and designer of this process, once begun it is governed solely by natural laws. He describes it thus:

Nurs’d by warm sun-beams in primeval caves
Organic Life began beneath the waves.

ATTRACTION next, as earth or air subsides,
The ponderous atoms from the light divides,
Approaching parts with quick embrace combines,
Swells into spheres, and lengthens into lines.

Hence without parent by spontaneous birth
Rise the first specks of animated earth;
From Nature’s womb the plant or insect swims,
And buds or breathes, with microscopic limbs.93

In a lengthy footnote in the second Canto, Darwin explicitly addresses the applicability of the idea that species, including humans, evolve to a greater state of perfection. Citing physiological evidence and claiming Buffon and Helvetius as predecessors, he discusses the possibility that humans were originally hermaphrodites and quadrupeds, evolving from a family of monkeys on the banks of the Mediterranean.

The choice of such an overtly Lucretian model also emphasises possible atheistic interpretations of the work, and ties into a long tradition of Lucretian and anti-Lucretian poems in the eighteenth century. However, several of the ideas underpinning Darwin’s portrayal of evolution have antecedents in the tradition of (anti-)Lucretian physico-theological poetry, where they are employed in the context of Christian apologetics. In Book Five of Brooke’s *Universal Beauty* (1735), the transformation of caterpillars into butterflies is used as an earthly analogue of the transmigration of Christian souls from fallen earthly bodies into their “second birth” in heaven:

> Who that beholds the summer’s glistening swarms,
> Ten thousand thousand gaily gilded forms,
> ...
> Who’d think these airy wantons so adorn,
> Were late his vile antipathy and scorn,
> ...
> From death, their future happier life derive,
> And tho’ apparently entomb’d, revive;
> ...
> So late depress’d, contemptible on earth,
> Now elevate to heaven by second birth? (5.166-185.101-103)

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This passage in itself presents nothing unusual, until it is read in conjunction with its footnotes, which use the example of the butterfly to address the question of whether anything in nature is badly designed. Seeking to counter the objection that some things do not seem to have “fitness” (100) for their purpose, Brooke argues that “many things may now appear unfit and improper in our way of thinking, which in reality are most perfective of future infinitely wise and directing purposes, to which our notions are by no means adequate” (101). This position, however, forces him to acknowledge a certain degree of mutability in the state of creation, leading to an argument that the world is in a state of progress to greater perfection, a position later taken up by Darwin. Brooke suggests that

if there were an absolute fitness in the present state of things, there could then be no change in any thing; since what is best can never change to better: but things do change, and must therefore have a present relative fitness, tending to, and productive of some future, absolute, and unchangeable fitness or perfection; to which this present relative fitness is by a moral, wise, and orderly necessity, precedent. (101)

Anticipating the criticism that such a theory is “too much tinctured with mystery” (101), Brooke invites the reader to consider whether the experience of seeing a butterfly transform has not shown them that many radical transformations can take place in nature via mechanisms which seem mysterious, and whether

by contemplating an animalcule’s egg, they can foresee that this will produce a maggot or caterpillar...that the maggot or caterpillar will build its own sepulchre...[and] will at length break through the gates of death, and put on a state and form of higher beauty and perfection, than could enter into any heart to conceive, or could have employed the dreams of the deepest philosopher? (102)

This argument, partially removed from its Christian context, becomes a standard feature of later evolutionary arguments. Still present, however, in the work of both Darwins, is the idea that the process of physical change is inherently improving.
Perhaps most significantly, there are hints of the levelling perception of humanity in relation to other life forms and the Earth which is conceptually necessary for a theory of evolution, displacing humankind as a central, special part of creation. In Book 4 of the poem, Brooke describes the vast scale of the universe, rendering the Earth and its life forms not only insignificant in the wider scheme of creation, but insignificantly different from each other in their relationship and importance to God:

This globe an atom to the native space,
Where vortical it wheels its annual race;
Its vortex (by adjacent whirl-pools bound)
A point to worlds that circling blaze around;
Lost in the whole, these vanish in their turn,
And but with relative effulgence burn:
But where finite to Infinite aspires,
Shrunk from its Lord, the universe retires;
A shade its substance, and a blank its state,
Where ONE, and only ONE, is only GREAT!
All equidistant, or alike all near,
The reptile minim, or the rolling sphere;
Alike minutely great, or greatly less,
In form finite INFINITUDE express;
Express the seal of CHARACTER DIVINE,
AND bright, thro’ HIS INFORMING RADIANCE shine. (4.213-28.79-81)

While in this case the ultimate message is one of equality in the eyes of the creator and an affirmation of God’s care for and presence in each being, in the light of the increasing prevalence of Deism among the educated elite, it is a small step from this vision of the Earth’s smallness to an understanding of a more impersonal universe.

The incorporation of society into the model also has important implications. A concern with the role and nature of human life and social relationships is a central feature of all Lucretian works, including the eighteenth-century anti-Lucretian tradition as well as Paradise Lost. In De Rerum Natura, human society comes into focus.
in the final books as Lucretius focuses in on the message and purpose of his work – creating human happiness through education about the true nature of things. The relationship of humanity to suffering and the potentially painful aspects of life thus become key. In English anti-Lucretian works, these issues remain the locus around which Christian authors grapple with the same essential question – given the evidently destructive aspects of at least part of the natural world, what positive role can be conceived for humanity? In these poems, emphasis on the fallen nature of man and the universal, forgiving nature of God is employed to provide a positive characterisation of mankind’s situation within the bounds of Christian orthodoxy.

*The Temple of Nature* is forced to grapple with similar questions, reaching a conclusion that looks back to the impersonal universe of the *De Rerum Natura*, while incorporating concepts of design and higher human qualities which can be seen as arising out of Christian traditions:

> HEAR, O ye Sons of Time! the powers of Life
> Arrest the elements, and stay their strife;
> From wandering atoms, ethers, airs, and gas,
> By combination form the organic mass;
> And, —as they seize, digest, secrete,—dispense
> The bliss of Being to the vital Ens. (4.145-50.142)

This passage explicitly rejects the idea that atoms and elements combine randomly, and asserts the idea not only of natural laws governing the basic principles of physics and biology, but of a certain degree of animism in this process – a ‘vital Ens’ or life-force that has the qualities of an abstract, impersonal concept of God. The religious implications of this position are articulated in the accompanying note, in which Darwin argues that

had those ancient philosophers, who contended that the world was formed from atoms, ascribed their combinations to certain immutable properties received from the hand of the Creator, such as general gravitation, chemical affinity, or animal appetency, instead of ascribing them to a blind chance; the doctrine of atoms, as constituting or composing the material world by the
variety of their combinations, so far from leading the mind to atheism, would strengthen the demonstration of the existence of a Deity, as the first cause of all things; because the analogy resulting from our perpetual experience of cause and effect would have thus been exemplified through universal nature. (142)

Priestman has pointed out that this passage and its accompanying note reject the atomistic philosophies of Democritus, Epicurus and Lucretius, who denied that any organized, underlying principles were responsible for the combination of atoms, which were the result of pure chance. He observes that for Darwin, these thinkers’ atomism was correct, but not their failure to realize that atoms combined according to ‘immutable’ attractive forces such as gravity, chemical affinity and (at the organic level) active desire. Had they realized this, the doctrine of atoms would have strengthened our belief in cause and effect, because the same laws produce the same results in so many cases. Since, for Darwin, the idea of causality leading back to an ultimate ‘first cause’ is the only basis for belief in God, atomism should be seen as supporting this belief rather than the ‘atheism’ for which the Epicureans were notorious. Darwin may also have in mind Hume, whose scepticism as to whether causation could ever be proved led to a devastating assault on deistic ‘natural religion,’ the shared ground between orthodox Christians and rational materialists such as Darwin.94

However, certain features are clearly materialist and incompatible with Christianity, especially the recycling of matter at the atomic level into the creation of new life. Darwin describes the process as a kind of material reincarnation:

HENCE when a Monarch or a mushroom dies,
Awhile extinct the organic matter lies;
But, as a few short hours or years revolve,
Alchemic powers the changing mass dissolve;
Born to new life unnumber’d insects pant,

New buds surround the microscopic plant;
Whose embryon senses, and unwearied frames,
Feel finer goads, and blush with purer flames (4.383-90.160)

An optimistic spin is placed on this process in the note, which reads
from the innumerable births of the larger insects, and the spontaneous productions of the microscopic ones, every part of organic matter from the recrement of dead vegetable or animal bodies, on or near the surface of the earth, becomes again presently reanimated; which by increasing the number and quantity of living organizations, though many of them exist but for a short time, adds to the sum total of terrestrial happiness. (160)

Darwin’s materialism also extends into the realm of human sensation, and thus behaviour. Flaws in society and higher elements of human nature are not attributed to the Fall or design, but are naturally generated by certain biological and environmental situations.

Hence in bright groups from IRRITATION rise
Young Pleasure's trains, and roll their azure eyes.
With fond delight we feel the potent charm,
When Zephyrs cool us, or when sun-beams warm;
With fond delight inhale the fragrant flowers,
Taste the sweet fruits, which bend the blushing bowers,
Admire the music of the vernal grove,
Or drink the raptures of delirious love. (4.151-8.142-3)

Darwin’s account of human sensation, first set out in detail in Zoonomia (1794) attributes our sensory experience of the world to mechanical processes of “irritation” of the sense organs and nervous system. Through the process of “association” – or what would now be termed classical conditioning – such stimulation can lead to higher emotional states such as love and the aesthetic sense of beauty:

the pleasure, we feel on examining a fine landscape, is derived from various sources; as first the excitement of the retina of the eye into certain quantities of action; which when there is in the optic nerve any accumulation of sensorial power, is always agreeable...and lastly by the associations of its
parts with some agreeable sentiments or tastes, as of sublimity, beauty, utility, novelty. (143)

Its materialist basis also forces Darwin to grapple with ethical issues in the Temple of Nature which The Economy of Vegetation overlooks, particularly in relation to the nature of the social contract. Tracing the development of all societal relationships back to biology, environment and natural processes raises a number of thorny questions about the origins of both positive and negative human behaviour which are largely taken for granted in the earlier poem. Whereas the Botanic Garden simply holds up exemplars of either tyranny or charity and heroism, the Temple of Nature must account for the underlying principles behind these behaviours. Darwin does this by building on his understanding of sensory pleasure’s association with particular objects and experiences as the foundation of art, positive emotions, and even patriotism and religious sentiment:

Next by SENSATION led, new joys commence
From the fine movements of the excited sense;
...
With fruits and foliage decks the barren waste,
And brightens Life with sentiment and taste;
...
Charm’d round the nymph on frolic footsteps move
The angelic forms of Beauty, Grace, and Love.

So dreams the Patriot, who indignant draws
The sword of vengeance in his Country’s cause;
Bright for his brows unfailing honours bloom,
Or kneeling Virgins weep around his tomb.
So holy transports in the cloister’s shade
Play round thy toilet, visionary maid!
Charm’d o’er thy bed celestial voices sing,
And Seraphs hover on enamour’d wing. (4.183-204.145-6)
Darwin then gives specific examples of individuals inspired to heroic and charitable actions as a result of these processes, declaring:

So HOWARD, MOIRA, BURDETT, sought the cells,
Where want, or woe, or guilt in darkness dwells;
With Pity’s torch illumed the dread domains,
Wiped the wet eye, and eased the galling chains; (4.205-8.146-7)

A certain degree of tolerance persisted in regards to ideas of species mutability and materialist views of the world, provided that they were not applied to humans. The inclusion of society along this continuum created a potentially much more provocative statement. However, the concept of a social ethics founded, at its base, on pleasure, bears a family resemblance to some of the theories of Adam Smith. Darwin’s philanthropists and artists, however, are not portrayed as acting out of economic self-interest. Indeed, trade is one aspect of societal development that is never worked out in detail in Darwin’s work; instead, association through pleasure is portrayed as functioning on a largely unconscious level as a kind of biological and psychological process.

Darwin describes even the highest, most complex manifestations of the human intellect as arising ultimately from the biological in a logical chain of causation. This chain ultimately leads to volition, or human will, portrayed as the basis of human intellectual capacity and science, as well as Enlightenment civil society based on reason:

Thy acts, VOLITION, to the world impart
The plans of Science with the works of art;
Give to proud Reason her comparing power,
Warm every clime, and brighten every hour.
In Life’s first cradle, ere the dawn began
Of young Society to polish man;
...
By thee instructed, NEWTON’S eye sublime
Mark'd the bright periods of revolving time;
Explored in Nature's scenes the effect and cause,
And, charm'd, unravell'd all her latent laws. (4.223-36.147-8)

The move from association to volition conspicuously sidesteps any consideration of determinism. While volition is portrayed as following in a chain of biological, sensory events after irritation and sensation, thus strongly implying that the human mind operates according to deterministic, physical principles, the idea that humans lack free will or genuine ingenuity is never considered, and is in conflict with Darwin's selection of exemplars, who stand out from the masses based on their conspicuous individual merits rather than being representative of the way sensory experience governs.

While natural forces operate on a cosmic scale, human ingenuity remains central to improvement and is seen as able to effect substantial, positive changes. In a note on bees, Darwin observes that "stronger bee-swarms frequently attack weak hives, and in two or three days destroy them and carry away their honey; this I once prevented by removing the attacked hive after the first day's battle to a distinct part of the garden" (132). Human improvement over nature is thus represented as both natural and positive, arising out of the biologically based volition but not constrained by the laws and instincts which govern the interactions of other organisms. Language is included among these gradually evolving improvements, as well as technologies which allow humanity to improve its material circumstances:

"Led by VOLITION on the banks of Nile
Where bloom'd the waving flax on Delta's isle,
Pleased ISIS taught the fibrous stems to bind,
And part with hammers from the adhesive rind;
With locks of flax to deck the distaff-pole,
And whirl with graceful bend the dancing spole;
In level lines the length of woof to spread,
And dart the shuttle through the parting thread.
So ARKWRIGHT taught from Cotton-pods to cull,
And stretch in lines the vegetable wool;
With teeth of steel its fibre-knots unfurl'd,
And with the silver tissue clothed the world. (4.253-64.150)

Darwin’s utopian vision is liberal and democratic, based on Enlightenment values. Central to the improvement of mankind and society is the printing press:

Now, happier lot! enlighten’d realms possess
The learned labours of the immortal Press;
Nursed on whose lap the births of science thrive,
And rising Arts the wrecks of Time survive.

Ye patriot heroes! in the glorious cause
Of Justice, Mercy, Liberty, and Laws,
Who call to Virtue’s shrine the British youth,
And shake the senate with the voice of Truth;
Rouse the dull ear, the hoodwink’d eye unbind,
And give to energy the public mind; (4.269-78.151)

Here, true patriotism is characterised as the effort to engage and improve the body politic through education and participatory democracy. The note stresses, more provocatively, the essential role played by printing technology in decreasing superstition and belief in magic – and by extension certain forms of religion and clerical control. Darwin writes that since the introduction of printing, superstition has been much lessened by the reformation of religion; and necromancy, astrology, chiromancy, witchcraft, and vampyrism, have vanished from all classes of society; though some are still so weak in the present enlightened times as to believe in the prodigies of animal magnetism, and of metallic tractors; by this general diffusion of knowledge, if the liberty of the press be preserved, mankind will not be liable in this part of the world to sink into such abject slavery as exists at this day in China. (151)
The Muse’s appeal to sympathy, restraint, and the ameliorating power of natural knowledge in the fourth Canto references Lucretius’ depiction of the power of truth to overcome human suffering and vice:

"HOW FEW," the MUSE in plaintive accents cries,
And mingles with her words pathetic sighs.—
"How few, alas! in Nature's wide domains
The sacred charm of SYMPATHY restrains!
Uncheck’d desires from appetite commence,
And pure reflection yields to selfish sense!
—Blest is the Sage, who learn’d in Nature's laws
With nice distinction marks effect and cause;
Who views the insatiate Grave with eye sedate,
Nor fears thy voice, inexorable Fate! (4.1-10.129)

While the direct reference in the accompanying note is to Virgil’s Georgics, Martin Priestman has observed that this passage is “generally recognized as Virgil’s homage to Lucretius for prioritizing the scientific study of nature over superstitious fears about this or the next life,” noting that “despite local arguments with Lucretius on whether the universe was formed from atoms by chance or inevitable natural laws…Darwin presents himself here as an unequivocally Lucretian scientist-poet.”95

While these two worldviews can comfortably coexist only by avoiding the question of whether there are any non-material components to the human mind, Darwin’s views of nature and humanity closely parallel each other in their essential optimism. Human love and the capacity for reason to improve the human condition sit well, philosophically, with the teeming life of the universe and its renewal that are so strongly emphasised in Darwin’s poetry. Links can be seen between these ideas and the ways in which Charles Darwin at first conceived his evolutionary model to be not only compatible with Christianity, but as reflecting a grand and uplifting conception

of the universe. Darwin emphasises the dominance of good in the natural world,
pointing out that:

When in soft tones the Muse lamenting sings,
And weighs with tremulous hand the sum of things;
She loads the scale in melancholy mood,
Presents the evil, but forgets the good.
But if the beam some firmer hand suspends,
And good and evil load the adverse ends;
With strong libration, where the Good abides,
Quick nods the beam, the ponderous gold subsides. (4.137-44.141-2)

Even death is given a positive spin, with the endless renewal of life shown as a
balancing act presided over by God:

While births unnumber’d, ere the parents die,
The hourly waste of lovely life supply;
And thus, alternating with death, fulfil
The silent mandates of the Almighty Will;
Whose hand unseen the works of nature dooms
By laws unknown—WHO GIVES, AND WHO RESUMES. (4.341-6.156)

The rich fertility of nature is also emphasised:

Each pregnant Oak ten thousand acorns forms
Profusely scatter’d by autumnal storms;
Ten thousand seeds each pregnant poppy sheds
Profusely scatter’d from its waving heads;
The countless Aphides, prolific tribe,
With greedy trunks the honey’d sap imbibe. (4.347-52.156-7)

This immense fecundity, however, gives way to a Malthusian fear of overpopulation:

The migrant herring steers her myriad bands
From seas of ice to visit warmer strands;
Unfathom’d depths and climes unknown explores,
And covers with her spawn unmeasured shores.
—All these, increasing by successive birth,
Would each o'erpeople ocean, air, and earth.
So human progenies, if unrestrain'd,
By climate friended, and by food sustain'd,
O'er seas and soils, prolific hordes! would spread
Erelong, and deluge their terraqueous bed;
But war, and pestilence, disease, and dearth,
Sweep the superfluous myriads from the earth.
Thus while new forms reviving tribes acquire
Each passing moment, as the old expire;
Like insects swarming in the noontide bower,
Rise into being, and exist an hour;
The births and deaths contend with equal strife,
And every pore of Nature teems with Life;
Which buds or breathes from Indus to the Poles,
And Earth's vast surface kindles, as it rolls! (4.363-82.159-60)

This passage is fascinating both for its acknowledgement of the Malthusian position, but also in its deep discomfort with its implications. While the concept of fecundity leading to overpopulation, war and disease is presented as factual and as a part of nature, Darwin's focus shifts back to the natural equilibrium and balance of life. Strikingly, the passage ends with an exultant celebration of life, the entire surface of the Earth represented as quickening with creation and growth.

Another section of the poem – in fact one of the very few passages marked in this work in the copy owned by Charles Darwin, prefigures a conception of the biosphere as driven by competition for resources, with wars seen as an organic and essential part of progress towards a greater state of perfection. Martin Priestman notes that this devastating summation of a Nature driven by hunger into murderous competition at every level...such passages anticipate Tennyson's vision of "Nature, red in tooth and claw"...which, though perhaps a response to
Robert Chambers's *Vestiges of the Natural History of Creation* (1844), is often seen as a striking prevision of Charles Darwin's *Origin of Species* (1859).96

The competition for resources which comes to the fore so prominently in Darwin becomes one of the greatest problems for Brooke in *Universal Beauty*, in which he attempts to refute any conclusion leading to the “survival of the fittest” by emphasising the fallen nature of man as exceptional in an otherwise harmonious natural world:

To man, even man becomes a mutual prey;
No gain can satiate, and no limits stay;
Down the dread depths his boundless lucre dives;
Warr’d on himself, with passion passion strives.
Fly him, ye rangers of the rolling flood!
Fly him, ye songsters of the warbling wood
Ye dwellers subterrene, the tyrant fly!
And safe in your remote asylums lie (6.279-86.125-6)

Reflecting a similar Enlightenment ethos to Darwin, the solution to this problem is not simply faith, but education – in this case the Godless are invited to embark on the study of the natural world in order to learn from divine design the proper foundations of a harmonious and productive society.

Elements of the way in which these processes are characterised in *The Temple of Nature* may reflect the influence of Malthus. Passages from the fourth Canto emphasise not only the destructive capacities of humans, animals and plants, but the central role played by hunger in competition between species and individuals:

The crawling crocodiles, beneath that move,
Arrest with rising jaw the tribes above;
With monstrous gape sepulchral whales devour
Shoals at a gulp, a million in an hour.

---

—Air, earth, and ocean, to astonish’d day
One scene of blood, one mighty tomb display!
From Hunger’s arm the shafts of Death are hurl’d,
And one great Slaughter-house the warring world! (4.59-66.134)

This reflects a new direction away from Darwin’s writing of the early 1790s, in which conflict is portrayed as based on greed and ideology rather than as an inherent part of nature. The portrayal of competition is also a move away from Lucretius, who similarly emphasises the role of human greed in the ongoing competition for resources, and portrays a cultivated Epicurean lack of desire for luxury as the solution. While Darwin retains much of this, he does not share Lucretius’ advocacy of knowledge alone as the solution, leading to acceptance and peace of mind. Instead, humanity is invited to actively engage in the transformation of their situation to achieve happiness.

Nonetheless, the concept of progress towards perfection remains. Priestman has observed that in contrast to the destruction highlighted as the result of competition for food, Darwin’s extensive note to this passage “optimistically envisions the artificial production of food which will—somehow—stop animals murdering plants and each other.”97 The note makes a number of points which distinguish Darwin’s utopian slant on this situation from those of his contemporaries such as Malthus and the later theories of his grandson, who would be influenced by both. Darwin characterises competition as an inherent part of the natural world, arguing that “as vegetables are an inferior order of animals fixed to the soil; and as the locomotive animals prey upon them, or upon each other; the world may indeed be said to be one great slaughter-house” (134). Possibly following Malthus, Darwin acknowledges the direct connection between competition for resources and war:

While rival realms with blood unsated wage
Wide-wasting war with fell demoniac rage;
In every clime while army army meets,

And oceans groan beneath contending fleets; (4.279-82.152)

"Yes! smiling Flora drives her armed car
Through the thick ranks of vegetable war;
Herb, shrub, and tree, with strong emotions rise
For light and air, and battle in the skies;
Whose roots diverging with opposing toil
Contend below for moisture and for soil;
Round the tall Elm the flattering Ivies bend,
And strangle, as they clasp, their struggling friend;
Envenom'd dews from Mancinella flow,
And scald with caustic touch the tribes below;
Dense shadowy leaves on stems aspiring borne
With blight and mildew thin the realms of corn;
And insect hordes with restless tooth devour
The unfolded bud, and pierce the ravell'd flower. (4.41-54.133-4)

However natural, wars and the preying of species on each other are not portrayed as an insurmountable problem or “necessary evil,” and Darwin turns to technology rather than population control as a solution. He suggests that

as the digested food of vegetables consists principally of sugar, and from this is produced again their mucilage, starch, and oil, and since animals are sustained by these vegetable productions, it would seem that the sugar-making process carried on in vegetable vessels was the great source of life to all organized beings. And that if our improved chemistry should ever discover the art of making sugar from fossile or aerial matter without the assistance of vegetation, food for animals would then become as plentiful as water, and they might live upon the earth without preying on each other, as thick as blades of grass, with no restraint to their numbers but the want of local room. (134-135)
This utopian vision of the role of technology is equally applied to the human realm, where the development of the printing press and more efficient means of producing goods are seen as potential solutions to competition between humans.

Darwin also tries to put a positive cast on the situation in other ways. In a discussion of the role of the remains of biological organisms in creating landmasses, Darwin characterises the limestone products – both mountains and sand - which result as “mighty monuments of past delight,” comprising the bodies which provided pleasure to their owners during their lives (165). However, it is another use to which these bodies are put that is of particular significance in light of Darwin’s discomfort with the implications of a Malthusian view of the necessity of natural curbs on population growth. Darwin sees the material remains of former life as providing both additional nutrition and physical landmass for new generations, increasing the capacity of the Earth to sustain more life with each generation. He argues that the bodies

supply more copious food to the succession of new animal or vegetable beings on their surface; which consists of materials convertible into nutriment with less labour or activity of the digestive powers; and hence the quantity or number of organized bodies, and their improvement in size, as well as their happiness, has been continually increasing, along with the solid parts of the globe; and will probably continue to increase, till the whole terraqueous sphere, and all that inhabit it shall dissolve by a general conflagration, and be again reduced to their elements. (166)

This enables him to avoid an understanding of ecosystems in which violent competition for resources and disease are required to control numbers. Reaching, however, a logical problem, with the prospect of the entire Earth becoming full of previously living bodies, Darwin turns to God for a solution – and in the process provides a visionary prefiguration of a cycle of universal creation, collapse and recreation similar to the concept of the “Big Crunch”:
thus all the suns, and the planets, which circle round them, may again, sink into one central chaos; and may again by explosions produce a new world; which in process of time may resemble the present one, and at length again undergo the same catastrophe! These great events may be the result of the immutable laws impressed on matter by the Great Cause of Causes, Parent of Parents, Ens Entium! (166-7)

This ultimately allows him to defer the necessity of destruction to an infinitely distant future and divine cause, and conceive of an Earthly world which can almost endlessly generate life:

Shout round the globe, how Reproduction strives
With vanquish’d Death,—and Happiness survives;
How Life increasing peoples every clime,
And young renascent Nature conquers Time;
—And high in golden characters record
The immense munificence of NATURE’S LORD!—
He gives and guides the sun’s attractive force,
And steers the planets in their silver course;
With heat and light revives the golden day,
And breathes his spirit on organic clay;
With hand unseen directs the general cause
By firm immutable immortal laws. (4.451-62.166-7)

The visionary nature of Darwin’s epic poetry marks a moment of transformation in the genre, from an approach to didactic verse that seeks to depict the world as it is, to one which imagines how it might be. Infused with spirituality, however abstracted, and concerned with social justice, *The Botanic Garden* and the *Temple of Nature* celebrate the Enlightenment worldview and its concomitant societal and industrial transformations with a Lucretian eye to improving the condition of readers by deepening their understanding. At the same time, Darwin’s belief in an ordered, progressive universe and essentially optimistic view of natural processes and human life works against the more radical implications of the poem’s emphasis on human
agency. Despite attempting to initiate his readers into the mysteries of the universe through science, Darwin backs away from presenting human reason as the origin of order in a world of chaos, instead presenting it as the product of an organised natural system. Far from affirming a radically atheistic, proto-Romantic worldview that embraces uncertainty and subjectivity, Darwin reasserts the benevolence of nature and the “firm immutable immortal” laws by which it governs human development.
Chapter Three: Specialisation and its Significance for an Epic Genre

By the late eighteenth century, the classical epic model of didactic poetry still remained highly influential, but its boundaries grew increasingly flexible as poets sought to deploy the form in new ways. Within the corpus of scientific verse, the most important developments occurred in the works of writers who subtly shifted the emphasis of their Georgic-inspired poems towards increasing public knowledge of increasingly specialised and technical fields. Darwin’s didactic poems arguably represent the most ambitious and complete attempt to encapsulate the methods and discoveries of an emerging scientific discipline in verse, and for this reason his works are often depicted by scholars as the apogee of this tradition. However not all literary historians have seen Darwin’s combination of epic and science as making a positive contribution to the genre. William Powell Jones gives Darwin at least some responsibility for its downfall, arguing that “The Botanic Garden seems to prove that science, especially botany, had by 1790 become too technical to be treated as a suitable subject for poetry.”

Whether they celebrate or disparage his work, Darwin has been positioned by critics from the early nineteenth century onwards as an endpoint, having extended the conventions of his predecessors in both scientific content and prosody as far as they could possibly go. Considered within the broader literary culture, however, Darwin emerges as a far more complex transitional figure, negotiating the presentation of the poems and his own persona as a writer at a time when the roles and identities of writers and public intellectuals were rapidly shifting. The difficulties faced by Darwin in establishing a successful and enduring literary persona for himself

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underscore the importance of developments in print culture for understanding the
reception of his works.

The epic scope of Darwin’s poems problematises the growing emphasis on
specialisation, in which the systematic overview of the detached gentleman scholar
gradually gave way to the new, proto-disciplinary scientist. While earlier in the
eighteenth century the gentleman scholar had a strong hold on cultural prestige
compared to the ‘artisan’ specialist, by the 1790s this distinction had become far less
stable.

At the time of the publication of The Botanic Garden (1792), this does not yet
seem to have had a negative impact upon the reception of the work. Darwin was
identified as the author of the poem, and his position as a physician prominently
noted but not treated as disadvantageous. The emphasis on science may also have
insulated him by situating his poetry as acceptably serious and relevant to his
profession, with the English Review observing that “poems, however, of some merit,
have been submitted lately to the public eye; and yet have sunk almost into oblivion.
But Dr. Darwin’s is a philosophical poem; and poets should remember that the present
is a philosophical age.”

Nonetheless, during contract negotiations with his publisher Joseph Johnson over
arrangements for The Loves of the Plants, Darwin was adamant that “I would not have
my name affix’d to this work on any account, as I think it would be injurious to me in
my medical practise, as it has been to all other physicians who have published
poetry.” No physician poet is mentioned by name; it is possible, however, that
Darwin had John Armstrong in mind, whose frequently reprinted Oeconomy of Love
causd something of a scandal. Desmond King-Hele further notes that “the

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99 See especially Frans De Bruyn’s series of articles on the effect of scientific approaches to
agricultural improvement on the status and interpretation of Georgic verse, for example
“Reading Virgil’s “Georgics” as a Scientific Text: The Eighteenth-Century Debate between
Jethro Tull and Stephen Switzer” and “From Georgic Poetry to Statistics and Graphs:
Eighteenth-Century Representations and the “State” of British Society.”
of reviews of Darwin's work will be given in full due to the publication of several anonymous
reviews of the same work in the same periodical in instalments and/or at different dates.
publication arrangements he suggests would allow him to suppress the book if he
found it was damaging his medical reputation.” In other letters, including one to
his son Robert Waring Darwin, Darwin emphasises the triviality of the work, and his
desire not to be associated with it for that reason: “I am printing the Loves of the
Plants, which I shall not put my name to; tho’ it will be known to many: but the
addition of my name would seem as if I thought it a work of consequence.”103 His
casual, even dismissive, attitude to his success as an author indicates the differing
status that his professional and literary pursuits held even at this early stage.

Darwin tries to tread a fine line between his serious medical-scientific persona and
his light-hearted literary one. On the one hand he faux-modestly downplays the
significance of his work, dismissing it as entertainment; on the other hand he
attempts a vast and detailed survey of the state of human knowledge, drawing on
the conventions of science to support his claims of expertise. Despite this, if there is a
common thread to the critical discourses surrounding Darwin in the late 1790s, it is
that his influence on poetry is treated by critics as being primarily stylistic, involving
the use of heroic couplets combined with footnotes, and an emphasis on visual
imagery. That the “Darwinian school” is treated as one of form rather than content is
suggested by the use of the term “Darwinian” by reviewers to refer to similarities in
verse style and imagery rather than other salient features, such as the poem-with-
notes format or the choice of a scientific subject. In comparison to Lyrical Ballads, the
British Critic stated that “we infinitely prefer the simplicity, even of the most
unadorned tale in this volume, to all the meretricious frippery of the Darwinian
taste.” The Edinburgh Magazine similarly observes that “in matter, and in manner, the
Lake and Darwinian schools of poetry are the very antipodes of each other — hostile
in all their doctrines, and opposite in every characteristic.”104 This is clearly only the
case with respect to the formal qualities of the verse. The term is also used to refer to
his speculative ideas, for example by Coleridge “Στοργη – the absurdity of the

102 King-Hele (ed.), Collected Letters, 236.
103 Darwin, Collected Letters, edited by Desmond King-Hele, 308.
104 Both cited in King-Hele, Erasmus Darwin and the Romantic Poets, 71.
Darwinian System – Birds – Allegators.”105 However, this usage tends to appear in discussions of his scientific ideas and religious beliefs rather than of his writing.

Darwin’s critics may have been encouraged in their stylistic use of the term “Darwinian” by Darwin’s own theory of poetics. Darwin sets out his aesthetic theories at some length in the “interludes” to The Loves of the Plants, which take the form of a dialogue between the poet and a bookseller. William Cowper provides a tongue-in-cheek summary of Darwin’s attitude to the character of the bookseller, noting in his review that

much critical knowledge is conveyed, and much philosophical too, in these dialogues, but it is impossible not to observe how very inferior a part is assigned in them to the Bookseller, whose short questions serve merely as a trigger to shoot off the poet’s charge of deep and abstruse intelligence.106

Darwin responds to the question of the differences between poetry and prose by arguing that

poetry admits of but few words expressive of perfectly abstracted ideas, whereas Prose abounds with them. And as our ideas derived from visible objects are more distinct than those derived from the objects of our other senses, the words expressive of these ideas belonging to vision make up the principal part of poetic language. That is, the Poet writes principally to the eye, the Prose-writer uses more abstracted terms. (41-2)

This emphasis on the visual, apparent in Darwin’s own work, forms the locus of much of the criticism of his writing style, including that by Anna Seward in both her Memoirs and private letters.

In the interludes, Darwin also defines poetry in a manner that tends to downplay its seriousness with respect to prose. He argues that when the poetic “mode of expression occurs too frequently, the prose approaches to poetry; and in graver works, where we expect to be instructed rather than amused, it becomes tedious and

105 Coleridge, Coleridge’s Notebooks, 10.
impertinent” (42). Responding to the Bookseller’s question, “is the office of Poetry only to amuse?” he replies “the Muses are young Ladies; we expect to see them dressed,” though conceding that

there are however didactic pieces of poetry, which are much admired, as the Georgics of Virgil, Mason’s English Garden, Hayley’s Epistles; never-the-less Science is best delivered in Prose, as its mode of reasoning is from stricter analogies than metaphors or similes. (43)

Darwin’s seeming repudiation of the capacity of verse to deliver serious scientific education has led Richard Cronin to describe Darwin’s claim to “inlist Imagination under the banner of Science” as

a project that promises to dismantle, but in fact reinforces the distinction between the two spheres. The imaginative is not unified with the scientific, but press-ganged into its service, in a structure of knowledge that, as Darwin’s metaphor reveals, has its true counterpart in the hierarchical, militaristic regimes ruled by those that Darwin berated as tyrants rather than in the reformed constitutions that he celebrated...In other words, Darwin’s verse serves only as an enticement to a reader who, it is hoped, will be educated by the volume into a proper appreciation of the superior value of scientific prose.107

While Darwin’s use of poetic language to celebrate the advance of science and technology is often powerful, even verse’s potential to evoke the sublime is treated with empirical detachment.

Darwin further distinguishes between poetic and scientific ways of describing the world in his discussion of the function of metaphor in verse. He states that the subject matter of poetry

must be interesting from its sublimity, beauty, or novelty; this is the scientific part; and the art consists in bringing these distinctly before the eye, so as to produce (as above mentioned) the ideal presence of the object, in which the great Shakespear particularly excells. (48)

In response to the Bookseller’s remark that “Then it is not of any consequence whether the representations correspond with nature?” Darwin argues not if they so much interest the reader or spectator as to induce the reverie above described. Nature may be seen in the market-place, or at the card-table; but we expect something more than this in the play-house or picture-room. The farther the artists recedes from nature, the greater novelty he is likely to produce; if he rises above nature, he produces the sublime; and beauty is probably a selection and new combination of her most agreeable parts. (49)

Poetry, then, is not only antithetical to truly naturalistic description, but seeks to improve on nature in order to create an experience more pleasing to the reader than that which is “real.” Denying that similes need to be closely related to their initial objects and citing Homer as a predecessor, Darwin argues that similes which accurately resemble their subjects become a philosophical analogy, it would be ratiocination instead of poetry: it need only so far resemble the subject, as poetry itself ought to resemble nature. It should have so much sublimity, beauty, or novelty, as to interest the reader; and should be expressed in picturesque language, so as to bring the scenery before his eye; and should lastly bear so much veri-similitude as not to awaken him by the violence of improbability or incongruity. (84)

These theories emphasise the artificiality of Darwin’s style, and lend greater weight to parodies which highlight the most easily mocked aspects of his work: the sometimes tenuous epic similes, “glittering” adjectives and constant personification. The divorce suggested between what is poetic and what is accurate also tends to diminish the seriousness of the verse, which may have contributed to the tendency of reviewers to ignore or downplay potentially provocative passages, whether sexual, religious or political. The degree of protection afforded to controversial content by this form, however, may also have reduced its longevity. By encouraging a focus on poetic style and artistry, the Darwinian school increased its vulnerability to the whims of taste.
In the preface to *The Temple of Nature*, Darwin claims that

the Poem, which is here offered to the Public, does not pretend to instruct by
deep researches of reasoning; its aim is simply to amuse by bringing
distinctly to the imagination the beautiful and sublime images of the
operations of Nature in the order, as the Author believes, in which the
progressive course of time presented them.\(^{108}\)

Martin Priestman has argued that “the disclaimer of an instructive intention is
disingenuous....here the apparently simple intention to present natural operations in
chronological "course of time" implies a massively ambitious attempt to present the
whole known universe as a single coherent system.”\(^{109}\) This ambitious scope is
evident as early as the most entertainment-oriented work of Darwin’s, *The Loves of
the Plants*, which endeavours to make a serious case for the sentience of plant life and
its continuity in some respects with that of humans, as well as sketching out a late-
Enlightenment view of the biosphere as organised, systematic and comprehensible.
With the publication of *The Economy of Vegetation* and *The Temple of Nature*, Darwin’s
literary project becomes increasingly complex, balancing an attempt to integrate an
account of the physical operations of the universe according to contemporary
standards of empirical, scientific evidence, and a Classical-Renaissance sensibility
which seeks to incorporate all fields of knowledge including proto-psychology,
sociology and “modern” ethics.

However, the tension between the ambitious scope of the works and the difficulties
in reconciling the requisite degree of speculation with the desire for scientific proof
causes fault-lines throughout the work, arising as much from generic boundaries as
from philosophy. Section VI of Canto IV of *The Economy of Vegetation* displays many
of the competing impulses at work in the poem in its account of technology for
underwater exploration. Accompanied by a detailed, closely argued and extensively
referenced footnote on discoveries relevant to diving bells and submarine vessels

\(^{109}\) Priestman (ed.), *Temple of Nature*, editor’s note, preface para. 1.
that would not be out of place in the *Proceedings of the Royal Society*, the verse passage itself veers away from science into a stirring narrative of national progress, imperialism and dominion over the oceans:

Led by the Sage [Priestley], Lo! Britain’s’ songs shall guide
Huge SEA-BALLOONS beneath the tossing tide;

... Then Shall BRITANNIA rule the wealthy realms,
Which Ocean’s wide insatiate wave o’erwhelms;
Confine in netted bowers his scaly flocks,
Part his blue plains, and people all his rocks.

... Onward, through bright meandering vales, afar,
Obedient Sharks shall trail her sceptred car,
With harness’d necks the pearly flood disturb,
Stretch the silk rein, and champ the silver curb;
Pleased round her triumph wondering Tritons play,
And Sea-maids hail her on the watery way. (4.195-212.178-9)

By its end, the passage has taken on a whimsical air of fantasy in which the real and mythological creatures of the deep playfully celebrate Britain’s technological and military might. As awkward as this transition is, it sits even more oddly with Darwin’s pithy acknowledgement of the sometimes fatal dangers of such research, noting that “shrin’d in the deep shall DAY and SPALDING mourn/Each in his treacherous bell, sepulchral urn!” (4.217-8.179). These competing generic strands have a tendency to undercut each other, with the rigor and commonsense tone of the notes to some extent weakened by the extremely ambitious nature of Darwin’s projections, and the seriousness of both is undermined by their association with playful mermaids and domesticated sharks.

