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The Victorian Poetic Imagination and Astronomy: Tennyson, De Quincey, Hopkins and Hardy

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This thesis investigates the effect of astronomy on the Victorian poetic imagination. It centres on four writers of the period: Alfred Lord Tennyson, Thomas De Quincey, Gerard Manley Hopkins and Thomas Hardy. To date this subject has received surprisingly little critical focus. This study redresses this lack, by revealing how these writers engaged creatively with the possibilities and limitations of contemporary astronomical science and its technologies. It argues that astronomy gave all four writers important metaphors and analogies, enabling them to project a sense of self-discovery in their writing. It shows how their interest in scientific texts, their association with prominent astronomers of the period, and their own astronomical observations, had a profound effect on their creative imagination. This thesis uses their texts, personal diaries, notebooks, letters and library collections to reveal their interest in the science of astronomy. Likewise, it researches the astronomical texts they studied, including those of the leading scientists of the day such as John Frederick William Herschel, John Pringle Nichol and Richard Anthony Proctor. The argument places Tennyson, De Quincey, Hopkins and Hardy’s interest in astronomy within the period’s cultural fascination with the science, and establishes them as both consumers and producers of astronomical knowledge. Each of the writers studied avidly watched the night sky through the telescopes he owned, had access to, or by the naked eye. Important to this enquiry, is a discussion of the optical technology of the telescope as a transparent framing and mirroring device, and how its use results in intense and visionary experiences in the work of these writers. This study crosses the traditional divides of science and literature, to show how these four writers achieved a synthesis of scientific and poetic thought in their writing.
I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

Signature .... G J Daw
For Geoff, Naomi and James
Astronomy compels the soul to look upwards and leads us from this world to another

(Plato, *The Republic*)

From the multitudinous observations of the astronomer on his tower, — spring truths which the philosopher employs to interpret nature’s mysteries, and which give to the soul of the poet those realities to which he aspires in his high imaginings

(Robert Hunt, *The Poetry of Science*)
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Introduction

‘A chain woven of feeling as well as thought’

In *Suspiria De Profundis*, Thomas De Quincey describes the vision he experiences when looking through the uncoloured, central field of a stained glass church window. His imagination translates the ‘white fleecy clouds’ he sees, into children in beds with ‘white lawny curtains’ rising to heaven. This forces the reader visually from the protection of a known space into the unknown.¹ Likewise, when De Quincey turns his back on his sister’s deathbed and looks out of the window, the confines of the room become extended into boundless infinity.² The window makes visible that which is beyond the boundaries of known space. The window as a transparent boundary acts like the mirror of a telescope: extending the inside out, and bringing the outside in, it converges the limits of inner and outer consciousness. The significance of the telescopic lens initiates a discussion of the influence of astronomical observation, and its technologies and theories, on the Victorian poetic imagination. The ability of the telescope lens to cause shifting perspectives between the immediate and distant worlds created differing conceptions of space and being, and affected the imagination. Writers were influenced by how they saw the heavens and incorporated this into the imagery, form and language of their imaginative output. Investigating their creative use of astronomy is important to our understanding of the poetic consciousness in the Victorian period.

The nineteenth century saw more inventions and discoveries than had previously been recorded in the history of astronomical science. The age produced the great names in astronomy, such as Sir William Herschel and his son Sir John Frederick William Herschel. In 1815, the German optician Joseph Von Fraunhofer discovered dark lines in the solar spectrum and in 1846, Lord Rosse resolved the Great Nebula in Orion into stars. Furthermore, in 1864 Sir William Huggins used a spectroscope on the Cats-eye Nebula in the constellation of Draco to demonstrate that planetary nebulae consist of

² Gerhard Joseph suggests that windows are ‘an appropriate genetic outer frame for a discussion of perceptual apertures in the Victorian period’: ‘Victorian Frames: The Windows and Mirrors of Browning, Arnold, and Tennyson’, *Victorian Poetry*, 16. 1-2 (Spring / Summer 1978), p. 70. Here I extend this train of thought to the telescope and astronomical science as framing and distance altering technologies and theories.
gases not stars. Comets such as comet Donati of 1858, the total solar eclipse of 1860 and the Transits of Venus in 1874 and 1882 captured the imagination of astronomers. The period also saw the birth of astronomical photography with the first photographs of the moon taken by J. W. Draper in 1840. In 1845, Jean Bernard Foucault took the first photograph of the sun, and this was followed by Warren de la Rue’s development of the photoheliograph for solar photography in 1854.

The discoveries of astronomical science produced a new appreciation of the majestic and mysterious nature of the heavens. They created new conceptions of its vastness and of the place of humankind within it. During this period, there were significant advances in astronomical technologies. This resulted in the discovery of thousands of nebulae, the identification of hundreds of double stars, and the first asteroids. John Herschel wrote that the ‘minute examination’ of stars, with ‘powerful telescopes and with delicate instruments’, had ‘produced immense catalogues and masses of observations, in which thousands of stars invisible to the naked eye are registered’. For John Herschel, such observations had

led to the discovery of innumerable important and curious facts, and disclosed the existence of whole classes of celestial objects, of a nature so wonderful as to give room for unbounded speculation on the extent and construction of the universe.³

Confronted by the new findings, long-held popular beliefs were adjusted as new evidence was literally presented to the eyes. The connection between the poetic and astronomy reflects the new revelations, and reveals how writers negotiated the new facts in relation to the known world around themselves. New theories and discoveries both excited and disturbed their relationship with the natural world. Astronomical ideas were problematic because evidence was, for the most part, beyond the reach of the senses. To most people the theories and discoveries were a fiction: they were beyond sight because of the distances involved or they were hypotheses, ideas, and possibilities. For example, the most popular theory of the development of the universe was the nebular hypothesis. John Herschel advised that the nebular hypothesis was not a ‘demonstrated truth’, but an ‘idea of Laplace’ and ‘a matter of pure speculation’.⁴ As such, the hypothesis was a fiction, and it remained contested throughout the nineteenth century. Embedded in

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Victorian culture, these fictions were assimilated by creative writers, and provided them with a way of reading the world.

Astronomical science was part of a common cultural experience. Like all science, as explained in the first issue of *Nature* on 4th November 1869, it was ‘impossible to separate […] from other knowledge and from daily life’. Addressing the connections between poetical and astronomical discourse, this thesis argues that astronomical observation created new spaces of creative potentiality. According to William Hamilton, Royal Astronomer of Ireland writing in 1833, ‘astronomy, though a science, and an eminent one, is yet more than a science, - that it is a chain woven of feeling as well as thought – an influence pervading not the mind only, but the soul of man’. This study brings together the shared critical methods of literary studies and the history and philosophy of science. It situates the writers’ deep interdisciplinary knowledge within both literary and scientific traditions, to produce a cross-disciplinary understanding that bridges the divide of science / culture. This thesis analyses the work of Alfred Lord Tennyson, Thomas De Quincey, Gerard Manley Hopkins and Thomas Hardy, in relation to the science of astronomy in Victorian culture. It discusses how the writers’ knowledge and practice of astronomy, enabled them to create a very personal synthesis of contemporary astronomical thought and experience. The four literary figures, poets and prose writers, come together in this thesis because they are all intrigued by the science of astronomy, and they incorporate many varied and complex aspects of astronomical discourse into their writing. Both their interest in astronomical phenomena and the act of using telescopes link them together. Likewise, there are poetic and literary connections between them, for example, Milton, the *Arabian Nights*, Jean Paul Richter, and poetic devices such as the use of the fragment. But, arguably most importantly, they all respond to astronomical discovery in texts which bring to the fore the poetical dimensions of imaginative writing.

Integral to this inquiry, is an exploration of the use and limitations of the visual technology of the telescope and the naked eye in astronomical observation, and their aid to the creative faculty. Essential to this is the individuality of the observer and the emotive responses inherent in the process of scientific discovery. There is solitariness in

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the process of astronomical observation particularly when mediated through the
telescope as a monocular instrument. It employs the singular eyepiece, the singular eye
and the singular persona. Therefore, the moment of observation is essentially a lone one
of direct apprehension of astronomical phenomena, despite the mediation of the
telescope lens. Even with the physical boundary of the telescope lens, there is a direct
link between the observer and the phenomena he observes: the lens is inherently
transparent despite its physicality. However, perception of its transparency disappears
at the precise moment of vision; it is a thing and a non-thing. Its refracting and
reflecting qualities lie unclaimed by the mind at that instant. Likewise, with the
telescope pointed at the sky above, the astronomer’s view is most likely un-intercepted
by terrestrial objects and landscape which cloud this transparency. As such, the moment
of experience for the astronomer is both a scientific abstract and an aesthetic one, which
might be regarded as paradoxical. Yet, as Richard Dawkins has eloquently shown in his
Unweaving the Rainbow (1998), the two are not mutually exclusive: ‘the spirit of
wonder which led Blake to Christian mysticism, Keats to Arcadian myth and Yeats to
Fenians and fairies, is the very same spirit that moves great scientists’.8

Although science called for accurate descriptions of astronomical phenomena,
poetry provided a vehicle for the emotive voice of astronomical findings. Poetry placed
the observer in the centre of experience, allowing an interaction between observer and
heavens that enabled the reporting of subjective experience. As this thesis investigates
the connection between poetic creativity and astronomy, we will recognize, to use
Gaston Bachelard’s term, ‘archetypes’ that appear across the different writings of poets
and scientists.9 There are reverberations across the disciplines, archetypical symbols
drawn from common experience, which invoke the discovery of the self in things other
than the self. As Bachelard argues, the imagination can ‘find in the very depth of
materials all of the symbols of the inner life’.10 Bachelard explains that the ‘real’ and
‘unreal’ should ‘be made to co-operate.’11 The imagination is the facilitator that

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7 For a discussion of the effects of the transparency of glass as a ‘medium and barrier’, see Isobel
8 Richard Dawkins, Unweaving the Rainbow: Science, Delusion and the Appetite for Wonder, London:
10 Gaston Bachelard, L'Eau et les rêves essai sur l'imagination de la matière, Paris: Gallimard, 1938,
11 Bachelard, Poetics, p. XXXV.
synthesises our view of our universe: ‘The imagination of qualities moves beyond given reality. We experience sensual joys but we make of them songs’. Poetic language, ‘cosmic words’ as Bachelard calls them, forceful and expressive ‘cosmic images’ ‘weave bonds between man and the world’ producing an ‘intimate cosmicity’.