Didactic treatments of very specific subjects tend to flirt with the mock-heroic, especially when the elevated style is applied to “low” subjects. John Chalker has traced the presence of this mode back to the fourth book of Virgil’s *Georgics*, and has
observed its importance in a number of the genre’s later exponents including Dryden’s translation and Grainger’s annotated didactic poem *The Sugar-Cane.*

Darwin’s work wanders between satire and a serious epic elevation of the modern industrial landscape. In Canto III of *The Economy of Vegetation*, mankind’s modification of the natural landscape for its own benefit is given an ancient lineage through the tale of Hercules’ conquest of Achelous, interpreted as the diversion of a river:

Thus when young HERCULES with firm disdain
Braved the soft smiles of Pleasure’s harlot train;
To valiant toils his forceful limbs assign’d
And gave to Virtue all his mighty mind;
Fierce ACHELOUS rush’d from mountain-caves,
O’er sad Etolia pour’d his wasteful waves,

The youthful Hero seized his curled crest,
And dash’d with lifted club the watery Pest; (3.471-82.151-2)

Virtue here is associated with science and industrial improvement, and the passages in which modern canal builders are lionised are linked to ancient heroes. Nevertheless, elements of the mock heroic creep in. The river is a “watery pest,” and Hercules is depicted with humorous overstatement as rejecting a life of pleasure with straight-laced “firm disdain.” A similar tendency to ridicule gently the nature of man despite his achievements is present in the description in *The Temple of Nature* of the evolution of verbal language from body language:

Thus jealous quails or village-cocks inspect
Each other’s necks with stiffen’d plumes erect;
Smit with the wordless eloquence, they know
The rival passion of the threatening foe.

Or when the Savage-Man with clenched fist
Parades, the scowling champion of the list;

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With brandish'd arms, and eyes that roll to know
Where first to fix the meditated blow;
Association's mystic power combines
Internal passions with external signs.
From these dumb gestures first the exchange began
Of viewless thought in bird, and beast, and man;
...
And hence the enthusiast orator affords
Force to the feeble eloquence of words. (3.343-62.113-4)

Here the development of language and oratory is celebrated but also undercut. Words are described as having a “feeble eloquence,” while primitive man – man in his natural state – is associated with jealous quails and village cocks, and portrayed as an aggressive fighter.

Darwin’s sense of humour and reliance on Pope’s tongue-in-cheek Rosicrucian machinery did not always strike a successful balance when combined with a desire to commemorate the technological achievements of modern industry:

From dome to dome when flames infuriate climb,
Sweep the long street, invest the tower sublime;
Gild the tall vanes amid the astonish’d night,
And reddening heaven returns the sanguine light;
While with vast strides and bristling hair aloof
Pale Danger glides along the falling roof;
And Giant Terror howling in amaze
Moves his dark limbs across the lurid blaze.
NYMPHS! YOU first taught the gelid wave to rise,
Hurl’d in resplendent arches to the skies;
In iron cells condensed the airy spring,
And imp’d the torrent with unfailing wing;
- On the fierce flames the shower impetuous falls,
And sudden darkness shrouds the shatter’d walls;
Steam, smoak, and dust, in blended volumes roll,
And Night and Silence repossess the Pole. (3.377-92.144-5)

Darwin’s tone here certainly contains an element of humour, given the “bristling
hair” of Danger and the over-the-top description of the water being sprayed as a
“gelid wave.” Not all critics, however, have appreciated Darwin’s use of the mock-
heroic. In one of the earliest academic studies of Darwin’s poetry, Clark Emery
opines that “The Rosicrucian mechanism, too, permits numerous grotesqueries.
There is something unseemly about ascribing to Nymphs the successful operation of
a fire-engine, or of the vacuum pump - especially when the poet draws a
comparison between the pump and a child at his mother’s ‘salubrious fount.’”111

While many of the compositional difficulties faced by Darwin can be traced back to
his attempt to blend a wide variety of literary genres and a certain ambivalence
concerning the purpose and seriousness of the work, the increasing
institutionalisation of science and solidification of genres within the field of science
writing also created challenges for an author attempting to present complex scientific
concepts for a general readership. As the field of available knowledge becomes more
expansive, the possibility of encapsulating it in a single poem becomes an
increasingly difficult, if not impossible task.

In addition, increasing emphasis over the eighteenth century on the skill and
expertise of the writer made such wide-ranging, epic works difficult to perform
successfully. George Rousseau and Paul Kaufman have demonstrated that books on
natural history and philosophy were among the most popular works of literature in
the later half of the eighteenth century, and this popularity contributed to a steady
rise in the level of scientific expertise amongst readers. By mid-century, the
popularity of didactic poems was beginning to be influenced by the scientific
authority and expertise of the author. Darwin’s wide-ranging scope, covering an
immense variety of contemporary sciences and his emphasis on his own rather
speculative ideas rather than on the consensus positions generally favoured by other

didactic poets, left him open to attacks on the basis of scientific rigour. The *Critical Review* notes that “we have heard that many branches of philosophy have been rendered popular, from Dr. Darwin’s mode of treating them ... though we question whether it have ever produced one proficient.”\(^{112}\) Darwin’s authorial persona was further compromised by his disingenuous attempt to demur in the preface of *The Temple of Nature*, stating that he aimed “simply to amuse” (i), which failed to stop people taking the work seriously while undermining his authority. The claims that “the Poem, which is here offered to the Public, does not pretend to instruct by deep researches of reasoning; its aim is simply to amuse”\(^{113}\) presents the text as lightweight and, in modestly pointing out the poem’s limitations, provided ammunition for critics of Darwin’s methods. Presumably this is Darwin’s attempt to deflect criticism of the theory of biological evolution by portraying it as highly speculative; however, the preface simply helped to reinforce the belief of most reviews that the ideas were implausible.

However the issue is not as simple as William Powell Jones’ suggestion that science became too specialised and too vast a field to be treated effectively in a poem. The poems are explicitly pitched at the introductory level, and in that sense their broad, survey approach to different scientific topics is not intrinsically different from that taken by popular prose works such as Buffon’s *Histoire Naturelle* and Goldsmiths’ *History of the Earth and Animated Nature*. It would be more accurate to say that science became naturalised in certain contexts, and that many of the roles traditionally filled by the epic poem were no longer required. The problem lies not just in the amount of knowledge, but the fact that increasing specialisation resulted in a growing compartmentalisation of high-level knowledge. With the rise of scientific disciplines, scientific texts are no longer expected to be oriented towards the explication and reinforcement of such a totalising system. As science becomes more applied and focused on solving particular physical or industrial problems, it becomes increasingly dissociated in scientific literature from religious or moral questions. This


is not to say that religion and science become dissociated in the wider culture – the persistence of works oriented towards natural theology suggest that they remained closely linked. However, as technological developments resulted in many practical applications for scientific research, they developed in a direction which was not directly related to theology. Thus the key issue with Darwin’s science is that it tries to marry applied science with a systematising worldview. This becomes increasingly untenable, resulting in provocative extrapolations which challenge both the understanding of scientific method and evidence, as well as the religious framework science had traditionally been employed to support.

**Authority, Institutions and cultural capital**

The vogue for botanising and fossil collecting among women, families and male “amateurs” provided a fertile and receptive environment for Darwin to push back the traditional boundaries of existing scientific genres, incorporating a novel amount of experimental detail into his poetic works which were targeted at female readers and, conversely, writing highly speculative prose works such as *Zoönomia* (1794) aimed at a general audience and widely reviewed. Ann Shteir has argued that despite the inclusion of women within the target audience of the work, Darwin “entrenched sexual difference and gender differences in both his poetic and his pedagogical writing. “The Loves of the Plants” naturalises a conventional sexual politics … Although some verses are sentimental, with tears, modest blushes, and maternal sighs, the over-riding tone is the lascivious delight of a male-centred sexual fantasy.” While this may be true of particular passages within the poem, Shteir’s characterisation of the work in this way is problematised by features of the poem and its reception which are feminised and which locate the poem within the domestic sphere of education involving mothers and children.

Sections of the poem invite domestic application, including a variety of do-it-yourself science experiments, and instructions for botanising readers. The poem’s status as an

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epic and didactic work also draws on certain cultural reading conventions – that the poem be read aloud as a family activity. The vignette structure in particular invites this. Works such as Charlotte Smith’s *Conversations Introducing Poetry* (1804) and Maria Jackson’s *Botanical Dialogues* (1797) reference the poem being read in exactly this manner. Smith’s *Conversations* promotes Darwin’s book as a work of literature and scientific resource within a specifically domestic setting, describing children both learning about botany from the work and reading it aloud to their mothers as an entertaining family activity:

to return, however, to our Sylphs and Gnomes – these you remember, though you have only heard detached parts of it read, are employed with the Nymphs, as the agents, or the machinery in the Botanic Garden; a work which you know your brothers have often read parts of to me; the splendour and beauty of the verse makes it delightful to George, who has an admirable ear for poetry; while Edward has been attracted by the variety of information conveyed in the notes; and became interested in experiments and facts, which probably would not, if offered to him in any other way, have excited his curiosity.\(^{115}\)

Jackson too cites the work in the domestic context of a mother educating her children. In a passage on star-jelly, the young daughter-character Harriet remembers the properties and classification of the plant due to Darwin’s memorable personification of it, and asks “may not Juliette and Henry read those lines, mamma?” to which the mother, Hortensia, replies: “they may read them this evening” before returning to the subject at hand.\(^{116}\)

In this domestic context, certain topics and sources of authority can be displaced onto the figure of Darwin. When Hortensia asks her son Charles whether he can enumerate to her and Harriet the Linnean classes after she has explained the underlying principles to both children, he cites Darwin’s poem as his source:


\(^{116}\) Jackson, *Botanical Dialogues*, 140.
Charles. I believe, Ma’am, I can, but I will own not quite fairly, as I cast my eye over them yesterday in the preface to the Botanic Garden, which lay open in Mr. Wilson’s room.

Hortens. In whatever way you may have come by your knowledge, we will be obliged to you to impart it to us. We expect you to translate for us; for male, you may say stamen.”

While his mother is clearly knowledgeable, his citation of a male author reinforces the ultimate importance of book-learning for mothers educating their children. Hortensia herself acknowledges this in an earlier passage in which she notes that

I shall have frequent occasion to recur to [The Botanic Garden], as we proceed in our botanical studies: I do not know a book, which contains more variety of knowledge on the subject, or any one where that knowledge is so clearly and agreeably given; I have learnt much from it.

Her request that Charles use Latin may contain a touch of conservatism regarding the sexual nature of the system – which is also specifically attributed to the male authority of Linnaeus – though certainly not enough for her to refrain from teaching her children its principles.

However, the use of the text as a manual for mothers can be seen as one of the features which made its authority tenuous in the context of increasing institutionalisation. Darwin’s framing of the texts as light-hearted introductions belies the serious and comprehensive nature of much of the content, and yet the prefatory assertions of the scientific material’s accessibility and entertainment value are constantly reinforced by the widespread use of figurative modes of personification and metaphor which by this time were becoming increasingly unacceptable in scientific discourse. At the same time that these features of the text increased the appeal of Darwin’s works to a broader readership than that aimed at by authors of more austere “textbooks,” which were generally not marketed for use by women and children other than for use in schools, the use of entertaining

117 Jackson, Botanical Dialogues, 69-70.
118 Ibid., 26.
119 Ibid., 69.
vignettes and fanciful but easily understood and memorable analogies compromised
the scientific rigour of the work.

Institutional sources of authority, however, are certainly not abandoned. The notes
and endnotes, which form a substantial portion of the text and which have been
estimated to run to over 80,000 words for *The Botanic Garden* alone\(^\text{120}\) draw on
contemporary studies and follow the familiar modern system of referencing research
publications which had become a standard feature of scientific periodicals and some
textbooks by this time, but which were rarely encountered in other genres. The notes
draw on masculine languages and spheres of influence, with Darwin’s prose style
detached and focused on detailed empirical observation and argument. The contrast
is especially stark in *The Loves of the Plants*, where the reader’s attention is constantly
deflected by italicised class and order markers to refer to the notes, in which the
“real” meaning of the analogy is explained. Personification and sentimentality are
almost entirely dispensed with; when plants, for example, are described as behaving
in a maternal manner, this appears as part of a serious argument for a limited degree
of plant sentience.

In so far as Darwin draws on a tradition of gentlemanly literary accomplishment in
the field of polite letters, his source of authority is also cultural. As a professional
physician but amateur scientist and poet, Darwin positions himself not as a member
of the newly professionalising sciences but as a polymath whose literary endeavours
are simultaneously epic, elite in their field of reference, and yet not a central part of
his identity or livelihood. Despite claiming in his letters to write for money, there is
nothing in the published works to suggest a mercenary motive beyond pitching the
poems as entertaining and appropriate for a wide audience. He also does not present
or market himself as an explicitly political writer or as having a sociological agenda
to promote cultural change through education, although these intentions can and
have been inferred from his works. His tendency to distance himself from his literary
productions places him within a particularly non-professional and genteel sector of

\(^\text{120}\) King-Hele, *Erasmus Darwin: A Life*, 257.
the literary marketplace. While for most of the eighteenth century this was a common and respectable stance which elevated the author above hacks and others writing for pecuniary motives, by the 1790s it had become an increasingly eccentric position for an author writing in a professionalising field, and may have served to undercut rather than bestow authority upon Darwin’s works.

This same genteel authorial identity can also be seen shaping the poems through Darwin’s extensive use of classical references. While not appropriating classical science writing in the conventional sense as a source of authority, a genre which had seen many of its most canonised authors and precepts gradually superseded as out of date over the course of the eighteenth century, Darwin’s use of classical literary motifs carries a different sort of cultural capital. The prominent use of classical mythological figures places the poems strongly within the neo-Classical movement which had dominated literature earlier in the century; this, combined with Darwin’s use of heroic couplets and highly structured epic similes, gives the poem a certain formal conservatism, linking him to a long and prestigious line of eighteenth-century predecessors, most importantly Pope and Dryden. Darwin’s neo-classicism also draws on the prestige of an education system still centred around classical history and literature, into which the “new” scientific disciplines were only starting to intrude, primarily through Dissenting academies.

In addition, the use of mythological figures elevates those sections of The Botanic Garden which have the potential to become novelistic in the most pejorative sense. For example, a synoptic account of the affairs of Jupiter leads into a fairly detailed, highly romanticised version of the rape of Europa:

Now lows a milk-white Bull on Afric’s strand,
And crops with dancing head the daisy’d land.—
With rosy wreaths EUROPA’S hand adorns
His fringed forehead, and his pearly horns;
...
Round his raised neck her radiant arms she throws,
And rests her fair cheek on his curled brows;

Changed from the Bull, the rapturous God assumes
Immortal youth, with glow celestial blooms,
With lenient words her virgin fears disarms,
And clasps the yielding Beauty in his arms;
Whence Kings and Heroes own illustrious birth,

Guards of mankind, and demigods on earth. (2.237-70.82-4)

Highly sexualised descriptions such as that of the Tritons who “Surround the timorous Beauty, as she swims/And gaze enamour’d on her silver limbs” (2.259-60.83), or Europa’s ready acquiescence to Jupiter’s advances, are insulated to some extent by their mythological setting, which renders a scene that could have become sentimental or tawdry somewhat more high-brow. Darwin’s reading of these sequences as allegories of scientific principles seeks to give them further weight. In a passage immediately preceding the one quoted above, for example, it is argued that Jupiter represents “purer air or ether” and Juno “inferior air,” terms which suggest reactions similar to the newly discovered ones between oxygen and bases to form acids (81). Darwin also seeks to cite classical precedents and authority for his science, but not in the usual sense. He argues that the Greeks and Romans, as well as the Magi of Egypt, employed myths as a way of representing their knowledge of chemistry hieroglyphically, and that the true meaning had been lost over time. Thus, Darwin styles himself as both scientist and antiquarian, revealing the latest British, European and American advances while attempting to side-step a portrayal of himself as an innovator or purveyor of new and risky theories.

On the practical level of marketing the poems as introductory science texts, the mixed-audience approach has limitations. Elementary aspects of the work would not have appealed to more knowledgeable readers, and the choice of verse as a primary medium limited the amount of factual content. Darwin tries to mitigate this to some degree through his substantial endnotes, but these received limited notice by reviewers. If reviews can be taken as representative of the manner in which the
poems were read, many readers may not have read the endnotes at all or may have seen them as peripheral (and optional) additions rather than as an integral part of the book. An important factor shaping reading style may be the mixed genre of the text. The endnotes still reflect the “gentleman scholar” approach of amassing a wide variety of areas of knowledge: the encyclopaedic collection of useful facts rather than the in-depth, applied knowledge of a particular area increasingly expected by specialists. While replete with interesting facts and speculations, the notes are designed to provide a general education rather than to equip readers for actual fieldwork. This is less the case with The Loves of the Plants, but even this text is billed as introductory and as a gateway to further knowledge. The reader who wanted in-depth essays on a contemporary scientific subject may have assumed that a work billed primarily as a poem would not suit their needs. However, Desmond King-Hele has argued that the notes and essays were widely read, citing their influence on a number of Romantic poets.\footnote{King-Hele, \textit{Erasmus Darwin: A Life}, 266.}

There is a sense of ambivalence in the text when it comes to consider the extent of its audience. The idea that only an already enlightened readership could be a suitable audience is present in \textit{The Economy of Vegetation}, albeit in verses lifted from Anna Seward:

\begin{verbatim}
STAY YOUR RUDE STEPS! whose throbbing breasts infold
   The legion-fiends of Glory, or of Gold!
STAY! Whose false lips seductive simpers part,
   While Cunning nestles in the harlot-heart!-

   ... But THOU! Whose mind the well-attemper’d ray
   Of Taste and Virtue lights with purer day;
   Whose finer sense each soft vibration owns,
   With sweet responsive sympathy of tones;
   So the fair flower expands it’s lucid form
   To meet the sun, and shuts it to the storm (1.1-14.1-2)
\end{verbatim}
These lines have a somewhat parodic quality. However, the idea of “initiation” into knowledge is treated more seriously in Darwin’s discussion of the Portland Vase. This is particularly the case in the Temple of Nature, where the process of education in the “mysteries” of the universe is paralleled to that of the Eleusinian mysteries, described as the corruption of mythologies which were originally formed to communicate scientific discoveries. In the lead-up to this passage, Darwin again raises the idea that knowledge of the temple of nature is appropriate only for those of a certain cast of mind. Parallels can be drawn with Catholic “mystification” in passages where he discusses the historical communication of scientific ideas as part of the mysteries, emphasising the credulous nature of the audience and corrupt version of the teachings:

From this first altar fam’d ELEUSIS stole
Her secret symbols and her mystic scroll;
With pious fraud in after ages rear’d
Her gorgeous temple, and the gods rever’d.
—First in dim pomp before the astonish’d throng,
Silence, and Night, and Chaos, stalk’d along (1.137-42.12-13)

The representation of mystification is not, however, treated without ambivalence in the text. Darwin’s note to this passage points out the possibilities of such a presentation of ideas for an unsophisticated audience, hypothesising that “might not such a dignified pantomime be contrived, even in this age, as might strike the spectators with awe, and at the same time explain many philosophical truths by adapted imagery, and thus both amuse and instruct?” (13)

The concept of scientific knowledge as a philosophical truth or mystery ties into this ambivalence. The materialist universe presented in The Temple of Nature may have been seen as risky or potentially unsettling by Darwin. Martin Priestman has discussed the possibility that the Eden passage in the poem is a deliberate “veiling” of controversy from the unsuspecting reader, arguing that the uncertainty surrounding whether the location being described is Eden or the Temple “may partly be to disguise the blasphemous implications of replacing the Garden of Eden story
with an alternative scenario which explodes its whole myth of creation and sinful knowledge.”

Darwin’s general ambivalence on this issue may spring from a sense of his work as religiously and ideologically challenging, and an unwillingness to be too blatantly provocative. His correspondence and the comments of his friends suggest that while his personal beliefs leaned towards the liberal and materialist, he had no intention of adopting a radical public persona (see chapter seven).

**Model of Authorship**

Darwin’s use of popular modes was not without cynicism. He is recorded by Mrs. Schimmelpenninck as having included the Upas tree story in *The Loves of the Plants* knowing that it was false but unable to resist its entertainment value and believing that his readership was largely uncritical. In his correspondence, he suggests that he writes primarily for money, telling Watt “as the Loves of the Plants pays me well, and as I write for pay, not for fame, I intend to publish the Economy of Vegetation in the Spring.”

To the Hon. Dudley Ryder, he wrote “I have sold the copy-right of this and the former part to Johnson of St Pauls for 800L and wish therefore to make it as accurate as I can.” Furthermore, while seeking the laureateship he claimed that

the Fame of it is no object to me, but as I have a large and increasing family, and from my time of life am not likely to live long enough to provide well for them, I should be glad for a 100L a year addition to my income, which I understand the Laureateship is worth.

His attention to commerce extended to that of his friends, writing to Boulton that

an idle book of mine, call’d the Loves of the Plants, sells so well, as to pay me,

I think of publishing another part of the same work in the spring, and shall have occasion to speak of fire-engines. Now what I wish is that you would

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124 Ibid., 365.
125 Ibid., 365.
tell me as much about the superiority of your fire-engines, as may fill half a page or more by way of note126
and to Wedgwood “If I could get 2 or 3 common etchings of the outlines of these figures by means of Mr Greville, to put into my book, to render the explanation more intelligible, would it affect in the least the sale of your Vases, or of Mr Greville’s prints?”127

This commercially-minded attitude to his poetry extends even to political and humanitarian causes. Writing to Josiah Wedgwood he states

herewith you will receive the Botanic Garden, of which I am the supposed, not the avow’d author. After you have read the page on the Slave-trade 117, and the eulogy on Mr. Howard’s Humanity in visiting prisons p.80, I do not insist on your reading any more. What I wish is, if it can be done without much trouble, that you would do me the favor to use your interest with Mr Griffiths to get it review’d early; as that I am told may influence the sale of it.128

While these statements themselves should not be taken uncritically – Darwin’s oeuvre suggests a genuine passion for education and spreading ideas about biological evolution, plant sentience, and industrial technology – they are worth noting for the wry distance they suggest between the author and certain aspects of his work. They also suggest that Darwin did not wish to paint himself primarily as an author. This problematises his reputation as a “radical.”

Darwin made a number of comments in his private correspondence and in conversation which suggested a less than lofty regard for his readership (see chapter five). The picture which emerges from these remarks suggests a writer aware of himself as an author of “popular” literature with the emphasis on entertainment which that entails; serious educational aspects take a lesser role in the social and public presentation of himself as an author. Certainly, he does not seem to have

126 Ibid., 349.
127 Ibid., 352.
128 Ibid., 331.
encouraged political interpretations of his texts or contemplated selling them in inexpensive versions to increase their dissemination among a wider variety of readers.

Fluctuations in the social and economic status of the writer are also significant for the changing status of Darwin’s work and his image in this period. Firmly a gentleman amateur, to some extent Darwin’s literary career was shaped by the same forces which eventually served to marginalise his reputation as an amateur scientist. In public, he emphasised his authorship of verse as both a learned accomplishment and as a source of light entertainment. He presented his work as introducing his audience only to “the vestibule of that delightful science” of Botany, and refers his readers to the works of Linnaeus. The tongue-in-cheek classical references to “P. OVIDIUS NASO, a great Necromancer” in the Proem, and Darwin’s assertion that he had “undertaken by similar art to restore some of them [the Gods and Goddesses] to their original animality,” positions him within a long line of neo-Classical imitators, with the characterisation of his poem and its deities as one which “may amuse thee by the beauty of their persons, their graceful attitudes, or the brilliancy of their dress” (vi–vii). Any suggestion that he considered himself as a professional writer, relying on his income as a man of letters rather than on his earnings as a physician, is kept within his private correspondence and often appears in the context of denigrating the significance of the work rather than portraying it as in any sense a “career.”

This style of authorship was, however, already fading from both the literary avant-garde and from the mainstream; the most successful writers of this period were already adopting the personae of professionals. Oliver Goldsmith, for example, author of An History of the Earth and Animated Nature, arguably the most successful popular science book in English of the late eighteenth century, is no more a “professional” naturalist or science writer than Darwin, but adopts a far more authoritative tone in his prefatory material, surveying the objects and methods of natural history and providing a literature review within which he positions his work.

129 Darwin, Loves of the Plants, unpaginated advertisement.
The aims of both Darwin’s and Goldsmith’s works are equally comprehensive and encyclopaedic, and provide much of the same kind of information, differing primarily in Goldsmith’s exclusive use of prose. In some respects, such as in his annotations and references to the latest scientific publications, Darwin’s work adopts more of the apparatus of the emerging professional “scientist.” However, while Darwin employs a poetic form designed to entertain and amuse as well as to instruct, Goldsmith aims to attract through the accessibility of his prose style which at the same time is entirely serious, and most closely resembles an encyclopaedia or textbook. Notwithstanding the customary assertion that his work will not try to be fully comprehensive, Goldsmith presents his system in an authoritative fashion, citing Buffon – not uncritically - in support of his choices, and positioning his work as superseding the most comprehensive natural history of the century, providing new information based on extensive reading.130

This authorial persona separated Darwin as a writer even further from some of his younger contemporaries. Coleridge, in a notebook entry, objects to the older poet’s philosophical views and his position as a “commercial” writer:

O Germany! Germany! – why this endless Rage of Novelty! Why, this endless Looking-out of thyself? — But stop! Let me not fall into the Pit, I was about to warn others of – let me not confound the discriminating character & genius of a nation with the conflux of its Individuals, in Cities & Reviews/ Let England be Sir P. Sidney, Shakespeare, Spenser, Milton, Bacon, Harrington, Swift, Wordsworth, and never let the names of Darwin, Johnson, Hume, fur it over! – If these too must be England, let them be another England/ - or rather let the first be old England, the spiritual platonic old England/ & the second [,] with Locke at the head of the Philosophers & Pope of the Poets, with the long list of Priestleys, Paleys, Hayleys, Darwins, Mr Pitts, Dundasses, &c &c – be

130 Goldsmith, History of the Earth. See especially 1:ix for claims as to the modest scope of the work and 1:x-xii for a more authoritative stance.
representative of commercial G[reat] Britain/these have their merits, but are as alien to me, as the Mandarin Philosophers and Poets of China.¹³¹

Jon Klancher has characterised this transition in authorial self-definition as a process in which “one critical function, ‘literature as a calling’ or vocation, began to be distinguished from another, ‘literature as a trade,’ and the formerly authoritative ‘man of letters’ began to be seen as a slavish creature of the market.”¹³² To this can be added literature as a hobby. For Darwin as an author exists within a sector of the eighteenth century republic of letters which was neither vocational nor professional, but in some sense constituted an “accomplishment.” This was a particularly common formation among physicians who were also men of letters – Akenside and Armstrong aimed to educate their readers with their works, but they were doctors first and writers second.

These aesthetic discourses intertwine with the early political radicalism of many Romantic poets, and we witness the emergence of the idea of original genius alongside the increasing professionalisation of the literary field. Day illustrates the close relationship between these two developments, pointing out that “the process of art is seen as organic compared to the mechanical nature of production”¹³³ and that “historically, the purpose of art was not self-expression but to encourage readers to imitate models of excellence. Individuals have always existed, but the idea of the individual comes to prominence when commercial pressure causes hierarchies to crumble, forcing people to forge their own identity. The appearance of the individual is therefore tied to the development of capitalism.”¹³⁴

The employment of verse as a literary genre and the aesthetic concerns associated with it also shift as a result. Accompanying Wordsworth’s and Coleridge’s *Lyrical Ballads* was an implicit assertion of the value of originality and a questioning of tradition. A movement away from “unnatural” language and neo-Classical

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¹³¹ Coleridge, *Coleridge’s Notebooks*, 89.
¹³² Klancher, “Vocation of Criticism,” 297.
ornamentation was already well underway in Cowper, Smith, Blake, Goldsmith and others. While the literary features we now associate with “Romanticism” had not yet become the standard among authors and critics, progress in this direction can be noted in Darwin’s literary contemporaries and reviewers. An inherent discomfort with didactic verse in general, and with the combination of poetry and science in particular, is almost entirely absent from reviews of The Botanic Garden (1789-92), but appears regularly in reviews of the later work, The Temple of Nature (1803). The Universal Magazine declares early in its review of the latter that “instruction is not the immediate province of poetry” and that “so difficult it is to describe minute mechanical changes, without employing language too metaphorical to be perspicuous, or too abstract and prosaic to gratify poetic taste, that we find the bard compelled incessantly to descend to professed prose, in order to enforce and illustrate his doctrines.” The reviewer adds that “bold metaphors, personifications and allegories, are his constant and sole resources; and in pourtraying [sic] the scenery of this fairy kingdom of his own creation, he adheres strictly to the principle of addressing himself directly and only to the eye. Nor does his propensity to metamorphosis stop here; but even in delineating inanimated external nature, her own graceful and varied forms seem too tame to catch his fancy, till they have been transformed into the living monsters of his own brain.” This is still a shift in progress; these reviews both express the view that a certain kind of didactic poetry is effective, while subtly denigrating the genre.

The ambivalence surrounding didactic poetry as a form increased over Darwin’s lifetime, but remained unresolved until well into the nineteenth century. Darwin’s own struggles with his literary persona, his sense of his poetry as a pursuit of lower status than medicine, and the reactions of critics who perceived tensions between the scope and style of his work provide an important window onto the shifting status of the gentleman scholar at this time. The use of Darwin’s poems by women and children and the commercial imperatives highlighted in the letters depict a different

style of authorship emerging, which highlights the competing cross-currents in the scientific print culture of the 1790s by showing a pivotal literary figure trying to be everything to everyone – the accessible family author, the compiler of encyclopaedias for experts, and a provider of light entertainment and amusement. The transition from celebration of the openness of this approach in early reviews of *The Botanic Garden* to greater criticism of it in *The Temple of Nature* provides, in microcosm, an index of the effect greater institutionalisation of the sciences was having on the public perception of the expertise a popular science writer should possess, and the extent to which generic boundaries were hardening to exclude speculation, imagination and entertainment from adult works understood to be primarily educational.
Chapter Four: Women, Sexuality and *The Loves of the Plants*

*The Loves of the Plants*, published in 1789, has recently attracted a considerable amount of critical attention, particularly from feminist historians of both literature and science who have read the poem as an example of an erotic and subversive text which challenges the ideal of monogamy. However, this interpretation of *The Loves of the Plants* contrasts sharply with the poem’s positive reception upon publication, when it attracted favourable reviews from religious readers such as Hannah More and William Cowper. Recent interpretations of the work as subversive also sit uneasily in light of its popularity as a model for female botanical poets in the early decades of the nineteenth century, several of whom authored well-received educational and conduct-oriented poems for children.

Towards the end of the eighteenth century, the market for popular science books aimed at women and children was increasingly flourishing, meeting the demands of a new market created by the vogue for botany, entomology and other popular sciences. *The Loves of the Plants* (1789), with its combination of up-to-date science, hands-on experimentation and accessible, entertaining verse catered ideally for this growing audience. The poem was immediately popular, principally on account of the high profile of its subject matter. In her *Memoirs of Dr. Darwin*, Anna Seward notes that “the immense price which the bookseller gave for this work, was doubtless owing to considerations which inspired his trust in its popularity. Botany was, at that time, and still continues a very fashionable study. Not only philosophers, but fine ladies and gentlemen, sought to explore its arcana.”

Despite the expense of the work, a second edition of *The Loves of the Plants* had already been issued by January 1790.

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Darwin’s use of verse — unusual in this field but not unprecedented, having been used before for a horticultural subject in William Mason’s *The English Garden* (1783) — added greatly to its appeal by providing additional interest to the lay reader, presenting the ideas in a memorable and accessible fashion, and adding aesthetic value to the work. William Cowper, writing in the *Analytical Review*, observes that “though Botany so abounds with marvellous realities, that the embellishments of fiction might, on such a subject, seem almost superfluous, yet he has greatly enhanced the beauty of his poem, by a continued series of fictions.”¹³⁹ Darwin himself emphasises this aspect of the poem in his Proem, where he states that the beauty of the verses will appeal even to those readers who are not familiar with the plants being described. He notes that “though thou may’st not be acquainted with the originals, [the pictures] may amuse thee by the beauty of their persons, their graceful attitudes, or the brilliancy of their dress” (vii). Darwin’s use of the analogy of pictures hanging in a lady’s dressing room to describe his exhibition of flowers also suggests strongly that this reader of little education is likely to be female.

**A “Sexy” Poem and Its Readers**

Darwin’s deployment of personification in *The Loves of Plants* in order to illustrate the Linnaean sexual system of plant classification has drawn a great deal of critical attention to the poem’s treatment of human sexuality. While a small number of scholars such as Janet Browne have acknowledged “the limited and entirely traditional nature of [Darwin’s] images,”¹⁴⁰ the emphasis in recent studies of the poem has fallen on the subversive potential of Darwin’s descriptions of the wide variety of sexual arrangements occurring in plant life. Typical of modern interpretations of the poem and its reception are Desmond King-Hele’s suggestion

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that “most pleasant of all for many of Darwin’s readers was their entry into a
genuine world where sex was multiplex”\textsuperscript{141} and Fredrika Teute’s argument that
Darwin signalled rejection of church-sanctioned rituals of monogamous
marriage and endorsement of free love. The sexual diversity of plant life had
its corollary in human cultures. Botany proved to be a medium for the
exploration of heterogenous sexuality and a conduit for politicised social
commentary.\textsuperscript{142}

Interpretations focussing on the risqué quality of Darwin’s verse frequently refer to
the most sexually explicit and “licentious” parts of the work, such as Darwin’s
description of a Tahitian marriage ceremony, a passage which has been taken to
portray the naturalness of uninhibited human sexual expression:

\begin{quote}
A hundred virgins join a hundred swains,
And fond ADONIS leads the sprightly trains;
Pair after pair, along his sacred groves
To Hymen’s fane the bright procession moves;
Each smiling youth a myrtle garland shades,
And wreaths of roses veil the blushing maids;
Light Joys on twinkling feet attend the throng,
Weave the gay dance, or raise the frolic song;
- Thick, as they pass, exulting Cupids fling
Promiscuous arrows from the sounding string;
On wings of gossamer soft Whispers fly,
And the sly Glance steals side-long from the eye.
- As round his shrine the gaudy circles bow,
And seal with muttering lips the faithless vow,
Licentious Hymen joins their mingled hands,
And loosely twines the meretricious bands. –
Thus where pleased VENUS, in the southern main,
Sheds all her smiles on Otaheite’s plain,
\end{quote}

\textsuperscript{141} King-Hele, \textit{Erasmus Darwin: A Life}, 237.
\textsuperscript{142} Teute, “The Loves of the Plants,” 7.
Wide o’er the isle her silken net she draws,  
And the Loves laugh at all but Nature’s laws.

Adonis. L. 468. Many males and many females live together in the same flower. It may seem a solecism in language, to call a flower, which contains many of both sexes, an individual; and the more so to call a tree or shrub an individual, which consists of so many flowers. Every tree, indeed, ought to be considered as a family or swarm of its respective buds; but the buds themselves seem to be individual plants, because each has leaves or lungs appropriated to it; and the bark of the tree is only a congeries of the roots of all these individual buds. Thus hollow oak-trees and willows are often seen with the whole wood decayed and gone; and yet the few remaining branches flourish with vigour; but in respect to the male and female parts of a flower, they do not destroy its individuality any more than the number of paps of a sow, or the number of her cotyledons, each of which includes one of her young. (4.387-406.164-5)

The last verse line of this passage — “and the Loves laugh at all but Nature’s laws” — has provoked readings in which the promiscuity of the plant Adonis and the accompanying amorous Tahitians are seen as embodying a pure, natural state of human sexuality, uncorrupted by Christian mores. For Browne, these lines embrace “the notion that human bonding was no more sacred than the purely physical meetings of stamen and pistil,” emphasising that “nature’s laws were not those of a church-driven society.” However, while eroticism clearly does pervade Darwin’s account of plant sexuality and is portrayed as a central feature of the natural world, the relationship of such natural sexuality to human behaviour is not explicitly addressed. This leaves the poem open to a variety of possible interpretations. A key assumption underlying readings focused on sexual radicalism is the idea that *The Loves of the Plants* is to be understood as an analogy in which plants are used to comment on the sexual and social arrangements of humans. Alan Bewell has argued

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that such an interpretation arises inevitably out of the language of late-eighteenth-century botany, which

was so imbued with socio-sexual implications that no botanical description was entirely removed from these concerns, and most were explicitly oriented toward them....the important impact of Linnaean botany did not reside in its promulgation of a specific social theory, but instead in this legacy of analogical thinking. The issue was not one of whether to draw analogies between human beings and plants, but what kind of analogy should be made.\textsuperscript{144}

The analogy which has generally been drawn by twentieth-century critics has been one which associates the text with the doctrines of eighteenth-century libertinism, in which human sexuality is seen as a good and natural force that should be expressed without the artificial restrictions imposed by Christianity and the state. This understanding of sexuality was expressed in a wide variety of genres, including medical and antiquarian learned treatises such as Richard Payne Knight’s \textit{An Account of the Remains of the Worship of Priapus} (1786). These texts used the emerging, detached language of scholarship to legitimise their ideas and to some degree mask their implications – although generally without mainstream success.\textsuperscript{145} To an extent, this can be attributed to a central feature of these works – if a text is to succeed in conveying meaning through analogy, it must make its intent and referents clear. For example, Payne Knight ensures his readers will understand that he means to generalise from Roman worshippers of Priapus to human sexuality as a whole by his prefatory assertion that “there is naturally no impurity or licentiousness in the moderate and regular gratification of any natural appetite.”\textsuperscript{146}

Contemporary reviews, letters and satires, however, reveal that an interpretation of the \textit{Loves of the Plants} as promoting sexual licence through analogy was far from universal in the late-eighteenth and early-nineteenth centuries, and was strongly

\begin{footnotesize}
\begin{enumerate}
\item[Bewell, “Jacobin Plants,” 134.]
\item[145 Trumbach, “Erotic Fantasy and Male Libertinism,” 272-3.]
\item[146 Quoted in Trumbach, “Erotic Fantasy and Male Libertinism,” 280.]
\end{enumerate}
\end{footnotesize}
contested when proposed. An alternative interpretation dominates throughout the 1790s in which the risqué vignettes are understood to function as amusing illustrations of a system of plant classification that is not interpreted as “standing for” something else, but one which reflects the sexual reality of the vegetable world. Authors such as Clement Archer in *Miscellaneous observations on the effects of oxygen on the animal and vegetable systems* (1798) and Maria Jackson in *Botanical Dialogues* (1797) cite *The Loves of the Plants* as a serious source of botanical information, while the Rev. Richard Polwhele refers his readers to “that most finished of all poems” for an illustration of the association between certain plants and birds in his *History of Devonshire* (1793-1806).147

Readers who mention the sexual content in their correspondence, including the evangelical conservative Hannah More, tend to discuss Darwin’s personifications with amusement rather than with seriousness. More’s response to Walpole’s recommendation of the poem playfully acknowledges the sexual elements of the verse and admires Darwin’s writing style, but also focuses critically on the poem’s argument for plant sentience, opining that

> I feel, like the most passionate lover, the beauty of the cyclamen or honeysuckle, but am as indifferent as the most fashionable husband to their amours, their pleasures, or their unhappiness... Seriously, one cannot care for the weal or woe of plants; and while one reads with admiration such fine verses, one cannot help wishing that they related the history, or analysed the passions or manners of men and women, the only people in whom, after all, with all their faults, I take any great interest.148

As far as the sexual content is concerned, More declares the poem to be tame and “spiritless” compared to the libertine dramas of the early eighteenth century, which “shamefully offend in another way.”149 Walpole exchanges similar banter with another of his female correspondents, Mary Berry, suggesting that Darwin’s vegetable world

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147 Polwhele, *History of Devonshire*, 1.89.
149 Ibid., 296.
is more galant than amongst human race, for you will find that they are the botanic ladies who keep harems and not the gentlemen — Still, I will maintain that it is much better that we should have two wives, than your sex two husbands — so pray don’t mind Linnaeus and Dr Darwin: Dr Madan [an advocate of polygamy] had ten times more sense.\textsuperscript{150}

Berry’s reply is equally tongue-in-cheek, noting that “I must at last own with blushes what I have hitherto concealed, perhaps improperly, from my husband:...I was early initiated into all the amours and loose manners of the plants by that very guilty character, Dr Solander [a student of Linnaeus].”\textsuperscript{151} While these responses recognise the potential for the application of plant reproductive habits to humans, they mirror Darwin’s light-hearted and humorous treatment of the subject and do not take the sexual metaphors and argument for biological parallels between humans and plants seriously.

While it is undeniably the case that the sexual explicitness inherent in Linnaean classification attracted conservative ire — especially in regard to female botanists — these views were rejected by many mainstream reviewers and commentators who argued that the system’s scientific accuracy justified the use of sexual terms. Indeed, when The Loves of the Plants was published and for several years afterwards, none of the poem’s periodical reviewers seem to have objected to Darwin’s personifications on the grounds of sexual licentiousness, treating his verse “ornaments” as appropriate for both an elegant work of art and a scientific work on the Linnaean system. In the Monthly Review’s 1793 survey of the complete Botanic Garden, the sexualised poetic treatment of the flowers is seen as a logical outgrowth of the underlying science:

in the second part of the poem, which the writer…very naturally, for a poet enamoured of the sexual system, has entitled The Loves of the Plants, we had a

\textsuperscript{150} Walpole, “Horace Walpole to Mary and Agnes Berry, 28 April 1789,” 11-12.

\textsuperscript{151} Berry, “Mary Berry to Horace Walpole, 29 April 1789,” 12.
very pleasing illustration of that system; with the remarkable properties of many particular plants.\textsuperscript{152} As late as 1800, the \textit{Monthly Magazine} explicitly contradicted Richard Polwhele’s claim in \textit{The Unsex’d Females} that such botanical language was not suitable for women, suggesting that any impropriety in botany was the product of the critics’ “foul imaginations.”\textsuperscript{153}

There are a number of features of the text which may account for this contemporary focus on the poem’s scientific content and the wide acceptance of the poem’s personifications as scientifically appropriate. The poem is structured to provide the reader with sufficient knowledge to understand the science which underlies Darwin’s personification of plants and to read beyond the metaphors to the Linnean system of classification which underlies them, despite Darwin’s anticipation that at least part of his audience will appreciate his work on a relatively superficial level. The preface contains a clear outline of the Linnean system and a recommendation that interested readers study the works of the “Great Master” in translation.\textsuperscript{154} There is also a series of plates so that the reader can accurately visualise what Darwin is describing in the notes’ detailed anatomical analyses of flowers. The \textit{Analytical Review} acknowledges the importance of the preface, noting that it contains “so much Botanical information as is necessary to enable readers, unskilled in Botany, to understand the poem.”\textsuperscript{155} Cowper’s assumption that the poem cannot be understood without such knowledge reflects Darwin’s framing of the work, and indicates an understanding of the text as an educational work. The suggestion in the second preface or “proem” that the reader contemplate the poem as “diverse little pictures suspended over the chimney of a Lady’s dressing-room” (vi) – interpreted by critics such as Asia Haut as eroticising the reading experience\textsuperscript{156} – appears as much a “dumbing down” as a “sexing up,” appealing to the reader of frothy, courtship novels to partake of an amusing text whose subject matter might otherwise be

\textsuperscript{154} Darwin, \textit{Loves of the Plants}, unpaginated preface.
\textsuperscript{156} Haut, “Reading Flora,” 245.
The larger typeface and humorous tone of the proem conspire to support this reading.

Furthermore, the extensive scientific footnotes repeatedly relate even the more risqué poetic illustrations to facts that present the personifications as essentially accurate, and for that reason serving a valuable pedagogical function. This has the effect of mitigating against a reading in which the personified plants are understood to represent the sexual appetites and behaviours of the British. For example, Silene (Catchfly), a flower characterised as a promiscuous “harlot-band” (1.133.14), is depicted as luring its victim swains with a “viscous snare” (1.132.14) of honey, terminology that privileges literal description over the poetically apposite. The interest and mnemonic value added by such descriptions are emphasised in the early reviews, none of which appear to consider the possibility that such images might send inappropriate messages. Following a passage in which the explicitly polygamous Iris is described, the English Review in 1789 noted only its appropriateness to the subject and its effectiveness, stating that

by these passages the reader will see how beautifully the sexual system of Linneus may be improved by poetical allusions; but these are not the only subjects in which our author displays his genius; even the dull class of cryptogamia, which has so often wearied many an industrious botanist, is made interesting by a lively imagination.157

The choice of cryptogamia (clandestine marriage) here highlights the reviewer’s obliviousness to hints of subversion, given that the sympathetic and moving portrayals of secret marriages may reasonably be understood to be challenging social norms.

Darwin’s detailed footnotes and multiple introductions, distinguishing between the mechanics of the Linnean system and the Ovidian verse, also decrease the likelihood of readers interpreting his personifications as gratuitous, inappropriate or

exaggerated by separating the “hard science” of his work from the looser analogies, which are given the status of a trivial amusement and a crib to make the poem easier and more accessible. The English Review (1789) highlights this dual function of the verse when it points out both its poetic merit, and the keys it provides to more serious scientific understanding: “this account of Tremella’s transformation would have done honour to Ovid’s Metamorphoses, and is quite in his style….The reader will observe the words particularly descriptive of the class and order of the plants are in Italics.”158 Darwin’s readers for the most part followed the distinction he establishes between the two parts of the poem, taking it seriously as a scientific and educational work despite the light-hearted tone of many of the metamorphoses. Horace Walpole, a great admirer of Darwin’s verse, understood the science to be the focus of the content, but found this frustrating and suggested to Hannah More that if you are not a naturalist, as well as a poetess, perhaps you will lament that so powerful a talent has been wasted to so little purpose, for where is the use of describing in verse what nobody can understand without a long prosaic explanation of every article.159

The acceptance of Darwin’s metaphors as largely non-controversial is likely to have been assisted by the increasingly wide adoption of Linnaean terminology by the scientific establishment, itself quite sexually explicit. Darwin himself weighed into this debate with the publication of his translations of Linnaeus’ works, engaging in an ongoing debate with fellow Lunar Society member William Withering in the 1770s and 1780s over the suitability of even relatively abstracted sexual language for female botanists. Withering’s botanical nomenclature was unapologetically bowdlerized to accommodate his female readers, and his popular Botanical Arrangement of All the Vegetables Naturally Growing in Great Britain (1776) removed all reference to sexual reproduction as the foundation of the Linnean system “from an apprehension that botany in an English dress would become a favourite amusement

with the ladies.”¹⁶⁰ This issue remained a concern for other contemporary writers in the same field, such as William Curtis, who sought to explain the Linnean system to his readers in the terms “least objectionable.”¹⁶¹

Darwin, conversely, emphasised the importance of translating the Linnean system literally and accurately, and in his own translations of Linnaeus (published as the work of the Botanical Society of Lichfield) argues that the sexual distinctions obscured by Withering “are essential to the philosophy of the system.”¹⁶² He also suggests that the introduction of Anglicised and desexualised names is unscientific as the names either “bear no analogy to those of LINNEUS, or are derived from such as he has rejected, or has applied to other genera; and has thus rendered many parts of his work unintelligible to the latin [sic] Botanist; equally difficult to the english [sic] scholar” (ii). While forced to pay lip service to the controversy over the use of sexualised language, conceding that the terms “virility” and “feminality” have been replaced by “male” and “female” “on account of the greater delicacy of modern language” (v), Darwin emphasises throughout the preface the importance of accuracy. By including both “latin” and “english” botanists within his audience, Darwin undermines Withering by suggesting that his bowdlerised text is unscientific and inappropriate for the well-educated, and redefines the terms of the debate from the social acceptability of the sexual system to the ability of introductory works to instruct lay readers in what is portrayed as a serious and useful study. Darwin’s comprehensive success in the debate on the basis of accuracy and the widespread adoption of his translation’s terminology, including by Withering himself in later editions, reinforced a candid recognition of the fact of sexuality in plants as being more important than censorship.¹⁶³

The depiction of anthropomorphised sexual behaviour in *The Loves of the Plants* also works against a reading of the poem as elevating natural passion over prevailing

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¹⁶¹ See Curtis, *Linnæus’s System of Botany*, 2. This explanatory footnote is affixed to the first mention of the word “male” in the overview of the classification system.
social standards. The images of sexuality employed are notable for their conventionality, with Janet Browne observing that “Darwin’s personal attitude to women or their emancipation is less significant than the limited and entirely traditional nature of his images, which reflect more generally held views about women and the relations between the sexes.”164 Women’s sexuality is portrayed along conventional lines, with many celebrations of modesty and virtue and portrayals of promiscuity largely limited to the figure of the femme fatale and the foreign or exotic woman. The depiction of Anthoxa is typical of Darwin’s portrayal of virtuous individuals assumed to be British, emphasising monogamous marriage, wholesome country life-styles and domestic harmony:

Two gentle shepherds and their sister-wives
With thee, ANTHOXA! Lead ambrosial lives;
Where the wide heath in purple pride extends,
And scatter’d furze its golden lustre blends,
Closed in a green recess, unenvy’d lot!
The blue smoak rises from their turf-built cot;
Bosom’d in fragrance blush their infant train,
Eye the warm sun, or drink the silver rain. (1.185-92.10)

Numerous other positive portrayals of women are not sexually oriented, and focus on the explanation of modern industries or the praise of labour and learning such as Rubia, who dyes cloth with the assistance of “four favour’d youths aloof” (1.325.31). Later editions also include Papyra, whose “three favour’d youths” (2.119.86) are “the fond disciples of the studious Fair” (2.120.86) who learn from her.165

Femmes fatales and foreigners dominate the more salacious episodes, with Ninon seducing her own son (1.125-30.13), culminating in his suicide, and the polygamous marriage of the chaste Mimosa occurring in an eastern harem (1.256.26). Other episodes in which males are portrayed as sexually aggressive, such as Zephyr who “tears with rude kiss [the Nymph’s] bosom’s gauzy veil/And flings the fluttering

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kerchief to the gale” (1.287-88.28), involve classical figures in allegorical episodes which, as digressive epic similes, are not particularly suggestive of such behaviour as a literal characteristic of vegetable nature. The Tahitian orgy mentioned above, in which couples “seal with muttering lips the faithless vow/licentious Hymen joins their mingled hands” (4.400-6.165), safely involves only Pacific Islanders, notorious in eighteenth-century travel literature for having liberal sexual practices. Alan Bewell has suggested that such descriptions had the effect of relativising British sexual practices, reminding readers “that human notions of marriage and morality were purely cultural phenomena rather than attributes independently bestowed by a creator.” While this may well be true, Darwin’s clear stereotyping of such practices as the province of “foreign” cultures appears to have largely insulated the poem against accusations of subversion. The passage is even singled out by the English Review (1789) for its artistry, with the reviewers declaring that they “shall not scruple to obtrude the conclusion of this canto on such of our readers as have a taste for the elegancies of poetic fancy.”

The places in which the poem occasionally deviates from these perceived natural categories, and presents negative aspects of nature in ways that are not morally improving, are criticised by the English Review:

If it should be urged that many tragedies present us with distressful objects without this relief [of virtue triumphant over every difficulty], we might answer that such as do are rarely esteemed by enlightened minds, unless where some signal punishment await the delinquent. We have been the more particular on this subject because we think our author’s third canto is rendered much less interesting by abounding with horror in too quick a succession, and without any relief.”

Additionally offensive to the reviewer is the blurring of traditional categories and folkloric associations, resulting in “several innocent plants brought to view to introduce similes, or, as the author would wish them to be called, episodes, of

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168 Ibid., 129.
everything horrible." These criticisms emphasise both the extent to which discourses of morality were entwined with popular science writing at this time, but also the degree to which *The Loves of the Plants* was evaluated in a generally positive manner in terms of its morality rather than being considered exempt from moral criteria.

Suggestions of raciness are also deflected by the pronounced element of humour in the depiction of more provocative relationships, such as polyandry. This arrangement is relatively rare in Darwin’s poem as most flowers with more females than males are portrayed as involving competition between as yet unsuccessful suitors. Where a polyandrous marriage does take place, it usually involves giant females such as Kleinhovia, a “Gigantic Nymph,” the “grace and terror of Orixa’s plains” who “bears her trembling lovers in her arms” (1.157-164.16). Similarly, the Iris, who weds “three unjealous husbands” (1.72.8), “owns a fiercer flame” (1.71.8), one which characterises her as dominating and scary as well as passionate, an image reinforced by the note which observes that “the large stigma or head of the female covers the three males, counterfeiting a petal with its divisions” (8). Darwin’s humorous treatment of this potentially inflammatory topic is reflected in the light-hearted response of readers such as Walpole and Berry, who did not seriously apply the principles described in the poem to the behaviour of people, or see the poem as inviting them to do so.

**Politicisation and Reaction**

As the 1790s progressed, however, the reception of *The Loves of the Plants* along with that of many other texts became increasingly politicised, and readings emphasising the possible analogy between Darwin’s plants and human sexual behaviour became more prominent. This was to some degree a side-effect of the extensive use of allegory by Jacobin writers to avoid prosecution, prompting conservatives to scour a

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169 Ibid., 129.
wide variety of genres for traces of sedition.\textsuperscript{170} Satirists began to suggest that Darwin’s sexualised language was a corrupting influence on his female readers in particular. It is the views of these anti-Jacobin satirists – most notably T.J. Mathias, Richard Polwhele, and The Anti-Jacobin, or Weekly Examiner’s team of George Canning, Hookham Frere and George Ellis – that have exerted the strongest influence on twentieth-century interpretations of Darwin’s work.

The anti-Jacobin satirists portray the late Enlightenment as a period in which traditional mores increasingly weakened, giving rise to widespread sexual libertinism particularly associated with the French Revolution. Positioning themselves as a conservative bulwark against the Gallic revolutionary tide, their works argue that a return to traditional religious and sexual values is necessary to avert the threat of a revolution in England. The two most popular and influential of these satires to accuse Darwin of using inappropriately sexual language were T.J. Mathias’s The Pursuits of Literature and The Anti-Jacobin, or Weekly Examiner’s The Loves of the Triangles. Published in 1794 to critical derision and excellent sales, The Pursuits of Literature went through more than nine editions before 1800, spawning numerous responses and spin-offs. The politically conservative poem pillories a wide range of authors, ranging from radicals such as Godwin and Priestley to popular poets such as William Hayley, whose writing style Mathias simply disliked. Mathias, noting in a footnote that “it is a matter of some curiosity to me to conceive, how young ladies are instructed in the terms of botany, which are very significant,”\textsuperscript{171} mocks Darwin’s metaphors in lines even bawdier than anything on display in The Loves of the Plants:

In filmy, gawzy, gossamery lines,

With lucid language, and most dark designs,

In sweet tetrandryan, monogyan strains,

Pant for a pystill in botanick pains;

On the luxurious lap of Flora thrown,

\textsuperscript{170} See Scrivener, especially 12.

\textsuperscript{171} Mathias, Pursuits of Literature, 57.
On beds of yielding vegetable down,
Raise lust in pinks; and with unhallow’d fire
Bid the soft virgin violet expire.\textsuperscript{172}

The ultra-conservative \textit{Anti-Jacobin, or Weekly Examiner’s} burlesque “The Loves of the Triangles” similarly insinuates via innuendo that Darwin’s poem is titillating, even pornographic. When the Darwin-character “Mr. Higgins” claims that he has chosen the topic of Algebra, he adds that “the more rigid and unbending stiffness of a mathematical subject does not admit of the same appeals to the warmer passions, which naturally arise of the sexual ... system of Linnaeus.”\textsuperscript{173}

Mathias’ and Canning’s comments about the sexual threat posed by the language of the Linnaean system seem considerably less significant, however, in comparison to their portrayal of writers they perceived as genuinely promoting libertinism. These included Richard Payne Knight, author of \textit{The Worship of Priapus}, a text which discussed the penis as an object of religious veneration. Knight is described as a serious threat to public morals, with Mathias coupling disparaging remarks about his works with a series of verses lamenting the decline of monogamy in British society, and describing \textit{The Worship of Priapus} as combining “all the ordure and filth...with a new species of blasphemy.”\textsuperscript{174} The \textit{Anti-Jacobin, or Weekly Examiner} likewise associates Knight with the decline of monogamy in a parody of his didactic poem \textit{The Progress of Civil Society}, including amongst its topics “Concubinage recommended” and “Freedom the only Morality.”\textsuperscript{175} Mathias’ attacks on Darwin in particular pale in light of his criticism of Matthew Lewis’ libertine novel \textit{The Monk}, in which he passionately advocates the author’s prosecution for obscene libel.\textsuperscript{176}

In contrast, both Mathias and \textit{The Anti-Jacobin, or Weekly Examiner} attack Darwin’s sexualised metaphors primarily on grounds of taste. While Mathias accuses Darwin of using inappropriate language, arguing that “modern ears are absolutely debauched

\begin{thebibliography}{99}
\bibitem{172} Ibid., 57.
\bibitem{174} Mathias, \textit{Pursuits of Literature}, 69-70.
\bibitem{175} Anon., “Progress of Man,” 182.
\bibitem{176} Mathias, \textit{Pursuits of Literature}, 239-43.
\end{thebibliography}
by such poetry as Dr. Darwin’s, which marks the decline of simplicity and true taste in this country,” he concedes that “when young minds are right instituted in [the works of Pope and Dryden] they may, without much danger, read such glittering verses as Dr. Darwin’s.” Although Mathias expresses a desire that naturalists be more religious, and trenchantly parodies sexualised botanical language, ultimately he portrays Darwin’s innuendo as not much more than a travesty of good style, comparing his “exotic poetry” to the “strength, simplicity and dignity” of Dryden and Pope. The Anti-Jacobin, or Weekly Examiner similarly emphasises the silly rather than dangerously erotic nature of the poem in its description of the seduction of a rectangle by a parabola:

And first, the fair Parabola behold,
Her timid arms, with virgin blush, unfold!
Though, on one focus fix’d, her eyes betray
A heart that glows with love’s resistless sway;
Though climbing oft, she strive with bolder grace
Round his tall neck to clasp her fond embrace,
Still e’er she reach it, from his polished side
Her trembling hands in devious tangents glide.

Although deliberately emphasising the ridiculous, the bawdiness of both “The Loves of the Triangles” and the Pursuits suggests that the issue is not sexual explicitness per se, but whether or not the content of the work is perceived to pose a real risk of encouraging libertine behaviour.

Another literary contribution to the debate, The Unsex’d Females (1798), by the vehemently anti-Jacobin Reverend Richard Polwhele, highlights the importance of audience and interpretation rather than the avoidance of sexual language, which is in fact employed abundantly by Polwhele to pillory botanising women:

With bliss botanic as their bosoms heave,
Still pluck forbidden fruit, with mother Eve,

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177 Mathias, Pursuits of Literature, 56-7.
178 Ibid., 15.
179 Canning et al., “The Loves of the Triangles,” 221.
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.180

For Polwhele, whose poem accused Mary Wollstonecraft and other female authors of personal and political immorality, the problem was the use of Linnaean language by an inappropriate readership – namely women. In a lengthy footnote early on in the poem, he defends Darwin’s poem against the “clamour of the poetic sparrow-hawks,” in particular Mathias, and praises in fulsome terms the beauty and accuracy of his pictures, describing them as “the most beautiful, in short, that were ever delineated by the poetic pencil.”181 As Asia Haut points out, for Polwhele “it is…not the botanical text itself that is reprehensible, but rather the female reader’s intellectual engagement with those texts and the analogies that she might subsequently draw.”182 This form of analogical reading is portrayed as a potential danger arising from weak or already deviant female minds such as Wollstonecraft’s, rather than an inherent feature of the text or one which it actively encourages.

These satires did not occur in a vacuum, with Mathias in particular attracting a variety of literary responses defending his targets, and periodical reviews criticising his personal attacks as providing a poor moral example. The Monthly Review described him in 1797 as “frightful” and remarked caustically that “Mr. Burke had pre-occupied the avenue of political, and Mr. Wilberforce that of spiritual terrorism: it was reserved for this very ingenious and learned writer to distinguish himself as a literary alarmist.”183 Representative of the most extreme conservatism, Mathias, Polwhele and The Anti-Jacobin, or Weekly Examiner were significant critics among Darwin’s readers but their ideas were hardly shared by the majority, who ensured the continued popularity of The Loves of the Plants throughout the 1790s. Nevertheless, their view of the sexual politics of Linnaean writing has been

180 Polwhele, Unsex’d Females, 10-11.
181 Ibid., 10-11.
182 Haut, “Reading Flora,” 253.
particularly influential on studies of the reception of Darwin’s poetry. One result of this has been the frequent portrayal of Darwin’s reception in the 1790s as a pattern of liberal acceptance followed by conservative rejection, rather than the more consistently positive response by both liberal and conservative readers that the evidence seems to suggest. Londa Shiebinger’s account is representative, in which she notes that

remarkably, neither Darwin’s style nor his liberal politics disturbed the public when his *The Loves of the Plants* first appeared...the Enlightenment had... ushered in more tolerant views of human sexuality. Sex was no longer seen as a sin or vice, but as part of the economy of nature – a natural impulse that should find free expression...Sexuality expressed within the bounds of upper-class sensibility and decorum could be tolerated because it did not pose a serious threat to social order.184

For Shiebinger, this Enlightenment period of tolerance of the naturalness of sexual expression was then “shattered” by the French Revolution, resulting in a widespread backlash against Darwin’s poem.185 Alan Bewell’s characterisation of Enlightenment botanical theory as giving “rise, during the period of the French Revolution, to more radical writing which used the analogy between plant and human sexuality as the basis for a revolutionary kind of pastoral writing aimed at subverting conventional wisdom about gender and sexuality,”186 and his situation of *The Loves of the Plants* within this revolutionary tradition, further reinforces the anti-Jacobin view of such writing.

These accounts of late-eighteenth-century views of human and plant sexuality characterise the period as prefiguring modern views of sexual drives - particularly those of Freud - insofar as they depict an understanding of the expression of the sex drive as natural and healthy, and its repression undesirable. The circulation of similar ideas in the radical culture of the 1790s tends to support this view, with the healthiness of sexual expression emphasised in works such as Godwin’s *Memoirs of

184 Schiebinger, “Gender and Natural History,” 174-75.
185 Ibid., 175.
the Author of the Vindication of the Rights of Woman (1798) and Knight’s The Worship of Priapus. Coupled with a developing emphasis on the importance of sexual satisfaction within companionate marriage, the eighteenth century appears as a time of emerging sexual modernity. Certain aspects of The Loves of the Plants have helped feed its association with this historical narrative, most importantly its demonstration of vibrant sexuality as a natural force, and its description of a wide variety of sexual arrangements.

However, it is important to note that these texts appeared in a context where the belief that it is natural and healthy to express a strong, innate sex drive outside of a monogamous marriage was not the norm. The botanical image of luxuriance used by Mathias and alluded to by Polwhele underlines the importance of this conservative understanding of female sexuality in particular for the period - women, while admittedly possessed of sexuality, would not seek to express themselves in socially unacceptable ways if they were left in a natural state rather than having their minds cultivated by licentious books and role models. Although male sexuality was treated with more permissiveness and strong sexual desire treated as more natural for men, monogamy still remained the social ideal and concern for the morality of both sexes persisted in public discourse.

Alan Bewell has sketched a lineage of eighteenth-century works uniting botanical imagery and an ethnographic understanding of human sexuality, some of which are blatantly pornographic.187 The scathing reception of these earlier erotic texts in the most popular reviews indicates that explicitly titillating works – while widely available - remained outside the mainstream for both male and female audiences. Of The Fruit Shop (1765), the Critical Review claims that “we are almost ashamed to say that we have looked into this abominable publication…. [The reader] will not find even the smallest sprinkling of salt to preserve it from putrefaction.”188 This pattern continues later in the century with the reception of other sexually-explicit satires

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which employed botanical imagery such as James Perry’s *Mimosa: or, the Sensitive Plant*, which received a pithy four-word notice in the *Monthly Review*: “ability prostituted to indecency.”

The widespread praise of *The Loves of the Plants* indicates that most reviewers did not consider the poem to fall within this existing tradition of botanical erotica. The reviewers’ response also suggests that the acceptance of the sexual content in Darwin’s work by most readers in the late 1780s and early 1790s did not arise primarily from liberal attitudes towards sexuality. While it is generally the case that sexual content in botanical works seems to have been more tolerated in the mid- to late eighteenth century than in the early nineteenth century, only botanical works not considered to be titillating or engaged in promoting libertinism received positive mainstream reviews. Furthermore, even Darwin’s harshest critics do not seem to have taken him particularly seriously as a promoter of libertinism – especially when compared to more radical writers such as Knight and Godwin. This suggests that while the idea of sexuality as a part of nature was widely accepted in the late eighteenth century, this concept was not always or automatically associated with liberal views towards actual sexual practices. This allowed Darwin to personify numerous non-monogamous arrangements in the Linnaean system without being seen to draw a serious analogy between plant and human promiscuity or undermine monogamy as a social norm.

**Sexuality and Darwin’s Female Imitators**

The distinction between sexuality *qua* sexuality and libertinism is particularly important when considering the work of female authors such as Charlotte Smith, Frances Rowden and Maria Montolieu, all of whom published poems for children in the early 1800s that were influenced by *The Loves of the Plants*. Critics such as Sam George, Judith Pascoe and Ann Shteir have identified the importance of *The Loves of the Plants* as a model for these women’s botanical poems with scientific notes, and for

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understanding their place within a continuum of Linnaean texts. George, Pascoe and Shteir have primarily read these works within the context of late-eighteenth-century controversies over the sexualised language and personification of Linnaean botany, with a key concern being the appropriateness of Linnaean sexual description for a female audience. Recently a critical consensus of sorts has formed in which Charlotte Smith and Frances Rowden – in particular – are seen as bowdlerising or repressing Darwin’s sexual content for the sake of decorum, and out of the belief that such topics were not suitable for a female author.190 However, the emphasis placed on female poets’ repression of the more blatant sexual aspects of the Linnaean system elides their active engagement with female sexuality, which derives as much from the use of flowers as moral exemplars in earlier conduct literature as from Linnaean botany.

Readings which figure Darwin and his women imitators as locked into a simple dichotomy of male licentiousness versus female censorship obscure the strong and persistent presence of sexuality and eroticism in botanical poems by women, and at the same time downplay the fact that most of Darwin’s contemporaries did not find his work morally offensive. The dominant critical image of women being morally tainted by their association with *The Loves of the Plants*, either as readers or writers, is further problematised by the Rev. Richard Polwhele’s lengthy defence of Darwin against the accusations of Mathias in his satire *The Unsex’d Females*. Frequently treated as a seminal text in the demonising of the botanising woman as licentious and politically Gallic, Polwhele’s diatribe elevates Anna Seward and Hannah More as examples of female literary virtue – both of whom expressed admiration, in Seward’s case publicly and extensively, for Darwin’s poetry.191

Nonetheless, it remains the case that sexual frankness was more acceptable in male authors than in female authors. Ann Shtier and Sam George have convincingly

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190 See especially Shteir 62-73, George 122-133 and Pascoe 200-201.
191 Seward devotes much of her *Memoirs of Dr. Darwin* to a generally sympathetic reading of his poetry. More admired Darwin’s writing style, but found his argument for plant sentience implausible (295). See also Polwhele’s *Unsex’d Females*.
shown that Darwin’s female imitators, such as Smith and Rowden, downplay the sexuality of his work, omitting explicit accounts of sexual congress and placing their flowers within more explicitly British and domestic settings associated with a purer, more innocent version of vegetable life. The fact that their floral fables address other topics apart from sexuality - such as vanity, education, and relationships with brothers, sisters and parents - has led Shteir and George to suggest that Darwin’s focus on sexuality has been altogether repressed in these works.\textsuperscript{192} To some extent, this argument is prompted by the authors themselves, all of whom claim to make their language more appropriate for young, female audiences. Smith’s mother character, Mrs. Talbot, informs her children in \textit{Conversations Introducing Poetry} that she will be dressing her flowers in simpler garb than Darwin’s (2:170), while Rowden indicates that since Darwin’s language is “frequently too luxuriant for the simplicity of female education” (vii-viii), she will pen her own verses in imitation of his style.\textsuperscript{193} In similar vein, Montolieu notes in one of her poems on plant courtship that

\begin{quote}
To Darwin, whose Botanic song
Wantons their wild amours among
I leave the daring task:
To paint the gentler pains of love,
Whose flattering doubts affection prove,
Oh Muse, is all I ask! (74)
\end{quote}

While it is true that in all cases Darwin’s footnote descriptions of the technicalities of reproduction are omitted, and that the sexual focus of the Linnaean system is minimized in their use of his terms, these women writers do nevertheless focus explicitly on courtship, sexuality and romance, both virtuous and “wanton.”

All three authors, Smith, Rowden and Montolieu, retain a high level of concern with embodiment, sexuality and eroticism in their poetry, paying particular attention to the beauty and sensuality of flowers, which often appear as the subjects of a

\textsuperscript{192} See Shteir 62-66, 72 and George 124-131.
\textsuperscript{193} Due to frequency of citation, references to Smith’s \textit{Conversations Introducing Poetry}, Rowden’s \textit{Poetical Introduction to the Study of Botany} and Montolieu’s \textit{Enchanted Plants} will appear in-text. All three works are referenced by page number only as the editions used do not contain line numbers.
sexualised gaze despite their characterisation as modest and retiring. Smith’s description of Flora and her nymphs in the poem “Flora” – included as the final poem in Conversations Introducing Poetry – contains more than a hint of erotically suggestive language. The simplicity of Flora’s garb, emphasised by Smith in the conversation introducing the poem, is constantly in tension with more wanton elements which threaten to break loose, such as “some wandering tresses of her radiant hair/Luxuriant floated on the enamour’d air” (184). “Luxuriant” is a particularly loaded term in this context, as luxuriants were associated in botanical writing with the artificial cultivation of flamboyant, immodest, and ultimately sterile beauty. Luxuriants were condemned as subjects of botanical study by writers such as Jean-Jacques Rousseau who considered them to be “monsters,” beautiful but barren, with no purpose other than to adorn. The nymphs who “wanton” (187) in Flora’s smile and breathe “voluptuous odours” (186) around her are portrayed by Smith as exotics in revealing clothes, such as the Calyxa, for whom “a brown transparent spatha formed her vest/... And a light sash of spiral Ophrys press’d/Her filmy tunic, on her tender breast” (186-7). The particular eroticisation of the exotic occurs elsewhere in the Conversations, in Smith’s description of the West Indian Cactus grandiflora, a “midnight beauty” who slowly unfolds “her golden zone, and thro’ the gloom/to thee her radiant leaves display” (94).

Smith’s tableaux capture Darwin’s sense of the pervasive natural sexuality of the plant world, personifying the flowers as sensual beings who unveil themselves simply to be admired. Her roses compete for attention in various states of undress, in much the same way as Darwin’s belles and beaux:

    The yellow Rose her golden globe displays;
    There, lovelier still, among their spiny sprays
    Her blushing rivals glow with brighter dyes,
    Than paints the Summer Sun, on western skies;
    And the scarce ting’d, and paler Rose unveil

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194 Further references to Smith are to volume 2 of the Conversations, unless otherwise specified.
195 For further discussion of Rousseau’s depiction of luxuriance and its influence, see George 30-35.
Their modest beauties to the sighing gale. (187)

It is important to note, however, that Smith’s flowers are not portrayed as sexually threatening or in any way indecorous. The moral she draws in the conversations surrounding the poem centres not on sexual behaviour but on taste and propriety, such as not showing off one’s learning in company. As was the case with many of her contemporaries, Smith did not translate the eroticism of Linnaeus’s and Darwin’s botanical analogies into an understanding of wantonness existing naturally among humans. Her Darwinesque tendency to particularize uninhibited sexuality in exotics and in flashy beauties such as roses reinforces the general picture of British sexual temperance found in both her work and in The Loves of the Plants.

Frances Rowden and Maria Montolieu, two other female poets who reference Darwin, explicitly address sexual behaviour as a moral issue. Aimed at a slightly older audience, their poems assume a reasonably high level of awareness of sexual behaviour, and they retain Darwin’s characterisation of the female as the primary agent in courtship. Romance is a frequently recurring theme in Rowden’s Poetical Introduction to the Study of Botany (1801). Several of the flowers, including Fuchsia, Disandra and Mignonette, are pursed by numerous swains in passages reminiscent of Loves of the Plants. As is the case in much of Darwin’s poem, the flowers are either coquettish or virtuous rather than cavorting in consummated relationships with multiple men. Less innocent sexuality is not avoided as a topic. Thyme is portrayed as a seductress who ruins young boys, while the story of Cista deals explicitly with the consequences of pre-marital loss of virginity, resulting in grief and madness. For the mother, hope fades “when flatt’ry’s art/Robs the young virgin of her simple heart;/O’er her spoil’d flow’r she droops with pensive care” (169). Generally, however, Rowden’s portrayals of sexual attraction and intimacy are positive, occurring within a gentle, affectionate courtship or marriage. One instance of this involves the daughters of the Strawberry who “yield, with modesty, to virtuous love” (165). Several verses, in a manner similar to Smith, also suggest a sensuality which is benign and pervasive throughout nature, with the sylphs protecting a tea
A plant called on to “let smiling love lurk in its silken cells/Sport ‘mid its leaves, or seek its floret bells” (172).

Maria Montolieu’s collection of fables The Enchanted Plants (1800) is even more concertedly focused on courtship and romantic love. One of its tales, concerning the courtship of a virgin Jonquil and a Butterfly, refers directly to Darwin. The Jonquil is overcome with jealousy when her beau becomes enamoured of a tawdry hot-house Amaranth. Her beau returns to her, but his faithfulness is left open to question. While eschewing explicit sexual description, the poem’s metaphors make the point obvious: “he worshipped at her silken shrine/And fluttering round her sweets divine/Imbibed her fragrant breath” (75). After fearing she has lost him, the jonquil protests “didst thou e’er know thy Jonquil trip?/Bee, Wasp, or Fly, my nectar sip?/Reserved for thee alone” (76). Sexual licentiousness is dealt with explicitly in a number of fables, in which flowers behave promiscuously (“Thy beauties by Monarchs caressed/Thy favours even cottagers share” 63), or slander each other with sexual innuendos (“You know on these subjects she’s wise/That this innocent paints red and white” 13).

Reviews of Smith’s, Rowden’s and Montolieu’s work were largely positive; in several cases the virtuousness of their poems was praised. The Anti-Jacobin Review, a conservative periodical founded after the original Anti-Jacobin, or Weekly Examiner ceased publication, is one of the few which criticises Rowden for imitating The Loves of the Plants, wishing “that our author had not taken Dr. Darwin for her model,” but praising her for avoiding Darwin’s “meretricious” imagery, a term used by the review to imply excessive use of ornament as much as inappropriately sexual description.196 Given their consciousness of the need to adopt greater “simplicity” of language, it is unlikely that the reviews would have been quite so positive if these women poets had employed Darwin’s level of anatomical frankness. Nonetheless,

most reviewers and readers do not seem to have considered that the sexualised botanic personifications of Darwin’s work – or that of his imitators – were inappropriate for a female audience. Such tolerance suggests that the majority of late eighteenth- and early nineteenth-century readers distinguished between accounts of sexual activity designed for the purpose of illustrating a scientific or moral point, and explicit genital details or erotic descriptions intended to arouse the audience.

The question still remains, however, as to why women would choose to include sexual content in botanical verse, especially when the poems tend to obscure the sexual nature of Linnaean classification. The strong presence of sensuality and romance in women’s botanical poems contrasts with prose genres of popular botanical writing, by both women and men, such as the introductory guide and the familiar dialogue, from which such themes are generally absent. By the 1790s and early 1800s, female authorship of such texts – particularly those aimed at women and children – was increasingly common, and works such as Priscilla Wakefield’s Introduction to Botany (1796) and Maria Jacson’s Botanical Dialogues (1797) received favourable reviews and achieved considerable popularity. In this context, the choice by these authors to write botanical verse in which plants are personified and situated within a variety of social relationships and contexts – including sexual ones – has important implications for understanding the genre and purpose of these poetical works.

The scope for including scientific content in a didactic poem is limited compared to that of a dialogue or textbook. Darwin’s Loves of the Plants is arguably the most successful attempt to combine science and poetry, with its extensive notes and preface on the Linnaean system, but in recognition of the limitations of the genre, he

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197 Periodical reviews of The Loves of the Plants, all of which were positive, do not distinguish between male and female readers, despite the suggestion in the Proem that Darwin’s target audience includes women. Had Darwin’s poem been considered unsuitable for certain audiences, it is likely that this would have been mentioned; eighteenth-century reviews generally did not flinch at identifying a text as containing inappropriate sexual content. See for example the discussion of Mimosa: or, the Sensitive Plant above.
presents the poem as an introduction to more serious works. The poems by Smith, Rowden and Montolieu contain far less scientific content in their notes. While Smith’s Conversations frequently veer off from morality, manners and taste into natural history, her pedagogical voice is directed towards simplification, and is frequently self-deprecating in regards to her scientific knowledge. The Darwinian poem “Flora” in particular has a small number of very simple scientific footnotes relative to other parts of the text, in contrast to more densely annotated poems by Smith such as Beachy Head. Rowden includes an extensive illustrated preface on the Linnaean system, and her work contains by far the most scientific content of the three. Her notes, however, are generally limited to brief discussions of the individual plant’s anatomy and the habitats where it can be found. Montolieu’s notes are extremely short and few in number, serving primarily to identify the scientific name of the plant described. Additional details when they do appear are brief. Montolieu, too, limits her scientific authority in the advertisement, modestly describing “the few Notes she wrote for her children ... which may be of use to young readers” (Enchanted Plants) as a simple, maternal aid.

Rowden’s prefatory claim that she has selected flowers for the moral lessons that they impart provides a key to the problem of genre. Whereas Darwin employs imagination to induce his readers to “cultivate the knowledge of Botany,” his female imitators employ science and contemporary interest in botany as vehicles for imparting wider-ranging teachings on morality and social behaviour. As such, science education becomes a secondary goal that, in the case of Montolieu in particular, is peripheral to the main focus of the text. The sexual themes in these works, rather than being viewed simply as vestiges of Linnaeus’s and Darwin’s fondness for personification of the sexual system of classification, can best be understood by considering the place of these poems within the wider genre of didactic poetry, in particular the numerous works in the late eighteenth century concerned with female conduct and domestic relationships, such as William Hayley’s The Triumph of Temper (1781) and Hugh Downman’s Infancy (1774-1776).

198 For example, volume I: iv-v.
This didactic genre includes a tradition of conduct-oriented poems that employ floral personification, including *The Florist or Poetical Nosegay and Drawing Book* (c.1780), *The Fables of Flora* (1771), and *The Poetical Flower Garden* (1778), works which are as important as antecedents to the poems of Smith, Rowden and Montolieu as Darwin’s *Loves of the Plants*. In these poems, virtue – both male and female – assumes a prominent position, and its sexual aspects are discussed without prudery. *The Florist* concludes with a description of a carnation-like flower it names the “Zone,” ending with a warning to female readers to keep their dresses on:

Let ev’ry nymph make that her choice,
To wantons never known;
And never but at Honour’s voice,
Unloose her virgin ZONE.199

Less explicitly, *The Fables of Flora* tells of a young male bee seduced by the “orient breast” of a dissolute pansy before being advised to choose a paler, more virtuous flower by an older, more experienced bee.200 The sexual knowledge assumed by these earlier eighteenth-century didactic works suggests that discussing topics such as seduction in works aimed at young women was not as significant a taboo as critics today might imagine; by attributing sexual agency to women, the texts take a conservative rather than progressive position that assigns females the greater share of moral responsibility in courtship and marriage.