In the nineteenth century, poetry and science were regarded as ‘kindred thrones’ which possess the ‘power’ to ‘lift the mind above the stir of earth, and win it from low-thoughted care’. In The Poetry of Science (1848), Robert Hunt writes of the truth attained by poetry in the marriage of fact and ideas. He argues that science ‘solicits’ facts from the ‘material world’ and ‘philosophy strives to apply the discovered facts to the great phenomena of being [...]. Poetry seizes the facts of the one and the theories of the other; unites them by a pleasing thought [...] it connects common phenomena with exalted ideas.

There was nothing new in the notion that scientific ideas could invoke the imagination. In the eighteenth century, Joseph Addison’s essay ‘On the Pleasures of the Imagination’ showed how astronomical observation and ‘authors of the new Philosophy’ could ‘gratify and enlarge the Imagination’, filling the mind ‘with a pleasing astonishment’, and confounding it ‘with the immensity and magnificence of nature’. This essay, first published in instalments in the Spectator between 21 June and 3 July 1712, remained popularly reprinted throughout the nineteenth century. It invoked categories of the sublime: the binary of the ‘dreadful’ and the ‘harmless’ and in particular the idea that the more ‘dreadful’ and frightful the object viewed, the greater the ‘pleasure’ received from it. Words, the ‘description of what is terrible’, and especially the ‘reflection we make on our selves at the time of reading it’, were for Addison just as capable of invoking such feeling as the viewing of actual phenomenon. This thesis shows how astronomical writing that invoked notions of the sublime by those such as John Pringle Nichol in his Views of the Architecture of the Heavens in a Series of Letters to a Young Lady (1837), and Robert Chambers in his

14 Hamilton, p. 671.
Vestiges of the Natural History of Creation (1844), had a profound effect on the writers studied.

The idea of the dreadful is also fundamental to the Catholic physicist and philosopher Blaise Pascal’s ideas of dread and terror, that he expresses in his Pensées (1670). Through the astronomical references he makes, Pascal depicts the heavens as a place of alienation: ‘the infinite immensity of spaces of which I know nothing and which know nothing of me’.\(^{18}\) For Pascal, the earth is ‘a mere speck’ compared to the vastness of the universe, which in turn, is ‘an infinite sphere whose centre is everywhere and circumference nowhere’. A ‘new abyss’ is found in the ‘minute parts’ with ‘all the conceivable immensity of nature enclosed in [the] miniature atom. Let him see there an infinity of universes, each with its firmament, its planets, its earth.’ Pascal advises that man should ‘tremble at these marvels’ and his ‘curiosity’ will change ‘into wonder.’\(^{19}\)

Throughout this thesis, there is a sense of fear turned into marvel when the heavens are observed. Tennyson, who engaged with the writing of Pascal, as we shall see later in this thesis, was particularly struck by awe and wonderment in terms reminiscent of Pascal. Tennyson’s astronomical knowledge provides him with analogies and metaphors to describe the psychological and spiritual states he explores in his poetry. For Tennyson, when observing the heavens, Pascalian ideas of immensity and unknowableness invoke a wonder at the omnipotence of God. Concerning man’s ‘disproportion’, Pascal had written that ‘it is the greatest perceptible mark of God’s omnipotence that our imagination should lose itself in that thought’.\(^{20}\)

The notion of the ‘Harmless’ and the ‘dreadful’ surfaces again in Edmund Burke’s contrasting of the ‘Beautiful’ and the ‘Sublime’ in his treatise A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and the Beautiful (1757). For Burke, the source of sublime is ‘whatever is in any sort terrible, or is conversant about terrible objects, or operates in a manner analogous to terror.’\(^{21}\) As we shall see in the chapter on De Quincey in this thesis, the horror he sees in an engraving of the Great Nebula in Orion by John Herschel produces a moment of remembrance of personal demons and terrors. Burke adds a ‘psycho-physiological twist’ to Addison’s ‘Dreadful’


\(^{19}\) Pascal, XV: 199, pp. 60-61.

\(^{20}\) Pascal, XV: 199, pp. 59-60.

‘Astonishment’ with sense impressions producing ‘the great originals of all our ideas’. For Burke, it is the sensory moment of terror that comes with the ‘obscurity’ of a fragmented representation, a partial viewing, that makes the thing viewed ‘very terrible’. As the chapter on De Quincey will show, with the viewing of a partial representation of the heavens in the engraving, the sublime moment invoked by terror becomes more a study of the mind of the spectator than of the object itself.

One way of dealing with the fear of secularization and the ‘disproportion’ of man whilst retaining a sense of awe at the revelations of astronomy, was to call into service the language of the sublime. For astronomers of the Victorian period Immanuel Kant’s ideas of the sublime had a particular relevance and made their texts appealing to the writers studied in this thesis. In particular, it was Kant’s retaining of an originating first cause in relation to the universe in his *Universal Natural History and Theory of the Heavens* (1755). Here Kant suggested the idea of a universe of multiple worlds in an infinite system, in which ‘eternity is inexhaustible’ and subject to ‘unending progression’. Kant wrote in terms suggestive of his later explorations of the sublime:

If the size of a planetary system in which the Earth is hardly seen as a grain of sand fills the understating with astonishment, how delightfully astounded we will be when we examine the infinite crowd of worlds and systems which fill the totality of the Milky Way. But how much greater this wonder when we know that all these immeasurable arrangements of stars once again create a numbered unity, whose end we do not know [...] here there is no end, but an abyss of true infinity, in which all capacity of human thought sinks.

Here there is evidence that Kant thought of astronomy as an activity that could produce astonishment, awe and religious wonder as it ‘opens up for us a view of the infinite field of creation and offers an idea of the work of God appropriate to the infinite nature of the Great Master Builder’. Later, Kant related this thinking to the idea of mathematical sublime in his *Critique of Judgement* (1790). Here, Kant argues that where the mind’s attempt to trace the stars of the Milky Way meets with the unbounded nature of the ‘planetary system’, it is suggestive of an incomprehensible infinity that ‘presents to us [...] our imagination, in all its boundlessness.’

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23 Burke, p. 102.
For Kant, it is not only in the vastness of creation that there are ‘important discoveries to be made’, but also in the ‘smaller things’ and in the ‘intermediate parts’ of ‘our solar system.’ Not just in the planets, but in the stars and comets that inhabit the interplanetary spaces of the universe. In the chapter on Hopkins, I discuss how he looks to the ‘level of the small’ by aligning himself with a comet in his fragment ‘I am like a slip of comet’, thus projecting a sense of insignificance and disproportion. I show how his sense of awe and astonishment comes not with a sense of fear at the heavens, but more with the apprehension of its beauty, which he finds in its minutest detail. For Hopkins, the beauty of the heavens revealed in his intense periods of observation is evidence of the providence of God, as the divine creator. His description of the comet in ‘I am like a slip of comet’ is factually correct albeit contained in sensuous language. Whereas, for the agnostic Hardy the plain speaking almost textbook descriptive use of astronomical phenomena, adds another dimension to the way writers use astronomy to aid their creative output. Views of the heavens in Hardy’s work overcome the binary of the beautiful and the factual. His descriptions of the night-sky create aesthetic scenery as well as being educational and instructive to the reader. Indeed, throughout this thesis the traditional opposition of the aesthetic and the factual is blurred. Facts about the universe are used to make the reader emotionally connect with the subject of the writing discussed. There is an appeal to the reader’s factual pre-knowledge gained from their part in educational cultural practices related to astronomy, such as those discussed in the chapter Astronomical Pleasures. Facts are employed to capture the reader’s attention through the suggestion of truth and reality. However, we shall also see how facts can be aesthetic through the pleasure in knowledge, and of discovering something new. Facts will also be seen to be used for creating art and forming a thing of beauty, not just in literature and poetry, but also in cultural spectacles such as the Eidouranion.

The language of the sublime was common to both astronomical texts and poetical writing of the period. Verse as well as prose had been traditionally used for scientific popularisation. Poems such as James Thomson’s The Seasons (1726-30), with its astronomical references, were widely read in the nineteenth century. By the 1800’s prose became the favoured medium of scientific popularisers. Nevertheless, in the

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27 Kant, *Universal*.
nineteenth century the cross-disciplinary use of poetical tropes was common. Scientific writing was more inclusive employing both technical and poetical writing. Many astronomers cited poetry in an attempt to express their emotional response to what they saw in the heavens. They drew on established poetical iconography, such as the biblical imagery of Milton, to illustrate astronomical discoveries. They also used evocative prose and well-known poetical material, together with interspersions of pictorial illustrations to make astronomy, a science of tables, figures and charts, a window onto other previously unknown worlds for the reader. Proctor introduced his article in the Belgravia Magazine, ‘Comets as Portents’, with lines from the French poet du Bartas. This furnished him with the means to describe the ‘superstitious awe’ with which comets were regarded ‘in old times’: ‘The blazing star, / Threat’ning the world with famine, plague, and war; / To Princes death; to kingdoms many curses’. When writing his The Story of the Heavens (1882), Robert Stawell Ball found apt description of the possibility of life on ‘the celestial bodies’ in Tennyson’s ‘The Two Voices’:

Life, it may be, stranger than ever Dante described or Doré sketched [...] Intelligence may also have a home among those spheres no less than on the earth. There are globes greater and globes less—atmospheres greater and atmospheres less. The truest philosophy on this subject is crystallised in the language of Tennyson:—

‘This truth within thy mind rehearse,  
That in a boundless universe 
Is boundless better, boundless worse’.