The use of the didactic tradition by female botanical poets is not, however, limited to moralising on the subject of domestic sexual mores. Sam George has observed that women’s botanical texts “offered, in various ways and degrees, an emancipated space for women, allowing them access to the public sphere of debate. For instance, women could contribute to the formation of national identity via botany and the privileging of native plants therein.”201 While Darwin’s images reinforce British literary stereotypes of the blushing virgin and the femme fatale, his wide variety of

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199 Anon., *The Florist*, 64.
201 George, *Botany, Sexuality and Women’s Writing*, 95.
exotics make prominent the more liberal sexual practices of non-British cultures. This imagery reappears in Smith’s descriptions of exotic vegetation, but it is in the poetry of Rowden and Montolieu in particular that a more explicit agenda emerges. Their images of foreign plants include a contrast between the flamboyant exotic and the virtuous native, but transcend this simple distinction to describe the civilising powers of cultivation in British soil and the universality of domestic love. In Montolieu’s fable “Prejudice,” a young Myrtle insults a beautiful, exotic Orange tree, but is reproved by the tree who, sheltered and cultivated by British benevolence, displays superior manners and sensibility (16-17). Rowden draws on tales of Cook’s voyages to the south Pacific. She portrays Oberea, queen of Otaheite, pining in a Banana grove for Joseph Banks, as a suffering “widow’d fair” (243), suggesting traditional marriage and true love rather than the promiscuity stressed in earlier satires such as James Perry’s *Mimosa: or, the Sensitive Plant* (1779). Both Rowden and Montolieu emphasise the universal naturalness of conjugal harmony, suggesting that poor cultivation may be more responsible for its absence than a plant’s nation of origin.

The internationalisation of British morality in these poems is consistent with the breadth of their social commentary, perhaps the most significant aspect of the botanical fable. This genre allowed female authors to go beyond subtle, metaphoric intrusions into public debates and engage explicitly with a variety of contemporary political and social questions, including the war with France, the slave trade, and the significance of domestic affections and stability for ordered society. Rowden’s *Poetical Introduction* includes a lengthy, passionate argument against the slave trade and criticism of the French Revolution, the perceived decorum and seriousness of which is evident in the polite, measured rebuttal of her encomium to Wilberforce published by the *Anti-Jacobin Review*. Montolieu is also critical of Jacobin politics. The theme of despotic rule, especially by the “low born” (10), recurs in her fable “Cruelty,” a transparent pro-war allegory containing references to the French Revolution (“Nor from the dawn of day, till setting sun/Had guillotine more execution done” 55), and a conclusion in which a patriotic army defeats the noxious
usurper. Aimed at a younger audience, Smith focuses on more domestic themes, but nonetheless extends her critique to society at large, also addressing the horrors of the slave trade. Within this context, the prominent position of non-sexual relationships such as friendship, parenthood and fraternity in women’s botanical poems takes on a greater significance. While critics such as Shteir and George have attributed the use of these images to the repression of sexuality, they can alternatively be seen, along with the poem’s churches, governments and wars, as part of an expansive interest in social relations. In this Smith, Rowden and Montolieu reveal their closest ties to Darwin who, despite the title of *The Loves of the Plants*, engages with an equally wide variety of familial, social and political contexts.

Darwin’s *The Loves of the Plants* provided an enabling model for women, but not primarily on account of its scientific authority or sexually liberating possibilities. Didactic poetry allowed women to enter decorously and virtuously into the thornier realm of politics and discussion of social, familial and sexual roles. While clearly influenced by Darwin in their portrayal of a pervasive sensuality in nature and in women, the characterisation of female sexuality by Smith, Rowden and Montolieu illuminates a generic connection with conduct literature that they share with Darwin. At least as significant as the poems’ ties to Linnaean didactic verse, the tradition of botanical fables enabled women writers to present female sexuality as a positive, active, but essentially benign force that would naturally express itself in companionate marriage if not subjected to “luxuriant” cultivation. Perhaps more than any other readers of *The Loves of the Plants*, these women illustrate the eighteenth-century tendency to engage with Darwin’s account of the sexuality of the Linnaean system in ways that reinforce rather than subvert traditional forms of courtship and marriage.

The emphasis that twentieth-century critics and historians have placed on the treatment of sexuality in Darwin’s *The Loves of the Plants* has opened up many productive avenues of enquiry, and has in many cases inspired a more inclusive and informed approach to eighteenth-century botanical texts and their readers - both
male and female. Nonetheless, the tendency of many critics to read the work almost exclusively as radical and subversive - in some cases depicting the text as even more sexually provocative than T.J. Mathias, Richard Polwhele or The Anti-Jacobin, or Weekly Examiner argue it to be – has obscured the poem’s widespread popularity. These approaches have also tended to collapse the complex engagement of female readers and writers with the sexuality of Darwin’s work into a simple dichotomy of repression versus liberation and revolution. This is too reductive, especially considering that most women and men were quite accepting of Darwin’s depiction of a pervasive sexuality in nature and were unprudishly entertained by his personifications, while at the same time maintaining traditional beliefs about the value of monogamous marriage. This is not to suggest that the poem does not depict sexuality as a strong, natural force or contain erotic elements that can be read as challenging conservative sexual norms. However, many features of the work, together with contemporary readers’ generic assumptions, seem to have discouraged an analogical reading that seeks to associate the non-monogamy of the plant world with the human realm.
In Darwin’s didactic poem *The Economy of Vegetation*, scientific knowledge is depicted as capable of providing explanatory constructs for the entire universe, including realms such as the creation of the earth and the animation of living organisms that were still considered by many of his contemporaries to fall more properly within the domain of religion. This wide-ranging scope is symptomatic of a more general shift occurring over the course of the eighteenth century, both in the kinds of knowledge available to students of natural history and natural philosophy, and the purposes for which that knowledge was expected to be used. In contrast to the conception of natural history as a contemplative practice designed to increase human understanding of the divine – an approach prevalent in both the seventeenth and eighteenth centuries, exemplified by authors such as Milton and Thomson – Darwin positions knowledge of natural processes as important both for its own sake and for its utility in leading to the invention of technologies designed to improve the quality of human life.

Despite the radically materialist implications of Darwin’s views, his Promethean conception of human intellect as capable of understanding and improving on nature, and the theological ambiguity of much of the text, *The Economy of Vegetation* was uncontroversial when it was first published. Indeed, the poem was warmly received by both liberal and conservative reviewers, in contrast to the criticism attracted by the more explicit materialism and theories of biological evolution in Darwin’s later poem *The Temple of Nature*. Part of the explanation lies in the genres with which *The Economy of Vegetation* was associated — the physico-theological poem, a traditionally pious form, and the classical epic, a form devoted to exemplifying virtuous behaviour. Readers who brought these generic associations to the text tended to
focus on Darwin’s depiction of classical myths and tropes of virtue and progress rather than thinking critically about the implications of his science, an approach encouraged by Darwin’s emphasis on an aesthetic of the beautiful which focused attention on his art and rendered his portrayals of technological advancement Edenic and non-threatening.

Published in 1791 as Part I of the long poem *The Botanic Garden*, accompanying Darwin’s 1789 poem on the Linnean system of plant classification *The Loves of the Plants*, the *The Economy of Vegetation* received glowing reviews in major periodicals. The *English Review* (1792) commented on the ambitious nature of Darwin’s project, noting that Darwin “has the boldness to attempt explaining, in the language of poetry, the various changes and combinations of matter, or, to use his own language, to enlist imagination under the banner of science.” Far from considering this hubristic or indecorous, however, the reviewer had unstinting praise for Darwin’s efforts, stating that “it would be difficult to find a languid or halting couplet in any part of his performance; and when we consider that the work is perfectly philosophic, we cannot but wonder how it should be conducted with such easy connexion and poetical elegance.”

In addition, a number of the admirers of *The Botanic Garden* – including renowned literary figures such as William Hayley, William Cowper and Rev. Richard Polwhele – penned verses in praise of the poem that were published with later editions of the complete *Botanic Garden*. These poems are notable for their emphasis on images of Darwin’s work as casting light on the workings of nature, and their depiction of Darwin as a Miltonic figure who reveals nature’s divine inner vitality. For Hayley, writing on behalf of himself and Cowper in 1792, Darwin’s elucidation of natural processes is a “glory” that “seem’d to wake/New life in every flower.” Polwhele’s 1792 verses use even stronger terms, depicting Darwin as a force of illumination and

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202 Advertised as Part II, despite being published first.
204 Ibid., 161.
205 Hayley, “To Dr. Darwin,” xi.
praising not only his ability, as a scientist, to reveal new knowledge, but ascribing to him an almost prophet-like capacity to reveal the life of creation:

Yes ! – and, wheree’er with life creation teems,
I trace thy spirit thro’ the kindling whole;
As with new radiance to the genial beams
Of Science, isles emerge, or oceans roll,
And Nature, in primordial beauty, seems
To breathe, inspir’d by Thee, the PHILOSOPHIC
SOUL!206

These verses echo the imagery of an earlier encomium by the Rev. W.B. Stephens, written in praise of the Loves of the Plants, in which Darwin is characterised as piercing through the veil of night to reveal not only nature’s secrets, but the essence of life itself:

Tho’ willing Nature to thy curious eye,
Involved in night, her mazy depths betray;
Till at their source thy piercing search descry
The streams, that bathe with Life our mortal clay;207

Far from producing a materialist disenchantedment of the natural world, Darwin is portrayed as revealing nature’s true vitality and divinity.

While images of light and illumination also possessed secular meanings in this period, this characterisation of Darwin’s role as a poet places him firmly within the Miltonic tradition of Thomson, Akenside, Savage, Brooke and Blackmore, in which the image of science shedding light on the workings of nature continued to have strong religious connotations and in which science was valued primarily for inspiring awe of God’s creation. This remained a central trope of eighteenth-century didactic nature poetry, harking back to a pre-industrial understanding of science as a discipline that “aimed only at understanding the natural world. It was not supposed

206 Polwhele, “To Dr. Darwin,” vii.
207 Stephens, “To the Author of the Poem on the Loves of the Plants,” vii.
to be about craft production or the deliberate creation of physical effects."208 For example, in James Thomson’s “Winter,” it is suggested that when nature is studied, this knowledge will lead to an understanding of the order and perfection of creation:

Hence larger prospects of the beauteous whole
Would gradual open on our opening minds;
And each diffusive harmony unite
In full perfection to the astonished eye.209

While Savage, Brooke and Blackmore had become obscure by the 1790s, other exponents of the genre such as Thomson, Young, Akenside and Pope were still well known and were among the most reprinted didactic poets. Within this literary context, the scientific poet is not seen as a provocateur, or even primarily as a conveyor of original ideas, but rather as an illuminator of an existing order understood within an explicitly religious and moral framework.

The necessity of taking into account religious belief as an important factor for the early reception of The Economy of Vegetation is further indicated by the fact that the authors of the verses discussed above were themselves orthodox, and publicly criticised divergence from correct Christian understanding in their own poetry. The Evangelical Cowper frequently wrote on religious subjects, including in The Task a passage typical of pious late-eighteenth century nature poetry in its criticism of knowledge unguided by religious insight:

Full often, too,
Our wayward intellect, the more we learn
Of nature, overlooks her author more;
From instrumental causes proud to draw
Conclusions retrograde, and mad mistake.
But if his word once teach us, shoot a ray
Through all the heart’s dark chambers, and reveal
Truths undiscern’d but by that holy light,

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208 Dear, ‘What Is the History of Science the History Of?’ 394.
209 Thomson, The Seasons, 144.
Then all is plain.210

Hayley, while not a primarily religious writer, defends orthodox belief in the divinity of Christ in his poem “Epistle to a Friend, on the Divinity of our Saviour,” while the notoriously conservative Reverend Polwhele, whose own didactic poem of the late 1780s – The English Orator – includes an entire book devoted to the delivery of effective sermons, describes in “The Tomb of Rousseau” poplars that “tremble o’er the grave/Where a cold Deist’s bones are laid.”211 It appears then, that as late as 1792-3, Darwin’s work was not perceived to be problematically heterodox by many prominent Christian readers, who instead located his work and authorship within a religiously-oriented tradition of writing about the natural world.

The religious undertones of the verses by Hayley, Polwhele and Stephens are of particular interest in light of the poem’s reception after the 1803 publication of The Temple of Nature, Darwin’s last and most controversial poem in which he describes the process of biological evolution. This poem was widely criticised by reviewers for its materialism, and its removal of God as an effective moral agent. Furthermore, Darwin’s earlier works – including The Botanic Garden – were frequently identified at this time as expressing essentially the same philosophies. In a scathing review of The Temple of Nature, The Universal Magazine identified Darwin’s philosophies with the “heterodox tenets of Epicurus and his disciples” and complained that Darwin “is not content with two appeals to the sober judgement of men” in his prose works but is now “serving up his system twice again” in his poetry.212

The shift from an almost universally positive reception of the philosophies of Darwin’s work to widespread condemnation has frequently been explained as a result of initially liberal attitudes to religion and orthodoxy in the late eighteenth century giving way to conservatism following the French Revolution and the Evangelical revival. Norton Garfinkle, for example, has stated that “the initial

210 Cowper, The Task, 103.
indifference to the religious implications of Darwin’s scientific theories reflected a survival of the complacency characteristic of English thought in the four decades immediately preceding the French Revolution” and “in the absence of general opposition to the existing order, [educated Englishmen] saw no danger in permitting mild expressions of unorthodox opinion.”213

This explanation rests on the assumption that it is the readers’ attitudes towards the social and religious implications of Darwin’s radical ideas that change, while their understanding of the ideas themselves remains stable. However, this does not explain the widespread praise of Darwin’s works, frequently in religious terms, by commentators whose views were religiously conservative prior to the backlash of the late 1790s and the publication of influential satires such as The Loves of the Triangles (1798) and T.J. Mathias’s Pursuits of Literature (1794). The response against Darwin’s poems can, alternatively, be understood as reflecting fundamental changes in the way readers interpreted the content and message of Darwin’s texts, from an understanding of Darwin's ideas as fitting in with established orthodoxies, to a belief that Darwin was promoting a radical materialism incommensurate with views widely held before the Revolution as well as after it.

There are strong grounds for reading The Economy of Vegetation as a radically materialist text, and this complicates any explanation of the poem’s positive early reception, appearing as it did soon after the Birmingham riots of 1791 in a climate hardly favourable to such philosophies. A materialist reading is suggested by Darwin’s emphasis on the role of natural processes and the ability of humankind to discover and understand them. Darwin’s philosophies are based on a Deist understanding of God as the original creator of a universe that, endowed with natural laws, is subsequently able to function and develop without divine interference. The governance of the universe by nature comes to the fore in a striking depiction of Hershel’s theory that the stars are approaching each other:

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Flowers of the sky! ye too to age must yield,
Frail as your silken sisters of the field!
Star after star from Heaven’s high arch shall rush,
Suns sink on suns, and systems systems crush,
Headlong, extinct, to one dark centre fall,
And Death and Night and Chaos mingle all!
-Till o’er the wreck, emerging from the storm,
Immortal NATURE lifts her changeful form,
Mounts from her funeral pyre on wings of flame,
And soars and shines, another and the same. (4.367-380.190-1)

Subject to natural processes such as aging and death, the universe is also portrayed as being able to regenerate itself rather than being dependant on intervention from God. The key feature of these processes is that they can be known, with Desmond King-Hele observing that “although…[Darwin] often refers to the ‘Great First Cause’ with apparent sincerity, he was scornful of organized religion, and he included Credulity, Superstitious Hope and the Fear of Hell in his catalogue of diseases.”214 The cure, according to Darwin, was “to increase our knowledge of the laws of nature” and to “set the faculty of reason above that of imagination.”215

Darwin’s materialism is apparent even in the passage most celebrated as pious and sublime, a description of the universe exploding out of chaos that anticipates the “Big Bang” theory of creation:

“-LET THERE BE LIGHT’ proclaim’d the ALMIGHTY LORD,
Astonish’d Chaos heard the potent word; -
Through all his realms the kindling Ether runs,
And the mass starts into a million suns;
Earths round each sun with quick explosions burst,
And second planets issue from the first; (1.103-8.9-10)

214 King-Hele, Erasmus Darwin, 55.
215 Quoted in Desmond King-Hele, Erasmus Darwin, 55.
In a letter to Thomas Barret, Horace Walpole describes this stanza as “the most sublime passage in any author, or in any of the few languages with which I am acquainted.” If the verse is taken alone, Walpole’s emphasis on the sublimity of the passage is understandable – it meets several conditions of Edmund Burke’s famous definition, including great dimensions and the “terror” evoked by the violent energy of a rapidly expanding cosmos. The verse, however, is accompanied – or rather, dominated – by a gargantuan footnote that describes in detail the mechanics of creation, citing contemporary scientific studies by well-known natural philosophers such as Herschel. Darwin recognises the limits of his knowledge, conceding that “we can have no idea of a natural power, which could project a Sun out of Chaos, except by comparing it to the explosions or earthquakes owing to the sudden evolution of aqueous or of other more elastic vapours; of the power of which under immeasurable degrees of heat, and compression, we are yet ignorant” (9). However, the word “yet” here is critical: with the assumption that the mysteries of creation are in principle discoverable, Darwin has removed Burke’s required obscurity and located the universe within the bounds of human comprehension.

This movement away from the sublime in Darwin’s representation of the universe is a concomitant of the role played by natural history in his work, providing knowledge of nature in and of itself rather than of God. This represents a significant break with Darwin’s most important predecessors in the genre of the philosophical poem, including Milton’s Paradise Lost and Pope’s Essay on Man, both texts which emphasise the limitations of man’s potential knowledge. In Paradise Lost, Milton stresses through the angel Raphael that understanding of “The Book of the World” is designed to lead to the admiration of

The Maker’s high magnificence, who built
So spacious, and his line stretched out so far;
That man may know he dwells not in his own;
An edifice too large for him to fill. (8.101-4.183)

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Not only is the understanding gained through contemplation of nature ultimately for the purpose of comprehending man’s place in creation rather than for any utilitarian application, man’s knowledge is necessarily limited – the sense of sublime wonder evoked by human smallness in relation to the divine can only occur because the magnitude of God’s creation is incomprehensible. Pope similarly stresses the limitations of humanity’s ability to understand the world through science, praising Newton but advising the reader to

\[
\text{Trace Science then, with Modesty thy guide;}
\]
\[
\text{First strip off all her equipage of Pride}
\]
\[
\text{…}
\]
\[
\text{Then see how little the remaining sum,}
\]
\[
\text{Which serv’d the past, and must the times to come!}^{217}
\]

As with Milton, the ultimate goal of science for Pope is for the student to look “thro’ Nature, up to Nature’s God,” a power that can never be fully comprehended by the human mind.\(^{218}\)

Darwin also departs from tradition in his emphasis on applied science. Pierre Danchin has observed that

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\text{Darwin’s scientific purpose is not merely speculative and theoretical; in each of the cantos [of The Economy of Vegetation] scientific knowledge immediately develops into technical innovations…man, visibly, is led by Darwin not only to understand, but also to exert his control over the world.}^{219}
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While the poetic description of industry is not inherently religiously challenging, within the context of the physico-theological genre, Darwin’s demonstration of the power of mankind to effect change through technological developments represents a further rejection of the study of nature as a site of religious contemplation and moral example. When human industry and technological inventiveness do appear in earlier physico-theological works such as Henry Brooke’s \textit{Universal Beauty} and Richard Savage’s \textit{The Wanderer}, they are used to make a religious point. For example,

\footnotesize{\textsuperscript{217} Pope, \textit{Essay on Man}, 2.43-52.61-62.}
\footnotesize{\textsuperscript{218} Ibid., 4.332.160.}
\footnotesize{\textsuperscript{219} Danchin, “Erasmus Darwin’s Scientific and Poetic Purpose,” 143.}
Brooke’s catalogue of the ways in which humans have made use of geological resources consists of pairs of moral and immoral actions ("Hence Medals may reveal the Patriot’s Face/Altho’ a Tyrant gild the nether Space" 3.70-1.47), culminating in a theological argument that it is mankind, not God, who is responsible for the misuse of creation:

Ah Nature! Thou hadst scap’d thy only Blot,
Cou’d Man but case to be – or hitherto were not;
Ay, there’s the Task, the Labour of our Song,
To prove that All is right – tho’ Man be wrong. (3.88-91.48)

In contrast, Darwin’s examples of the ability of humans to transcend natural limitations reinforce his depiction of human knowledge and power as potentially boundless. An analogous passage from The Economy of Vegetation describes the invention of gunpowder:

You taught mysterious BACON to explore
Metallic veins, and part the dross from ore.
With sylvan coal in whirling mills combine
The crystal’d nitre, and the sulphurous mine;
Through wiry nets the black diffusion strain,
And close an airy ocean in a grain. –
Pent in dark chambers of cylindric brass,
Slumbers in grim repose the sooty mass;
...
Starts the red flame, and Death pursues the flash. –
Fear’s feeble hand directs the fiery darts,
And Strength and Courage yield to chemic arts;
Guilt with pale brow the mimic thunder owns,
And Tyrants tremble on their blood-stained thrones. (1.237-52.24-6)

While similar in its moralising pairing of the neutral fact of gunpowder’s existence and its use by tyrants, this passage is notable for the total absence of God or religion as a guiding agent – judgement is being passed in humanistic terms, with guilt and
fear the only consequences of immoral action. Furthermore, Darwin’s description of a man-made substance as enclosing a microscopic universe – “an airy ocean in a grain” – ascribes creative powers bordering on the divine to human industry, the extent of which is highlighted by the ability given to gunpowder to lead and direct the actions of Death itself, which pursues rather than instigates. This emphasis on the accessibility of natural knowledge brings cosmic processes that, like Burke’s ocean, are objects “of no small terror,”220 within the domain of human comprehension and control.

Religious reviewers such as William Cowper, however, did not seem to notice many of the more provocative theological implications of Darwin’s ideas. Cowper, like most commentators prior to the resurgence of religious conservatism in the early nineteenth century, was relatively tolerant of scientific theories that deviated from strictly literal readings of the account of creation in the Bible.221 In his line-by-line manuscript notes on The Economy of Vegetation, preparatory work for a critique later published in the Analytical Review, Cowper writes of Darwin’s geological creation passages that “they who cannot content themselves with the Mosaic account of Creation will hardly find a more ingenious one than is here given, or more plausibly supported, and the poetry of the passage is admirable.”222 However, he also noted passages he perceived as potentially indecorous in terms of doctrine, observing at the end of the first Canto that the appearance of the Goddess of Nature “perhaps follows a little too close the invocation of The Living God at the end of the preceding line.”223 Interestingly, Cowper does not suggest that Darwin is being deliberately impious here or infer that he is suggesting that Nature is the true divinity and arbiter of natural laws, even though this is arguably the case.

220 Burke, “from A Philosophical Inquiry,” 798.
221 Although an Evangelical himself, Cowper’s relative liberalism with regards to scientific theories that conflict with the account of creation in the Bible stands in contrast to the more conservative Evangelicalism of the early nineteenth century, which emphasised the pre-eminence of Scripture. See Peter Toon, Evangelical Theology, 113-140.
223 Cowper, “Remarks on Dr. Darwin’s Economy of Vegetation.”
Given this sensitivity to passages which may be understood to undermine the role of God in creation, why did so many readers describe Darwin as a Miltonic figure and locate *The Economy of Vegetation* within a religiously orthodox tradition of nature poetry? While the differences between Darwin’s poem and the examples of the physico-theological genre discussed above are non-trivial, his use of many of their features nonetheless gives *The Economy of Vegetation* a strong resemblance in style and content to these well-known religious works. As in Brooke’s *Universal Beauty* and Blackmore’s *Creation*, the *Economy of Vegetation* is cosmic in its scope, seeking to explain the natural history of the Earth from creation to the development of modern industry, and is similarly wide-ranging in geographical terms. Indeed, the global nature of the discoveries, lands and cultures covered by the poem and its predecessors is such a distinctive feature of the genre that it led the *Edinburgh Review* to make veiled accusations of plagiarism against Darwin when reviewing Anna Seward’s analysis of the poem.224

Darwin’s celebration of the operation of natural laws, scientific knowledge and industrial progress, while based on a different understanding of human agency, also bears a more than superficial resemblance to the physico-theological tradition’s celebration of harmonious order and design in divine creation. In the fourth canto, Darwin’s description of oxygen and its role in respiration becomes a meditation on vitality, showing the goodness and beauty in nature that pervades even destructive processes:

224 Anon., “[Review of] Memoirs of the Life of Dr. Darwin,” *The Edinburgh Review* 4 (1804): 238-239. The reviewer notes that “it is not our intention to arraign Dr. Darwin of literary depredation on the property of others […] It is true, notwithstanding, that for nearly seventy years there has existed, in obscurity and neglect, a philosophical poem in the English language, stamped incontrovertibly with all those peculiar characters of the Darwinian school to which we have alluded….It is entitled ‘Universal Beauty;’ and its general object is an exposition of whatever is beautiful in the plan and economy of the universe in all its parts. In the prosecution of this object, the author takes a very wide compass; and the general laws which bind the planetary system, the physical laws which peculiarly regulate the globe which we inhabit, the phenomena and provisions of the mineral, the vegetable and the animal kingdoms, are all brought under poetical review; and the more remote and fanciful allusions of the text are illustrated by a series of philosophical notes.”
Hence plastic Nature, as Oblivion whelms  
Her fading forms, repeoples all her realms;  
Soft Joys disport on purple plumes unfurl’d.  
And Love and Beauty rule the willing world. (4.59-62.166)

Brooke seeks to demonstrate the goodness of God in a similar manner, showing that the rebirth following death results in an even greater state of beauty:

Returns the bane into its native earth,  
And there revives it to a second birth,  
Renew’d and brighten’d like the minted ore,  
To shoot again to life, more gorgeous then before! (1.388-91.22)

While the stated purpose of *The Economy of Vegetation* is to educate, leading the votaries of science “from the looser analogies, which dress out the imagery of poetry, to the stricter ones, which form the ratiocination of philosophy” (v) rather than to glorify the divine, there are nonetheless recurring references to God or “Divine Love,” especially following sections that demonstrate majestic works of creation and acts of justice. The description of creation culminates in an account of the planets revolving “amid their bright abode/Space without bound, THE BOSOM OF THEIR GOD!” (1.113-14.10) while in a Biblical analogy springing from a discussion of lightning, the Israelites are punished for idolatry and show remorse in the face of famine and a deluge, “with mingling cries dispersing hosts applaud/and shouting nations own THE LIVING GOD” (1.583-84.55). These references highlight *The Economy of Vegetation’s* links with the physico-theological genre and provide at least a nominally pious context for the ambiguous creation passages, discouraging readers from interpreting the text as materialist and atheistic.

Another generic feature of Darwin’s text that encourages an understanding of the poem as a work that promotes virtue rather than infidelity is its inclusion of aspects of the epic. H. Grant Sampson points out that this is a common element of many long physico-theological poems throughout the eighteenth century, observing that

Many of the longer poems are deliberately modelled upon the traditional epic: they are extensive in length...they are extensive in scope, presuming to
explore the design of the universe; they are extensive in philosophy, claiming to vindicate the ways of God to man. Many of them contain formal elements of the epic: the Invocation, the Statement of Theme, the Heroic Speech.²²⁵ Beyond the influence of Paradise Lost as a model, the use of the classical epic as a framework for the religious nature poem makes sense given the epic’s close association with moral didacticism during the eighteenth century. While the divergence between classical and Augustan morality caused unease, Adeline Johns-Putra notes that the understanding of the epic as a didactic form remained strong, and translators such as Pope could not “help but update [Homer’s morality] for a modern readership.”²²⁶

Darwin retains this moral focus strongly, drawing on models of virtuous behaviour and the development of society during his classically-inspired analogies and digressions. The Economy of Vegetation contains many episodes, drawn from both history and mythology, which represent virtue rewarded. From the fourth Canto, Cowper particularly notes “Heroic Love well exemplified in the history of Aegle,” the story of a young girl who recovers from the plague with the aid of her loyal betrothed.²²⁷ This story is used by Darwin to show that Love “with his keener arrows conquer’d DEATH” (4.126.171). The praise of virtue is also extended from such traditional examples to include new industrial developments in passages that attract equal praise despite their novelty. Darwin’s account of the development of the steam engine focuses on its benefits for society, emphasising the machine’s role in food production where its “flinty teeth the golden harvests grind/Feast without blood! And nourish human-kind” (1.277-8.28). This invention is then placed within the epic tradition through a comparison to the works of Hercules, who “o’er many a clime/waved his vast mace in Virtue’s cause sublime” (1.297-8.30). For these lines, Cowper has nothing but praise, writing that “the machinery of the steam engine and

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²²⁵ Sampson, “The Physico-Theological Epic,” 49.
²²⁶ Johns-Putra, The History of the Epic, 96.
²²⁷ Cowper, “Remarks on Dr. Darwin’s Economy of Vegetation.”
its vast powers described. Sublimely compared to the achievements of Hercules which are themselves sublimely described.”

Far from questioning the appropriateness of including industry within such a model, Darwin’s paean to science appears as a natural extension of the classical epic form, an association bolstered by Darwin’s use of heroic couplets. While “in a sense, his is simply the ornate style of much eighteenth-century literature,” Darwin’s choice of this style for The Economy of Vegetation also has an important ideological function. McNeil points out that

Darwin was riding high on the triumphs of the industrial and scientific bourgeoisie. Buoyed by their success, he offered the century’s most confident poetic testimony to their values: science as the avowed goal of poetry, exclusive reliance on the visual sense and an instrumentalist use of the imagination.

By utilising the standard poetic form of eighteenth-century “polite” letters for what is arguably more of a scientific treatise than a “poem,” Darwin not only stressed the power of humanity to control and develop the natural world, but also elevated such control to the level of a heroic literary subject – a force with the power to improve the human condition and thus worthy of imaginative exploration.

Darwin’s epic similes and digressions did more to establish the orthodoxy of The Economy of Vegetation than simply to emphasise its moral didacticism. The beauty of Darwin’s imagery and his creative application of classical epic analogies to contemporary subjects encouraged evaluation of the poem on primarily literary and aesthetic terms rather than on the basis of its philosophies, discouraging reviewers from reading between the lines and seeing the implications of Darwin’s scientific ideas. That the literary features of the text were significant in influencing its reception and interpretation is suggested by the almost exclusive attention paid to the verse in reviews. For example, the English Review (1792) devotes ten pages to

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228 Ibid.
229 Hassler, Erasmus Darwin, 37.
discussing the style and content of the verse. While Darwin’s portrayal of scientific theories is included in this discussion, the focus remains substantially on the elegance of Darwin’s couplets and imagery. The notes, in contrast, are mentioned only once as providing a break from the quick succession of beauties in the verse that are so numerous that they would be difficult to process without a rest. Evaluation of the work’s philosophic content, similarly, is confined to a few sentences concerning Darwin’s cosmological theories, “most of which [the reviewers] are ready to approve, and all of them to admire.” The Critical Review (1792) evaluates the science in more depth, but devotes the majority of its substantial review to discussing the literary qualities of Darwin’s work and the effectiveness of his imagery in conveying the philosophy.

On a textual level, there are several features of the poem that invite such a literary reading. The emphasis in the criticism on the beauty of the literary features of the text is encouraged by the constant use of metaphor and classical reference, with the “hard” scientific material relegated to either footnotes or essays in the appendix. While there are pages that are visually dominated by the notes, the poem itself contains the primary narrative with the notes providing focused elaborations of particular points. These make little sense if read independently of the verse or continuously from one note to another. Defining The Economy of Vegetation as primarily a work of imaginative literature rather than as a work of science in response to these textual cues, reviewers emphasised the poem’s aesthetic qualities, making comparisons with Homer and Pope. The episode depicting Jupiter and Juno on Mount Ida is given the highest praise by Cowper, who declares it to be “more embroidered and richer in variety of fancy than Homer’s. No description indeed in all our poetry has ever been more exquisitely finished.” The English Review (1792)

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232 Ibid., 164.
234 Cowper, “Remarks on Dr. Darwin’s Economy of Vegetation.”
concurred, suggesting that “those who are induced to compare it with that of Homer, as translated by Mr. Pope, will perhaps prefer [it] to the latter.”

To some extent, this kind of reading strategy is promoted by the verse-privileging layout of all didactic poems with notes, a point which did not go unremarked by contemporary critics such as Anna Laetitia Barbauld. In an essay on didactic poetry, Barbauld emphasises the role of didactic poetry in cultivating virtue rather than its capacity to inform, suggesting that such works should be read only after the reader is already familiar with the subject matter. She notes that “in that beautiful poem, the Essay on Man, the system of the author, if in reality he had any system, is little attended to; but those passages which breathe the love of virtue, are read with delight, and fix themselves on the memory. Where the reader has this previous knowledge of the subject, which we have mentioned as necessary, the art of the poet becomes itself a source of pleasure.” Barbauld goes on to invoke Darwin as an example of such improving art and isolates his verse from its underlying science, asking “who does not admire the infinite art with which Dr. Darwin has described the machine of Sir Richard Arkwright? His verse is a piece of mechanism, as complete in its kind as that which it describes.”

The influence of these generic and thematic associations can be seen in the fact that far from being read as a materialist work which undermines a sense of human worth, passages which could be interpreted as implying an excessively mechanistic view of humanity were read as emphasising the beauty of human emotions and relationships. The passage of this type which attracted the most contemporary attention is the simile in the third Canto in which the sucking action of a breastfeeding child is compared to the mechanical action of a pump, with the physics of the pump being represented as the prior or more fundamental process:

NYMPHS! YOU first taught to pierce the secret caves
Of humid earth, and lift her ponderous waves;

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237 Ibid.
Bade with quick stroke the sliding piston bear
The viewless columns of incumbent air;
Press’d by the incumbent air the floods below,
Through opening valves in foaming torrents flow,
Foot after foot with lessen’d impulse move,
And rising seek the vacancy above. –
So when the Mother, bending o’er his charms,
Clasps her fair nurseling in delighted arms;
Throws the thin kerchief from her neck of snow,
And half unveils the pearly orbs below;
With sparkling eye the blameless Plunderer owns
Her soft embraces, and endearing tones,
Seeks the salubrious fount with opening lips,
Spreads his inquiring hands, and smiles, and sips. (3.345-360.142-3)

Far from reading this as devaluing or mechanising the process, however, the pump section of the simile was simply ignored by many commentators such as Hayley and Cowper who praised the description of mother and child. In a 1792 letter to Darwin, William Hayley wrote that “I am in raptures with a thousand beauties in your poem, but no passage, I think, has enchanted me more than your picture of a child at the Breast – it is most faithfully painted from nature, and with all the tenderness, all the spirit, and all the Grace of Correggio,”238 while Cowper noted the “beautiful simile of an infant sucking.”239 The Critical Review (1792), a rare critic of this passage, admired the pump but noted the description of the child to be “rather philosophically exact than poetically illustrative.” Nonetheless, the reviewer conceded that it was “too beautiful to be wholly passed over.”240 This suggests that far from accepting Darwin’s materialist views, reviewers were reading Darwin’s comparisons between machinery and life as merely illustrations rather than indicative of a serious philosophical connection.

239 Cowper, “Remarks on Dr. Darwin’s Economy of Vegetation.”
The pervasive emphasis throughout the text on beauty reduces the sublime and potentially terrifying implications of industrial expansion and creates a glossy, Edenic vision of England’s scientific and industrial developments that both downplays the hubris of Darwin’s elevation of man’s powers over nature, and connects to nationalistic discourses of progress. An inventor and founding member of the Lunar Society of Birmingham, whose members according to King-Hele “did more than any other group to drive forward the Industrial Revolution in Britain,”241 Darwin had a personal interest in presenting technological development in terms as appealing as possible to the public. In light of this, it is not surprising that he draws on the language of the beautiful when describing industry. For example, control over nature emerges as a force of domestication in the first canto, where the use of fire rescues humanity from an uncultured, savage state:

NYMPHS! YOUR soft smiles uncultur’d man subdued,
And charm’d the Savage from his native wood;
...
Taught, the first Art! With piny rods to raise
By quick attrition the domestic blaze,
Fan with soft breath, with kindling leaves provide,
And list the dread Destroyer on his side. (1.209-216.21-22)

Not only is fire “domestic” and fanned with “soft breath” – even a salt mine is rendered non-threatening by the evocation of roundness, curvaceous lines and light:

Thus, cavern’d round in CRACOW’s mighty mines,
With crystal walls a gorgeous city shines;
Scoop’d in the briny roc, long streets extend
Their hoary course, and glittering domes ascend; (2.125-8.72)

The fact that “the galleries in these mines are so numerous and so intricate, that workmen have frequently lost their way…and have perished before they could be found” is relegated to a footnote on a different page (71). This propagandistic element of Darwin’s stress on the beautiful in his poetry has lead Maureen McNeil to

argue that the reader is “informed about the abstract processes of production, but discouraged from drawing any conclusions about the human material conditions of production,” an elision that allows Darwin to present a utopian vision of industry as elevating the human condition.

Darwin’s feminisation and domestication of potentially threatening technological developments is extended to experimental science, with the nympha{s of the Botanic Goddess providing a surprisingly delicate, boudoir-like environment for Benjamin Franklin’s lightning rod experiments:

You lead your Franklin to your glazed retreats
Your air-built castles, and your silken seats;
Bade his bold arm invade the lowering sky,
And seize the tiptoe lightnings, ere they fly. (1.383-86.37-8)

The closest figure to a sublime deity in this scene is Franklin himself, who is depicted as a saint with a halo-like “crown electric round his head” (1.388.38). Yet he too is softened and feminised by analogy with “intrepid LOVE,” who “snatch’d the raised lightning from the arm of JOVE” and thus – as the footnote tells us – disarmed divine justice (1.389-90.38). While this analogy could quite reasonably be read, in light of the Promethean imagery used to describe Franklin, as suggesting that he is taking on divine powers and disarming Old Testament-style religion through science, it does not seem to have been understood as subversive. Of the many hundreds of lines in the poem, this scene is picked out by Cowper as worthy of mention for its beauty, but as in the case of many other ambiguous passages, is evaluated purely in aesthetic terms.

The primarily aesthetic evaluation of The Economy of Vegetation in both published reviews and private correspondence, and the pious poetic and critical readings of Darwin’s work by literary figures known to hold conservative religious views, provide an important key to explaining the positive reception of this theologically

243 Cowper, “Remarks on Dr. Darwin’s Economy of Vegetation.”
ambiguous text. Faced with a scientific work that highlights its literary nature at every turn through classical reference, finely-tuned couplets and beautiful imagery, reviewers interpreted the poem through the lens of existing literary genres such as the physico-theological poem and the epic. This encouraged readers to focus on Darwin’s art and to interpret his goals as fitting within these essentially orthodox literary traditions, as well as discouraging analysis of the potentially subversive implications of his science. Furthermore, the religious idiom adopted by Darwin’s early supporters suggests that immediately prior to the post-Revolution swing towards conservatism, wide-ranging works of science were still being understood within a Christian framework that assumed a close relationship between science and belief. The attention paid by critics such as Polwhele, Cowper and Hayley to clear departures from Establishment doctrine also suggests that this spiritual understanding of science was not as tolerantly liberal as is often claimed, and that popular science writing in this period was still, to some extent, expected to align itself with orthodoxy.
Chapter Six: Speculation, Science (Non-)Fiction and *The Temple of Nature*

Darwin’s final, posthumously published poem *The Temple of Nature* (1803) appeared within a literary, religious and political culture that was rapidly moving away from the Enlightenment enthusiasm which had greeted both parts of *The Botanic Garden* (1789-1792). The criticism attracted by the highly speculative elements of *The Temple of Nature*, features which had been praised in *The Botanic Garden*, shows a clear shift in the perception of the role of the popular science writer. This cultural transition becomes particularly apparent when the response of critics to Darwin’s evolutionary ideas is considered, and compared to the reception of his grandson’s *The Origin of Species* (1859). Over the course of the 1790s, a genre which had previously been closely tied to the achievement of goals which were not scientific per se, such as the defence of a religious worldview or the dissemination of morally improving knowledge and pastimes, was increasingly institutionalised along with scientific research itself. Accompanying this institutionalisation came more rigid standards of experimentation, and the establishment of the modern journal article and introductory “text book” as standard forms for the introduction of new scientific discoveries. As this took place, speculation and the application of scientific discoveries to social, moral and religious questions became largely cloistered within the domain of “non-scientific” genres, including fiction. Darwin’s use of elements that linked his work to fictional and speculative genres rendered the scientific status of his work increasingly problematic for reviewers.