‘Think you this mould of hopes and fears  
Could find no statelier than his peers 
In yonder hundred million spheres’.

This combination of styles had its uses: it could capture the imagination of a wide readership, and it could make safe and add weight to the findings of astronomy. Likewise, it could whet the appetite of the non-specialist reader, especially when used in the preface or introductory lines of chapters, where it acts to lead them from the familiar to the unfamiliar. As Gillian Beer has acknowledged, the inclusion of poetry in scientific discourse, to some extent, ‘effortlessly claimed gender and class community

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32 O’Connor, pp. 24-26.
with a selected band of readers’. However, we should not forget the potential poetry offered for expressing the sense of awe, bewilderment and fear experienced in the discovery of the heavens. Both poetry and astronomy had an aesthetic dimension that evidenced convergence rather than polarisation. Often even detailed technical astronomical passages become highly charged with emotion. Disseminators of astronomical knowledge, such as Ball, acknowledged aesthetic responses to astronomical observation. According to Ball:

Saturn possesses an interest for a far more numerous class of persons than those who are specially devoted to astronomy. It is of interest, it must be of interest, to every cultivated person who has the slightest love for nature. A lover of the picturesque cannot behold Saturn in a telescope without feelings of the liveliest emotion; while, if his reading and reflection have previously rendered him aware of the colossal magnitude of the object at which he is looking, he will be constrained to admit that no more remarkable spectacle is presented in the whole realm of natural scenery (Fig. 1).

Astronomy, in its need to describe what is beyond the visual capabilities of the naked eye, had a special requirement for the use of imaginative description. It was not until the increasing specialization and use of statistical information and formulae in the late nineteenth century, that new divisions were created between the imaginative and the factual in scientific writing. In astronomical writing, this was ushered in by the development of spectroscopy with its barcode-like results of “Celestial Chemistry”, such as can be seen in the spectrum of the star T Coronæ (Fig. 2). However, the development of a scientific language that was increasingly statistical, often called for descriptions that were more imaginative in the realm of popular science. Therefore, writers and lecturers continued to unite with the reader in projecting the necessity for the use of imagination. Ball, for instance, claimed to have chosen a poetically charged title for his lecture on the tidal effects of the moon on the earth: ‘A Glimpse through the Corridors of Time’ (1881), because he considered the subject ‘appeal[ed] powerfully to the imagination as well as to the reason’.

The writers in this study actively engaged in astronomical observation whether by

33 Beer, Open, pp. 175-76.
34 Ball, Story (1885 edn.) p. 251.
Figure 1 The Planet Saturn in 1872, from Robert Stawell Ball, *The Story of the Heavens*
the naked eye or the telescope. This fact enables me to focus on the epistemological and aesthetic issues that their fascination with astronomy and the technologies of astronomy raises. In particular, the telescope and the retina of the eye as both receivers and borders between self and other, separating and yet uniting subject and natural phenomena. The telescope as a separating and uniting optical device, acts as a psychological frame that limits the field of view. Thus, to some extent, it makes safe the phenomena observed, not least in the limitation of the size of the area under observation. However, paradoxically the device also enlarges the depth of visual field: it acts as an extension of the human eye and its workings become emblematic of an increased depth of vision, which works metaphorically as the ability for inner vision. Just as the eye was popularly regarded as the window to the soul, then the telescope extends the possibilities for even deeper revelations of individual consciousness. The telescope also acts as a magnifying device, bringing to the foreground astronomical phenomena cognitively known to exist at distances inconceivable to the human brain. This near focus causes a mixed response of both recoil in fear, and a marvel at what the telescope reveals. Such response is reflected in the aesthetic discourse of the sublime employed by poets and astronomers. The era was one in which visual metaphors resulted from the use of such optical instruments as the telescope, the spectroscope, the diorama, the stereoscope and the magic lantern. Visuality was the paradigmatic trope of the period, and the appeal of science as a commodity was linked to its marketability as both instruction and entertainment. Astronomical science bombarded Victorian audiences with spectacular visual images, which caused them to re-interpret their relationship with their known world and their observational practices and technologies. Astronomical writing engaged
creatively with visual spectacle, disseminating the science through ‘imagistic representation and description’. Amédée Guillemin presented the fifth edition of his *Le Ciel* (1877), as ‘speaking to the eyes through visual representation or illustration of phenomena’.

Writing in 1865, G. H. Lewes recognised the ‘underlying resemblances’ between science and poetry:

> a poem on the stars and a treatise on astronomy have distinct aims and distinct methods. But having recognised the broadly-marked differences, we are called upon to ascertain the underlying resemblances. Logic and Imagination belong equally to both.

More recently, Gillian Beer in her highly influential *Darwin’s Plots* (1985) has identified the shared discourse between literature, poetry and science. She argues that ‘not only ideas but metaphors, myths, and narrative patterns could move rapidly and freely to and fro between scientists and non-scientists’. This thesis is related to the main paradigms in current scholarship in literature-and-science, such as Beer’s focus on language, and George Levine’s one-culture model detailed in his *Darwin and the Novelists* (1988). However, rather than being confined to a particular paradigm, it draws simultaneously on these models, as well as scholarship by those such as Bernard Lightman, who has shown the importance of contextualist studies in the history of science in his edited volume *Victorian Science in Context* (1997). Likewise, important studies in the relationship between science and literature such as James Paradis and Thomas Postlewait’s *Victorian Science and Values: Literary Perspectives* (1981), and U. C. Knoepflmacher and G. B. Tennyson’s *Nature and the Victorian Imagination* (1977), have influenced me to look for the conversation and shared discourse between Victorian astronomical science and literary works of the period. Inspired by these seminal texts, I have found myself part of a growing community of scholars interested in the relationship between literature and science who converse through networks, such

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as the British Association for Victorian Studies and the British Society for Literature and Science. Although astronomy still sees only a very small number of papers presented, its presence is nevertheless remarkable in its difference from the larger interest in Victorian medicine, biology, evolutionary science and geology. With the 150th anniversary of the publication of Darwin’s *On the Origin of Species* in 2009, there has been more focus, and perhaps a more noticeable resurgent interest in the relationship between literature and science. However, without being reductive as to the importance of Darwinian evolutionary science to the Victorian discourse of the origins of Man, there is a tendency to ‘over-Darwinize’ the period.\(^{42}\) There is a propensity, for example, to ignore the nebular hypothesis, an astronomical theory of the origins of the earth and its solar system, fervently debated during the period.

Excellent studies of the place of science in Victorian culture have recently been produced. Notable among these is Aileen Fyfe and Bernard Lightman’s informative collection, *Science in the Marketplace: Nineteenth Century Sites and Experiences* (2007), which focuses on the consumerism of scientific entertainments from the Crystal Palace to the printed page. Likewise, on-line archives such as the Darwin Correspondence Project, *The Correspondence of William Henry Fox Talbot* and *Science in the 19th Century Periodical*, reveal the extent to which the various branches of science, including astronomy, were of general knowledge and importance in Victorian culture. However, despite the popularisation of astronomy in the Victorian period, there has been surprisingly little interdisciplinary focus on the effect of the transmission of astronomical knowledge on Victorian poetic discourse. The only book length study to date appears to be Anna Henchman’s doctoral thesis, *Astronomy and the Problem of Perception in British Literature, 1830-1910*. Pamela Gossin’s recent *Thomas Hardy’s Novel Universe: Astronomy, Cosmology, and Gender in the Post-Darwinian World* (2007) emphasises the importance of the science to Hardy, but unfortunately fails to deal in any depth with the rich references to astronomy in his verse.\(^{43}\) In contrast, this thesis considers the extent of the popularisation of astronomy and its effects on Victorian poetic creativity. It contributes these insights to our knowledge of the period and the writers studied.


Invoking an astronomical metaphor for circulatory knowledge, what becomes prominent, is what I like to term the orbit of influence. Such influence is not surprising to some extent, in view of the nature of scientific discourse in the nineteenth century and its growth from the eclecticism of natural philosophy. However, research for this thesis has revealed the huge extent to which astronomers and literary figures mixed with each other, both socially and professionally, within a climate of mutual admiration and the desire to learn from each other. Tennyson, for example, mixed with Charles Pritchard and Joseph Norman Lockyer, and Thomas De Quincey was a close friend of the astronomer John Pringle Nichol. Placing this orbit of influence within the nineteenth-century rise of popular science, involves the recognition of the uncertain boundaries between the popular and the learned, their constant renegotiation, and that many astronomers involved in the diffusion of their specialised knowledge contributed to the popularisation of astronomy. Huxley identified nineteenth-century science as connected with ‘the Anglican clergy, amateurism, and natural theology’, connections he wanted to break in favour of a professionalization of science.\textsuperscript{44} Professional astronomer is a difficult term to apply to nineteenth-century practitioners of the science, as many astronomers who we might now call amateur, contributed directly to the production of astronomical knowledge. Agnes Clerke summed up the position in her \textit{A Popular History of Astronomy during the Nineteenth Century} (1885), claiming astronomy as ‘the science of amateurs’, and that ‘there is no one “with a true eye and a faithful hand” but can do good work in watching the heavens’.\textsuperscript{45} Private enthusiasts were responsible for a great deal of the observation and recording of astronomical phenomena, and their findings were often published in journals and newspapers. They included wealthy landowners such as Lord Rosse, business and professional men like the Liverpool brewer William Lassell, the mechanical engineer James Nasmyth, and retired service men such as Admiral W. H. Smyth. Like Lord Rosse, who built a six-foot aperture telescope, the ‘Leviathan of Parsonstown’, they often constructed large telescopes to observe planets, nebulae and double stars.\textsuperscript{46} Even those less wealthy owned telescopes and contributed their observations to newspapers and magazines. As Samuel Smiles wrote in 1884, ‘astronomers in humble life! There seems to be no end of them. There

\textsuperscript{44}Lightman, \textit{Popularizers}, p. 12.
\textsuperscript{45}Agnes M. Clerke, \textit{A Popular History of Astronomy during the Nineteenth Century}, Edinburgh: Adam and Charles Black, 1885, p. 7.
must be a great fascination in looking up to the heavens and seeing those wondrous worlds careering in the far-off infinite'.

This study acknowledges the contributions of the amateur to the production of astronomical knowledge during the Victorian period. The science of astronomy belonged to both the disciplined expert, and to those outside institutions of knowledge. These institutions included the Royal Astronomical Society, founded in 1820, and government or university astronomical departments that were concerned with systematic positional astronomy, celestial mechanics and later astrophysics. This thesis discusses the role of those on the periphery of institutionalised science such as the gentleman, whose private ventures into astronomy for pleasure nevertheless contributed to the production of knowledge. Likewise, it acknowledges the role of their families in the collection of astronomical facts. This study also recognises that poets as amateur enthusiasts, in using astronomy in their writing, also contributed to the dissemination of astronomical knowledge. They too were consumers of popular science - astronomy was accessible in such forms as books, magazines, journals, visual spectacles of orrery shows, magic lantern slides at public lectures, and museum displays. Here Roger Chartier’s aphorism ‘cultural consumption is also cultural production’ is apt.

An exact replication of the ways astronomical observation affected its participants in the Victorian period would be impossible. The discipline went through innumerable changes, due to the increase in knowledge about the universe and the development of astronomical technologies. Instead, like the fragmentary nature of astronomical references in poetry of the era, this inquiry looks for traces, continuously bringing together aspects of astronomy in poetry and science ‘into its layers and folds’. This method is particularly suited to writing about astronomical observation, as it is often essentially a fragmented momentary experience. Likewise, its disciplinary knowledge is built upon the bringing together of facts and experiences from a multitude of sources and observations over often lengthy, periods. Proctor reminds us in his Essays on Astronomy (1872), that the information about the universe provided by telescopic

48 The Government astronomers included those who worked at the Royal Observatory, Greenwich, such as Sir George Biddell Airy, the Royal Observatory, Edinburgh, and the Solar Physics Observatory in South Kensington, London: ‘British Astronomy’.
observation was ‘piecemeal’, and that the ‘whole array of known facts’ have not been brought ‘into one grand picture’, but are ‘seen as it is only by parts, and (even so) only as through a veil and darkly’.  

The writers included in this thesis studied and practised astronomy within the cultural popularisation of the science – they were cultural consumers and producers. Their knowledge about the science came from cultural products: to observe fruitfully they studied the texts, attended lectures, and watched displays. They thereby took part in scientific social production. Their consumption of astronomical knowledge is written into their own cultural production, which in turn places them as knowledge producers within the culture of the popularisation of astronomy. As we will see in Chapter I, astronomy was a popular cultural pursuit that was part of the Victorian quest for knowledge, and it extended beyond the scientific institutions into the lives of ordinary individuals. These astronomical pleasures, I will argue, are evidence of Victorian society’s intoxication by the science of astronomy, and provide insights into its influence on writers of the period.

Astronomy was part of the spirit of the age, and poets expressed their anxieties, fears and hopes by embracing its ideas. In Chapter II, I trace Alfred Lord Tennyson’s interest in astronomy and show how, contrary to popular critical opinion of his reaction to science, astronomy was a significant and positive muse that enabled his exploration of faith, doubt and immortality. Focussing largely on his elegy In Memoriam A. H. H. (1850), I reveal astronomy as a source of hope and aspiration for Tennyson. In particular, I argue that astronomy resulted in an intensity of poetic vision in his work.

Chapter III focuses on Thomas De Quincey’s article published in Tait’s Edinburgh Magazine ‘System of the Heavens as Revealed by Lord Rosse’s Telescopes’ (1846). Ostensibly, a review of John Pringle Nichol’s recently published Thoughts on Some Important Points Relating to the System of the World (1846), part of the article takes the form of a prose poem that reflects De Quincey’s knowledge of astronomy. In De Quincey’s imagination, John Herschel’s illustration of the Great Nebula in Orion included in Nichol’s text, takes on a grotesque form as he constructs it from fragments with astronomical and cultural relevance. Here I show how the Great Nebula becomes an exploration of the importance of the Burkean sublime to De Quincey’s aesthetic

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vision, and a site for the expression of his private fears and demons.

Chapter IV shows how the poetic and astronomical fragment was also important to Gerard Manley Hopkins. However, in contrast to De Quincey, Hopkins employs the actual physical nature of a comet as a fragment of the solar system. This chapter reveals how Hopkins uses this fragmentary characteristic of comets in his, ‘I am like a slip of comet’ (1864), to project a reading beyond the text, which reflects his personal conflicts and torments.

In Chapter V the physical nature of cometary bodies, and in particular their motion through the heavens, is shown as providing an important analogy for Thomas Hardy. Through a close reading of the Norcombe Hill passage in his Far From the Madding Crowd (1874), I reveal its relationship to astronomy. Here theories about the motion of the earth, offer a new way of reading the passage. From this, emerge insights into Hardy’s use of astronomy in his poetry, and into how he breaks down the dichotomy between literature and science.

To conclude this thesis, I return to the question of the conversation between literature and science. In a previously unacknowledged article by the Victorian critic and poet Edward Dowden, I find an intriguing commentary on the relationship between ‘the Scientific Movement and Literature’, which employs De Quincey’s distinction between the literature of knowledge and the literature of power. Projecting back the idea of clashing cultures as identified by C. P. Snow, I suggest the relationship between Victorian astronomy and poetry rests on the ‘creative chances’ taken by the writers studied.52

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I

Astronomical Pleasures

On Thursday 15th November 1866, Constance Talbot, wife of the eminent scientist and contributor to the development of photography William Henry Fox Talbot, wrote to her husband:

I am most impatient to hear all you saw of the Meteors on Wednesday night – You had not charged me to keep our eyes open for the chance of what we might see, but however we did not forget – And this is what we saw – About ten o’clock in the evening, the shutters of a window looking towards the East were opened. – and a very brilliant light was seen occasionally – Which we think was nothing but common lightening, – and once or twice, a star shot across the sky – About ½ an hour later we looked again & saw an oscillating light <ill. del.> close to the horizon rather to the North of East, with a dark coloured Clouds obscuring part of the illuminated space. – This faded away after a short time – and we saw nothing particular for an hour or two, except that the sky was remarkably clear towards the East, although on the West side of the house there appeared a good many clouds – and there was some wind – We retired to our rooms a few minutes later at 11 o’clock thinking that all was finished, – but after undressing & before we got to bed, there came on a sudden & violent storm of wind & rain – & the heavens were inky black – Rosd left her room & came to sit with me by the fire side – and we talked on for a good while, although the storm had passed off rapidly – At last she went to bed – and I proceeded with various little things before doing the same – It was about a quarter to one when I was quite finished & I thought I would just give one more look at the sky – When to my astonishment & delight I saw Meteors flying about in all parts, looking like small rockets or like comets, more vivid than I ever saw, and going out like a spent fire work – I awoke Monie (who was fast asleep) and brought her back to my room which has a bow window, commanding a great expanse of sky. – And there we stood gazing for at least ¾ of an hour: the glorious display continuing all the time, & perhaps much longer, for being very cold, & seeing no new Phenomena we at last thought it wise to go to bed. – I am impatient to read the accounts in the Times which we shall get this evening – I am very sorry that my Brother & Harriot lost the whole thing as they gave up observing when the storm came on at midnight.¹

Constance Talbot was reporting a huge meteor shower which appeared on the nights of the 12th, 13th and 14th November 1866. The meteors were reported to have been ‘most

numerous at 1.12am’ on the 14th ‘when they were falling at the rate of 100 per minute’ and ‘the sky was scored in all directions with their trains’. The event was described in The Times newspaper the following day as a ‘sight never to be forgotten’, and on December 4th as ‘such a display as was probably never before witnessed in England’. However, this letter is remarkable not just for the description of astronomical phenomena, but for the way it exhibits the nineteenth-century fascination with astronomical observation. It also informs us of the extent to which astronomical observation and the recording of data was extended to families, and was part of daily life. Wives and children were also part of the culture of astronomical observation, a tradition which had historical precedents most significantly in the life of Caroline Herschel, sister of Sir William Herschel. Caroline famously recorded the movements of astronomical phenomena from her brother’s nightly telescope sweeps, and later she turned astronomer herself discovering eight comets. Indeed, wives and families accompanied their astronomer husbands on major observation expeditions, such as the British Himalaya expedition to Spain to observe the total solar eclipse of 18 July 1860. George Biddell Airy was accompanied by his wife Richarda, his eldest son Wilfred, and eldest daughter Hilda, Mrs. Vignoles travelled with her husband the civil engineer Charles Blacker Vignoles, and Mlle Struve with her father the Russian astronomer Otto Wilhelm von Struve (Fig. 3).

Letters such as Constance Talbot’s inform us of the Victorian fascination with astronomy, but so too does the ironic voice of satire in the nineteenth century periodical press. In 1858, the magazine Punch satirised the ‘hunt’ for Comet Donati describing amateur astronomers as being as ‘plentiful as partridges’. Significant in this context, is the adjacent engraving by the caricaturist, and illustrator John Leech titled ‘So fond of astronomy, that they are always on the balcony, looking for the comet’. With the man’s hat covering the telescope lens the cartoon questions whether practising astronomy was perhaps an excuse for more illicit occupations (Fig. 4). Such satirical comment, although it pokes fun at the craze for astronomy, at another level it reveals the extent of

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2 G. J. Symons, letter, The Times, 15 November 1866, 10B.
3 C. G. Talmage, letter, The Times, 16 November 1866, 4F; R. H. Allnatt, letter, The Times, 4 December 1866, 12A.
4 Richard Holmes details Caroline Herschel’s turn from being solely an assistant to her brother, to doing his calculations by day, and by night being an astronomer herself: The Age of Wonder: How the Romantic Generation Discovered the Beauty and Terror of Science, London: Harper, 2008.
5 Peter D. Hingley, ‘The First Photographic Eclipse?’, Astronomy & Geophysics, 42.1 (2001), p. 1.20. The expedition was named after the ship they travelled on - the H.M.S. Himalaya.
the Victorian fascination with astronomical observation. My emphasis in this chapter is on the ways in which astronomy saturated all levels of society, how it was as much entertainment as instruction, and how it had aesthetic as well as factual appeal. This chapter also explores those ways in which astronomical science was projected to the Victorian public. It highlights the variety of places where the writers studied in this thesis could have consumed astronomical science, both as adults and children. Therefore, the purpose of this chapter is to demonstrate the range and depth of the Victorian cultural intoxication with astronomy.