**Initial Reception**

As we have seen, the most provocative, and for many readers the most salient, feature of *The Temple of Nature* was its explicit materialism and description of the
biological evolution of life. Aimed at a popular audience and widely reviewed, the mixed reception of *The Temple of Nature* in some ways resembles that of *The Origin of Species* (1859), but is in other ways radically different. These similarities and differences reveal a great deal about the religious and scientific climates in which both Darwins were publishing. David Hull notes that the religious response to the *Origin* was not unified, with Unitarian and Broad church periodicals showing the most support, followed by Catholic periodicals, with Methodists and Low Church Anglicans largely opposed.244 Furthermore, divisions deepened when the theory was applied to humanity in Darwin’s *Descent of Man* (1871), with Unitarians and Broad church Anglican periodicals continuing to respond positively, while other major religious groups were opposed.245 Rather than being controversial in all respects and for all audiences, the rapid uptake of some of Darwin’s major ideas by more liberal religious groups suggests that by the mid-nineteenth century, a large sector of society was willing to engage in serious and informed debate about the origin of human life, including explanations which were perceived to directly conflict with Christian revelation. Despite the prevalence of this view among scholars of Charles Darwin, these finer distinctions are not often made in discussions of the status of evolutionary views earlier on in the century, which are often depicted as consistently opposed. Alvar Ellegard, whose study of the reception of *The Origin of Species* maps the rapid mainstream acceptance (within a decade) of the theory of descent for animals and the more ambivalent response to human descent, portrays the pre-*Origin* response to texts espousing these ideas as powerfully and almost universally negative.246

While it is certainly the case that Erasmus Darwin’s evolutionary ideas in *The Temple of Nature* did not achieve the cultural influence and success of his grandson’s and

245 Ibid.
246 See Ellegard, *Darwin and the General Reader*. Also, for example, Adrian Desmond’s insightful analysis of the response to Charles Darwin’s work in *The Politics of Evolution*, is not applied to his discussion of earlier evolutionary texts, which he portrays as experiencing wholesale rejection.
were criticised by most readers, to attribute their rejection to religious conservatism alone is to perpetuate a view of Darwin’s early nineteenth-century readership as far more closed-minded than they arguably were. *The Temple of Nature* was indeed criticised on religious grounds by some periodicals, with the *Universal Magazine* in particular objecting to Darwin’s targeting of the work at impressionable “youths and virgins.” Faced with the potentially provocative materialism of the poem, the review *Flowers of Literature* (1804) had the following to say:

This poem, written in a monotonous flow of smooth versification, sometimes unintelligible, but which contains also striking passages, is dangerous on account of its total denial of any interference of the Deity in the creation and preservation of everything; and of its adherence to a system of materialism, degrading to human nature. Parents, or instructors, should beware of letting it fall into the hands of their offspring, and of their pupils.247

This comment is interesting not because it is representative of the public response to the poem, but because it is not. *The Temple of Nature* was reviewed by at least nine mainstream periodicals, and this pithy notice is by far the most negative. The poem was even reprinted soon after in 1806 as part of a collected edition that included Darwin’s earlier epic natural history poem, *The Botanic Garden*. In many ways, the response of the *Flowers of Literature* reviewer encapsulates what has become something of a stereotype – that for religious readers in the early nineteenth century, the suggestion that human life and culture evolved according to natural laws was universally shocking and scandalous, and equated to atheism.

While scholarly perspectives are usually more nuanced, this perception of the public’s response to evolutionary ideas still has the power to influence. The reality, however, is far more complex. Some reviews of *The Temple of Nature* were entirely positive, such as the *Monthly Visitor* (1803) which praised the “luxuriant imagery” and the “spirit of a large and liberal philosophy” in the work.248 Most negative reviews were quite balanced. *The Critical Review* is fairly typical, providing a lengthy

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discussion of all aspects of the work, both poetic and philosophical. While generally disapproving of Darwin’s poetic technique, certain passages such as the exordium are singled out for praise, and even described as “highly beautiful.”249 Darwin’s materialism is discussed seriously, and without a knee-jerk reaction to its theological implications, although the references to God are criticised as inconsistent with the rest of his theory and possibly insincere. The review treats his evolutionary ideas, which it rejects as absurd, as nonetheless part of a current debate, suggesting that “his theory of organic life does not differ essentially from that of M. Blumenbach; and both are derived from an intermixture of the system of Buffon with that of Brown, to which is added a peculiar superstructure of his own.”250

The tension between rejecting Darwin’s ideas as implausible and at the same time feeling compelled to take them seriously is also present in the Universal Magazine. More inclined than the Critical Review to indulge in sarcasm, the reviewer observes that “it would require all the Doctor’s ingenuity, and no small portion of his sophistry, to demonstrate that the cause of theism is strengthened by such a view of the Creative Power.”251 Of Darwin’s evidence for the spontaneous generation of life, it notes that

as men and cows, and other large and complicated animals, have never been discovered by philosophers arising in an infusion of marsh-mallows, or in a stationer’s paste holder, it is necessary likewise to demonstrate that all beings are in a state of gradual improvement.252

Even so, the reviewer concedes on the same page that “while we acknowledge that the facts which have been hitherto ascertained by the experiments of naturalists rather tend to corroborate that doctrine than to invalidate it, we must affirm, that ... it does not [support] ... any general system of materialism.”253 Overall, however, there does not appear to have been any great public outcry or controversy. The poem was considered by almost all reviewers to restate positions that Darwin had put forward

250 Ibid., 362.
252 Ibid., 396.
253 Ibid., 396.
in his earlier works, some of which – especially *The Botanic Garden* – had remained quite popular. These ideas, however, were never widely adopted, and despite the lengthy discussions devoted to them in reviews, were ultimately dismissed as fanciful or ridiculous.

On the surface, the explanation for the tension between tolerance and dismissiveness in most reviews seems to be tied up with the problematic questions of genre created by Darwin’s hybrid text. As an epic, poetic and speculative work, his approach is visionary, concerned with what is theoretically possible rather than what is likely or practical. Having marketed the poem as a scientific and educational work, however, reviewers evaluated his ideas according to the standard increasingly applied to such texts, namely adherence to the scientific method. This becomes particularly apparent in reviews of *The Temple of Nature*, where attacks on his ideas are frequently presented as based not on religious or moral grounds, but on empiricism.

The poem is far less rigorous in scientific terms than Charles Darwin’s later opus, and does not provide plausible evidence for a mechanism that would force readers to consider seriously the validity of the theory. Although Darwin hints at natural selection in the Malthusian lines “From Hunger’s arm the shafts of Death are hurl’d/And one great Slaughter-house the warring world!” (4.65-6.134), this idea is never fully developed in the poem. Instead, Darwin proposes a proto-Lamarckian process in which the desires and needs of the parent organisms can influence the features of the offspring, a theory he first put forward in his prose medical work *Zoonomia* (1794) to explain heredity in human children. This theory has the disadvantage of being impossible to prove by observation. The *Edinburgh Review* complains that

> instead of copying from the great volume of Nature which now lies open to our view, he fondly attempts to penetrate the veil which must for ever conceal her mysteries from mortal eye, and affects to disclose, with all the confidence of an observer, an imaginary order and progress of things.254

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This comment is reflected in many other reviews, where the focus of criticism falls squarely on the fact that Darwin does not provide comprehensive evidence for his claims or follow Bacon’s empirical scientific method.

The observations made by several reviews not only focus on issues of scientific inaccuracy, but also appear to assess Darwin’s earlier work from a position of hindsight in which their sense of his scientific authority has substantially shifted. The Critical Review (1803) admires the poem on artistic grounds as “truly elegant and elaborate,” but suggests that “the author, as usual, illustrates his peculiar views by an ample range through the various kingdoms of nature; as usual, also, he endeavours to bend the facts and phaenomena that surround him to the same obliquity of opinion.” The Annual Review (1803) also focuses its review critically on Darwin’s repetition of passages and ideas from The Botanic Garden and the lack of credibility surrounding his speculations, opining that

the philosophical system here displayed and illustrated in the notes, scarcely differs, in any respect, from what has been already published in the former works of the same author, and is therefore, for the most part, a mere repetition of dubious or misapplied facts.

The reviewer goes on to describe Darwin’s evolutionary ideas as a “supremely absurd system” and, as a parting swipe, caustically remarks that “all future chemists will, we doubt not, hold themselves indebted to Dr. Darwin for informing them that an acid may be composed of siliceous earth, metallic oxyds and alkali, and that water and sulphuric acid are similar substances, though they have not a single characteristic property in common.”

This anticipates aspects of the reception of Charles Darwin’s work two generations later. Tess Cossett has observed that Bishop Wilberforce’s

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257 Ibid., 593.
258 Ibid., 594.
objections to Darwin’s theory were mainly scientific, that he had many leading scientists on his side, that he skilfully picked out all the weak points in Darwin’s theory, and that his basic assumption was that science and religion were necessarily in harmony ... His review of Darwin’s *Origin of Species* in the *Quarterly Review* finally comes round to considering the opposition between the theory of evolution and the Creation story in the Bible, but this is not the main ground of his attack on Darwin.259

A similar discourse operates in many of the reviews of *The Temple of Nature*, in which theological concerns are raised but treated as lesser issues than the scientific implausibility of the work.

**Evolution and Human Life**

However, the largely sceptical response of Erasmus Darwin’s readers to the speculative mechanism proposed in *The Temple of Nature* — that of a natural law instigated by the “first cause,” a position which allowed for both religious and materialist interpretations — contrasts with the preference of many readers later in the nineteenth century for similar mechanisms to explain Charles Darwin’s theory of evolution. Alvar Ellegard has shown that many Victorians, persuaded of the reality of evolution for animal species but deeply uncomfortable about the theory’s implications for humanity, rejected the very mechanism that had made the theory plausible in the first place. Instead, a variety of “middle ground” positions were embraced that included God as an initiating, designing or monitoring force who guided the process of evolution, a position of the kind articulated in *The Temple of Nature*.260

Readings of this kind are invited by *The Temple of Nature*, which makes repeated and explicit reference to God as the ultimate creator while leaving the day-to-day operation of natural phenomena to the laws of nature:

260 See Ellegard, Darwin and the General Reader.
GOD THE FIRST CAUSE!—in this terrene abode  
Young Nature lisps, she is the child of GOD.  
From embryon births her changeful forms improve,  
Grow, as they live, and strengthen as they move.  
Ere Time began, from flaming Chaos hurl'd  
Rose the bright spheres, which form the circling world;  
Earths from each sun with quick explosions burst,  
And second planets issued from the first.  
Then, whilst the sea at their coeval birth,  
Surge over surge, involv'd the shoreless earth;  
Nurs'd by warm sun-beams in primeval caves  
Organic Life began beneath the waves.  
(1.223-34.19-20)

Echoing the creation passage in The Economy of Vegetation, this passage if anything more clearly depicts a theistic, personal deity rather than the abstract “divine Love” of the earlier poem. It is likely, then, that something in addition to the lack of evidence was influencing the sceptical response to Erasmus Darwin’s theories, especially given the relatively muted reaction to their first expression in Zoonomia in 1794.

One of the factors that may have worked against the adoption of Darwin’s theory as a religiously acceptable compromise was his explicit inclusion within his evolutionary framework not just of human life, but also human society and relationships. This was to treat human life in a clearly materialistic fashion. Readers were also disturbed by Darwin’s conception of an afterlife, in particular the view that by providing food for other organisms, the dead would not only live on but would contribute to the happiness of other living beings. The Universal Magazine dryly remarked that Darwin, when describing the devastation wreaked by an earthquake, “in the fulness [sic] of his benevolence, his heart then bounds with exultation in the cause of happiness, thus extended among the delighted maggots ... that spring up from the wrecks of human desolation, endowed with much finer feelings!!”261 Such

manifest materialism also suggested to readers that the religious elements of Darwin’s system were insincere, or inconsistent.

Darwin’s application of the theory to human life had other provocative implications for humanity’s place in the world, causing readers of his work to focus on his ideas about the meaning of life and its basis in ethics. The *Universal Magazine* reviewer noted that if God is merely the first cause, “it is of little importance if the phenomena of the world arise, independently of the Deity, from the appetencies of matter alone.”262 The central role of these appetencies, and their ambiguous relationship to the role of God in Darwin’s system, come to the fore in the third Canto where Darwin describes the evolution of the human mind and feelings. The opening lines of the section on the development of sympathy suggest divine involvement:

The Seraph, SYMPATHY, from Heaven descends,
And bright o’er earth his beamy forehead bends;
On Man’s cold heart celestial ardor flings,
And showers affection from his sparkling wings;

With sacred truth each erring thought control,
Bind sex to sex, and mingle soul with soul;
From heaven, He cried, descends the moral plan,
And gives Society to savage man. (3.467-484.123-4)

This image of human affection as a gift from heaven, however, is undercut by a footnote which gives material and biological explanations for human feelings, as well as the setting out of a process of social learning. In light of the note, which describes the role of automatic reactions to yawning and vomiting in inducing sympathy, the suggestion that supposedly sacred human relationships, such as marriage, are a divine gift rings hollow. The *Critical Review* especially emphasises what it sees as the impropriety of Darwin’s suggestion that the Golden Rule is somehow innate, having described it as inscribed on the shrine of Nature. The reviewer states that “we cannot close the present canto without entering our decided protest against the first of the

following lines ... the benevolent precept referred to ... was neither acted upon nor known till promulgated by the Divine Author of the Christian religion, and is one of the great characteristic marks of this most blessed and sublime communication.”

The central issue is not a challenge to the Mosaic cosmology or to literal readings of the Bible, but questions of ethics and the meaningfulness of human existence. After noting that Darwin’s praise of Paul rings hollow as “the doctrine of St Paul makes no part of the creed of the author of the Temple of Nature,” the Literary Journal points out that Darwin’s vision of the recycling of dead organic matter by worms “may possibly be congenial with the feelings of modern philosophy; but it is as destructive of every principle of good poetry, as it is repugnant to common sense, and paralyzing to every generous motive of human energy.” The reviewer then adds that “notwithstanding the name of a Great First Cause is frequently introduced, yet while it is deprived of all moral agency, it has no more influence on the tendency of the poem” than unenforced laws against disrespect towards the royal family.

Thoughtful analysis of the philosophical implications of Darwin’s ideas is characteristic of the critical religious commentary on the poem; reviews that present an emotive response to Darwin’s treatment of materialism in The Temple of Nature, such as that published in the Flowers of Literature, are rare. This equanimity takes an unusual form in the Critical Review, which, although unsupportive of Darwin’s materialism and his tendency to “subvert the first principles and most important precepts of revelation,” criticises him for not drawing more on Lucretius. Commenting on Darwin’s reference to the De Rerum Natura’s apostrophe to Venus, the reviewer states:

we are surprised that Dr. Darwin has not more frequently copied that admirable writer upon a similar subject: we have not traced more than two other allusions to him in the course of the entire poem, and these merely in

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265 Ibid., 538.  
his poetic descriptions. He might have been consulted with still greater advantage as a natural historian, philosopher, and logician.267

This suggests that the kind of liberal culture that, however selectively, embraced Charles Darwin’s *Origin* already existed at the turn of the century. However, similar concerns regarding the implications of evolution for humanity were also prevalent, making a work which explicitly included humanity within its evolutionary system more difficult to accept than it might otherwise have been.

**The Decline of the Application of Natural History to Poetry**

In addition to issues touching upon religion and ethics, generic and literary factors may also have played a role in undermining Darwin’s scientific authority. Darwin’s choice of the didactic poem as his medium, and his inclusion of speculative elements when disciplinary boundaries were solidifying, were likely to have been important factors in undercutting the plausibility of the scientific theories of *The Temple of Nature*. While the appropriate relationship between science and verse had been a subject of critical debate throughout the eighteenth century, influential commentators such as Addison, Joseph Trapp and John Aikin had argued that natural history was one of the most congenial subjects for poetry. This idea only began to fall out of vogue in a significant way in the late 1790s, making Darwin one of the first poets of natural history in this period to experience an adverse critical reaction on the basis of his subject matter.

Aikin’s *Essay on the Application of Natural History to Poetry* (1777) both asserts the benefits for poets of choosing natural history as a subject and registers some of the tensions which would become prominent in the criticism of subsequent decades and which can be seen emerging in reviews of *The Temple of Nature*. Early on in the essay, Aikin makes a case for scientific poetry that is primarily aesthetic and concerned with originality; by choosing the subject of natural history, poets will avoid, he

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267 Ibid., 163.
argues, the “insipidity” and “perpetual repetition” of modern poetry. Other errors, such as the use of mixed metaphors and obscure descriptions could be avoided by adopting something akin to the scientific method, with Aikin advising that such mistakes are “owing to a too cursory and general survey of objects, without exploring their minuter distinctions and mutual relations; and is only to be rectified by accurate and attentive observation, conducted upon somewhat of a scientific plan.” From this standpoint, empirical observation and the inclusion of accurate details are not only compatible with poetic art but are presented as potentially improving even for poetic greats such as Milton, Gray and Collins, from whom examples of repetition of imagery are drawn. In characterising poetry this way, Aikin’s essay is nothing if not conventional, harking back to the well-established British tradition of praise for Georgic poems as valuable for their challenge to poets seeking to embellish unusual subjects.

Darwin’s initial impetus for choosing scientific topics for poetry, and the responses of his early critics, mirror Aikin’s emphasis on originality. In her Memoirs of the Life of Dr. Darwin, Anna Seward quotes Darwin as remarking, after reading her verses later used for The Loves of the Plants, that “The Linnaean system is unexplored poetic ground, and an happy subject for the muse.” Several reviewers concurred. The Monthly Review (1789) described The Loves of the Plants as “very singular,” observing in glowing terms that Darwin has “produced a most pleasing variety in his poetic descriptions, and made every plant an entire new object.”

This somewhat intuitive argument for originality, present in Aikin’s essay and in Darwin’s poem, is complicated by the explicitly stated instrumental purpose of both texts – to create new scientists. This creates tensions in the way in which the case for a poetry of natural history is framed, ultimately treating poetry as little more than a means to an end. In the dedication to Thomas Pennant, Aikin makes a claim for his

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269 Ibid., 10.
270 Ibid., 8.
271 Seward, Memoirs of the Life of Dr. Darwin, 130.
essay essentially similar to Darwin’s “advertisement” for The Botanic Garden: to enlist readers “under the banner of science.” The purpose of the essay, the reader is informed, is “to add incitements to the study of natural history, by placing in a stronger light than has yet been done, the advantages that may result from it to the most exalted and delightful of all arts, that of poetry.”

Aikin goes on to state that “if what I have done shall be the means of acquiring you a single fellow-labourer in your interesting researches into BRITISH ZOOLOGY, I shall not be dissatisfied with my success.” While the scientific method of close, empirical observation may result in more accurate poetic details, and encourage departure from clichéd images and subjects, Aikin and Darwin wish, in the first instance, to enrich the ranks of scientists.

For much of the 1790s, this primary purpose remains largely unremarked in reviews of Darwin’s poetry that focus on the novelty of his work and his skill as a versifier. By 1803, however, the belief in natural history as a new and refreshing direction in which to take traditional poetic forms was beginning to weaken. The Critical Review opens its commentary on The Temple of Nature by observing that

in direct contradiction to what has uniformly occurred to us in antiquity, and what we have generally noticed in later times, poetry and philosophy appear throughout the whole of his compositions to be sworn and irreconcilable foes ... had he been less of the poet, his philosophy would have been more accurate – had he been less of the philosopher, his poetry would have been more admirable.

This judgement stands in direct contrast to the same review’s response to the style and content of Darwin’s earlier scientific poems, in which the evaluation was fulsome. The reviewer’s comments register an important ambivalence, characterising The Temple of Nature as a deviant production amongst a body of works, including Darwin’s earlier poems, in which philosophy and poetry are successfully combined. At the same time, the idea that true philosophy and true poetry compromise rather

273 Aikin, Essay on the Application of Natural History to Poetry, iv.
274 Ibid.
than enhance each other suggests the start of the idea of two separate spheres or 
“cultures,” a formation which was only just beginning to emerge.

This negotiation over appropriate scientific language and metaphor can also be seen 
occuring in prose science books, with the kind of speculative content and rhetorical 
flourishes employed by Darwin progressively restricted to works aimed at 
“beginners,” women and children. A marker of these shifting standards of scientific 
writing and their implications for authors wishing to establish themselves as 
authorities in the field of science education can be seen in the new way in which 
Maria Jackson, a female botanist and popular author of botanical works for both 
children and adults, responds to Darwin’s work. Already placed on the margin of 
scientific discourses because she is a woman, Jackson cites Darwin as an important, 
groundbreaking authority in her family-oriented work *Botanical Dialogues* (1797). In a 
discussion of the validity of Linnaeus’ assertion that anther dust is necessary for 
fertilisation of the seed, Jackson’s mother-character Hortensia observes

   indeed I do not know any who have doubted of it, till the celebrated author of 
   the Botanic Garden, whose investigations have thrown light upon many 
   obscure subjects in botany, conjectures that those figs, which have their 
   receptacles closed on all sides, might be vegetable monsters cultivated for 
   their fruit, as those grapes and barberries are, which are without seed…and 
   this seems probable from what is told us by Mr. Milne concerning the figs of 
   Malta.²⁷⁶

Here, the form of Darwin’s writings on botany appears to be irrelevant; he is simply 
cited alongside Colin Milne, an author of prose introductions to botany and botanical 
dictionaries.

However, in her later, more technical book on horticulture, aimed at adult readers, 
Jackson takes pains to distance herself from Darwin’s speculative style, noting in her 
prefatory acknowledgements:

nor must I omit the works of the late celebrated philosopher, and much-lamented member of society, Dr. Darwin, on the subject of vegetable physiology: and although, as being derived more from speculative inquiry than from actual experiment, his theories ought to be received with caution, the young student will not act wisely if he be deterred from giving due weight to the ingenuity of his conjectures by the alarm he may receive at the boldness of them.277

This citation strikes a defensive note. Rather than celebrating Darwin’s ingenuity, Jackson makes an argument for taking him seriously despite the imaginative nature of much of his writing. In contrast to the earlier praise of Darwin’s “conjectures,” here Jackson aligns herself with the empirical and professional, distinguishing between experimentation and investigations of a more imaginative and speculative kind.

Darwin’s attempt to integrate rigorous science with entertainment created other generic interstices which sometimes pulled the interpretation and influence of his work in competing directions. The Botanic Garden, in particular, includes narrative sequences which incorporate elements of popular novelistic genres such as the gothic and romantic melodrama. This aspect of the work drew a mixed response from reviewers. The Critical Review in particular found the gothic third Canto of The Loves of the Plants to be excessively dark, and suggested that this section should include a heavier emphasis on redemption. Other reviewers found Darwin’s extended human analogies to be genuinely moving, and the most memorable part of the work. The Temple of Nature and Zoonomia would later come to be formative influences on the development of speculative fiction, with Darwin’s notes on the spontaneous generation of life one of the inspirations for Mary Shelley’s Frankenstein (1818). Brian Aldiss has identified The Temple of Nature as being a key text in the formation of science fiction literature, describing Darwin as “a part-time science fiction writer.”278

277 Jackson, Sketches of the Physiology of Vegetable Life, 4-5.
278 Aldiss, Billion Year Spree, 14.
Associations between Darwin’s poem and the gothic novel are not limited to this connection. Other typical elements of the Gothic and science fiction feature in Darwin’s work. To some extent, *The Botanic Garden* shares the element of “explainable phenomena” with the gothic genre, arising out of the same late-Enlightenment culture. The dark, sordid side of the world is acknowledged, but then explained away, with the causes shown to arise from human nature rather than from the supernatural. While responsible for a large part of the entertainment value of the poem, these sequences also serve a didactic function, either satirising popular stereotypes or providing proto-sociological and biological reasons for certain kinds of destructive or “deviant” behaviours. Thus, although forming part of the tradition of gothic literature and what will become science fiction, Darwin is here writing a kind of speculative non-fiction, in so far as even the more outlandish suggestions and explanations are intended to be taken seriously. While his suggestions are not, as in a utopian work, intended to provide a model society used to comment on an existing one, his poems nevertheless contain a utopian element. The particular innovations suggested by Darwin reflect current Enlightenment ideas and concerns, projecting a world which is essentially rational and available to human knowledge.

**The Temple and Taste**

The cultural impact of Darwin’s poetry was also increasingly undermined by changing artistic tastes. The rise of Romanticism, classically defined, and the increasing dominance of the more personal, introspective style pioneered by Wordsworth and Coleridge in *Lyrical Ballads* had already started to affect the public perception of the artistic merit of Darwin’s work. At the time of the publication of *The Botanic Garden* in the late 1780s and early 1790s, didactic poetry in general and works on natural history in particular were experiencing a vogue that had been running for much of the eighteenth century, which had seen the rise of the Georgic and the physico-theological poem as major genres. By the turn of the century, however, this had begun to change, and the “artificial” style of Darwin which emphasised glossy visual images and carefully constructed heroic couplets began to
be seen as sterile and divorced from reality. When reviewing The Temple of Nature, the Universal Magazine opined that “nothing can be so mechanically frigid as the personification of abstract ideas (such as of vegetation, warmth, moisture, irritation, association, reproduction, &c. &c.).” The review concludes by criticising Darwin’s muse for being “loaded with feathers, and pearls, and fringe, in a gaudy profusion,” evoking verbal prostitution and the epithet “meretricious,” sometimes applied to Darwin’s style.

Some of the criticism on artistic grounds was directed at Darwin’s poetical style and well deserved. The Critical Review, amongst others, emphasises the extent to which the poet’s highly adorned register and repetition of images had become stale through self-plagiarism:

its versification, its vocabulary, its images, are all alike confined and unvaried, wearying us with their monotony of recurrence and perpetuity of pomp, and in very few instances offering any thing which we have not already met with in our author’s Botanic Garden. It is a gallery of little gaudy pictures, in which the artist is a continual mannerist, and for ever copying from himself.

At the same time, Darwin’s epic similes continued to attract praise from other reviewers, with The Annual Review lamenting that The Temple of Nature was “strikingly deficient in those brilliant similes and personifications which constitute the most valuable portion of Dr. D.’s poetry.” In the memorable nature of Darwin’s digressions may have lain his greatest problem in translating his style to an era of increasing scientific rigour; the emotive and fanciful nature of many of the passages translated badly when the attention of critics turned towards the principles underlying Darwin’s personifications.

280 Ibid., 278.
The relatively measured reception of Darwin’s poem *The Temple of Nature* provides an important context for the later reception of *The Origin of Species*. Specifically, it sheds light on why Charles Darwin’s methodology and use of evidence were able to affect such a seismic shift in public beliefs concerning the theory of animal descent in such a short period of time. It also suggests that, despite the emerging Evangelical revival and generally conservative political climate, materialist works were reviewed in a fairly balanced manner, suggesting a greater degree of tolerance of religious ‘infidelity’ than is often portrayed as typical of this period. The public response to *The Temple of Nature* also elucidates a number of the factors contributing to the decline of poetry as a genre of science writing at this time, most importantly increasing pressure for all forms of popular science writing to meet more rigorous standards of empirical evidence.
Chapter Seven – Didactic Poetry in an Age of Revolution

Between the publication of The Economy of Vegetation in 1792 and the posthumous publication of The Temple of Nature in 1803, Darwin’s poetry attracted the attention of a number of satirists and political commentators, many of whom interpreted his work within the increasingly reactionary political and religious climate which emerged following England’s declaration of war with France in 1793 and the subsequent Terror. The politicisation of Darwin’s writings in the late 1790s is frequently accounted for in terms of a reactionary backlash against his work’s liberal politics and its representation of sexuality. However, the complexities of the reaction in terms of class, popular readership and politics have been neglected in place of an oversimplified narrative of increasing conservatism. Such a narrative obscures the reasons for the more severe responses to texts such as The Temple of Nature, against which Darwin’s earlier pro-Revolution work, The Economy of Vegetation, remained to an extent insulated. It also obscures the relatively late singling out of Darwin as a particularly dangerous literary force among many politically liberal authors. Furthermore, the reception of Darwin’s work in the late 1790s is less uniformly negative and thus more complex than has been suggested in previous studies by Desmond King-Hele and Alan Bewell.

Darwin’s work has frequently been associated with radical culture by modern literary critics and literary historians. In part, this has been provoked by The Loves of the Plants; in the 1990s a number of seminal studies tied botany to radical culture, including its role in the work of Mary Wollstonecraft and in satires of Banks’ South Sea voyages to Tahiti. Alan Bewell reads the association of plants with Jacobinism as primarily an issue of sexuality, and places fear of sexual deviance at the core of the conservative reaction to Darwin’s poetry. This position is also taken by Darwin-biographers Desmond King-Hele and Jenny Uglow, who situate the sexual content of The Loves of the Plants as part of the flourishing radical literary culture of the 1790s, in
part fostered by Darwin’s publisher, prominent Dissenter and liberal society-figure Joseph Johnson.283

As contemporary reviews and reader-commentary suggest, however, the sexual content of Darwin’s poetry attracted much more approbation from his reviewers and readers and less vehement ire from his critics than would be expected from a text considered to be radically challenging to prevailing norms. Consequently, focusing on the sexual content as the single most important feature of Darwin’s oeuvre for its political affiliation and reception has resulted in a distorted picture of his relationship to radical culture. In general, recent criticism overstates the extent to which Darwin actively engaged in political debates and desired subversion, and in the process oversimplifies the ways in which the discourses of science and education were deployed for political ends.

**Darwin’s Satirists**

At the time of their publication, Darwin’s poems of the late 1780s and early 1790s were not generally interpreted as political works. This, however, began to change in the mid-1790s, as the French Revolution turned bloody and support for democratic reform diminished among the political centre and centre-left in England. Darwin’s politics, combined with his relatively abstract view of God, lead certain critics to associate his work with “Jacobinism” and to criticise his approach to science and his belief in human perfectibility as promoting atheism.

The first major satire to be published of Darwin’s work was the pseudonymous *The Golden Age, a Poetic Epistle from Erasmus D----N, M.D. to Thomas Beddoes, M.D.* (1794). This poem in rhyming couplets takes the form of a letter from “Darwin” to Beddoes, in which Beddoes’ support for the French Revolution is highlighted and a variety of his and Darwin’s more provocative scientific ideas are mocked. The focus of the text is very much on Beddoes’ encouragement of the French Revolutionaries and his

apologia for current events in France, with the verse accompanied by substantial footnotes which reprint inflammatory extracts from his works. Darwin, as the nominal “author,” is also implicated in these ideas, although no quotations from the few explicitly political passages in his works are included. A section from the end of the poem is typical, in which both men are characterised as supporting democracy and French-style social egalitarianism, as well as promoting atheism:

Now rise, my Muse, and, warm with rapture, dart
From Men to Manners, “Fancy to the Heart.”
Transporting sight! To view the Sons of Pride
Their little heads with shame and sorrow hide,
Ranks and Distinctions cease, all reeking lie
In the mean muck of low Equality!
Favourites of freedom, Sons of frisky France,
Who never learnt like British Bears to dance,
...
Ye pious Atheists, Moralists, who deem
The Christian’s Heaven and Hell an idle Dream,
Delighted to deride all vulgar fears
Of Beelzebub’s black Claws, cropt Tail and Ears
With manly Scorn and Dignity to tread
On prostrate Superstition’s hoary head;
Who, foes to Power Despotic, dare defy
The King of Kings, that Bugbear of the sky.284

The publication date of the poem coincides with the publication of the first part of Darwin’s Zoonomia, in which he first includes elements of his theory of evolution. This publication was the first to attract strong criticism from a major periodical reviewer, with the British Critic (1795) urging readers to avoid Darwin’s works, primarily on religious grounds.285 It is possible that this satire was prompted, not just by Darwin’s published medical correspondence with Beddoes, but by the Deistical

284 Anon., The Golden Age, 11-12.
elements of the ideas expressed in Zoonomia, combined with the liberal politics evident in The Botanic Garden.

Setting the tone for all later satires of Darwin’s poetry, the author of The Golden Age also takes aim at Darwin’s poetic style. In a passage near the beginning of the poem, “Darwin” states that:

Oh had I, silly swain, the force and fire
Of some, whom Frenchmen’s bloody deeds inspire;

Could I, for ever studious to refine,
Prank with my pearly phrase each pretty line,
Or like an empty Bottle, deep immers’d,
Whence Bubbles after Bubbles bustling burst,
Amus’d to view my noisy nothings swell,
In the sweet vanity of thought excel.286

This characterisation of Darwin as possessing potentially dangerously liberal ideas but expressing them in a way that is silly to the point of being ineffectual becomes a topos of later contemporary criticism; the contrast here between Darwin’s “pearly phrase” and “noisy nothings” and the long quotations from Beddoes’ medical and political prose suggests that Darwin’s ideas are certainly suspect, but of the two he is hardly the more dangerous.

The anonymous author extends his parody of Darwin’s poetic style to his and Beddoes’ scientific ideas, picking out examples which emphasise hubris and religious infidelity. A footnoted quotation from Beddoes’ Observations on Calculus, in which he describes potential applications of vegetable oil, based on its similarity to animal oils, and speculates “may we not, by regulating the vegetable functions, teach our woods and hedges to supply us with Butter and Tallow?,”287 is used in an anti-

286 Anon., Golden Age, 4.
287 Ibid., 6.
Semitic passage to both mock this idea as ridiculous and to suggest that such scientific over-reaching amounts to atheism:

The sottish Jews, who in a God believ’d,
And sometimes blessings, oftener plagues receiv’d,
Shouted a Miracle, when on the ground
Their boasted bread the greedy grumblers found:
By no dry crusts shall Infidels be fed,
Our soil producing Butter to our Bread!288

This mockery of Beddoes’ association of plant and animal life modulates into a swipe at Darwin’s similar proposition in *The Loves of the Plants*. The author also takes Darwin’s inversion of Ovid’s *Metamorphoses* far further into the realms of humorously questionable taste, suggesting that if the analogy were true, women would be at risk of rape by lustful shrubbery:

Then, oh! Ye fair, if through the shady grove
Musing on absent Lovers you should rove,
And there with tempting step all heedless brush
Too near some wanton metamorphos’d Bush,
...
Beware, beware, lest to your cost you find
The Bushes dangerous, dangerous too the Wind289

The author sketches a link between the belief that science will be able to solve mankind’s problems and Gallic institutionalised atheism, spelling out the terms for later attacks on Darwin by *The Anti-Jacobin, or Weekly Examiner* and its associates. Most notably absent, however, is any attack on Darwin (or Beddoes) on the basis of sexual licentiousness; their mutual threat to society is based firmly in their perceived advocacy of democratic reform and the religious infidelity suggested by their utopian beliefs in the possibilities of science.

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289 Ibid., 8.
This satire of Darwin, and to a large extent the others which followed, depict him as a particularly genteel type of subversive. The sexual provocations take place within the context of effete frippery, invariably characterised as having a somewhat frivolous, silly quality. The class connotations of this differ from the butts of other satires. In this sense, Darwin is positioned as representing the stratum of society which Norton Garfinkle has argued was largely immune from criticisms of mild unorthodoxy in the late eighteenth century.290 Towards the margin rather than being at the centre of democratic foment, Darwin represents the perceived dangers of the decadence and bourgeois liberalism of the upper middle classes, who are threatening in part because they do not take the threat of revolution seriously.

T.J. Mathias’s *Pursuits of Literature* (1794-1797), also first published in 1794, was the first major satire of contemporary literature to include Darwin within its compass, and it was the first to stress the sexual content of the poem and that of introductory botanical books for women more generally. As discussed in detail in chapter four, Mathias’s rebukes in this area were pointed but fairly mild compared to his criticisms of other writers such as Richard Payne Knight and Matthew Lewis, and concerned primarily with issues of taste. Sexual language and poetic style, however, were not the only aspects of Darwin’s poem to which Mathias objected. In a similar manner to the author of *The Golden Age*, Mathias takes aim at the grandiose scale of Darwin’s ideas and the degree of scientific knowledge and control over natural processes which would be required to achieve them. The particular idea in question appears in the fourth Canto of *The Economy of Vegetation*, in which Darwin suggests the future possibility of climate change through control of the winds, as part of a utopian project to increase agricultural productivity and the health of humans and animals.

In a note, he writes that

> the suddenness of the change of the wind from N.E. to S.W. seems to shew that it depends on some minute chemical cause; which if it was discovered

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might probably, like other chemical causes, be governed by human agency; such as blowing up rocks by gunpowder, or extracting the lightning from the clouds. If this could be accomplished...the vegetation of this country would be doubled; as in the moist vallies of Africa...the number of its inhabitants would be increased, and their lives prolonged; as great abundance of the aged and infirm of mankind, as well as many birds and animals, are destroyed by severe continued frosts in this climate. (186)

While Darwin provides a considerable amount of detail in his explanation of this process, purporting to extrapolate logically from known technologies, he can provide no comprehensive, empirically supported theory of weather patterns to explain how this highly speculative proposal would work.

In his Pursuits of Literature, Mathias singles out Darwin’s climate-change scheme for attack, implying not only that his speculations are scientifically implausible but also that he claims far too much for science. Mathias writes that he “could give with Darwin, to the hecick kind/Receipts in verse to shift the north-east wind,” adding in a footnote a reference to Rabelais and suggesting that “The true cream of their modern Encylcopedie is to be found in the French Revolution, 1789, &c.”

He returns to the issue in a later footnote in the context of a critique of William Godwin’s Political Justice, observing caustically that

the next thing observable [in the work], is a most affectionate concern and regard for the welfare of mankind, who are to exist some centuries hence, when the endless perfectibility of the human species (for such is their jargon) shall receive its completion upon earth; when the disciples of Dr. Darwin have learned to manage the winds and direct their currents at pleasure, and the descendants of Abbe Sieyes have calmed the waves of a stormy people with the essential oil of democracy.292

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291 Mathias, Pursuits of Literature, 115-16.
292 Ibid., 210.
Mathias goes on to link such faith in self-improvement and the perfectibility of mankind with hubris and atheism, suggesting that another discovery seems to be, that as hitherto we have had recourse to the agency and interference of the Deity, and his unalterable laws, to account even for the fall of a stone to the ground...we are now to discard the superintendence of God in human and terrestrial affairs, and to believe in no providence but our own, and to re-make ourselves and our faculties.

This atheism is again linked to democracy and revolution, the two forming an almost inseparable pair in critiques of Darwin’s politics. The worship of reason, despite the irrationality and self-serving nature of much human behaviour, is seen as causing the current political, religious and social instability in France.