Victorian culture was saturated with astronomical experiences as part of the common cultural fascination with the sciences. As spectacle, astronomical science was a part of the ‘cultural marketplace’ that competed for visitors by offering a range of attractions.⁷ As a developing science in which ground-breaking discoveries were being

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made, its technologies took an increasing part in Victorian cultures of display. Astronomical pleasures were no longer the province of the scientific elite reliant on the expensive possession of a telescope. Astronomy could be encountered in a multiplicity of forms in Victorian society such as print culture, public displays and lectures, and museums.

With the plethora of books on astronomy being published, the public was becoming more knowledgeable about the science. Throughout the nineteenth century writers such as Richard Proctor, Mary Somerville, John Pringle Nichol, John Herschel, and Robert Stawell Ball published books aimed at a less-specialised general readership. One of the earliest bestsellers was written by the Scottish schoolmaster and divine, Thomas Dick. His *Solar System* (1846), published in two parts by the Religious Tract Society, sold

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30,510 and 26,890 copies by 1850. Many of the books were written with the amateur enthusiast in mind. Titles such as Proctor’s *Half-hours with the Telescope* (1868), suggested astronomy was an activity that could be enjoyed by the non-specialist in his or her leisure time. The Revd. Thomas Webb’s *Celestial Objects for Common Telescopes* (1859) provided amateur astronomers, who could afford to possess ‘ordinary telescopes’, with ‘plain directions for their use, and a list of objects for their advantageous employment’. Like many astronomical texts of the period, Webb’s book mixed astronomical instruction with a ‘theology of nature’, advising readers that ‘a personal examination’ of the heavens would provide evidence of the ‘greatness and glory’ of God as the ‘CREATOR’. Writers of astronomical texts often combined astronomical instruction with religious themes. For example, the Rev. James Gall jnr., in his *The Stars and the Angels* (1846) argued for the existence of other inhabited planets, whilst describing the view that the angel Gabriel would see on his way from heaven to earth to tell Mary that she would have a child.

The Victorian popularisation of astronomy coincided with the period in which books on scientific subjects were becoming available to a wider audience. This was due to the increase in the number of books being printed, and the reduction in prices as a result of mass-production and the repeal of taxation on paper and print. During the eighteenth century, books on natural philosophy were popular with polite society but were expensive, and therefore remained the province of the wealthy. However, the nineteenth century saw the development of the steam-powered printing press, machine-made paper, cheap woodcuts, and stereotyping. These developments together with the rise of circulating libraries, religious tracts, secular education and the postal system, led

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10 Webb x, original emphasis; Here I adopt the distinction between a ‘theology of nature’ and ‘natural theology’ identified by John Brooke and found useful by critics such as Jonathan Topham, Aileen Fyfe and Bernard Lightman in their discussions of scientific texts. Scientific writers often presented beliefs about divine purpose in creation (a ‘theology of nature’) without propounding the Paleyean philosophical arguments that find rational proof of God’s existence in nature (natural theology): see Lightman, *Popularizers*, p. 24.

to an increase in the availability of scientific texts to an ever-increasing reading public. The interests of commercial publishers such as W. & R. Chambers and Charles Knight, together with the role of the Religious Tract Society, meant scientific instruction was brought to a widening audience of family readership amongst the middle and working classes.\(^\text{12}\) *The Penny Cyclopedia of the Society for the Diffusion of Useful Knowledge*, contained entries on famous astronomers, and astronomical theories. It referred to important scientific texts such as Pierre Simon Laplace’s *Mécanique Céleste* (1799), and John Pringle Nichol’s *Views of the Architecture of the Heavens* (1837) for further reading.\(^\text{13}\) The Society for the Diffusion of Useful Knowledge (SDUK) also published the *Library of Useful Knowledge*, which sold for sixpence a copy, and was published biweekly. It focused on scientific subjects such as the nebular hypothesis, explaining them in a general manner that imbued a sense of progress within the realms of natural theology.\(^\text{14}\) According to an 1849 review, ‘thousands’ who purchased such books ‘to peruse, had their attention drawn to a neglected study, and, as the appetite could be satisfied by the means which created it, the early publications of the Society largely promoted the spread of popular science’.\(^\text{15}\)

As well as reasonably priced publications, there were also learning aids that were both recreative and instructive. At the Great Exhibition of 1851, an umbrella was exhibited made of ‘perforated material’, which when opened and held up to the light, revealed spots of light that formed the ‘the larger stars’.\(^\text{16}\) A portfolio set of twelve hand-coloured astronomical prints titled *Astronomical Diagrams*, intended for learning at home, were published from 1846 onwards by John Reynolds. Priced at 1 shilling they were affordable to middle-class audiences (Fig. 5).\(^\text{17}\) An equally fascinating example of

\(^\text{12}\) Fyfe and Lightman, p. 6. Other important publishers of nineteenth century scientific texts include Longmans, J. W. Parker and W.S. Orr & Co.


\(^\text{14}\) Other miscellanies devoted exclusively to science were John Joseph Griffin’s *The Scientific Miscellany: An Occasional Publication of Treatises Relating to Chemistry and Other Experimental Sciences*, Glasgow: Richard Griffin, 1841. Dionysius Lardner’s *Cabinet Cyclopaedia* (1830-44), consisted of 133 volumes many devoted to the study of science and authored by eminent practitioners. It included John Frederick William Herschel’s *A Preliminary Discourse on the Study of Natural Philosophy* (1831).


\(^\text{18}\) Five of the cards have tissue paper backing with holes in the card. They can be held up to the light to display stars, planets or phases of the moon against a darker background. Some are highly detailed with
astronomical parlour entertainment joined with instruction was *Urania’s Mirror*. This was a set of thirty-two cards pierced with holes, which when held up to the light, revealed the pattern of a constellation (Fig. 6). The set first issued in 1825 and still in publication in 1834, was usually accompanied by Jehoshaphat Aspin’s book *A Familiar Treatise on Astronomy*. The portrayal of the feminine constellation Cassiopeia in a semi-naked pose suggests this was an adult optical toy. It was however given moral credence by the sub-title: ‘A View of the Heavens; Consisting of Thirty-Two Cards, on which are represented all the Constellations Visible in Great Britain; on a Plan Perfectly Original, Designed by a Lady’.  

Popular periodicals also published essays and stories that offered information and instruction on astronomical pursuits, and the nature of astronomical phenomena. The established quarterlies such as *Blackwood’s Edinburgh Magazine* carried learned articles, whilst the new monthlies such as the *Cornhill Magazine* combined non-fictional articles with fictional stories and poems.  

Fantasy stories appeared in periodicals, such as ‘A Tale of a Comet’ in the *Englishwoman’s Domestic Magazine* in 1857, which mixed astrology and myth with astronomical facts. Aimed at a middle-class female audience, the magazine also carried instructional essays on astronomical subjects such as ‘Shooting Stars and Meteoric Showers’. The same magazine published Edgar Allan Poe’s short story ‘Collision with the Comet’. This story tapped into contemporary fears about the effect on the earth should it come into contact with a comet, in the wake of the appearance of Comet Donati in 1858. Articles and stories like these often mixed fact and fiction, instructing and entertaining at the same time. For example, William Leitch in his 1851 article in *Good Words* ‘A Journey through Space’, used a comet as a ‘rocket […] vehicle for surveying the universe’.  

written explanations and vignette illustrations of astronomical and meteorological phenomena. Several of them were drawn and engraved by the artist John Emslie (1813–1875): National Maritime Museum, Greenwich MS AST0051.  


21 ‘Shooting Stars and Meteoric Showers’, *Englishwoman’s Domestic Magazine*, 3 (1854-55), pp. 139-43. It describes the physical and chemical composition, related theories and observations of such phenomena.  


Figure 5 James Reynolds, *Astronomical Diagrams* – Comets and Aerolites

Figure 6 *Urania’s Mirror; or a View of the Heavens*, 1825, with Cassiopeia in a semi-naked pose
The largest audience for these books and periodicals was amongst the middle-classes. An 1851 parliamentary hearing was told the audience for the shilling monthlies such as the *Cornhill Magazine*, despite their democratic agenda, was ‘almost exclusively confined to the middle-classes’.

The editor of the *Arcana of Science and Art*, whose scientific articles included a section on ‘Astronomical and Meteorological Phenomena’, anticipated a wide ‘popularity’ for his publication in

> the engine-room of the mechanic; the laboratory of the chemical student; the museum of the naturalist; the library of the gardener; the workshop of the manufacturer; the studio of the artist; and at the firesides of all classes.