As with the Pursuits, The Anti-Jacobin, or Weekly Examiner’s parody The Loves of the Triangles (1798) has attracted critical attention for its portrayal of Darwin’s botanical language and personification as sexualised and licentious (see Chapter Four). Of all the satires and parodies of Darwin’s work, The Loves of the Triangles contains the strongest characterisation of The Loves of the Plants as a sexually provocative work, with passages that suggest that Darwin’s poem condones promiscuous behaviour:

Alas! that partial Science should approve
The sly Rectangle’s too licentious love!
For three bright nymphs the wily wizard burns;

Three bright-ey’d nymphs requite his flame by turns. (218)

The notes to the early part of the poem, however, moderate the force of these passages by suggesting that Darwin imposes sexuality on an essentially neutral and innocent subject through a combination of a prurient mind and absurd scientific speculations. The introduction, a parody of the exordium to The Botanic Garden in which unworthy readers are informed “For you no Tangents touch, no Angles meet/No Circles join in osculation sweet!” is footnoted: “Osculation – For the Os – culation, or kissing of circles and other curves, see Huygens, who has veiled this

293 Ibid., 211.
delicate and inflammatory subject in the decent obscurity of a learned language.”

Rather than argue that Darwin’s speculations pose a serious threat, this note seems to characterise the entire debate over Linnean sexual terms as ridiculous. Indeed, the “editor” in the preface observes, following a discussion of the sexual elements of the Linnean system, that “though we have not the same sanguine persuasion of the absolute perfectibility of our species... yet, as we are in at least the same proportion, less convinced of the practical influence of Didactic Poems, we apprehend little danger to our readers’ morals, from laying before them Mr. Higgins’s doctrine in its most fascinating shape” (210).

However, like the Pursuits, The Loves of the Triangles has a wider case to make about Darwin’s scientific and political tenets. In the lengthy preface of over five pages, only one paragraph is devoted to sexuality; the others home in on the same philosophical and stylistic issues with which The Golden Age and The Pursuits are concerned. Primary among these is Darwin’s belief in “the ‘eternal and absolute PERFECTIBILITY of MAN,’” which Canning, Frere and Ellis link to the evolutionary theories of Zoonomia, having “Higgins” (Darwin) contend that

if, as is demonstrate, we have risen from a level with the cabbages of the field to our present comparatively intelligent and dignified state of existence... we should, if these energies were not repressed and subdued by the operation of prejudice and folly, by King-craft and Priest-craft... continue to exert and expand ourselves in a proportion infinitely greater than any thing of which we yet have any notion.”

This passage, which is in part repeated in a similar parody of biological evolution in the notes to the verse, not only mocks the idea of evolution as absurd, but portrays Darwin’s political and medical views as more radical than they arguably were by conflating the evolution of Zoonomia with the anti-institutional rhetoric of Richard Payne Knight and Thomas Beddoes’ medical speculations on the possibility of immortality.

295 Ibid., 208-9.
296 Ibid., 214-216.
The association of a scientific belief in the almost unlimited powers of human reason with the Terror in France forms the focus of the most serious passages in the poem. Following a humorous, innuendo-laden passage on the romantic pursuit of a rectangle by three different curves, the poem’s tone and direction changes markedly to declare:

Thus, happy France! In thy regenerate land,
Where Taste with Rapine saunters hand in hand;
Where, nursed in seats of innocence and bliss,
Reform greets Terror with fraternal kiss;
Where mild Philosophy first taught to scan
The wrongs of Providence and rights of Man

A later passage, in which “Higgins” calls for an invasion of England by republican France and which ends with the guillotining of Pitt, contains the only direct reference in any of these satires to a political passage from The Botanic Garden:

Fair freedom’s plant o’ershades the laughing isle:
Fir’d with new hopes, th’ exulting peasant sees
The Gallic streamer woo the British breeze;
While, pleas’d to watch its undulating charms,
The smiling infant spreads his little arms.

This verse-section is annotated “infancy is particularly interested in the diffusion of the new principles,” and is followed by the following edited extract from The Loves of the Plants:

Here Time’s huge fingers grasp his giant mace,
And dash proud superstition from her base;
Rend her strong towers and gorgeous fanes,
&c. &c. &c. &c.

While each light moment, as it passes by,
With feathery foot and pleasure-twinkling eye,

297 Ibid., 222.
298 Ibid., 229.
Feeds from its baby-hand with many a kiss

The callow nestlings of domestic bliss.299

The omitted lines include a description of “the fair growths of Science, and of Taste” regenerating the wasteland left after the destruction wrought by time on “superstition” and its institutions. While not explicitly aimed at a particular country or political system, the violence and upheaval suggested by “dash” and “rend” certainly evoke the threat of revolution. The citation in *The Loves of the Triangles* of passages from Darwin’s poems, which specifically link political revolution to science and philosophy, supports Desmond King-Hele’s contention that Canning targeted Darwin on the basis that his “evolutionary ideas were deeply subversive of established religion because Darwin denied God the guiding role he was designed to fill.”300 At its core, then, the most vitriolic satires of Darwin’s work are concerned with questions of religion, and with the politics of the text seen as an extension of its science.

*The Anti-Jacobin, or Weekly Examiner’s successor, The Anti-Jacobin Review,* published two cartoons in 1798 and 1799 which depict Darwin more generally as part of the radical Jacobin movement and subversive liberal print-culture. James Gillray’s cartoon of August 1798, *The New Morality,* illustrated a poem by Canning of the same name which satirised a variety of supposedly pro-French political and literary figures. In the case of Gillray’s cartoon, the text focused on is *Zoonomia,* the work of Darwin’s which first attracted religiously conservative opprobrium. The choice of this text associates Darwin with Jacobin politics on the basis that it advocated atheism – the image depicts flowers in a basket labelled “Zoonomia, or Jacobin plants,” with each flower wearing a bonnet-rouge. *The Loves of the Plants* is also evoked by the use of flowers, but sexual subversion per se is not emphasised in the image. A second cartoon by Rowlandson was published by the *Anti-Jacobin Review* in 1799. It depicted a proliferation of dangerous books and pamphlets similar to those shown emerging from the “cornucopia of ignorance” in *The New Morality.* In this

image, a paper labelled “Darwins [sic] topsy turvy Plants and Animals Destruction” is being fed into a fire along with a variety of “seditious” religious and political titles including works on atheism, Deism, Unitarianism, democracy, Barlow’s Conspiracy of Kings and Thelwall’s Rights of Nature. As with the verse satires, these cartoons associate Darwin’s scientific observations with the subversion of public institutions and religion. The poet himself is vilified as one among many provocative public intellectuals.

Alongside these satires of Darwin’s poetry and prose works, Richard Polwhele’s poem The Unsex’d Females (1798) provides an interesting point of contrast. As we have seen, Polwhele explicitly, and at length, exempts Darwin from criticism and effusively praises his works. While centrally concerned with female sexuality, Polwhele’s poem constantly returns to pro-democratic and pro-French politics as its central issues of concern. These apparently clear similarities between the objects of Polwhele’s vitriol and Darwin’s poem are worth discussion. It may be that Darwin’s association with the mainstream and the male made his political commentary unproblematic for Polwhele, but a more likely scenario seems to be that, given the relatively minor role played by the political passages in Darwin’s poems, these passages were ultimately not that conspicuous for Polwhele as a reader. Instead, his interest in the prefatory poem he contributed to The Botanic Garden appears to be primarily scientific and religious, as discussed in chapter five.

Nonetheless, while the political attacks on Darwin seem to have been substantially inspired — or at least fuelled — by the evolutionary and materialist ideas he expresses in Zoonomia, there are certainly moments of explicit political engagement in The Botanic Garden. In addition to the passage against superstition in The Loves of the Plants, quoted by the Anti-Jacobin, or Weekly Examiner above, the American revolution is celebrated in the Economy of Vegetation; Britain’s colonial rule is characterised as a vampiric eagle presiding over its starving and angry young, a tyranny eventually defeated with the aid of Benjamin Franklin:

301 George, Catalogue of Political and Personal Satires, 529.
So, born on sounding pinions to the WEST,
When Tyrant-Power had built his eagle nest;
While from his eyry shriek’d the famish’d brood,
Clenched their sharp claws, and champ’d their beaks for blood,
Immortal FRANKLIN watch’d the callow crew,
And stabb’d the struggling Vampires, ere they flew.
- The patriot-flame with quick contagion ran,
Hill lighted hill, and man electrised man;
Her heroes slain awhile COLUMBIA mourn’d,
And crown’d with laurels LIBERTY return’d. (2.361-370.91)

The passage continues with a description of Liberty’s progress through Ireland and France, building a sense of inevitable momentum towards the overthrow of church and monarchy:

  The Warrior, LIBERTY, with bending sails
  Helm’d his bold course to fair HIBERNIA’S vales;-  
  Firm as he steps along the shouting lands,
  Lo! Truth and Virtue range their radiant bands;
  Sad Superstition wails her empire torn,
  Art plies his oar, and Commerce pours her horn.
  Long had the Giant-form on GALLIA’s plains
  Inglorious slept, unconscious of his chains;
  Round his large limbs were wound a thousand strings
  By the weak hands of Confessors and Kings;
  O’er his closed eyes a triple veil was bound,
  And steely rivets lock’d him to the ground;
  While stern Bastile with iron-cage inthralls
  His folded limbs, and hems in marble walls.
  - Touch’d by the patriot-flame, he rent amazed
  The flimsy bonds, and round and round him gazed;
  Starts up from earth, above the admiring throng
  Lifts his Colossal form, and towers along;
High o'er his foes his hundred arms He rears,
Plowshares his swords, and pruning hooks his spears;
Calls to the Good and Brave with voice, that rolls
Like Heaven's own thunder round the echoing poles;
Gives to the winds his banner broad unfurl'd,
And fathers in its shade the living world! (2.371-94.91-3)

This passage is accompanied by a note containing a lengthy quotation from Helen Maria William's *Letters from France* (1790) detailing the conditions inside the Bastille prison, a humanitarian interest of Darwin's which reappears in his encomium to the prison reformer John Howard later in the Canto, when Howard in the guise of an angel appears to St. Peter in prison. (2.565-572.105)

Superstition appears again in association with tyranny in an anti-slavery passage also in Canto II of *The Economy of Vegetation*. Following a catalogue of precious metals and their sources, Darwin pauses to examine the human costs:

Heavens! on my sight what sanguine colours blaze!
Spain's deathless shame! The crimes of modern days!
When Avarice, shrouded in Religion's robe,
Sail'd to the West, and slaughter'd half the globe;
While Superstition, stalking by his side,
Mock'd the loud groan, and lap'd the bloody tide;
For sacred truths announced her frenzied dreams,
And turn'd to night the sun's meridian beams. –
Hear, oh, BRITANNIA! Potent Queen of isles,
On whom fair Art, and meek Religion smiles,
Now AFRIC'S coasts thy craftier sons invade,
And Theft and Murder take the garb of Trade!
- The SLAVE, in chains, on supplicating knee,
Spreads his wide arms, and lifts his eyes to Thee;
With hunger pale, with wounds and toil oppress'd,
"ARE WE NOT BRETHREN?" sorrow choaks the rest;
- AIR! Bear to heaven upon thy azure flood
  Their innocent cries! – EARTH! cover not their blood! (2.413-30.95-6)

Compared with other liberal works circulating during the 1780s and early 1790s, however, Darwin’s political commentary is generally quite mild and similar to a lot of other material in the mainstream. Many liberal writers at this time engaged in similar debates without necessarily identifying or being widely identified as dangerous radicals, such as William Cowper, whose abolitionist positions were strongly associated with his Christianity. Charlotte Smith and Anna Laetitia Barbauld similarly expressed liberal and abolitionist positions. Of Darwin’s politics, Richard Cronin has argued that

if the sympathies here are democratic, it remains a qualified and urbane variety of democracy. Darwin’s detestation of tyrants, for example, does not extend itself to kings. At the end of *The Economy of Vegetation* he celebrates British constitutional monarchy in a charming cameo that is not merely dutiful.”302

In this passage, reminiscent of Desaguliers’ *The Newtonian System of the World* (1728), Darwin describes the royal couple at leisure in Kew Gardens receiving the blessing of Nature herself on their reign:

In one bright point admiring nature eyes  
The fruits and foliage of discordant skies,  
Twines the gay floret with the fragrant bough,  
And bends the wreath round GEORGE’S royal brow.  
-Sometimes retiring, from the public weal  
One tranquil hour the ROYAL PARTNERS steal;  
Through glades exotic pass with step sublime,  
Or mark the growths of Britain’s happier clime;  
With beauty blossomed, and with virtue blaz’d,  
Mark the fair Scions, that themselves have rais’d;  
Sweet blooms the Rose, the towering Oak expands,

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The Grace and Guard of Britain’s golden lands. (4.575-586.207-8)

George also receives a patriotic mention in the description of Boulton’s new coin minting machine:

Hard dyes of steel the cupreous circles cramp,
And with quick fall his massy hammers stamp.
The Harp, the Lily and the Lion join,
And GEORGE and BRITAIN guard the sterling coin. (1.285-88.29)

In her Memoirs of the Life of Dr. Darwin, Seward mentions the controversy surrounding Darwin’s politics, but defends him on the basis of the date of his publications, implying that support for the French prior to the Terror was acceptable and did not suggest approval of the turn taken by the Revolution. She writes of the “Warrior, Liberty” passage (quoted above) that

this sublime sally of a too-confiding imagination has made the poet and his work countless foes. They triumph over him on a result so contrary; on the mortal wounds given by French crimes to real liberty. They forget, or choose to forget, that this part of the poem (though published after the other) appeared in 1791, antecedent to the dire regicide, and to all those unprecedented scenes of sanguinary cruelty inflicted on France by three of her republican tyrants, compared to whom the most remorseless of her monarchs was mild and merciful.303

Cronin concurs, observing that

in 1790 such sentiments united Whigs and Reformers. The French Revolution is celebrated as the overthrow of tyranny, and an event that has brought to an end a period of almost a century in which Britain and France had been engaged intermittently in dynastic wars.304

303 Seward, Memoirs of the Life of Dr. Darwin, 223-4.
304 Cronin, Politics of Romantic Poetry, 34.
In a similar vein, Seward characterises Darwin’s liberal politics more generally as humanitarian in motive and centred on opposition to wars fought for reasons other than self-defence:

and there were subjects out of himself on which he was always seriously and earnestly ingenuous. Politics was one. He hated war, and thought the motives few indeed, which could vindicate it’s [sic] homicide, especially in this commercial and sea-defended country. That of forcing America into internal, unrepresented taxation, and of interfering, through jealousy of her principles, with the internal government of France, he utterly disapproved. The event of both those contests accomplished his prophecies, and justified his disapprobation.”305

In context, then, Darwin’s political writings were initially fairly unprovocative and uncontroversial. Readings of his work as radical by both contemporaries and more modern critics rely to a large degree on hindsight; significantly, his final work, The Temple of Nature, for the most part avoids the political references of The Botanic Garden, focusing instead on human nature in general rather than on its implications for systems of governance. Whether or not Darwin’s private views evolved over this period, his later publications may be seen as representing a retreat from public political commentary.

**Darwin and Radical Culture**

At least some of the controversies surrounding Darwin are tied to his intended audience. The expense of Darwin’s books precluded their marketing to lower-middle and working-class audiences, a feature which saved other potentially subversive books from suppression, such as Godwin’s Political Justice (1793). The importance of price in determining, in the eyes of both the public and the government, the seditious potential of a work is illustrated by the contemporary case of Paine’s Rights of Man. William St Clair points out that

in three book clubs in Gloucestershire of which we have a record for the 1790s, *The Rights of Man* was the most common pamphlet. But when Paine reduced the price from 3s 6d (3.5 shillings), already a low price for pamphlets, to just sixpence, and arranged for several editions to be sent to be distributed among the working men of the manufacturing cities, he caused a scare throughout the government. At sixpence, *The Rights of Man* could be bought, read by, and read aloud to groups who normally had no access to pamphlets. By refusing a personal fortune – he was offered a thousand guineas (£1,050) for the intellectual property rights – he had broken through the censorship of price. Paine himself was hurriedly convicted of seditious libel in his absence, a number of booksellers went to prison for continuing to sell copies, and the book ceased to be available.\(^{306}\)

It is possible that the high price of Darwin’s books was a calculated technique to avoid censure, or a fortuitous accident. However, when considering Darwin’s modern reputation as a radical, it is important to take into account the real limitations an expensive price would have placed on circulation, making this form of publication unattractive to someone who genuinely wished to widely disseminate subversive ideas. A luxurious volume of several hundred pages and multiple engraved plates would have been outside the price range of the vast majority of households. Inexpensive pamphlets were by far the most potent and popular form of publication from all sides of the political spectrum, and were the centre of government censorship campaigns during the 1790s. Coleridge in his 1795 lectures decries legislation to restrict the publishing of political pamphlets (the “Two Bills”), arguing that

> the first of these Bills is an attempt to assassinate the Liberty of the Press; the second, to smother the Liberty of Speech. And first of the first, which we shall examine clause by clause. – The outrage offered to his Majesty is the pretext – which outrage is ascribed to “the multitude of seditious pamphlets and

\(^{306}\) St. Clair, *Reading Nation*, 257.
speeches daily printed, published, and dispersed with unremitting industry and with a transcendant [sic] boldness.”

Although his publishing priorities minimised the potential political clout of his works, Darwin had numerous social, professional and literary ties to radical culture, most importantly his membership of the Lunar society of Birmingham and his professional relationship with the publisher Joseph Johnson. Darwin’s affiliation with Johnson, whose circle included Blake and Fuseli, both of whom were involved in the production of plates for Darwin’s poems, has frequently been used to cast his books as radical and to position him personally within radical democratic circles. Darwin certainly expressed support for the French Revolution in his correspondence and poetry, writing to James Watt at the start of 1790: “Do you not congratulate your grand-children on the dawn of universal liberty? I feel myself becoming all french both in chemistry and politics.” In addition to the small number of passages addressing “liberty” in *The Botanic Garden*, and private correspondence and conversation amongst friends, in December 1791 he also “with Joseph Strutt and Samuel Fox ... founded the Derby Society for Political Information, one of the earliest of the Radical societies formed in the wake of *The Rights of Man.*” Uglow adds that “the manifesto of the Derby Society (one of its demands being full adult male suffrage) was published in July, presented to the National Assembly in November, and printed in the *Morning Chronicle* the following month.” Its editors were later charged with seditious libel.

This, however, appears to be the limit of Darwin’s political involvement. While he expressed democratic views in private and was politically engaged, these were activities and discourses he participated in as part of a social circle that was concerned with many facets of society’s progress, most importantly science and technology. Radical political concepts also percolated through this milieu and were

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310 Ibid.
discussed and debated, but the agenda of disseminating these ideas and actively working for political change was not necessarily present or a priority. Remaining in Derby despite his increasing fame as both a physician and an author, Darwin does not appear to have been greatly involved in Johnson’s progressive social circle, and his correspondence with members of the Lunar society more often focuses on technological and industrial developments and on personal concerns rather than on politics.

At no point does Darwin seem to have thought of or publicly positioned himself as a political figure. If anything, his correspondence intimates some anxiety about attracting controversy, and what this might mean for his professional standing as a doctor. In terms of his choice of Johnson and the authorial image which came with it, it is important to note that not all of Johnson’s authors were perceived as radicals; many, such as Charlotte Smith, were liberal without being considered seditious activists. Helen Braithwaite has catalogued the large variety of books published by Johnson’s house over the course of his career, ranging from the provocative works of Joseph Priestley to far more conservative religious books. She observes that in the decades over which Johnson was involved in the book trade,

he had built up a wide-ranging and diverse list of authors and acquaintances that did not consist simply of hard-core ‘radicals’ but included ‘arch-conservatives,’...latitudinarian Anglicans, Catholics, moderate dissenters ... and sober evangelicals.311

Most importantly, she notes that

there are dangers in making too much of certain relationships and regarding someone who, among other things, publishes ‘radicals’ as solely a ‘radical’ publisher. Also, Johnson was certainly incriminated as a ‘radical’ in 1798 but, in view of the heightened sensitivities of the time, was that really the case (as with so many of his high-profile authors), and might that label be just as inappropriate, exaggerated and expedient now as then?312

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311 Braithwaite, Romanticism, Publishing and Dissent, xiii.
312 Ibid., xiii.
A person could be involved in such networks to differing extents, and Darwin’s political ideas seem to have been progressive and democratic without advocating the overthrow of the British monarchy or any fundamental change to the constitutional system.

**Politics, Morality and the “Darwinian School” of Poetry**

Despite his private views and social connections, the image of Darwin as a public figure, embedded in the contemporary critical reception of his work, remained remarkably apolitical. At the same time, the flexible, hybrid form that he pioneered proved attractive to contemporaries such as John Gisborne, Thomas Beddoes and Richard Payne Knight, who employed their own didactic poems for more explicitly political ends. This influence, however, does not seem to have had much effect on Darwin’s own public image as a writer. The issues of taste and style that dominate both the early reviews and satires of Darwin’s poems continue, in the eyes of critics, to define his influence on his contemporaries and posthumous reputation. The tendency to praise or critique Darwin on the basis of aesthetics rather than on religious or political grounds is present from the very first reviews of *The Loves of the Plants*, but becomes even more dominant with the passage of time, particularly following the publication of Wordsworth’s and Coleridge’s *Lyrical Ballads* (1798), a book which, in retrospect, marked a shift away from neo-Classical formalism. Indeed, the periodical reviews of *The Temple of Nature* are devoid of any references to politics, despite appearing only a few years after the publication of *The Loves of the Triangles*.

To a large extent, the decline in interest in Darwin’s poetry from the first decade of the nineteenth century onwards can be attributed to the fact that the didactic poem in its eighteenth-century form, a quintessentially (neo-)classical genre, fell out of vogue. And yet, as a genre, Darwin’s didactic poems did not go quickly or quietly. Darwin’s work inspired and influenced a cluster of late-eighteenth century contemporaries and early Romantic poets who continued to perpetuate and/or respond to elements
of his work well into the nineteenth century. Chapin affirms Darwin’s lasting popularity and standing in English literary life when he notes that

Darwin’s ambitious attempt to unite poetry with science achieved a popularity which lasted well into the following century. It was not until 1809 that Byron was able to notice the neglect of the Botanic Garden as “some proof of returning taste,” and there were serious attempts to follow in the Darwinian path as late as 1828.313

By the end of the 1790s, the adjective “Darwinian” had entered the English language, referring not to the survival of the fittest but to highly ornamented verse in heroic couplets, or, in the words of the British Critic’s review of Lyrical Ballads, Darwin’s “meretricious frippery.”314 References to a “Darwinian School” of poetry appear, for the most part to be short-hand for describing a poet whose verse style bears similarities to Darwin’s, rather than describing a distinct group of followers publishing Darwin-style verse analogous to a “Lake School” or “Cockney School.” Desmond King-Hele’s survey of Romantic-era poets whose work echoes Darwin’s suggests a broad rather than specific influence on literary culture, in which “very few of them knew how much they owed to Darwin.”315 The notable exception is the relatively large number of female writers whose work, directly inspired by The Botanic Garden, is discussed in chapters four and eight of this thesis.

However, the number of male poets who produced works with numerous, clear similarities to Darwin’s appear to be few, and are mainly those with either personal or professional connections to Darwin himself. These poems are notable not so much for their combination of heroic couplets and footnotes, which was a style hardly exclusive to Darwin, but for their use of the medium of the didactic poem for specific purposes. In the case of Darwin’s closest male imitators, John Gisborne and Thomas Beddoes, these agendas were far more blatantly political than Darwin’s own, taking

313 Chapin, Personification, 82.
314 Cited in King-Hele, Erasmus Darwin and the Romantic Poets, 71.
315 King-Hele, Erasmus Darwin and the Romantic Poets, 277.
The Botanic Garden as a model for the ways in which the genre could be used to intervene in discourses outside of science.

Of those who applied Darwin’s style to the subject of natural history, Gisborne was probably the most successful, with his The Vales of Wever, a Loco-Descriptive Poem attracting mainstream periodical reviews (1797). A minor poet who is known now largely through his association with Darwin, Gisborne’s significance lies in his status as a transitional figure, combining Darwinian rhyming couplets and an interest in natural history with a “Romantic” aesthetic and sense of the sublime. Although his treatment of landscapes anticipates something of the flavour of Wordsworth’s and Coleridge’s verse, Gisborne’s sense of the instrumentality of the didactic poem is grounded firmly in the eighteenth century, combining a tourist guide with a tract promoting liberal political causes.

The brother of Thomas Gisborne whose own blank-verse natural history poem Walks in a Forest (1794) was widely reviewed and reprinted, John Gisborne was related to Darwin via marriage as the husband of Darwin’s stepdaughter. Drawing on the long eighteenth-century tradition of didactic natural history poems, Gisborne includes epigraphs in his poem from Akenside’s The Pleasures of the Imagination (1744), and also references Thomson’s The Seasons (1730), but his primary influence is clearly Darwin. Gisborne combines Darwin’s polished couplets and preference for visual imagery with his brother’s eye for naturalistic detail:

And when relentless Autumn pours
On earth’s chill bosom leafy showers,
Rimes the blue eyelids of the dawn,
And frosts with crystal gems the lawn;
Thy welcome steps, Hygeia, guide
These groves and deepening dales beside.316

In line with his predecessors, and in keeping with his brother, Gisborne also includes physico-theological passages, stating that “in all the works of nature the power of the

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316 Gisborne, Vales of Wever, 26. Further references to this work appear in text.
Supreme Being is fully manifested.” The poem includes a standard apostrophe to the divine:

O sovereign GOD! Thy gracious power
Glows on each leaf and opening flower:
From the tall oak’s umbrageous wreath
Down to the tiny blade beneath (84)

While Gisborne employs notes, they, like his verse, are essentially descriptive rather than “scientific” in the sense that they seek to explain the systems and processes underlying natural phenomena. For example, an account of regular flooding in the region describes the damage wrought during specific previous floods but does not seek to account for the cause (10-11). There are some exceptions: an account of sheep surviving heavy snowfalls provides scientific detail and cites Darwin as a source (35-6), and a couple of botanical passages also go into some detail (e.g. 38). These notes, however, are few in number compared to those which simply describe or provide local information useful for tourists. This aim is reflected in the poem’s subtitle – it is a “loco descriptive” rather than “philosophical” poem. While this genre has much in common, historically, with the didactic science poem, including a pervasive religious sensibility, its approach is contemplative rather than analytical; it does not place importance on understanding why the creation works in the way that it does. There is also an emphasis on aesthetics. Some passages suggest the influence of Mason, Gilpin, Price and Knight on garden design:

From my bold terrace burst the scene,
Rob’d in a waving vest of green;
Swift slopes my foreground’s velvet lawn,
Late glistening with the tears of morn;
Bends o’er the shelving cliffs, or shrinks,
And tufts with fern the giddy brinks;
While mingling oaks in rude arcades
Chequer the green expanse with shades.
Fronting, a sister lawn displays
Umbrageous promont’ries and bays;
With grace superior swells sublime,
And marks the mouldering wrecks of time (9-10)

While many passages depict a Classical, pastoral landscape, a proto-Romantic or
gothic sensibility can also be seen in some passages:

Here as the silent orb of night
Silvers the crags with sacred light,
Pours through the gaping rocks her beams,
And sheds a glory on the streams,
Old towers and ramparts burst around,
Inchantment walks the hoary ground:
Black shades contrast the illumin’d scene,
And horror frowns those dells between.
Pale o’er the woodlands moonshine glows,
And pale the lustrous deluge flows,
Rolls o’er the graves on WEVER’s brow,
While yellow vapours swim below. (16-17)

There is a frequently recurring sense of the horror or destructiveness of aspects of
nature, for example in the description of the death of Pliny during the eruption of
Mt. Vesuvius (65). Gisborne’s natural vistas often contain a threatening sense of the
sublime which foreshadows later Romantic and Gothic landscapes:

Where the lost eye pursues in vain
Gigantic Grindon’s bleak domain,
Where yawning THOR the vale alarms,
And Beauty sleeps in Horror’s arms.

“Thor’s Cave is situated a few miles from Grindon, and is justly entitled to
the peculiar attention of every traveller. The mouth of the cave, the lofty and
almost perpendicular precipice from whence it opens, the adjacent hills, the
deep cave beneath, in whose bosom the river Minfold flows, form an
astonishing display of natural grandeur and beauty. For a truly poetical
description of Thor’s Cave, I refer the reader to an author, whose poetry can perish only with language itself. See Darwin’s Botanic Garden, vol. ii. p. 104.” (42)

In passages such as the above, however, Gisborne’s sense of a Romantic and sublime landscape sits somewhat at odds with his notes, which – like many of Darwin’s annotations – have the effect of undercutting the sense of vastness, sublimity or mystery conveyed in the verse.

The similarity of his style to Darwin’s was noted by a reviewer for the *Monthly Magazine*, whose brief summation reads: “Mr. Gisborne’s “Vales of Wever” is a loco-descriptive poem, evidently imitated, in regard to style, from Darwin’s Botanic Garden: some parts of it are beautiful.” 317 Anna Seward also highlights the connection, discussing the poem at some length prior to her analysis of Darwin’s poetry in her *Memoirs of Dr. Darwin*:

in the year 1797, [John Gisborne] published a spirited and elegant local poem, entitled, “The Vales of Wever.” It is evidently of the Darwinian school, though in a shorter measure, and has genius to support the peculiar manner of poetic writing which it emulates and has caught.318

Not all reviews, however, were positive; Seward reproaches negative reviewers and their general lack of interest in the poem, commenting that

while the powers of metrical landscape-painting are the theme, not unwelcome to those who feel its enchantment, will be instances which must prove that they are possessed by Mr. John Gisborne in a degree which would disgrace the national taste if they should be suffered to pass away without their fame. “The Vales of Wever” is this young man’s first publication. Beneath thankless neglect, the efflorescence of a rich imagination will probably sink blighted, like the opening flowers of the spring before an Easter

mildew, no more to rise in future compositions to the view of that public
which had estimated so coldly the value of the first.319

Her remark was perhaps inspired by reviews such as the one published in the
*Monthly Visitor*, which observed that “Mr. Gisborne has a very rich kind of a fancy.
By some persons he will be eminently admired;—but he is by much too fanciful for
us. Many of his lines might do honour to a Della-Crusca; and it is as certain, that they
would be objected to by a Gifford.”320

The emphasis on style and aesthetics in both Seward’s review and that of the
periodicals is significant in light of similarities to Darwin’s work that are not
mentioned, especially given that the reviews were published in the same year as *The
Loves of the Triangles* (1798). Darwin’s influence on Gisborne’s poem goes beyond
natural history into the realm of politics. Somewhat awkwardly, Gisborne’s
landscape descriptions are occasionally interrupted by blatant political passages
which often seem to have no logical connection with the material surrounding them.

Early on, Gisborne describes the retreat of Rousseau:

Admir’d Britannia’s temperate isle;
Yet thought on Gallia’s lovelier vales,
Her brighter founts, her softer gales,
Thought on her chains with Freedom’s sigh,
And all the patriot kindled in his eye. (51)

A lengthy passage on the 1790 massacre at Ismail is just one of a number of anti-
Russian passages, including a lengthy note full of invective against Catherine the
Great: “death has removed from the world one of the most formidable tyrants in
female form that ever threatened the liberties of mankind” (29). He adds that
she affected to consider the oppression of surrounding nations as a duty she
owed to the safety of her own empire. It has however been asserted, that she
was a *popular* sovereign within her dominions; but let it be remembered, that
attachment and loyalty are often professed from fear, and it would require

319 Ibid., Seward 115-16.
more than papal faith to believe that this principle had no influence with her enslaved commonalty (29).

A transparent analogy, this passage moves from a description of the atrocities committed by the Russian army in Poland to a more general statement that “Chains are the portion of the slave - /The virtuous will be free and brave,” accompanied by a note stating that “the author hopes that he shall not be censured for unnecessary warmth on so interesting a subject. He is aware that it is become almost fashionable to stigmatize such sentiments as no better than empty declamation; but it is an ill symptom, and peculiar to modern times.” A celebration of “Immortal WASHINGTON” (31), follows, though Gisborne stops short of directly celebrating France:

Labour inclines his swarthy brow,
Strews far around, array’d in health,
Leaves, flowers, and fruitage, blushing wealth!
While Trave, with all her sails unfurl’d,
Proclaims the PATRIOT OF THE WORLD. (32-3)

A number of other minor poets were inspired by Darwin’s style and/or subject matter. Thomas Beddoes’ *Alexander’s Expedition* (1792) is perhaps the earliest example. Desmond King-Hele repeats Beddoes’ prefatory assertion that he was inspired to write the poem to prove that it was easy to write in the Darwinian style. The work itself, however, suggests a more serious motive behind the composition. Employing heroic couplets, Darwinian patterns of syntax and extensive annotations, *Alexander’s Expedition* looks and sounds like Darwin’s poetry although its couplets are considerably more prosaic, lacking the earlier poet’s variety of language and flair for striking imagery. Beddoes establishes an ambivalent relationship with Darwin’s work, admitting imitation but disclaiming plagiarism. He writes in the advertisement that the poem originated in a stratagem “to assume the style of the most elegant of modern poets”321 but “begs leave to add, that the following verses were not only written, but nearly printed before the appearance of the Oeconomy of

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Vegetation and the third edition of the [sic] Loves of the Plants….He could not therefore transplant any of the Graces with which the more recent productions of this great poet and philosopher abound. Neither would he have attempted it, for imitation carried too far becomes contemptibly puerile” (iv). Both flattering Darwin and suggesting his own originality on the level of style, Beddoes somewhat disingenuously downplays the most salient feature of his own verses. Like most didactic epics, Alexander’s Expedition uses its history lessons as a vehicle for education of other kinds, in this case peddling a blatant pro-democratic political agenda through the rehabilitation of the figure of Alexander as a liberal, elected, and Enlightened ruler.

Beddoes gestures towards a more serious educational motivation in the advertisement, stating that the notes “were chiefly written with a view to diffuse more widely a knowledge of old and new Hindoo literature, which although sufficiently familiar to the learned, is but just reaching the circle of ordinary readers” (iv). Following Darwin, he laments that “Fancy” is frequently overlooked as a driving force in science, and then obliquely adds that he will not offer vain apologies for his annexed observations, which he foresees will be “warmly disapproved” (iv). He then proceeds to note the “Great political changes” (v) wrought by young men, stressing the importance of educational opportunities in the development of great scientists: “And if this advantage is at present confined to a few, where does the fault lie, but in those institutions, which by every direct and indirect means, counteract the designs of creative wisdom, and check the improvement of the individual, and by consequence, of the species?” (vi). Beddoes makes it very clear to which institutions he is referring – namely the church and Britain’s imperialist government: “The Crescent onward leads consuming hosts/And Carnage dogs the Cross along thy coasts” (32). Furthermore, “the moral character of the Hindoos can never begin to improve, if it needs improvement, till the last hour of their merciless tyrants from Europe shall arrive” (13). Alexander is cast as the model of an enlightened ruler, somewhat awkwardly in light of Beddoes’ constant denunciation of imperialism and slavery: “Large was thy thought, and liberal was thy soul/…Beyond the Sage’s
amplest grasp, thy mind/Embraced the mighty mass of human kind” (28). His egalitarian emphasis on nurture over nature (“Man is every where what circumstances make him” 13) and politicisation of the role of the poet (“It would well become poetry, philosophy, and all the powers propitious to mankind, to correct the prevailing ideas respecting the powerful” 40-1) also sit uncomfortably with his solution, which consists of a peace based on commerce and sound political economy. This outcome is portrayed positively in association with Alexander’s conquests:

Lo! In redundant current, Commerce pours,
Obedient to they call, her Eastern stores;
And still, though Plague and Rapine range the land,
Her spicy bale perfumes thy chosen strand. (29)

Beddoes’ view of science also shares Darwin’s celebration of its ability to control the natural world and harness its forces for human ends: “it belongs to philosophy to disarm Nature, as well as Superstition of her terrors” (16). While the seeds of these ideas are present in Darwin’s work, they exist for the most part as a covert subtext, only occasionally becoming explicit. In other words, while Beddoes co-opts the popular form of Darwin, his use of the didactic poem leads off in a different direction, to become an explicitly activist text rather than one which aims more for breadth of appeal than controversy.

While not a member of the so-called “Darwinian school,” Richard Payne Knight’s highly politicised Lucretian didactic verse epic, *The Progress of Civil Society* (1794), also became associated with Darwin through the parodies of both Mathias and the authors of *The Loves of the Triangles*. (*The Anti-Jacobin, or Weekly Examiner* satirised *The Progress of Civil Society* separately under the title *The Progress of Man*, which was presented as having been written by the same author as *The Loves of the Triangles*). Martin Priestman’s study of the composition history of Darwin’s *The Temple of Nature* suggests that its final topic may have been chosen in response to Knight’s publication of *The Progress of Civil Society*.322 The original association of the two works is likely to

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have been invited by their mutual use of Lucretius, which also gave undertones of atheism. In the case of Darwin, such judgements were largely retrospectively applied. However, Knight’s text takes De Rerum Natura as a more fundamental and obvious model.

Knight describes his work as a Lucretian imitation from the outset, declaring at the start of the preface that “the learned reader will perceive, that the general design of the following work is taken from the latter part of the fifth book of Lucretius,”323 and also expresses a debt to Pope’s Essay on Man from which he has “occasionally repeated ideas and observations” (vi). This lineage seeks to establish the poem as a serious philosophical work, an issue Knight addresses specifically when he discusses his style, informing the reader that

those, who are accustomed to admire the uniform glitter of the present fashionable style both in verse and prose, will certainly think my colouring flat and insipid; but do not let them imagine that any defects of this kind, proceed from negligence ... it having been my endeavour to adapt, as much as possible, the character of my style to the character of my subject; and not, like that great orator, Mr. Prigg, to display as much eloquence upon a riband, as a Raphael. (xiii)

This apparent distancing of himself from Darwin, or at the very least his poetical style, comes to the fore in one of the areas in which Mathias and The Anti-Jacobin, or Weekly Examiner associated them: their portrayal of sexuality, and its links to a materialist, non-Christian worldview. Knight begins on the defensive, devoting a substantial section of the preface to defending himself against charges of religious infidelity and sexual obscenity arising from the publication of The Worship of Priapus (1786). His celebration of sexuality as a foundational part of human nature, however, follows Lucretius in emphasising the role of marriage and connubial ties in establishing stable societies and governments. The image which emerges – despite Knight’s statements in support of legal divorce – paints a picture antithetical to the

323 Knight, Progress of Civil Society, v. Further citations of this work appear in text.
antinomian situation emphasised by both *The Anti-Jacobin, or Weekly Examiner* and Mathias, especially in terms of sexual license. Sexuality is portrayed as a highly civilising force, the unrestrained exercise of which leads to torpor and depression:

- From the same source the attractive power began,
- Which changed the wandering brute to social man:
- First native lust the rugged savage led
- To the rank pleasures of his lawless bed:-

Till, often cloy’d with what he oft desired,
His passions sicken’d, and his nerves grew tired: -
Then, lull’d in intervals of soft repose,
The social thought of sympathy arose;
The converse of the soul the sense beguiled,
And dalliance, turn’d to gentle friendship, smiled: -

In band connubial, to each neighbouring race;
Controls fell discord in its germs innate;
And, with concentrated interest, builds the state. (8-9)

While ascribing a utilitarian rather than sacramental value to the institution of marriage, Knight treats human sexuality with none of the playfulness to be found in Darwin’s *Loves of the Plants*. The rather dour portrayal of the results of indulgence at the end of the first Canto has the general effect of closing down possibly licentious readings to a much greater extent than Darwin’s early work, though at the same time making a more provocative statement about the biological and contingent origins of human moral behaviour that was later to attract similar criticism when repeated in Darwin’s *The Temple of Nature*.

As with Darwin’s *Botanic Garden*, *The Progress of Civil Society* was tied to political violence through its endorsement of the French Revolution – in this case a charge more clearly deserved. In the preface, Knight points out that the political passages of the poem are already out of date, but ends with a veiled threat that the scenes of the
Revolution could repeat themselves in England: “the account of the state of France in the sixth Book, which was written during the reign of the Jacobins: that such scenes, however, may not soon be present again, both in that country, and in other parts of Europe, is rather to be hoped than expected” (xxiii). This idea is echoed in the poem itself, with Robespierre relativised among a long string of hereditary tyrants. Thus, Knight sidesteps the unique circumstances surrounding Robespierre’s rise to power, and continues with a passage directed to “happy Britain” full of implied menace against the monarchy should parliamentary reform fail:

Be thy own friend, and let thy children know,
That, for themselves, their blood and treasures flow;
That not ambitious hopes, or vengeful pride,
Lead on thy armies, or thy councils guide;
But that thy sword, impartial justice draws,
To save thy liberties, and guard thy laws.

Repair the waste of age and time’s decay,
That slowly on thy constitution prey;

On adamantine pillars stands the throne,
Whose subjects feel, its interests are their own;
But frail and transient is its gloomy sway,
When terror only bids its slaves obey (144).

Priestman has described Darwin’s choice of evolution as a more radical topic than his original plan for a Lucretian poem on the progress of society, which paralleled Knight’s own Progress of Civil Society. From the early drafts of The Temple of Nature, this seems to be true.324 From a religious standpoint, the change in topic from societal development to biological development is certainly more provocative. However, this is not necessarily true politically. Darwin’s treatment of the political and social implications of his evolutionary ideas, while considerably more radical than that postulated in his earlier works, is radical primarily for philosophical reasons. The basic structures of society and government are not overtly challenged, and the text

324 See Priestman, Early Drafts, 311. Also transcribed as part of the electronic edition.
shies away from much explicit engagement with political questions. In this respect, Knight’s poem remains the more politically provocative text.

Darwin’s major contribution to political writing in this period, then, is arguably the provision of a poetic model capacious enough to be used as a vehicle for political commentary and calls for reform. Although his own work addresses these issues fairly tangentially, his successors and imitators more centrally incorporated advocacy for democracy and liberty in England into their writing. These works are less “scientific” poems than poems which take advantage of the didactic genre’s ability to contain and accessibly present a range of generic hybrids and discourses.

V. Didacticism and the Romantic Poets

The political legacy of Darwin’s generic choices can also be seen in the response to his work of the poets of the 1790s now identified as “Romantic.” While Wordsworth and Coleridge arrived at an entirely different conclusion with regards to what constituted the ideal poetic form, their early work arose out of a similar moral and political exigency: the desire to transform and improve society. Reacting to the status quo of Enlightenment verse that both reflected and produced polite culture – one which was refined, highly structured and sought to improve through education, whether it be through explicit didacticism or satire – Romantic writers rejected the forms of neo-classicism as sterile but continued to deploy verse, sometimes quite ambivalently, for instrumental aims. David Duff has argued that rather than resulting in a rejection of didacticism, English responses to the French Revolution involved “a wholesale politicization of literature that left few writers or genres untouched, and gave a permanently polemical edge to Romantic literary culture” and that these manifold pressures translated into a ubiquitous and relentless demand for usefulness: for literature to serve some cause, perform some function, or state some purpose—a demand that was at its strongest at precisely the
moment when the idea that art was essentially without purpose, an end in itself, began to crystallize.325

The gradual shift across the period in which Darwin was publishing to what is now understood as a “Romantic” aesthetic reflects not so much a turn away from didacticism but a shift in the means of achieving social and personal improvement. As the 1790s progressed, transformation of society became increasingly discussed in terms of individual moral transformation. Literary historian Gary Day’s description of the shift to a Romantic literary consciousness centres on a radical rethinking of mankind’s relationship to society, arguing that increasingly in this period “criticism defines literature against mechanical conceptions of man and nature.”326 Rather than expressing faith that education, science and industry would significantly improve peoples’ lives, Day argues that “the eighteenth-century dream that commerce would unify society”327 was abandoned and that “there was a positive perception of the public realm in the eighteenth century but this changes in the nineteenth….It is no longer the sphere where the individual grows but where he or she is controlled.”328

Wordsworth’s Preface to Lyrical Ballads (1800/1802) can been seen retrospectively as an important barometer of changing poetic tastes, but it is equally notable for the pervasively utilitarian emphasis it retains from the Enlightenment. While criticism of Darwin’s style predates this work, and the more “natural” style of poetry championed in Lyrical Ballads was not immediately well received, the work’s attacks on the style of writing employed by Darwin and many of his contemporaries foreshadows several major complaints which would be directed against Darwin’s poetry over the coming decades. Desmond King-Hele considers Darwin’s work as pivotal in inspiring Lyrical Ballads, arguing that “first, he seduced Wordsworth and Coleridge into following him, and it was largely their revolt against his ‘gaudiness’ that spurred them to develop a new style. Second, Wordsworth and Coleridge both

326 Day, Literary Criticism, 208.
327 Ibid., 208.
328 Ibid., 209.
drew heavily on Darwin in the individual poems.”329 Frederick Pottle agrees, suggesting that “Wordsworth’s famous essay on poetic diction…is from beginning to end an anxious attack on the poetry of Erasmus Darwin, then much more popular than his own.”330 The importance of Darwin as a focus of reaction is suggested in the review of Lyrical Ballads published by the British Critic, in which the poems are measured in terms of their difference from the Darwinian style (see chapter three). Despite this, science as a subject is not rejected as being inherently unsuitable for poetry by Wordsworth. In his 1802 preface to Lyrical Ballads, he argues that

the remotest discoveries of the Chemist, the Botanist, or Mineralogist, will be as proper objects of the Poet’s art as any upon which it can be employed, if the time should ever come when these things shall be familiar to us, and the relations under which they are contemplated by the followers of these respective sciences shall be manifestly and palpably material to us as enjoying and suffering beings.331

Desmond King-Hele points out that “In the Botanic Garden the sciences most discussed are botany, geology and chemistry. So there is little doubt where Wordsworth is aiming.”332 In fact, the connection of the two cultural fields is defended at some length in the preface, and Wordsworth’s conception of both the scientist’s and the poet’s modus operandi are grounded in the language of empiricism.

In terms similar to those used by Darwin in Zoonomia, a possible influence, Wordsworth postulates that

we have no knowledge, that is, no general principles drawn from the contemplation of particular facts, but what has been built up by pleasure, and exists in us by pleasure alone. The Man of Science, the Chemist and Mathematician, whatever difficulties and disgusts they may have had to struggle with, know and feel this…What then does the Poet? He considers

330 Cited in Chapin, Personification, 82.
332 King-Hele, Erasmus Darwin and the Romantic Poets, 70.
man and the objects that surround him as acting and re-acting upon each other, so as to produce an infinite complexity of pain and pleasure.\textsuperscript{333}

The debate instead plays out primarily in terms of artificiality, and the ways in which poetry can be used to create an authentic, living form of knowledge. For Wordsworth, the role of the poet is not only to understand mankind through empirical observation, but to infuse humanity into the scientific mode of understanding the world:

if the time should ever come when what is now called science, thus familiarized to men, shall be ready to put on, as it were, a form of flesh and blood, the Poet will lend his divine spirit to aid the transfiguration, and will welcome the Being thus produced, as a dear and genuine inmate of the household of man.\textsuperscript{334}

Jordan argues that for Wordsworth, “science can be pursued with passion and become a proper poetic subject.”\textsuperscript{335} He observes that

Wordsworth’s poetry of the \textit{Lyrical Ballads} period begins with an “I have felt,” and tries to recreate that feeling for the reader by describing it thematically and circumstantially. The importance is not, he insists, in the event, which is not more than the setting or the catalyst, but in the feeling observer, who – despite the “I” – is not simply William Wordsworth, but rather observing humanity, “the mind of man.”\textsuperscript{336}

The humanizing of empiricism, as employed by poets, is tied explicitly here to a moral role – the inculcation of ethics and the creation of a social contract.

Wordsworth takes pains to distinguish between the abstracted knowledge of the Man of Science, and its applied form in poetry, which connects individuals to each other through shared experience:

the knowledge both of the Poet and the Man of science is pleasure; but the knowledge of the one cleaves to us as a necessary part of our existence, our

\textsuperscript{333} Wordsworth, “Preface,” 252.
\textsuperscript{334} Ibid., 254.
\textsuperscript{335} Jordan, \textit{Why the Lyrical Ballads}, 4.
\textsuperscript{336} Ibid., 5-6.
natural and unalienable inheritance; the other is a personal and individual acquisition, slow to come to us, and by no habitual and direct sympathy connecting us with our fellow-beings.  

He adds that the Poet is the rock of defence for human nature; an upholder and preserver, carrying everywhere with him relationship and love. In spite of difference of soil and climate, of language and manners, of laws and customs: in spite of things silently gone out of mind, and things violently destroyed; the Poet binds together by passion and knowledge the vast empire of human society, as it is spread over the whole earth, and over all time.

For Wordsworth then, in contrast to Darwin, simply acquiring and sharing information about humankind and its surroundings is not sufficient to effect improvements in society and human lives; poetry must actively create emotional connections between people that would otherwise not naturally exist.

Wordsworth’s impassioned argument for a socially engaged role for poetry is reflected in his own contributions to the _Lyrical Ballads_. In reference to Goody Blake, Jordan argues that “behind this action is the whole drama of the Enclosure Acts that eliminated the common “wastes” from which the poor used to gather sticks to warm their hearths; she represents a type, a social problem, and is even given a characteristic name – “Goody” – which tends to convert her into everyone’s grandmother.” Tintern Abbey equally focuses on relationship; in regards to the living air, Jordan suggests that “This whole description does not derive directly from the “eye upon the object,” except as the object is the observer who feels and relates to the experience. Relation is characteristic of this poetry; it pulls the observer into the situation or makes him feel his way into it.”

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338 Ibid., 253.
340 Ibid.
Darwin’s personification is not seen to function in this way; instead, compared to the Romantic ideal of spontaneity, whether practised or not, Darwin’s personifications and carefully polished couplets are considered contrived and artificial. In a probable swipe at Darwin, Wordsworth remarks that

it is not, then, to be supposed that any one, who holds that sublime notion of Poetry which I have attempted to convey, will break in upon the sanctity and truth of his pictures by transitory and accidental ornaments, and endeavour to excite admiration of himself by arts, the necessity of which must manifestly depend upon the assumed meanness of his subject.341

Chapin identifies the critical heritage of this style as Addisonian, arguing that this view has its origins in that strain of critical theory which, receiving its most important formulation in the critical essays of Addison, finds later expression in the verse of the Wartons, Collins, and many lesser mid-century poets. The tendency to identify pictorial imagery with the very essence of poetry itself was, as has been seen, a prominent element in this strain of critical theory. One remembers Addison’s dictum concerning the importance of “Beautiful descriptions and images” as constituting the “life and spirit of Poetry.”342

Duff concurs, noting that for Addison, writing a georgic—that is, a didactic poem on the science of husbandry (or, by extension, other practical topics)—is the ultimate test of a poet’s skill because it involves elevating mundane and seemingly unpoetic subject-matter into art. The challenge is, above all, a stylistic one, because this metamorphosis must be achieved through language, by a careful process of selection and embellishment.343

Thus, poetry becomes “an art of disguise, an exquisite dressing-up game”344 which highlights the poet’s skill and at the same time trivializes it. Duff observes that

342 Chapin, Personification, 82-3.
344 Ibid., 261.
from a Romantic perspective, however, such a conception of poetry betrayed a fundamental misunderstanding of the nature of poetic language, and amounted to a travesty of the poet’s art. The idea that form and content were separable, that poetic language was merely an outer covering or “dress” that concealed the naked thought beneath, was, for the Romantics, the most grievous of all errors in the Neoclassical system; and the genre of georgic, being the ultimate display of linguistic fancy dress, enshrined that error to a maximum degree.345

This leads to accusations of “coldness” by a number of Darwin’s leading critics, including in contemporary works such as Anna Seward’s biography.346 Similar remarks were made by Coleridge, in his journal: “Dr Darwin’s Poetry, a succession of Landscapes or Paintings – it arrests the attention too often, and so prevents the rapidity necessary to pathos – it makes the great little. - seems to have written his poem as Painters who of beautiful Objects take Studies.”347 He returns to similar opinions in the Biographia Literaria, recalling that

I had occasion to render my own thoughts gradually more and more plain to myself, by frequent amicable disputes concerning Darwin’s Botanic Garden, which, for some years, was greatly extolled, not only by the reading public in general, but even by those, whose genius and natural robustness of understanding enabled them afterwards to act foremost in dissipating these "painted mists" that occasionally rise from the marshes at the foot of Parnassus. During my first Cambridge vacation, I assisted a friend in a contribution for a literary society in Devonshire: and in this I remember to have compared Darwin’s work to the Russian palace of ice, glittering, cold and transitory.348

345 Ibid., 261.
347 Coleridge, Notebooks, 3.
348 Coleridge, Biographia Literaria, 154.
Coleridge’s remark that “this style of poetry, translations of prose thoughts into poetic language, had been kept up by, if it did not wholly arise from, the custom of writing Latin verses, and the great importance attached to these exercises, in our public schools”\textsuperscript{349} emphasizes not only Darwin’s artificiality but his lack of originality, and a certain lack of maturity of thought. The phrase “painted mists” evokes something false and slightly tawdry – the inauthentic style which is beautiful on the surface only. This is especially problematic when the moral system advocated is based on personal sympathy rather than on a system of universal rights and privileges. Darwin’s style is problematic, in this context, not purely for aesthetic reasons but because of its failure to inspire moral reform by creating sympathy and pathos in the mind of the reader.

The recurrence of the accusation of coldness is particularly interesting in light of characterisations of Darwin as a politically and sexually provocative writer. Both Seward and Coleridge specify that a major flaw of Darwin’s poetry is its inability to touch the emotions – it is beautiful and pleasing only on an intellectual level. These weaknesses are seen by several major commentators, most prominently Anna Seward, to flow naturally from Darwin's self-conscious emphasis on the visual. While not inherently antithetical to radicalism, the focus placed on this aspect of Darwin’s style in early nineteenth-century criticism of his literary works further suggests that Darwin was not widely thought of as a provocative or dangerous writer at this time. To some degree, his style of writing was more associated with the \textit{ancien regime}. Duff observes that

\begin{quote}
in some deep sense, didactic poetry is compromised for the Romantics by its association with a culture of subordination, of deference to received wisdom and authority….The Romantics seek from poetry a different kind of wisdom that does not come in the form of precepts and instructions. For Blake and Shelley, this antидidactic aesthetic has a political tone: antидidacticism means anti-authoritarianism—opposing other men’s systems,
\end{quote}

\textsuperscript{349} Ibid., 155.
and laying aside, as Shelley puts it, “the presumptuous attitude of an instructor.”

Despite their criticisms, Desmond King-Hele, Livingston Lowes and others have shown that Darwin exerted considerable influence on the work of Coleridge, Blake and Shelley. In the *Biographia Literaria*, Coleridge does not always wholly condemn Darwin, stating that

> the seductive faults, the dulcia vitia of Cowley, Marine, or Darwin might reasonably be thought capable of corrupting the public judgment for half a century, and require a twenty years war, campaign after campaign, in order to dethrone the usurper and re-establish the legitimate taste.

At least one comment is wholly positive:

> if facts are required to prove the possibility of combining weighty performances in literature with full and independent employment, the works of Cicero and Xenophon among the ancients; of Sir Thomas More, Bacon, Baxter, or to refer at once to later and contemporary instances, Darwin and Roscoe, are at once decisive of the question.

Ultimately, Darwin’s failure in Romantic terms is one of function – the neo-Classical form which privileges structure and decoration appears inadequate to the task of provoking genuine personal and social reform.

**Post-Romantic Reception and Afterlife**

By the mid- to late nineteenth century, Darwin’s work had largely fallen into obscurity, although it still featured in a number of literary histories. Literary style and taste dominate discussions of Darwin’s work throughout this period. Leigh

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351 See, for example, King-Hele, *Erasmus Darwin and the Romantic Poets* and Lowes’ *Road to Xanadu*.
Hunt neatly captures the major criticism of Darwin’s style when he quips in his *Feast of the Poets* (1814) that

the late Dr. Darwin, whose notion of poetical merit, in common with that of Goldsmith and others, was of the school of Pope, though his taste was otherwise different, was perhaps the first, who by carrying it to its extreme pitch of sameness, and ringing it affectedly in one’s ears, gave the public at large a suspicion that there was something wrong in it’s nature.354

One of the few histories to devote a large amount of space to discussion of Darwin as a writer, Craik’s *A Compendious History of English Literature and of the English Language, from the Norman Conquest. With Numerous Specimens* (1864), criticises his work primarily in stylistic terms, suggesting that the poems’ successes come about in spite of Darwin’s aesthetic philosophies and meticulous method of composition and revision. Craik describes *The Botanic Garden* as “hard, brilliant, sonorous…a poem cast in metal — a sort of Pandemonium palace of rhyme,”355 arguing that

Darwin’s theory of poetry evidently was, that it was all a mechanical affair — only a higher kind of pin-making. His own poetry, however, with all its defects, is far from being merely mechanical…Vicious as it is in manner, it is even there of an imposing and original character; and a true poetic fire lives under all its affectations, and often blazes up through them.”356

The occasional passages that Craik considers to be sublime, however, do not outweigh the defects. Ultimately, he concludes that “the mortal disease inherent in Darwin’s poetry is, that it is essentially unspiritual. It has no divine soul: it has not even a heart of humanity beating in it. Its very life is galvanic and artificial.”357 This is not a question of the lack of religion as such, but more a function of the combination of science and poetry, a feat which Craik considers impossible due to the irreconcilable worldviews on which he perceives scientific and poetic thought to be based. He argues that

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354 Hunt, *Feast of the Poets*, 34.
356 Ibid., 364.
357 Ibid., 366.
whenever anything has been perfectly reduced to a matter of science, its poetical character is extinguished: it ceases to appeal to any passion or affection. What was veneration or terror, religion or superstition, becomes now satisfied and unimpassioned intelligence...The tendency of science is to reduce and level; the tendency of poetry is to magnify and exalt... His poetry appeals to none of what may be called our original and universal sympathies.358

Echoing early commentary by Seward and Coleridge, Craik here more explicitly underlines the concept of science and art as “two cultures.” While spirituality emerges as an issue, it is employed in terms of establishing poetic worth on the basis of pathos, rather than to question Darwin’s moral standing.

This is a general trend in Darwin criticism in the nineteenth century, where the ties with poetry’s moral exigency still present in the critiques of Wordsworth and Coleridge become abstracted and weakened until discussions of Darwin’s verse tend to be based on style alone. More broadly, the trajectory of commentary on Darwin’s work can be seen occurring against the backdrop of poetry’s separation not just from science, but from worldly concerns more generally as it becomes isolated within the cultural domain of “art.” By the early nineteenth century, only traces remain of any understanding of Darwin as a radical. Reviews of the *Temple of Nature* do not mention politics, and no reference is made to Darwin as a political radical or subversive figure, though some reviewers do question his religious and moral influence. As previously discussed, however, this is done in a largely measured and moderate fashion.

Later on in the century, Darwin is, if anything, religiously rehabilitated by biographers such as Dr. John Dowson, and his own grandson Charles, who seek to rebut all charges of atheism against him. In the book-version of a lecture given to the Literary and Philosophical Society of Whitby (1861), Dowson writes that

358 Ibid., 375-76.
Mrs. Schimmelpenninck more than hints that he was an atheist, but this is utterly inconsistent with innumerable passages in his works. He was the Theist but not a Christian, though he knew something of the value of Christianity, for he says in “Zoonomia” ...under the head of Grief, which he considers as a disease, “Consolation is best supplied by the Christian doctrine of a happy immortality.” And yet I fear the only immortality in which he believed was the eternal transmutation of matter.359

Dowson goes on to add that “the truth seems to be, that he had a pleasure in startling his hearers by blurtling out opinions more heterodox than any that he really held”360 and notes that “there are passages in the ‘Botanic Garden’ of great moral as well as poetical beauty – such is his graphic eulogium of Howard, the philanthropist.”361 Charles Darwin, in his biography of his grandfather, takes a similar line, arguing that “Dr. Darwin has been frequently called an atheist, [apparently as a convenient term of abuse; whereas in every one of his works distinct expressions may be found showing that he fully believed in God as the creator of the universe.]”362 Like Dowson, however, he feels obliged to add that “although Dr. Darwin was certainly a theist in the ordinary acceptance of the term, he disbelieved in any revelation.”363 Rather than signalling a change in the understanding of Darwin’s religious beliefs, these comments parallel the descriptions of Darwin’s religious positions in reviews of The Temple of Nature. The difference lies in the understanding of the terms atheism and theism, indicating the emergence of more liberal definition of theism able to encompass Darwin’s Deism, and a more narrow definition of atheism as the rejection of all concepts of God.

Thus, the current view among scholars of Darwin that he was a political radical foregrounds views that gained currency only among a relatively small percentage of Darwin’s contemporary readers, during a relatively limited time span, in the late

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359 Dowson, Erasmus Darwin, 47.
360 Ibid., 48.
361 Ibid., 26.
362 Darwin, Life of Erasmus Darwin, 61-2. This text was originally published as part of an 1879 study of Erasmus Darwin’s theory of evolution by Ernst Krause.
363 Ibid., 63.
1790s. While controversies surrounding the religious orientation of *Zoonomia* and *The Temple of Nature* did become major issues of concern for some reviewers and readers, these too were of limited duration and did not dominate the public perception of his poetry and personal morality to the exclusion of all else. It is important to consider the other factors governing Darwin’s waning popularity during this period, especially among the generation of poets and cultural commentators that followed him, in order to recognise the extent to which certain features of his work continued to influence major writers of the next generation. Furthermore, we need to take into account the significant role played by broader cultural movements surrounding the institutionalisation of science in the declining popularity of Darwin’s verse style.
Chapter Eight: Scientific Poetry After Darwin

There is a strong critical consensus among scholars of the eighteenth-century didactic poem that the genre died as a cultural force some time in the late 1700s. In the specific case of scientific verse, critics have largely attributed this decline to the rise of C.P. Snow’s “two cultures” of art and science. While political explanations have been put forward in several studies of the Georgic to account for the apparent disappearance of Virgilian poetry on agriculture, critics of other types of didactic poetry with substantial scientific content have largely settled for explanations based on aesthetics and changes in public taste. The judgement of these works as awkward hybrids of verse on unsuitable subjects has prevailed since the Victorian period, a narrative which has tended to obscure their continuing popularity. Other earlier long poems which married Newtonian physics, natural history and religious reflection, such as James Thomson’s The Seasons (1730), remained among the most popular and widely-read works.

Despite the widespread popularity of verse on scientific subjects at the turn of the century, literary histories of the period treat as unproblematic the assumption that this form of writing simply ceased to exist almost overnight. A closer examination of verse published in the period, however, reveals that didactic poetry persisted as a popular genre into the early decades of the nineteenth century, particularly on topics related to natural history such as botany, which had become a fashionable pastime for both men and women, as well as an emerging scientific discipline. Very recently, scholars including Judith Pascoe and Alan Bewell have noted the existence of female botanical poets in this period. Only Sam George and Ann Shteir have discussed their work in any depth, however, both uncovering a handful of writers primarily influenced by Darwin’s The Loves of the Plants. A closer examination of science books published in the nineteenth century suggests that the number of scientific poems by
women is much larger than is usually recognised, not including Victorian books of sentimental verse about flowers which can be seen as out-growths of this tradition. These include Sophia Reeve’s 1809 poem The Flowers at Court and associated works such as The Wedding Among the Flowers (1808), The Botanical and Horticultural Meeting (1834), The Festival of Flora (1818), and Flora’s Fancy Fete (1839). It is likely that a great deal of women’s poetry from this period also exists on other scientific topics without necessarily having a Darwinian lineage.

The general obscurity of didactic verse from the beginning of the nineteenth century in past and current critical canons can be attributed at least in part to the increasing adoption of this form of writing by female authors, to the point where women comprised the majority of authors writing botanical verse. The rise of writing by women operating outside of emerging scientific institutions such as the Linnaean Society (1788) and the Royal Institution (1799), combining verse with natural history and philosophy, including Eleanor Anne Porden’s The Veils (1815), Sophia Reeve’s The Flowers at Court (1809) and Elizabeth Perkins’ The Botanical and Horticultural Meeting (1834), also coincided with increasing critical discomfort with this genre, and its authorship by ladies.

The omission of these women writers from the canon does not necessarily reflect a lack of success with the public. All received positive reviews, and while The Veils and The Flowers at Court were not reprinted, The Botanical and Horticultural Meeting went through at least five editions, being republished as late as 1872. The numerous changes in title undergone by this work provide an interesting window onto the increasing pressures placed on women across the Victorian period to domesticate the sphere in which they were positioning their scientific knowledge. The first two editions of 1834 and 1835 were entitled The Botanical and Horticultural Meeting, or Flora’s and Pomona’s Fete. The 1836 edition, however, the first to bear Perkins’ name rather than the anonymous “by a lady,” reversed the title to become Flora and Pomona’s fete, or the botanical and horticultural meeting. In 1872 it was further modified to become Flora and Pomona’s Fête, or the Origin of Botanical & Horticultural Meetings. A
poem after the Butterfly’s Ball, etc. At first, the emphasis falls squarely on the scientific aspects of the work: the poem is about a botanical meeting first and foremost, rather than a party. The inversion of the title gives the work a decidedly more frivolous air. The final title stresses its derivative nature as an imitation of William Roscoe’s extremely popular and influential children’s poem *The Butterfly’s Ball and the Grasshopper’s Feast* (1806).

A number of tensions are apparent in the way in which female authors marketed these works. The brief flourishing of verse as a popular form of scientific publication for women seems to go against a number of trends, both scientific and literary, which have been identified in this period. Ann Shteir has traced the shift during the first half of the nineteenth century from scientific writing by women, in which serious botanical science was combined with the domestic, familiar and religious, to works which approached the detached voice now common in science writing, i.e. a style which dispensed with the feminine and maternal persona of earlier works structured as dialogues or conduct books. Shteir notes that a strong connection between science and life in women’s writing around the turn of the century was increasingly “replaced…with a representation of science that lacked a visible shaper and with a disembodied voice of (ostensibly) invisible and inaudible gender.”

She laments that

the issue remains a problem. In a professionalizing and defeminizing science culture, it may seem advantageous to adopt the equality model and ensure that women have access to mainstream science. But that is science constructed on the male model, far removed from family, home, mothers, contextual thinking, and other cultural features that have become gendered as “feminine.”

Shteir thus characterises the connection between science and its context, strongly present in both verse and prose scientific works by women in the late eighteenth and

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365 Ibid.
early nineteenth centuries, as in some sense feminine and existing in contrast with the professionalising attitudes that attempted to exclude women and female “botanizing” from the new, institutional science of “botany.” The parallel development of a genre of flower books and personal guides aimed at amateurs and designed to enhance the enjoyment of flowers as a feminine accomplishment rather than as the vehicle for detailed scientific information reinforces an understanding of the two approaches as a gendered opposition, as does the fact that male authors largely abandoned botanical verse at this time for more scientifically authoritative forms. Female writers in this tradition, however, defied the trend towards entirely separate literary and scientific spheres. Rather than conform to the pressures of institutional science and adopt the style of writing favoured by masculine exponents, women writing about botany in verse occupied a middle ground between science as a purely polite, fashionable accomplishment and a professionalized field of study.

**Children, Flowers and Festivities**

Attempts to situate these works within a kind of scientific *écriture féminine* is problematic, however, given their primarily masculine lineage. Up until the end of the 1790s, the authors who achieved the greatest success as authors of didactic verse, including poems on botany, were mostly men, although around the turn of the century writers such as Frances Rowden, Maria Montolieu and Charlotte Smith published well-received didactic works strongly influenced by Darwin’s *The Loves of the Plants*. While these female writers cultivated a maternal authorial persona, aiming their poems at young women and children, this too grew out of a strong lineage of male-authored conduct and morality poems based on floral allegories from the earlier eighteenth century. The emphasis on the moral — and frequently religious — context of knowledge in eighteenth-century didactic poems made the genre attractive and accessible for both men and women, whose works for much of the century were evaluated more on the grounds of moral correctness than scientific accuracy. Female writers who used the form at the turn of the century continued this
emphasis on moral didacticism, employing the narrative potential of the genre to depict largely conventional ethical precepts and reassuring gender stereotypes.

Sophia Reeve’s preface to *The Flowers at Court* highlights the aims of her work as both a maternal guide for children, and a work of moral didacticism within a long and prestigious lineage of texts combining science with religion. Referring to recently published children’s poems including *The Peacock at Home* (1807) by Catherine Dorset as inspiration, Reeve presents her work in a light-hearted fashion before striking a more serious note, expressing the “hope, that by turning to botanical pursuits the attention of her juvenile readers, they may find in them a source of useful instruction, as well as of innocent amusement.”366 She suggests to her young audience that

the plants and herbs which every hill and valley afford in endless diversity, while they exercise our industry in classifying their tribes, in contemplating their beautiful mechanism, or their brilliant colours, they teach us, ‘to look through nature up to nature’s God;’ and finding him alike wonderful in the flowers of the field, the firmament of heaven, and the waters of the deep, our wonder may be warmed into devotion, and the most salutary influence be produced upon our conduct.367

The reference to looking “through nature up to nature’s God,” the most famous lines of Pope’s *Essay on Man* (1734), gives the poem a literary and philosophical gravitas that goes beyond children’s entertainment to reference almost a century of physico-theology.

The seriousness of the poem’s preface is qualified, however, as the narrative rapidly descends into decidedly girlish territory that draws more on Pope’s satirical *The Rape of the Lock* than his elevated philosophical speculations. The poem commences with a lament that, while a variety of insects and animals have recently had their glamorous parties celebrated in verse, flowers have sadly been left out. Flora exclaims:

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367 Ibid., 6-7.
shall my beautiful train
In their own native wood-lands neglected remain?
Taught by Darwin’s soft numbers the botanists know,
That their bosoms with love’s melting tenderness glow;
And Montolieu proves, in each elegant fable,
That to talk or to think they are equally able. 368

The references to Darwin and Montolieu, while providing Reeve with additional respectable poetic antecedents, are essentially facetious with respect to Darwin’s arguments for plant sentience, and Maria Montolieu’s use of the same idea as the basis for a series of moralising floral allegories. The tone of the poem further lightens as

....a Rose, as by magic inspir’d,
Felt her heart by ambition and vanity fir’d.
For long had she wish’d in a ball-room to shine,
And to hear the beaux whisper her form was divine.
...
“Oh, queen of enchantment! would you condescend
In a gala for Flowers your assistance to lend,
...
For us there seems left no diversion or sport,
Unless you indulge us by holding a Court.
How delightful to think that, the drawing-room o’er,
The papers would publish what dresses we wore;
All the grand presentations they’d certainly tell,
And probably mention who shone as the belle. 369

Similar and familiar moralising stereotypes of femininity dominate Elizabeth Perkins’ The Botanical and Horticultural Meeting, which also revolves around a party held by flowers, replete with clashes of the various egotistical belles and piously

368 Ibid., 10.
369 Ibid., 10-11.
modest maidens who attend. Her Flora, however, is rather less traditionally virtuous than the lady of Reeve’s court, indulging in more than a touch of vanity and revenge for what appear to be rather minor social slights. The poem is heavily indebted to The Butterfly’s Ball, suggesting if not outright plagiarism then at least a strong degree of influence – not just between Darwin’s female successors themselves but also between the lady botanical poets and William Roscoe:

At the Butterfly’s ball and the Grasshopper’s fête
There was much to be seen, and as much to relate,
But the Beauties of Flora were none of them there,
Tho’ kindly they lent their perfume to the air:
The Goddess resolv’d that the insects should find
She deem’d them ungrateful, as well as unkind;
Her anger was rous’d, and she vow’d, in her Rose,
No Beetle or Moth, that night should repose:
And an order went out to the well-known Blue Bells
To say, they must shut up their little hotels.
Some nettles she took to the Butterfly’s bower,
(For she thought he’d return to his fav’rite flower)
And conceal’d them where Roses and Jesamines meet,
To sting, with due vengeance, his wings and his feet. 

At the risk of reading too much into a series of entertaining moral fables, it nonetheless seems significant that Roscoe’s little entomological vignette and its predominantly male characters inspired a large number of female writers to respond by asserting the significance of a branch of science by then understood to fall within the feminine domain, and by referencing – if not necessarily following through – a number of serious scientific antecedents including Pope and Darwin. This scientific context allows a series of texts which would otherwise become mild entertainment for children to continue to function as educational works in a much broader sense, thus retaining scientific botany to some degree within a feminine sphere of authorship.

Perkins, The Botanical and Horticultural Meeting, 3.
The adoption of traditionally feminine, modest and religious authorial personae had a number of advantages for women seeking to establish themselves as educators in an increasingly professionalised field which excluded them. Most immediately, it allowed them to draw on the cultural prestige of the mother-figure as teacher and instiller of virtue in order to secure for themselves the primary audiences which remained available to them: women and children. While writers of both sexes produced science books for children, women writers were better able to compete in this market because the level of expertise and technical detail required were considerably lower, greater emphasis was placed on the artistry of the author in making the book accessible and entertaining, and works were often evaluated on the basis of the virtuousness of their content, making authorship an uncontroversial choice for a lady. The ultra-conservative Anti-Jacobin Review responded favourably to Reeve’s Flowers at Court on this basis, observing that “should she succeed in drawing but one hapless fair one from the naturally debilitating and necessarily vitiating music-mania of the day, she will have done some positive good to her kind.”

However, these authors’ decision to target their literary works at women and children and to characterise themselves as virtuous amateurs brought with it a number of limitations. In the case of Perkins and Reeve, the marketing of their works at such a young audience necessarily restricted their scope for conveying botanical information at any but the most basic level. The notes are few and extremely brief, often conveying only a single fact about the plant or clarifying its botanical or common name. In this they follow the model of writers such as Charlotte Smith and Maria Montolieu whose botanical poetry for children pared back the substantial annotations of earlier works such as Darwin’s The Loves of the Plants to brief glosses that clarify terms and images rather than teaching the reader in depth about plant anatomy and botanical classification.

**Eleanor Anne Porden and the Didactic Epic**

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A third important didactic poem from this period – Eleanor Anne Porden’s six-book medievalist epic romance The Veils (1815) – attempts a similar balancing act between a conventionally feminine subject matter and the desire to link her work with a lineage of serious scientific verse. Unlike Perkins’ and Reeve’s books for children, however, Porden targets an adult audience and models her substantial annotations on Darwin’s, including a large amount of cutting-edge scientific information gleaned from her regular attendance at lectures given at the Royal Institution. Among her manuscripts are an unpublished epistolary science-fiction novella between two characters – Lord Aircastle and Electromagus – as well as an unpublished botanical poem, and a plan for what appears to be a didactic poem on electricity and the battery structured along the lines of Darwin’s The Botanic Garden.

The Veils – Porden’s sole published didactic poem – employs similar strategies to Perkins and Reeve to feminise and moralise its subject, including a cast of stock characters such as virtuously chivalrous knights in shining armour and chaste damsels in distress who remain constant in their affections under the most trying of circumstances – being tricked into and trapped in marriage by elemental spirits who refuse to release them. A number of elements of Porden’s poem, however, set it apart from the works of her contemporaries. In The Veils, Porden makes an unprecedented attempt to combine a lengthy verse narrative romance with modern science, and employs her stereotypical characters allegorically in a manner similar to Darwin. For example, the episode describing the family history of one of the poem’s treasonous villains – Orechalcon – allegorises the formation of brass from zinc and copper. The poem describes how:

His father Calchos lov’d in early youth
Fair Calamina with unshaken truth;
The king their union long forbade; and plann’d
To bless his favourite with Solfara’s hand.
At length his anger rose, to find, that still
Their constancy opposed his royal will:
They shunn’d the gathering storm, to Pyros fled;
He blest their loves; and in his court they staid
Till jealous Chalcos deem’d the monarch ey’d,
With more than pity’s gaze, his gentle bride;
(For o’er the lovely exile’s form and face,
Her soft dejection shed a dangerous grace;)

This passage is glossed with a note explaining the chemical formation of brass, and
the more common tendency of copper to form compounds with sulphur. Porden
takes pains to stress her qualifications, pointing out in her preface that
the author, who considers herself a pupil of the Royal Institution, being at
that time attending the Lectures given in Albemarle-Street, on Chemistry,
Geology, Natural History, and Botany, by Sir Humphry Davy, Mr. Brand, Dr.
Roget, Sir James Edward Smith, and other eminent men, she was induced to
combine these subjects with her story.

At the same time she seems compelled to justify and qualify her scientific status,
adding that “though her knowledge of them was in a great measure orally acquired,
and therefore cannot pretend to be extensive or profound, yet, as it was derived from
the best teachers, she hopes it will seldom be found incorrect.” This statement
asserts the scientific accuracy of her works, while giving credit to the male
luminaries that are the source of her knowledge rather than claiming scientific
discovery in her own right.

Porden’s more adult scope, and her use of annotations reminiscent of those prevalent
in the work of her eighteenth-century predecessors, proved to be a sticking point for
reviewers. The Quarterly Review remarked in 1817 that
we have been much pleased with Miss Porden’s poem, and almost against
our will. In our opinion she could not have chosen a species of composition
by which her extraordinary powers of versification could have been exercised
under greater disadvantage, than a poem intended to display the “different

372 Porden, Veils, 2.226-37.61.
373 Ibid., vii.
374 Ibid.
energies of nature, exerted in producing the various changes which take place in the physical world,” but personified and changed into the spirits of the “Rosicrucian doctrine.”375

While generally more positive about her learned choice of topic, the Monthly Review also condemned the annotations, suggesting that “she has to learn the art of not displaying her learning” and that “we deprecate, in any future poem by this fair writer, so much of the Royal Institute. We should even prefer an equal quantity of the Royal Exchange.”376

The inclusion of botany also raised the spectre of the sexually risqué elements of Linnean plant classification. The reception of Darwin’s botanical poetry and that of his female imitators suggests that the degree to which in the 1790s Linnaean botany was considered to be sexually scandalous has been greatly overstated by scholars. Nonetheless, a move towards a more profound conservatism is evident in this pre-Victorian period. Unpublished correspondence between Porden and her sister over the botanical section of The Veils provides an interesting window into attitudes towards botany and women’s sexuality in the early decades of the nineteenth century, and the degree to which this association was contested. Writing to her sister in 1811, after sending her a draft of an early version of The Veils, then titled The Restoration, Porden seeks to justify her inclusion of botanical science within the poem in the face of her sister’s charge that botany has “a great appearance of indelicacy” and should not be studied by women:

Now my dear sister, this is so exactly the contrary of all which I have ever heard, that you must not wonder if I am at a loss to comprehend it. I have all ways [sic] heard Botany considered as a study particularly suited to the elegance and delicacy of female minds, and I must say it is a very engaging one.377

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377 Porden, “Manuscript Letter from Eleanor Anne Porden to her Sister,” Derbyshire County Archive (Matlock), Shelfmark D3311/25/1/1.
Porden goes on to defend her interest in the subject based on public opinion and the prevalence of female authorship of botany books, arguing that:

I certainly should never have imagined that there could be any indelicacy in a study which had been made the subject of Public Lectures ... Indeed many Ladies have written on Botany, and a much greater number have been distinguished as Botanists, yet I never heard any of them censured ... .