The *Magazine of Popular Science and Journal of the Useful Arts* and mechanics magazines like the *Penny Mechanic*, and the *Penny Magazine*, were cheaper costing only a few pence and were aimed at the lower-classes. However, there is evidence of their appeal to the middle and upper-classes. Alfred Lord Tennyson’s library now at the Tennyson Research Centre, Lincoln, for example, contains a copy of the *Penny Magazine*. The magazine’s method of compilation often provided an overview of important topics covered in learned journals. They appealed to those wishing to acquire knowledge to help with the Victorian etiquette of polite conversation. Popular magazines could also be an important knowledge source for women, providing them with enough material for conversation, without making them appear too learned. An 1861 engraving in *Punch* titled ‘Horrid Girl’, attacked the woman who was too well informed, her knowledge scaring off suitors (Fig.7). Although referring to Geology, Susan Darwin’s letter to her brother Charles advised that the *Penny Magazine* was the ideal source for learning ‘a little smattering’. The letter also provides evidence of the appeal of the magazine beyond its intended working-class audience:

> I think Geology far the most interesting subject one can imagine & now I have found a very easy way of learning a little smattering of it. The penny Magazines give a few pages (which the most foolish person can understand) in every Number on the subject. — I think this clever penny work has come out since

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24 The shilling monthlies were aimed at a readership between the expensive monthlies such as *Blackwood's Edinburgh Magazine* priced at £2s. 6d, and the penny weeklies such as the *London Journal*: Dawson, p. 124.

25 The *Arcana of Science and Art* (1828-1838) was an annual off-shoot of the weekly magazine *The Mirror of Literature, Amusement, and Instruction* published by J. Limbird (1822-49); Cited Jonathan R. Topham, ‘The Mirror of Literature, Amusement and Instruction and Cheap Miscellanies in Early Nineteenth-Century Britain’, Cantor et al., p. 66, original emphasis.


you left England we all *swear* by it as it contains every kind of knowledge written so pleasantly with prints.\textsuperscript{28}

Editors of these magazines regarded all types of person as having the capacity for learning. ‘There is no reason why a hedger and ditcher, or a scavenger, should not have as correct opinions and knowledge as a prince or a nobleman’, wrote the editor of the *Working Man’s Friend and Family Instructor* in 1850.\textsuperscript{29} Publications like the *Magazine of Science* were compilations of short articles, letters and reviews from a variety of sources. The ideological intention was to raise the reader’s curiosity, and thus the desire for self-improvement. Such magazines were not conceived as rivals to learned journals but as having a particular role in the popularisation of science. This is clearly expressed


\textsuperscript{29} ‘The Working Man No.1., The Importance of Having a Scientific Knowledge of his Trade or Occupation’, *Working Man’s Friend and Family Instructor*, 1.2 (1850), p. 33.
in the full title of *The Intellectual Observer: Review of Natural History, Microscopic Research and Recreative Science*. Its reference to ‘Recreative Science’, posits the double meaning of recreative, imparting new life to a subject, or to take recreation. The appeal to the general reader came in the simplification of scientific laws and researches in the language of the lay person. The editor of the first volume of the *Magazine of Popular Science* explained this as the ‘exclusion of all elaborate original memoirs of scientific researches’, in favour of ‘brief Essays, or Abstracts,’ rendered ‘intelligible’ by the use of illustrations and the divesting ‘as far as possible, of all technicality of language’.\(^{30}\) The inherent visual nature of astronomical science and the necessity of illustrative material to instruction in the subject are reflected in the use of diagrams, drawings, and later photographs to explain theories and report observations. Reader comprehension was the aim but so was the raising of enthusiasm for the subject. Illustrations of actual observations of astronomical phenomena also encouraged readers to look for examples themselves. As a reviewer advised in the *Quarterly Review* in 1884, illustrations ‘impress the mind with livelier ideas than the mere abstractions of reason can convey’.\(^{31}\)

Astronomical instruction and entertainment were not limited to print culture. The experiences of audience members at cultural displays of astronomical phenomena, and first-hand experiences of astronomical events, were popular subjects for discussion at social events. Science was often communicated and theories developed and discussed through private conversation. Likewise, oral delivery and the debate of scientific papers at institutions such as the Royal Astronomical Society, was regarded as the great moment in the dissemination of discovery, rather than when it appeared later in print.\(^{32}\) Whilst some scientific subjects were considered inappropriate for polite conversation in mixed company, or unfashionable such as mathematics or phrenology, astronomy as a physical science was considered a suitable subject.\(^{33}\) Hugo Reid, author of self-help guides and mathematical texts, included in his list of suitable topics for conversation

\(^{30}\) ‘Prospectus’, *Magazine of Popular Science and Journal of the Useful Arts*, 1 (1836), p. 3, original emphasis.


\(^{32}\) James Secord makes this point in relation to debating practices at the Royal Geographical Society and reflects on the ‘publication patterns’ of ‘scientific reformers’ such as the astronomer John Herschel: ‘How Scientific Conversation Became Shop Talk’, Fyfe and Lightman, p. 30.

\(^{33}\) As Secord notes mathematics was considered ‘obscure’ and phrenologists had been ‘pilloried’ in the press from the 1830’s onwards: ‘Conversation’, pp. 34-35.
‘Curious Facts in Physical Science’. In the *Cornhill Magazine*, the illustrator and watercolourist, Richard Doyle gave an account of the popular ‘Conversazione’ gatherings that enabled scientific discussion in polite society (Fig. 8). In Doyle’s print ‘Science and Art: Conversazione’ crowds flock to admire ‘all kinds of curious, interesting, and instructive objects’ which include scientific instruments such as telescopes and microscopes. Fine art portraits including those of famous scientists, adorn the walls: one recalls a well-known portrait of the paleontologist Richard Owen depicted with a fossil femur in hand. However, these are ignored in the scramble to the viewing floor where the only attention given to the pictures is to the anatomical posters.

![Figure 8](image)

*Figure 8* Richard Doyle, ‘Science and Art: Conversazione’, engraved by the Brothers Dalziel, from ‘Birds Eye Views of Society’, *Cornhill Magazine*, 1862

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34 Secord, ‘Conversation’, p. 42.
35 See also Secord, ‘Conversation’, pp. 44-45. Doyle’s prints were later published as *Bird’s Eye Views of Society*, London: Smith, Elder, 1864.
37 Secord, ‘Conversation’, p. 45.
of a gorilla. Instead the crowd jostles to closely inspect scientific specimens, and tools such as microscopes and telescopes displayed on the tables. Doyle explains that ‘there are microscopes through which you may gaze at the wondrous beauties to be seen in the foot of a frog, and telescopes through which you may gaze at the stars.’ According to Doyle

there are to be seen in the vast crowd which is pouring in and pouring out a great variety of men and women, eminent in their various pursuits. There are literary lions, artistic celebrities, famous lecturers upon science, distinguished inventors in mechanics, discoverers of planets.

Doyle’s print particularly illustrates the cultural fascination with the objects and tools of scientific discovery. However, in the disregard for the fine art portraits, there is the suggestion that the real interest of the crowd is in the tools and discoveries of popular science rather than institutionalized science. Here, popular science is both spectacle and entertainment. The print and Doyle’s accompanying text, highlights how scientific instruction and entertainment were mixed in Victorian society. Doyle advises the reader that ‘If instruction does not bore you too much, and you are not averse to informing your mind with new facts’, these are ideal occasions for obtaining ‘more useful knowledge than is to be acquired in, suppose we say, all the balls in the season, or out of the season’.

Public lectures were also important occasions for the instruction and enjoyment of astronomy. They could be heard at the Royal Astronomical Society, provincial astronomical societies, and mechanics institutes. Towns and cities such as Leeds and Liverpool had thriving astronomical societies. Some, like Leeds, counted famous names amongst their members such as John Herschel and George Biddell Airy. They were nevertheless open to a wider group of patrons, particularly if, like Leeds, they offered concessionary rates of membership to other local institutions such as the Young Men’s Christian Association and the Mechanics Institution. In 1839, the Eclectic Review reported the London Mechanics Institution as having 1200 members who could attend lectures ‘twice a week on natural and experimental philosophy, practical mechanics,

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38 This is connected to popular debates on man’s evolutionary relationship to apes that followed the sale of the anthropologist and explorer Paul Belloni Du Chaillu’s collection of stuffed gorillas to the British Museum which he bought back to Britain in 1861: Secord, ‘Conversation’, p. 42.
39 Doyle, Cornhill, p. 269.
40 Doyle, Cornhill, p. 270.
astronomy, chemistry, literature, and the arts’. An 1854 edition of the *Hampshire Telegraph*, reported that the Rev. O. Owen had given a lecture at the Winchester Mechanics Institute on Astronomy, ‘illustrated by dissolving views’. As well as its publications the SDUK had many local branches that sponsored lecture courses, which like their publications, were as popular with the middle-classes as the working-class. An 1843 print of the Lecture Hall of the Greenwich SDUK shows a lecture to a packed house. The audience by the standard of their dress - lace bonnets, shawls and tail coats - appears to be more middle-class than working-class (Fig. 9).

Lecturers used wall-hangings which were taken from venue to venue to demonstrate the science of astronomy and its latest advances. The Working Men’s Educational Union produced a series of hangings made from cloth and metal on such subjects as the telescopic appearance of the surface of the moon, and the planetary orbits of the solar system (Fig. 10). Other lecturers, including Robert Stawell Ball often shone a lantern light onto clay models of the moon’s surface or produced smoke rings to

![Figure 9 Lecture Hall of the Greenwich Society for the Diffusion of Useful Knowledge, 1843](http://www.nmm.ac.uk/collections/explore/object.cfm?ID=PAH5856)

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Figure 10 Wall hangings produced by the Working Men’s Educational Union, i) Planetary orbits with comet; ii) Telescopic view of the surface of the Moon, 1850-60
simulate nebulae. Popular were lectures given by well-known astronomers such as Proctor: an advertisement in the *Pall Mall Gazette* claimed his 1883-84 lecture tour of 170 lectures was delivered to 70,000 people.  