P.S. I cannot help thinking the opinion of the impropriety of Botany, must have originated with those who think all knowledge unfit for the female mind.378

Her treatment of botany in the published version of the poem shies away from neither the display of botanical knowledge, nor the description of plant reproduction. In a densely-annotated passage describing aquatic plants, Porden sketches personified flowers in gently sexualised terms, similar to those used by Charlotte Smith and Frances Arabella Rowden:

The bright Nympeas graced the sparkling tide,
Numerous the tribe! a modest blush was seen
O'er the fair face of Nilus' sacred queen,
Her rival, bright Nelunbia, grac'd her side,
Her glowing charms in deeper crimson dyed;
She blest the Samian sage, whose wise command
Her embryo offspring saved from luxury's hand.
At love's fond call, here Valisneria fair,
Her spiral stem uncurls, and floats to air;
Here Sagittaria points her dart of green,
While far above her graceful flowers are seen.379

The passage is accompanied by several detailed notes, including one which directly addresses the reproduction of the Valisneria. Indeed, the unusual way in which the plant fertilises itself is presented as its primary point of interest for the botanist:

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378 Ibid.
The valisneria has perhaps little right to a place with the large and specious flowers already mentioned, but the wonderful mechanism it displays will always render it dear to the botanist... The female, or fertile flower, has a spiral stalk which remains coiled up at the bottom of the water, till the flower is perfected. It then uncurls, and the flower rising floats on the surface. The male flowers, on the contrary, have a very short stalk, which breaks off close to the stem previous to their expansion, and they spring up to the surface. Their petals are there unfolded, and the pollen of the anthers is wafted on the stigma of the female flower, which being fertilized, its stalk coils up, and it descends again to the bottom of the water, where the seeds are ripened.380

In a similar manner to Darwin, Porden draws on the detached, dry language of scientific prose for her annotations, offsetting the sentimental, feminised tone of the verse with the authoritative voice of a modern natural historian. The inclusion of Linnaean botanical material was not criticised by reviewers. However, as we have seen, the tone of the notes attracted pointed negative commentary from reviewers who felt that Porden was overstepping the boundaries appropriate to her gender by portraying herself as a scientific authority.

Porden also began composing her own response to William Roscoe’s The Butterfly’s Ball and the Grasshopper’s Feast – or more precisely, a response to female imitators such as Reeve and Perkins. Although undated, the verses were almost certainly written after the explosion of women’s botanical versions of Roscoe’s poem, as they sharply parody the genre’s obsession with parties, frills and vanity. Rather than a wedding or botanical meeting, Porden depicts a dignified parliament of flowers in which the speakers are primarily masculine. The poem consists of an exchange between sensible, moral flowers such as the Lily, who argue that the reputation of the floral community would be better served by being the only group not to have a party, while the flashy Poppy and Coxcomb respond, unconvincingly, that this would cause everyone to look down on the flowers:

“"The flowers impatient wish a fete to give,

380 Ibid., 150.
“And wait the sanction of our mighty name
“Yet shall my friends, the floral honour live
“But by a dance or rout revealed to fame –
“Things that are noble are the work of one,
“With us the custom dies if we ordain
“No honour tis to do what all have done
“The last support of fashions falling train
“But if we as the peers of Flora’s state,
“Decree nor feast, nor rout, nor ball to give
“Then shall our nation be more truly great.
“Renowned for temperance our name shall live.”

In this poem, Porden bucks one trend while adhering strongly to another; by redirecting the focus back onto conduct, the critique targets the lip service paid to moral seriousness by many of the authors of botanical verse for children, whose claims of religious intent sit at odds with their poems’ tendency to celebrate social intrigues and physical beauty. Unlike the scientific authority which she explicitly claims for herself in The Veils, Porden here draws on a more traditional source of feminine influence as a moral educator.

**Combined Verse/Prose Works**

Another way in which women sought to navigate the pressures resulting from an increasingly specialised scientific publishing market while retaining traditional markets and sources of authority was through the publication of manuals which combined factual prose with selections of poetry, rendering the “handbook” style both more entertaining and accessible for readers but also more feminine. This hybrid style of book was to remain popular throughout the nineteenth century, pioneered by authors such as Elizabeth Kent. Her two volumes, *Flora Domestica* (1825) on the cultivation of houseplants in pots, and *Sylvan Sketches* (1831) on trees,

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381 Porden, “Untitled Manuscript Poem,” Derbyshire County Archive (Matlock), Shelfmark D3311/19/135.
impart the bulk of their gardening and horticultural advice in prose, but ornament each selection with extracts from earlier canonical poets such as Thomson and Spenser, as well as contemporary Romantic poets including Southey, Shelley and Wordsworth (Kent was the sister-in-law of Leigh Hunt).

Epigraphs to Flora Domestica assert the religious framework of the text, making reference to Adam’s cultivation of the garden of Eden. As a gardener Kent portrays herself as a nurturing, maternal figure motivated to publish only out of tender care for her charges:

   in pity to these vegetable nurslings and their nurses, I resolved to obtain and to communicate such information as should be requisite for the reading and preserving a portable garden in pots. This little volume is the result; the information contained in it has been carefully collected from the best authorities; and henceforward the death of any plant, owing to the carelessness or ignorance of its nurse, shall be brought in, at the best, as plant-slaughter.382

The verse passages which accompany the information for each plant are not presented as anything other than ornamental, with Kent stating that they were included “in the belief that lovers of nature are most frequently admirers of beauty in any form, such anecdotes or poetical passages are added, relating to the plants mentioned, as appeared likely to interest them.”383

Gardening itself as a pastime is presented as suitably feminine through a strong association with sensibility. On discovering that Ariosto carefully tended all growing things in his garden, even weeds, Kent equates such interests with humanity and good character, exclaiming

   who can read this anecdote of so great a man, and not feel an additional interest in him! In how amiable a light it represents him! Was a cruel, unfeeling, or selfish man ever known to take pleasure in working in his own garden? Surely not. This love of nature in detail (if the expression may be allowed) is a

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382 Kent, Flora Domestica, xiii-xiv.
383 Ibid., xiv.
union of affection, good taste, and natural piety. Thus, even in a practical handbook, Kent returns to the topos that female interest in science should be encouraged primarily for its morally improving qualities.

The religious emphasis in the preface intensifies with Kent’s second volume, *Sylvan Sketches* (1831). Despite the moral undertones of some of her observations about the value of gardening in her first book, Kent nonetheless feels compelled to defend her religiosity, noting that:

> It has been observed, and objected against the writer, that, in a former publication, of a similar nature to the present, there was wanting a spirit of religion, and that frequency of grateful reference to the Creator, which would seem naturally to flow from a contemplation of the wonders and beauties of creation ... .

> That she has not introduced the *subject* of religion, is certainly true; but she thinks it can scarcely be said with justice, that any book is wanting in a *spirit* of religion which treats of the beauties of nature and of the pleasures to be derived from them.  

That it was felt necessary to defend a book about the care of pot plants against charges of irreligion indicates the degree to which women’s botanical writing had become entwined with other discourses at this time; the domestic, and by extension female, orientation of Kent’s earlier work may have intensified this connection in the eyes of certain readers. While Kent’s association with the second generation of Romantic poets may also, among readers who were aware of her family connections, have raised concerns about her religious persuasions, this is not mentioned as a factor in the text, and she continues to promote contemporary poetry enthusiastically through extracts selected for their beautiful descriptions of natural phenomena.

Kent’s incorporation of now-canonical Romantic poets into a work which otherwise adopts the dry, detached style of modern scientific prose is notable for its

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384 Ibid., xv.
385 Kent, *Sylvan Sketches*, x.
conservatism. Romantic innovations in style and subject are largely ignored in favour of pretty descriptions of trees, flowers and bucolic rural scenes that could have come from almost any English poet of the preceding two centuries. Indeed, the selection of extracts is notable primarily for their similarity across author and time-period. From Coleridge, a description of a “small and silent dell” is chosen to highlight the beauty of the countryside, while Keats contributes a picture “of whitest Cassia, fresh from summer showers.” Milton, on the other hand, despite being a frequent resource for the author, is critiqued as “uncivil” for a description interpreted by the author as tracing “the intellect of man to vegetables.” This concern with orthodoxy, perhaps combined with her association with Hunt, who was no admirer of Darwin, may account for the conspicuous absence of references to his work in a text which quotes almost every other major poet of natural history in the English canon.

**Romanticism and the Scientific Poem**

The influence of late-eighteenth-century forms of didactic poetry can also be found throughout the corpus of Romantic verse. However, as can be seen in the works of many of the women writers above, nineteenth-century didactic poetry moves away from Darwin’s philosophical provocations towards convention and safety in its most fundamental worldviews, even in its more radical Romantic formulations.

One of the first literary and artistic responses to Darwin came from William Blake, who was familiar with *The Botanic Garden* both as a reader and as the engraver of several plates for *The Economy of Vegetation*. Echoes of Darwin’s language, metaphors and ideas have been identified in Blake’s poems by a number of scholars, with particular attention paid to *The Book of Thel* (1789), *The French Revolution* (1791), The

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386 Ibid., xix.
387 Ibid., 67.
388 Ibid., xxxv.
Blake’s illustrations for *The Botanic Garden*, based on designs by Henri Fuseli, portray a relationship between humankind and natural forces arguably quite different from that which is depicted in the text of the poem. While Darwin’s verse, on the whole, emphasizes the ability of humans to understand natural processes and to improve their environment, Blake’s engravings of Fuseli’s *The Tornado* and *The Fertilisation of Egypt* instead stress the overwhelming power of nature, and present the gods of pagan religion, understood by Darwin to function as symbols of ancient scientific knowledge, as helpless in their attempts to control or influence natural forces. The central figure of Jove in *The Tornado* clutches lightning bolts in his hands, but is bent backwards, vulnerable and naked, by a dragon-like creature emerging from the waters which is in the process of devouring him. In *The Fertilisation of Egypt*, the

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391 Ibid., 158.

392 Ibid., 159.

393 These engravings illustrate accounts of weather events in Darwin’s *The Economy of Vegetation. The Fertilisation of Egypt* was included from the first edition, while *The Tornado* was included from the 3rd edition.
figure of Anubis is depicted in a pose of supplication or prayer to the sun, while a bearded, god-like figure emerges from the clouds with sparks of lightning menacingly emanating from his fingertips. A sistrum lies on the riverbank at Anubis’ feet. The abandoned ritual implement and the transformation of Anubis’ role from warning of the floods (in the verse) to praying, futilely, for them to be averted, undermines Darwin’s description of a scientifically sophisticated society in which astronomy and the construction of canals allowed Egyptians to effectively manage their water resources and climate.

This resistant reading of Darwin’s Enlightenment-rationalist characterization of nature as both powerful and chaotic and yet, with sufficient human knowledge, controllable, accompanies an infusion of spirituality and order into the universe of Blake’s own poems. David Worrall points out that chaos in Blake’s view, whether a “soul shudd’ring vacuum” or the “petrific abominable chaos” of Herschel…is no place of beginning but a fall from Eternity, a stone sealing in “the heavens”…. The equation of the Herschel-Darwin chaos with the stone which sealed the heavens has extensive resonances in all of Blake’s poetry, from the entombment of Christ to the sealed caverns of the senses.394 Darwin’s view of repeated cataclysms through which the universe continually renews itself is rejected in favour of a worldview which assigns the responsibility for renewal and the progress towards perfection to God, however abstract and heterodox in definition, rather than to natural processes. Ryan observes that each of Blake’s “three longer prophecies – The Four Zoas, Milton, and Jerusalem – climaxes in a cosmic and psychic convulsion that transforms the earth, puts an end to time, and brings humanity into the life of Eternity with Jesus, who has triumphed over the enemies of mankind.”395 In the human realm, this cycle of birth and rebirth is manifested through the efforts and perception of humanity, with Saree Makdisi pointing out that for Blake,

imagination….is the process by which lived, experienced reality is brought into being. The freedom to imagine is the power to create the world, and here that power is human rather than divine (or rather such divine power is here recognised as inherently human).396 This contrasts sharply with the Herschel-Darwin vision of transformation, in which a new universe naturally rises, phoenix-like, from the ashes of the old (see chapter 5).

Blake’s view of Enlightenment order and its resulting disenchantment of the universe is similarly negative. Michael Ackland argues that for Blake,

the supposedly objective and empirical realm is thereby shown to exist only as a function of mind; while theories of science and deism are revealed to be hopelessly circular: man projects the natural world and then discovers confirmation there of his notions of facts and divinity. By attributing the dominant imperial methodologies to Urizen, Blake forces the reader to recognize that what passes for truth and proven knowledge in this life is virtually indistinguishable from priestcraft and superstition. Furthermore, this early embodiment of enlightened thought is shown to be unmistakably totalitarian.397

In addition, Peter Otto notes that “one of the most persistent elements in The Four Zoae’s numerous stories of the Fall refers to a struggle between Urizen (reason) and Luvah (love) for control of Albion (the whole man) that concludes with Urizen’s defeat of Luvah.”398 This triumph of reason represents a false understanding of the nature of reality and the body, which must draw on Luvah and Tharmas (sense experience) as well as mind.399

These ideas also express themselves through a negative portrayal of biological evolution. David Charles Leonard observes that

396 Makdisi, William Blake and the Impossible History, 267.
398 Otto, Blake’s Critique of Transcendence, 78.
399 Ibid., 78-9.
the creation of both Urizen and Orc in the world of generation according to
the natural biogenetic law is an act of destruction of the eternal world of
imagination in Blake's [The Book of] Urizen” and “Urizen, the monster of the
Nile, is the source of all man’s woe, for Urizen’s creation through natural
evolutionary process is a creation of binding laws that attempt to restrain
man’s eternal spirit.”400

This is established in direct opposition to the views of continual improvement and
adaptation presented in Zoonomia, with Leonard pointing out that “unlike Erasmus
Darwin’s view, Blake’s view of the process of development from filament to man is
demonic, horrible, and destructive.”401 Blake’s visions in Urizen and The Four Zoas
have an epic, Miltonic quality, despite expressing positions which directly critique
the view of God and the creation presented in Paradise Lost. This links several of his
works with the anti-Lucretian tradition of physico-theological poetry, through
Blake’s Gnostic retelling of the creation story and the direct, critical connections he
draws with elements of the scientific worldview of the late eighteenth century.

David Worrall argues that Darwin and Blake were more philosophically in tune in
their depiction of human sexuality, arguing that in the Visions of the Daughters of
Albion “[Ooothoon’s] freedom from sexual jealousy seems to match that of Darwin’s
polygamous flowers, and indeed although in a visionary sense Blake’s and Darwin’s
purposes may seem poles apart, their moral perspectives (this parallel helps us to
realize) may not be.”402 Worrall also notes one of Blake’s most well-known visual
references to Darwin, the title page of The Book of Thel, suggesting that “this is
perhaps the lesson being learned by the onlooker...Thel’s self-doubts about sexual
experience are not reflected in the plant world of the two figures emerging from the
flower.”403 Indeed, the two figures, one naked, the other scantily clad, appear to be
reaching enthusiastically for each other as they leap out of their respective plants. By
visualizing Darwin’s flower-personifications in this way, however, Blake may have

401 Ibid., 80.
403 Ibid., 400. See David Erdman, Illuminted Blake, 33 for further discussion of this image and
its possible connections to The Loves of the Plants.
been making an even more provocative statement than Darwin. The contrast between the flower-lovers and the demurely-clad, retiring Thel makes an explicit statement about the importance of sexual experience, rather than using human courtship as an analogy for the reproduction of plants.

While many of Blake’s responses to Darwin involve substantial reinterpretations, the responses of Percy Bysshe Shelley offer more subtle, yet still significant, philosophical shifts towards the re-enchantment of Darwin’s Enlightenment cosmos. Shelley’s *Queen Mab* (1813) is arguably the canonical Romantic poem most influenced by Darwin. These similarities are both formal – the combination of verse with scientific notes – and thematic, in the philosophical exploration of the underpinnings of society in relation to nature. Shelley, like Darwin, also belongs within the lineage of British scientific poets whose work grappled directly with Lucretius and Milton. While frequently characterised in its time as an atheistic or blasphemous poem, *Queen Mab* is interesting in the context of late-Enlightenment didactic poetry for its reinsertion of “spirit” into the natural and human worlds. Several passages in the work suggest a *Tintern Abbey*-style pantheism, while others are more explicitly animistic:

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Throughout this varied and eternal world
Soul is the only element, the block
That for uncounted ages has remained.
The moveless pillar of a mountain’s weight
Is active, living spirit. Every grain
Is sentient both in unity and part,
And the minutest atom comprehends
A world of loves and hatreds.\textsuperscript{404}
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This emphasis on soul and the sentience of atoms is explicitly anti-Lucretian; in the *De Rerum Natura*, the idea that more than one type of substance can exist – both spirit and matter – is systematically refuted, the movement and behaviour of atoms being

\textsuperscript{404} Shelley, *Queen Mab*, 52. Further citations of this work will appear in text. This edition does not have line numbers.
attributed to physics rather than to any degree of consciousness or manipulation by a God-like entity. Describing the atomic composition of the universe in this way negotiates a compromise between – on the one hand – the relatively pure materialism of Lucretius and Deism of Darwin in which, at the most basic level, the universe operates according to ethically and emotionally neutral laws of physics combined with a large degree of random chance, and on the other hand the deterministic design of the Christian anti-Lucretians.

This same passage and other sequences focus on the existence of a human soul, not only for its narrative potential for the tour lanthe is given of the universe but also as the basis for a moral imperative:

Soul is not more polluted than the beams
Of heaven’s pure orb, ere round their rapid lines
The taint of earth-born atmospheres arise.
Man is of soul and body, formed for deeds
Of high resolve, on fancy’s boldest wing
To soar unwearied, fearlessly to turn
The keenest pangs to peacefulness, and taste
The joys which mingled sense and spirit yield.
Or he is formed for abjectness and woe,
To grovel on the dunghill of his fears,
To shrink at every sound, to quench the flame
Of natural love in sensualism, to know
That hour as blest when on his worthless days
The frozen hand of death shall set its seal,
Yet fear the cure, though hating the disease.
The one is man that shall hereafter be;
The other, man as vice has made him now. (52-3)

These passages perform a re-enchantment of the natural world, reasserting a teleological dimension to nature which is only present in Darwin’s poems in a very
limited sense. While not arguing for design or the interference of any kind of creator God, Shelley’s Nature nonetheless is portrayed in a state of ideal harmony or balance which generates perfection, and some degree of sentience (of an immanent sort) underlies this:

Hath Nature’s soul,
That formed this world so beautiful, that spread
Earth’s lap with plenty, and life’s smallest chord
Strung to unchanging unison, that gave
The happy birds their dwelling in the grove,
That yielded to the wanderers of the deep
The lovely silence of the unfathomed main,
And filled the meanest worm that crawls in dust
With spirit, thought, and love; on Man alone,
Partial in causeless malice, wantonly
Heaped ruin, vice, and slavery; his soul
Blasted with withering curses; placed afar
The meteor-happiness, that shuns his grasp,
But serving on the frightful gulph to glare,
Rent wide beneath his footsteps?

Nature! – no!
Kings, priests, and statesmen, blast the human flower
Even in its tender bud; their influence darts
Like subtle poison through the bloodless veins
Of desolate society. (49-50)

This contrasts with Darwin’s nature which, while animated and driven by “Divine Love,” lacks any sense of sentience or purposiveness beyond abstract natural laws, personified for literary effect. Such a model, which is close to its Lucretian template, is rejected in Shelley’s poem for moral reasons.
Shelley’s text resurrects the position of physico-theological writers such as Brooke in arguing that mankind only is prone to violence and the disruption of natural harmony. One of the central arguments of the poem is that constructed elements of human society – namely aristocratic government and greed – are responsible for mankind’s state, and not nature. The alternative of a morally enlightened human race bears the stamp of Christianity and perhaps Milton in particular, when the world to come is compared to Eden and described as free from tyranny. This is a stark rejection of the Darwinian model of ethics and societal relationships put forward in The Temple of Nature, in which the whole of nature competes for resources, and it is only humankind, through certain naturally developed intellectual and emotional faculties, that is able to develop a higher sense of ethics.

Shelley’s employment of the genre for political purposes is in tune with its utopian lineage. As is the case with his poetic predecessors, science is used to provide both the justification for and means of improving society and human behaviour. However, the emphasis on educating the audience in scientific concepts recedes, becoming, in Shelley’s poem, primarily a rhetorical strategy for providing substance to his arguments rather than a vehicle for improving the lives of individual readers.

Another Romantic poet, Anne Bannerman, known primarily for her Gothic verse, is one of the few poets in general, and women in particular, to produce a poem bearing strong similarities to The Economy of Vegetation. The resemblance is so striking that Bannerman pre-empts charges of plagiarism in a note prefatory to her Collected Poems (1800), stating that she had composed her poem “The Genii” six months prior to reading The Botanic Garden. Taking this statement at face value, although there are more than a few possible echoes of Darwin’s poem, it is nonetheless an interesting example of the ways in which the genre transforms when coupled with a Romantic aesthetic and view of nature.

Bannerman’s invocation of the Genii at the beginning of the poem has structural parallels to the Goddess of Botany’s description of the distribution of labour amongst
Darwin’s Rosicrucian spirits in *The Botanic Garden*, but that is where the similarity ends. Whereas Darwin’s spirits are playful and sport in an Edenic landscape, Bannerman’s are malevolent and inhabit a sublime, Gothic landscape of ice floes and volcanos:

Yes! ‘twas your thunder - Awful Genii, hail!
Who, thron’d in terrors, ride the Siroc gale,
Whose fires in Aetna’s sulph’rous bosom glow,
Whose cold, on Arctic rocks, congeals the snow;
...

In every sea, disport the foaming waves,
And yield their treasures, from their deepest caves;
The gloomy demons of the mines obey,
And Ocean’s spirits own your sov’reign sway.
Ere sprung the world from Chaos’ dreary bound,
And the bright planets wheel’d their placid round,
Gigantic masters of the realms of night!
No fair proportions met your sullen sight;
From cumb’ring clay the precious ore refine,
To form the treasures of the dreary mine.
Ere Spain’s tremendous and unpitying host
Led death and slaughter to the western coast.405

The landscape of the poem is Miltonic, but without a sense of the inherent worth of the earthly creation and the industry of humanity in improving it. Like Darwin’s Nymphs and Gnomes, Bannerman’s Genii are proto-industrialists, exploiting the Earth’s resources and engaging in manufacturing. However, her descriptions of mining are pitched in exactly the opposite manner to Darwin’s descriptions of gleaming salt-sculptures. Instead, she highlights the danger faced by miners, portrayed in this instance as the result of a nature essentially antagonistic to human aims:

Unmov’d you stand, while terror-working spells

Bring hideous spectres from their yawning cells
To brew the blast, whose pestilential breath
May sweep for ever thro’ the caves of death;
That the same rock, whose rifted channels gave
The envied ore, might also yield a grave. (7-8)

The malevolence of the Genii extends to the animal kingdom, with passages describing the death of a whale in a maelstrom:

The mighty monarch of the northern sea,
Caught by the current, struggles to be free;
With frightful cries, and frantic with despair,
He flings his monstrous water-spouts in air
In the dread circle of the gulf of death,
Yet, yet he rallies his decaying breath;
The raging surge his firmest effort mocks,
And the wild whirlwind drives him on the rocks; (16-17)

Rather than depicting a nature simply antagonistic to humanity, Bannerman’s Earth is permeated with death. This is not, however, the destructive capacity of a natural world designed to maintain balanced populations, à la Malthus or Darwin. Rather, natural laws are replaced by a supernatural machinery that is as capricious as it is violent. In this perhaps, is Bannerman’s most striking abandonment of the Enlightenment worldview, in which even the “slaughterhouse of the warring world” follows predicable natural principles.

The Genii inhabit a liminal theological space, in which their control over natural processes on earth and in the solar system appears to be almost absolute, but they nonetheless share this material realm with angels and a remote yet personal God. The passage which describes their dominions in terms menacing, visionary and sublime, posits their existence before time, implying, ambiguously, that they pre-date the biblical creation:

You saw the expanding firmament divide
The waste of waters from the ocean’s tide;
And, when the voice of heav’n, on ev’ry shore,
Bade the wide vengeance of the Deluge pour,
“not unappal’d”
...
Thro’ the wide course of many a circling sphere,
No power opposing your sublime career.
Regents of space! You range thro’ worlds unknown,
Where Saturn, freezing with his pallid zone,
While his dim moons, in feeble lustre gleam,
Turns his huge surface to the distance beam.
...
-What are the dreams, that prompt our midnight fears,
To the long horrors of a night of years?
Ye sullen rulers! while your eyes behold
Suns ever burning, on their thrones of gold,
Unnumber’d spheres their blissful seats disclose,
And worlds where spirits of the just repose,
How must the knowledge of your meaner joy
Heave your hard hearts, and all your hours annoy,
Correct your triumph, as you proudly tower,
In space unlimited, supreme in power! (20-22)

This essentially pessimistic stance, which positions the Genii as unlimited in their Earthly powers to cause destruction, forms the backdrop for a series of passages which treat human suffering. However, the poem never comes to a clear or consistent view of the extent to which the beings of the worlds “where spirits of the just repose” have any power to ameliorate the human condition, or whether aid and justice are dispensed universally or arbitrarily. In grappling with these issues, The Genii bears a strong resemblance to one of its major influences – Coleridge’s The Rime Of The Ancyent Marinere, In Seven Parts (1798). When the Genii attempt to exercise
their powers over humans, in a passage inspired by Coleridge, salvation via more benevolent natural spirits is forthcoming:

In that dead sea, which not a breath deforms,
No sweeping whirlwinds, or internal storms,
You rule, terrific masters of the deep!
And the hush’d waves in sullen silence keep.
What horror thrills the mariner, to feel
A death-like calm arrest his stiffen’d keel;
In vain he watches for th’accustom’d gale,
To move the bark, or fill the flagging sail;
In vain he hopes, while gloom obscures the day,
The coming blast will drive him on his way;

O ye soft spirits of the fluid air!
From heav’n’s high arch, the fav’ring breezes bear

Your power prevails; the grateful pilot hails
The wind’s first breath, and spreads the swelling sails

However, a slave diving for pearls is not so lucky, being eaten by a shark in a passage which, like many in Darwin, exhibits the hazards of attempting pathos in rhyming couplets: “The furious shark uprears his scaly form,/In awful hunger, rolls his flaming eyes;/ The luckless sufferer turns, and shrieks, and dies” (17-19).

The poem ultimately reasserts an essentially Christian stance, referring to the ultimate destruction of the Genii during the second coming of Christ:

But, when the skies shall glow, in living fire,
Your powers, your terrors, and your spells expire;
Your reign is finish’d, when, from shore to shore,
The seraph’s trump reveals, that Time shall be no more. (24)

Angel-like spirits are also invoked to provide comfort from the Genii’s lack of sympathy:
Descend! – Your angel smiles will chase away
The storms that shake the tenements of clay

Say, tho’ the boast of human pride is o’er,
And hope extingu’ed, to revive no more,
That life eternal shall repair the woe,
And soothe the memory of the scenes below;
-Say, that, invested with a purer frame,
The soul unchang’d shall ever be the same,
Shall turn to every friend, with guardian care,
And soothe, and soften, when their hearts despair; (11-12)

The pleading tone here does, however, in the context of Bannerman’s wider portrayal of nature, leave the reader with a lingering sense of doubt. The angels are invoked, but whether or not they respond to the poet’s entreaties is unresolved. This, combined with the general picture of a world in darkness, governed more by chaos than order, suggests that the poem is negotiating with a similar set of concerns to Shelley. The sense that nature and humanity’s role within it is far from perfectly ordered; that rather than unproblematically progressing towards perfection, humanity must continually combat violence and an inhospitable environment; and that the presence of divinity or some kind of higher spirit is both necessary and tenuous evinces an almost total loss of the kind of faith that the physico-theologians of the eighteenth century take for granted, and which is epitomised even by largely secular works such as Darwin’s. Revisiting Milton with the edge of a Blakean doubt in the goodness of an omnipotent God and his ability to positively intervene in human affairs, the Romantic didactic poets question one of the most fundamental premises of the genre – that the universe is neatly ordered, and that human knowledge of this fact will, on its own, lead to a significant betterment of the human condition.

Scientific Poetry in the Victorian Era
The ambivalence of the Romantic poets provides an early register of the insecurity in the relationship between literature and science which was to increase over the course of the century. This insecurity encouraged a reassertion, rather than a withdrawal from, the use of the scientific poem to create a spiritual and ethical context for scientific discoveries and their implications, including both in the ways in which eighteenth-century scientific poems were read and in the work of the nineteenth-century inheritors of the didactic tradition.

The eighteenth-century didactic poet who remained most strongly embraced by Romantic and Victorian-period readers was James Thomson. John Strachan has observed that “in the period which we now label ‘Romantic,’ the universality of the appeal of Thomson’s *The Seasons* was axiomatic...some 274 editions [were] published between 1789 and 1830.”

The resilience of Thomson’s work and its influence in popular culture relied on its ability to be read in a multitude of ways consonant with cultural trends of the late eighteenth and early nineteenth centuries, but also to the spiritually reassuring picture of scientific discovery presented in the poem. In “Autumn” Thomson celebrates the ability of mankind’s intellect to penetrate the veil of nature, calling on his muse to

> Say, then, where lurk the vast eternal springs
> That, like creating Nature, lie concealed
> From mortal eye, yet with their lavish stores
> Refresh the globe and all its joyous tribes?
> O thou pervading genius, given to man
> To trace the secrets of the dark abyss!

After a lengthy geographical catalogue of the parts of the earth which had, in many cases, only recently been discovered, including the geological strata, Thomson nonetheless shies away from the more potentially provocative implications of

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406 Strachan, “That is True Fame,” 247.
geological time, asserting instead the order of the “fair-divided earth” and its rivers over which “a social commerce hold, and firm support/The full-adjusted harmony of things.”408

Nineteenth-century readers of The Seasons praised passages and sentiments like this especially highly. Strachan notes that for the nineteenth-century poet, satirist and critic John Wilson, “The Seasons possesses a kind of neo-pantheistic grandeur: ‘that Poem must be great, which was the first to paint the rolling mystery of the year, and to show that all its Seasons are but the varied God? The idea was original and sublime.’”409 Thomas Campbell similarly cites Thomson’s particular framing of nature as a significant contributing factor to his ongoing popularity and fame:

It is almost stale to remark the beauties of a poem so universally felt – the truth and general interest with which he carries on through the life of the year; the harmony of succession which he gives to the casual phenomena of nature; his pleasing transition from native to foreign scenery; and the soul of exalted and unfeigned benevolence which accompanies his prospects of the creation.410

Among the nineteenth-century poets for whom science was a significant focus, Tennyson looms large as the inheritor of both the scientific-didactic tradition of the eighteenth century, and as arguably the greatest example of the use of scientific poetry to reintegrate a universe governed by laws of nature with a sense of spiritual and moral significance for humanity. Patricia O’Neill argues that

deeply suspicious of the Romantic mystique of individualism and moral heterodoxy, Tennyson doubted that the scientific quest would sustain the emotional and spiritual hopes of humankind ... Moreover, despite his friendships with scientists like Tyndall, Tennyson increasingly used his dramatis personae to prove that traditional social authority and religious

408 Ibid., 833-5.
409 Cited in Strachan, “That is True Fame,” 249.
410 Cited in Strachan, “That is True Fame,” 253.
beliefs are no less compelling for an ethical society than the “natural” laws
touted by Victorian scientists.\textsuperscript{411}

Some of Tennyson’s most famous works and lines grapple with this particular issue,
most notably \textit{In Memoriam}. Tess Cosslett suggests that, just as over the course of the
poem the narrator’s

feelings about Hallam’s death change gradually from grief to reconciliation,
so his feelings about the scientific universe change from fear and depression
to acceptance and celebration. As with the later scientific writers, this
acceptance involves the perception of ordered law, patterned interconnection,
and organic processes, giving structure and stability to the changes of a
mutable and transient universe.”\textsuperscript{412}

This depiction of the universe is important on more than a personal level, or as an
index of the Victorian “crisis of faith.” Tennyson’s retention of a meaningful, yet
abstracted, conception of God that contributes significance to human life and death
can be read in the context of the long eighteenth century’s corpus of scientific poetry,
and in the even longer tradition of Christian and humanistic anti-Lucretian poetry. In
his work, O’Neill observes, that while

no longer the immediate creator of each individual soul, God remains as the
guarantor of the goodness of creation which in this version of evolutionary
theory embraces a divine teleology – the divine event which authorizes and
justifies humankind’s existence and advancement.\textsuperscript{413}

The interest of the poem as far as the history of the scientific didactic poem is
concerned lies chiefly in the degree to which a view of the universe that decentralises
humanity has become naturalised in his work, without simultaneously entailing the
rejection of spirituality. Evolutionary ideas in \textit{In Memoriam}, written and published
prior to \textit{The Origin of Species}, appear – some forty years after \textit{The Temple of Nature} – as
observations which do not require justification.

\textsuperscript{412} Cosslett, “Scientific Movement,” 47-8.
Tennyson’s compromise solution is somewhat different from Erasmus Darwin’s but contains a similarly abstract concept of God compatible with a powerful, impersonal “nature.” He also foregrounds the importance of human love and affection as sources of meaning in a world where the value of individual human lives is unclear.

The prevalence of positions like this has lead Cosslett to observe that several modern historians have seen the Victorian “conflict” as not between science and religion but between “religious science and irreligious science;” that is, between a science pursued in the interests of natural theology, that relates its findings to moral and religious values, and a new, professional, “value-free” science.\(^{414}\)

The use of eighteenth-century didactic poems and the nineteenth century’s own scientific poetic tradition suggests that many of the driving cultural and religious concerns behind the eighteenth-century physico-theological genre continue relatively unchanged well into the nineteenth century. Most significantly, the terms of the debate begin to shift towards accepting a changed role for humanity, including negotiating the significance of human existence in increasingly humanistic and less explicitly Christian terms.

**Didactic Poetry and the “Two Cultures”**

The brevity of the period in which women successfully employed didactic verse as a scientific genre can to some extent be attributed to the rise of the “two cultures” and the solidification of disciplinary boundaries over the course of the early nineteenth century, making the combination of science and literature increasingly problematic for readers at the level of taste.

However, the issues at play are considerably more complex than the questions of poetic taste and style raised in reviews. The stylistic distinctions are not inherently

\(^{414}\) Cosslett, Science and Religion, 2.
gendered, with similar criticisms being made of Darwin’s The Temple of Nature. Of this poem, the Critical Review argued that “had he been less of the poet, his philosophy would have been more accurate - had he been less of the philosopher, his poetry would have been more admirable.”415 Nonetheless, the increasingly widespread belief that good poetry could not be a medium for the more technical, specialised content now expected of popular science writing disproportionately affected women who were largely excluded from institutional sources of authority and education. Porden attempted to bridge this gap by allying her work with Humphry Davy and the Royal Institution, however, as we have seen, this was not well received.

The development of science and literature into two distinct fields of cultural endeavour also undermined traditional sources of women’s authority in less obvious ways. Perhaps most significantly, the increasing institutionalisation of science resulted in its separation from another cultural field with which it had been closely identified during the British Enlightenment - that of religion. With the rise of modern scientific literature, the relationship between science and religion increasingly became the domain of theological writers such as William Paley, whose Natural Theology (1802) became one of the most highly influential works of the physico-theological tradition. Authors in the field of science education – particularly those publishing manuals, school textbooks or articles in journals such as the proceedings of the Royal Society - were no longer expected to incorporate a religious context into their works. While this was less the case in children’s books, which were more likely to retain religious lessons, even here the level of technical detail expanded at the expense of moral didactic content, as the greater inclusion of science in school curricula increasingly resulted in a much higher level of expertise among young learners.

It is too simplistic to attribute the increasing separation between religion and science in science books and articles written for the general public to secularisation. Indeed,

the works discussed here were published contemporaneously with an Evangelical revival in England, accompanied by a noticeable shift towards explicit religious piety in books on domestic recreations and pastimes, including amateur botany. This emphasis continued well into the Victorian period in the genre’s final incarnations, namely books on the symbolism of flowers which incorporated poetry and tended to be devoid of scientific content. Early works in this genre include Flora’s Fancy Fete (1839), a sequel to The Botanical and Horticultural Meeting by Perkins. Rather, it is likely that the decline of a tradition of didactic verse characterised by its placing of new scientific ideas into a religious, moral and social context was at least partly the result of the naturalisation of these ideas and the Newtonian system on which they were based into late eighteenth and early nineteenth-century British culture. The idea that science and religion were irreconcilably opposed had not strongly taken hold in Britain, and by the turn of the century, the moral orientation of eighteenth-century science poetry – one of its most distinctive features – had more or less become obsolete.

In conclusion, the existence of this cluster of early nineteenth-century poems suggests a number of important things regarding the relationship of female authors to science as a subject, and about the role of the didactic poem over the long eighteenth century. The presence of a rich tradition of women’s verse scientific writing in the early decades of the nineteenth century suggests that didactic poetry remained a vital form for much longer than has been previously thought, and that the genre suffered a slow decline and transformation into other related forms rather than a sudden and catastrophic end. The strong presence of female writers within this tradition also suggests that they were negotiating the increasing restrictions placed by institutionalised science on their participation. They did this by drawing on traditional religious and moral sources of authority as a way of maintaining their stature as educators – a position that may ultimately have become problematic as disciplines further solidified.
Conclusion

The development and reception of the scientific didactic poem during the late eighteenth and early nineteenth centuries has a great deal to tell us about the engagement of the reading public with both science and religion. The didactic poet throughout this period occupied the role of a “legislator of society” more explicitly than most, and while this is partly responsible for the backlash against the form in the Romantic period, it is also the reason why the genre managed to persist well into an era of prose science publishing, morphing in the process into similar popular forms that engaged an audience excluded from an increasingly institutionalised scientific culture.

Of all the major scientific poets publishing in the late eighteenth century, Erasmus Darwin is arguably the most liberal in his political and religious views. However, it is the received view of the reception of his works that makes this interesting. It would be a gross understatement to say that many of Darwin’s ideas were not widely accepted in England in the 1790s, and yet his works were widely embraced and continued to influence writers in a range of related genres for many decades to come, during which his own poems continued to be reprinted. That this occurred during what is understood by most historians to be a period of highly reactionary politics and an Evangelical revival is even more challenging to narratives of increasing conservatism in this period. Rather than public opinion changing dramatically over a short space of time, Darwin’s readers and those of the writers who preceded and followed him suggest that the process was far more gradual than is usually thought. The more incendiary aspects of his ideas and style attracted parodies - as popular works often do - but these do not seem to have substantially altered the views of most of his readers. Indeed, his poem The Botanic Garden was reprinted in 1799 after the publication of The Loves of the Triangles, and his complete poems were reissued in 1806, along with a volume of “beauties” or extracts from The Botanic Garden in 1805. These books were lavishly illustrated and very expensive to
print and purchase, and yet were republished at precisely the time when interest in his works is supposed to have been waning dramatically.

The relatively moderate, measured way in which Darwin’s texts were discussed — even by many of their critics — suggests that readers in the 1790s were far more open-minded than most historians contend. They also seem to have been more religious, but in ways that were tolerant and open. This suggests at least two somewhat unexpected conclusions about Darwin’s readership at this time - firstly, that liberal and centrist reviewers were far more open to seriously debating challenging religious ideas, including evolution, than is usually thought. This is especially important in light of the later reception of Charles Darwin’s work, which is usually seen as the first presentation of evolutionary ideas to be taken seriously by a large number of readers. Secondly, this tolerance does not seem to be the result of Enlightenment secularisation, as has been previously argued. Darwin’s readers brought a religious worldview to their interpretation of his texts both before and after the move towards a more conservative culture described by historians of the 1790s. However, the long history of classically-inspired didactic poems in the eighteenth century, of which Darwin’s poems are among the last major examples, may explain at least some of his reception, especially the tendency to interpret his works within well-established religious frameworks and debates rather than seeing them as dangerously radical.

A major feature of didactic poems about science during the eighteenth century is their attempt to situate new scientific discoveries, such as Newtonian physics and the idea of a clockwork universe, within existing religious frameworks. On the whole, the didactic genre is a conservative one which grapples with questions of the meaning of human life and the position of humankind in a universe increasingly understood as being under the control of immutable natural laws. Poems in this tradition attempt to restore meaning and structure to human life, as well as fashion a meaningful role for God that is consistent with new scientific discoveries. Darwin, too, attempts to do these things, as do Shelley, Bannerman, Porden and others, right
through to Tennyson at the end of the nineteenth century. They do so in a uniquely ecumenical way which engages both religion and science, the desire to explain and understand the world, and the need to shape a meaningful place for humanity within it.
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