Visual aids and devices such as orreries and magic lanterns were also used by lecturers to illustrate their talks. At a lecture to the Leicester Literary and Philosophical Society in 1877, Proctor demonstrated “by means of the oxy-hydrogen lantern, the various stages through which the moon passes, and showed clearly the glacial action on her surface. As the different pictures appeared on the curtain they were accompanied by an interesting description from the lecturer”. Ball also used the magic lantern on his lecture tours, sprinkling his lecture with witty anecdotes and ending with a poem (Fig.11). Producing dissolving views of astronomical phenomena, he could create the atmosphere of an evolving scene for the audience as he allowed one view to fade out while the next was fading in. It offered a simultaneous and seamless viewing experience. Dissolving time lapses between slides, it enabled the operator using astronomical slides to convey the idea of a universe in motion and in a continual state of change. The illustration of Ball lecturing to the Royal Institution also shows him using a mechanical orrery, a portable planetarium device that was manufactured in different sizes, and worked by a series of clockwork-like wheels. They were all of a very similar type, and could be used to demonstrate the movement of the planets around the sun. Some, like the Bate orrery manufactured by Robert Brettell Bate in the 1820’s from his premises near the Royal Exchange in London, had a tellurium attachment that could be used to demonstrate the earth/sun system and a lunarium to show the sun/earth/moon system. Some also included an oil lamp to enable the demonstration of an eclipse.  

Astronomical lectures were often mixed with other popular entertainments. *Cruchley’s London in 1865: A Handbook for Strangers* (1865), described the Polytechnic, 309 Regent Street, London opened in 1838, as offering “an agreeable mélange of popular science and music, of lectures on scientific subjects “made easy to

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48 Such devices date back to Ancient Greece: Archimedes is credited with owning a planetarium. The modern version is named after Charles Boyle, the 4th Earl of Orrery, who had one built by John Rowley in 1712-3. This original Rowley orrery can be seen in the Science Museum, London: Inventory number 1952-73.
Figure 11 Sir Robert Stawell Ball lecturing at the Royal Institution Christmas Lecture, 1889, with an orrery and magic lantern projector.
Figure 12 The Polytechnic Institution, London, 1840
the humblest capacity’”, which included the exhibition in the new theatre of a ‘dissolving orrery’ (Fig. 12). George Augustus Sala in his Gaslight and Daylight (1859) describes Saville House, Leicester Square, London as ‘the palace of showmanship’ and ‘the greatest booth in Europe’. In this ‘omni-showing house’ ‘expositors of Orrery’ could be seen alongside ‘giants; dwarfs; sheep with six legs; calves born inside out; marionettes; living marionettes; lecturers on Bloomerism’.

During Lent and Easter, astronomical displays were a popular post-seasonal entertainment in London’s theatre land. C. H. Adams gave a series of lectures on astronomy at the Adelphi Theatre, on The Strand, using an orrery to illustrate his points. His display was a regular Lent booking which in 1852 was advertised as ‘C. H. Adams’ Orrery and Miss Johnson on the Musical Glasses’. In 1851, Punch satirized the regular orrery displays at the Haymarket in London: ‘Our Colonel’s Corner’ reported ‘During Passion Week, he went to see one of the Orreries […] Crimson with rage, he rose from his seat, and exclaimed – “Why, this is precisely the same as was exhibited last year!”’

In the same issue of Punch the article ‘On Orreries’ Heads Orreries Accumulate’, ridiculed ‘a new Orrery’ at the Haymarket for advertising ‘nine additional planets’, the ‘spirited Astronomer’ needing to add ‘an extra comet or a few additional moons’ to secure the public’s ‘appetite for novelty’. Orrery displays were often fraught with mistakes and the audience often displayed a lack of patience with the demonstrators: the Theatrical Observer complained, ‘We cannot avoid animadverting the foolish and disgraceful conduct of certain parties who attend them for the purpose of annoying the lecturer.’ Another famous attraction for visitors to London was Charles Busby’s hydraulic ‘Self-Moving Orrery’, a construction set in motion by water flowing through a series of circular vessels (Fig. 13). It was glowingly described as ‘unquestionably the most beautiful contrivance of modern times, for the popular exhibition of Astronomical Phenomena’.

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silently gliding and harmonious movements which characterise the planetary revolutions’. Like many other lecturers, Busby also took his orrery, to the provinces lecturing to mechanics institutes and societies such as the Brighton Literary and Philosophical Institution.

Travelling lecturers had historically played an important role in the diffusion of astronomical knowledge, and in stimulating interest in the subject. Famous during the late eighteenth century were Adam Walker’s astronomical lectures using an Eidouranion or Transparent Orrery (Fig. 14). Walker’s lecture tours helped popularize astronomical science and were continued into the 1830’s by his sons William and Deane Walker. In his guide-book to the best entertainments of the British metropolis, Horace

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Figure 14 James Stow after Edward Francis Burney. Proscenium of the old Lyceum Theatre, or English Opera House, in the Strand, 1817, showing Walker’s Exhibition of the Eidouranion, engraving, from Robert Wilkinson’s *Londina Illustrata*, vol. II, 1825

Wellbeloved recalled that ‘many thousands are indebted’ to Walker’s Eidouranion ‘for their early clear notions of astronomy.’ Fifteen feet in diameter, this moving musical planetarium showed the latest discoveries in astronomy. The textbook, which could be purchased to explain each scene of the display, described the Eidouranion as ‘a most brilliant and beautiful spectacle’ which conveys to the mind the most sublime instruction; rendering astronomical truths so plain and intelligible, that even those who have not so much as thought upon the subject, may acquire clear ideas of the laws, motions, appearances, eclipses, transits, influences, &c. of the planetary system.

Here the words ‘beautiful’ and ‘sublime’ are used to describe the Eidouranion as an instrument of scientific ‘instruction’. There is evidence here, of how knowledge and discovery, as discussed in the introduction to this thesis, are capable of creating the sensation of the sublime. Likewise, facts and instruction also create a ‘beautiful spectacle’, an aesthetic object of beauty, blurring the binary of the aesthetic and the factual. This quote from Walker’s textbook particularly emphasises the sense of wonder these spectacles and astronomy in general generated, and how this wonderment was centred upon a sense of revelation. At such lectures the secrets of mysterious other worlds and natural phenomena like comets and eclipses, were now being revealed. It renders ‘plain’ and simple, astronomical scientific laws in the minds of the audience to the extent that it provides them with ‘truths’.

Here it becomes apparent that science itself, or indeed its methods of instruction and equipment, are as much part of the spectacle of astronomy as the heavens themselves. The ‘sublime instruction’ provided by the Eidouranion could also be enjoyed on a smaller scale with a miniature portable model produced by the London publisher Elton (Fig. 15). This version provides interesting insights into how the larger device by Walker worked. It consists of a roller blind set in a mahogany frame. The blind is pierced with illustrations of the constellations and is illuminated from behind by a window or lamp. These transparent orrery displays were as much aesthetic as educational experiences, flavoured by the use of music to enhance the effect. Deane Walker used the sound of the ‘Celestina’, a huge glass harmonium, invented by his father Adam Walker: ‘All at once […] the scene began to change; and, while the Celestina was giving an idea of the music of the

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38 Wellbeloved, p. 2.
spheres, the Sun burst forth with its ever-moving rays’.  

Visits to orrery displays started at a young age and were part of a child’s education. Charles Lamb in his ‘The Old and New Headmaster’, a tale in his *The Essays of Elia* (1823), described the headmaster’s vacation duty as having to take ‘some cadet of a great family […] to Mr. Bartley’s Orrery’.  

The educational possibilities of Bartley’s Orrery are expressed in Thomas Hood’s poem ‘Love and Lunacy’ (1836). Here Ellen does not know the phases of the moon, and mistakes ‘the new illuminated clock’ for a full moon. This brings the realisation to her lover Lorenzo, educated in astronomy from mechanics institutes, public lectures and the *Penny Magazine*, that he should have ‘led’ her to ‘Bartley’s Orrery, not Covent Garden!’ Bartley’s lectures at the Theatre Royal, English Opera House, London made use of a planetarium named the Uranologia, with a circumference of 100 feet, a 130 ft orrery and an 18 foot globe. In an 1862 article in the

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Cornhill Magazine, John Hollingshead describes a visit to Bartley’s Orrery as a youth, recalling the premises being filled with people who had attended ‘to perform a solemn duty by learning something about the “solar system”’ and ‘looked bewildered’. Reading an explanatory text prior to their visit might have prevented, as the Revd. J. Joyce suggested, an ‘ignorance of the language in which any science is taught’. Joyce promoted his Scientific Dialogues Intended for the Instruction and Entertainment of Young People (1807), which included a section on astronomy, as ‘a complete compendium of natural and experimental philosophy’ which conveyed ‘that kind of familiar instruction which is absolutely necessary before a person can attend public lectures in these branches of science with advantage’. Thomas Pringle and Robert Story in their poem The Institute (1811), which mocked the Edinburgh Philomatic Society, expressed similar concerns. Their lines enforce the importance of visual spectacle to learning for those other than the well educated:

The Electric Tube, the light-dissecting Prism,
The Piles and Batteries of Galvanism,
The Concave Mirrors, Calorific Ball,
Scales, Globes and Orrery – were wanting all!
And how, without an image to the eye,
Shall pure Abstraction, gliding from on high,
Be seen by those of vulgar mould,
To Imitation’s servile habits sold? –

(149-156, original emphasis).

Magic lantern shows also included moving diagrams of astronomical phenomena. In his series of letters ‘Labour and the Poor, 1849-50’, Henry Mayhew recalled a visit to a shopkeeper in the ‘fancy trade’ who described the development of astronomical magic lantern slides (Fig. 16):

About thirty years ago the diagrams for astronomy were introduced. These were made to show the eclipses of the sun and moon, the different constellations, the planets with their satellites, the phases of the moon, the rotundity of the earth, and the comets with good long tails. What a tail 1811 had! and similar things that way. This I consider an important step in the improvement of my art. Next, moving diagrams were introduced. I really forget, or never knew, who first introduced those improvements. The opticians then had the trade to themselves, and prices were very high. The moving diagrams were so made that they showed the motion of the earth and its rotundity, by the course of a ship painted on the

Figure 16 Magic lantern slides of comets, planets, astronomical theories and phenomena, 1811-25

lantern - and the tides, the neap and spring, as influenced by the sun and moon. Then there was the earth going round the sun, and, as she passed along, the different phases were shown, day here and night there. Then there were the planets going round the sun, with their satellites going round them. How wonderful are the works of the Creator! The comets, too; that of 1811, however, with a famous tail, as he deserved. His regular course - if you call it regular - was shown.  

The ‘moving diagrams’ referred to by Mayhew’s shopkeeper, were introduced with the development of rack work slides by Carpenter & Westley and Newton & Co. These slides illustrated subjects such as the rotation of the earth, the development of the Copernican and Newtonian systems of the motion of the planets, the elliptical orbit of

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the earth, and the nature and form of comets. With the development of mass-produced copper-plate slides these sets became popular for use in the home. The rack work slide, with its geared leaver set the illustrated planets in motion according to their relative speed. They were popular with travelling lecturers such as Mr. Keevil who used them to form a spectacular display in an astronomical lecture on eclipses, the planets, and their moons in 1838 (Fig.17).  

Figure 17 Mr. Keevil’s magic lantern orrery rack work slide, 1838

The popular parlour visual device, the stereoscope, was used for viewing astronomical slides of phenomena in 3-D. As a contributor to the magazine *Nature* noted, the device enabled ‘the eye to perceive the solidity of the planet [Jupiter]’.

One of the most popular astronomical subjects for the stereoscope was the moon. With the strong chiaroscuro effect of the slides, viewers could determine the surface of the moon in three dimensional relief. Warren de la Rue was the first to publish a set of slides of the moon in 1856-7. In 1859, the Brighton photographer Samuel Fry also issued a successful slide of the moon with an explanatory pamphlet and chart, that received critical acclaim in the 21st April 1859 issue of the *Photographic News* (Fig. 18).

Viewers could also enjoy the ‘bewitching qualities’ of ‘solidity or of distance’ produced by the stereo photographs of Charles Piazzi Smyth’s expedition to Tenerife, which illustrated his book *Tenerife, An Astronomers Experiment: or, Specialties of a Residence Above the Clouds* (1858) (Fig. 19).

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69 Fry used the equatorial telescope at Charles Howell’s observatory on Hove beach to photograph the lunar surface over the period 1857-9; ‘Samuel Fry – Brighton Photographer’, Sussex PhotoHistory, http://www.photohistory-sussex.co.uk/BTNfrysamuel.htm [accessed 20 May 2010].
70 This was the first book published with stereographic prints: ‘Photographic Correspondence - Stereoscopic Book Illustrations’, *Notes and Queries*, 2nd Series, 96 (31 October 1857), p. 356.
Astronomical instruction was also available literally on the streets of London. Mayhew described the street exhibitor Mr. Tregent and his telescope, photographed by Robert Beard offering telescopic views of the moon (Fig. 20).\footnote{Tregent reckoned to make £125 a year at ‘a penny a peep’. On Saturday, Sunday and Mondays he usually took 20s, other nights 7s. or 8s., or sometimes 2s. 6d., depending on the weather. Henry Mayhew ‘The Telescope Exhibitor’, in Henry Mayhew, \textit{London Labour and the London Poor: A Cyclopaedia of the Condition and Earnings of Those That Will Work, Those That Cannot Work, and Those That Will Not}} Tregent, a tailor by day and telescope exhibitor by night, charged ‘a penny a peep’ giving a ‘short lecture, whilst they are looking through’:

When the observer sees Jupiter, I begin: ‘Do you see the planet, sir? ‘Yes’ ‘I introduce to you Jupiter with all his four satellites. It is distant 600 millions of miles from the sun, and its diameter is about 7900 miles. It travels round the sun at about 27,000 miles an hour, and its orbit is over four years.

Jupiter was a popular planet for the telescope exhibitors as they could ‘draw’ in customers who felt they were being deceived at the prospect of viewing four moons. Tregent offered his experience of this selling technique:

Suppose I’m exhibiting Jupiter, and I want to draw customers, I’ll say, ‘How many moons do you see?’ They’ll answer, ‘Three on the right, and one on the left, [...]’Perhaps a rough standing by will say, ‘Three moons! that’s a lie! there’s only one, everybody knows’. Then, when they hear the observer state what he sees, they’ll want to have a peep.\footnote{See also Chapman, pp. 174-75.}
Charles Manby Smith in his *The Little World of London* (1857) also described the view of Jupiter offered by a telescope exhibitor; he meets him on a leisurely stroll through London as ‘the shadows of evening are settling down upon it’:

> The sounds reverberate amid the lofty houses as we pursue our way, and have hardly died off in the distance when, in turning a corner, we are suddenly confronted by a small group assembled round the proprietor of a very long telescope, which he has pitched upon a convenient spot, and pointed at the planet Jupiter, who, having just cleared the chimney-tops, is shining with uncommon brilliancy, and presents a capital object for the range of his instrument. Twopence for a practical lesson in astronomy is cheap enough - so we join the group, and, when our turn comes round, renew our acquaintance with the planet whom we have not looked fairly in the face for seven years. We find the broad belts in his disc perfectly distinct, and three of his satellites in attendance, two on the left hand and one on the right, the fourth having been eclipsed by the planet himself just two minutes before we paid our respects to him. As we gaze at the beautiful spectacle with a pleasure not easily defined, the street astronomer obligingly recites the natural history of the planet - his size, distance from the earth and sun at the present moment, his periods of revolution on his own axis, and round his primary, &c., &c..."
Both Tregent and Manby Smith’s descriptions present the street telescope exhibitor as a source of knowledgeable information about the night sky. It is possible Manby Smith is describing Tregent’s street show, but there were other street telescope exhibitors operating in London – Tregent noted there were ‘about four men besides [himself], going about with telescopes’ but ‘of these there’s only one of any account’. Although Manby Smith describes only ‘a small group assembled around’ the telescope exhibitor, Tregent describes the huge crowds he could attract during special astronomical events. On the night of the eclipse of the moon (13th October 1856), he remembered a crowd of ‘forty deep […] pushing and fighting’ with the ‘police’ ‘there to keep order’. He recalled, ‘I was glad when it was over’ as ‘the buttons to my breeches were dragged off my back by the pressure behind, and I had to hold up my breeches with my hand’. A similar telescope in Leicester Square received satirical comment in the magazine *Punch* in 1846. The article claimed that with the appearance of ‘so many new comets’, the astronomer marketed the view of the comets on offer through his telescope, as if they were food: ‘A fine fresh comet also ready at eight o’clock, and another will be served up, with the milky way, at ten’.76

The optical device of the telescope was of interest to those seeking self-improvement. Enthusiasts could build their own telescope at home following instructions given in magazines and books. The 1861 edition of Jabez Hogg’s *Elements of Experimental and Natural Philosophy*, gives instructions on how to build ‘a cheap and really useful telescope’ from ‘a single convex lens of four, five, or six feet focus, which lens can be had of an optician for half-a-crown’, a paper tube and ‘two more tubes of tin for an eye-piece’. Capable of ‘definition’ approaching ‘that of an achromatic’ telescope, ‘the user would be able to focus on ‘the satellites of Jupiter, and also the dark belt across the body of the planet’.77 Likewise, the *Popular Science Review* also advised the construction of ‘an optic tube, through which some of the wonders of the heavens may be seen’, giving instructions for a ‘cheap non-achromatic comet-seeker’ that would ‘give a field of four or five degrees, and magnify about ten times, and will show the stars in the Pleiades and the sword-handle of Perseus very well’. For ‘those who did not wish to try the experiment of constructing a telescope at little or no cost’, the article recommended

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a small instrument made by Messrs. Parkes and Son, Birmingham, the cost of which is less than £4. It is mounted upon a cast-iron stand, and sold in a convenient box. It has afforded us great pleasure – in enabling us to examine the more prominent objects in the heavens.\textsuperscript{78}

In 1862, the \textit{Intellectual Observer} noted a ‘great increase in the number of purchasers of microscopes and telescopes, which are becoming necessary portions of the furniture of every well-ordered home’.\textsuperscript{79} Likewise, the home observatory was becoming increasingly popular. For the do-it-yourself and amateur astronomer, magazines and books included articles and designs for its construction. The most popular model was printed in the \textit{English Mechanic}: The Rev. Edward Lyon Berthon’s article gave instructions for his ‘Romsey’ Observatory that could be built at a cost of £10 or £12, or £8, 10s without the transit room by any ‘village carpenter’ (Fig. 21).\textsuperscript{80} Home-owners also built larger observatories capable of housing bigger telescopes or converted part of their house into an observatory. In his \textit{Astronomical Observations} (1865) Joseph Gurney Barclay described his home observatory built in 1854, as ‘erected in the midst of the pleasure-grounds’ which surrounded his ‘residence at Leyton, in Essex’: ‘the building consists of a quadrangular room, sixteen feet square, surmounted by a wooden dome, [...] it revolves on gun-metal wheels connected by a ring’.\textsuperscript{81} George Frederick Chambers also describes the building of a ‘10ft dome made for use on the tower of a dwelling-house at Bickley’ in 1864, which in 1874 was taken to pieces ‘and sent by rail to East-Bourne, where it was re-erected’ on the tower of Northfield Grange (Fig. 22).\textsuperscript{82}

Observatories and telescopes were a common sight in the nineteenth century. The public could see William Herschel’s huge 40-feet reflector at Slough, and James South’s observatory housing the then largest refracting telescope in the world, on Campden Hill, behind Holland House.\textsuperscript{83} Likewise, the huge achromatic telescope,
known as the Craig telescope after its benefactor the Revd. John Craig, built on Wandsworth Common in 1852, could be easily viewed by train passengers on the local railway (Fig. 23). Observatories were built all over the country: for example there was John ‘Mad Jack’ Fuller’s private observatory at Brightling, Sussex; the industrialist Henry Bessemer’s observatory at his home Bessemer House, Dulwich, London (Fig. 24); Robert Newall’s twenty-five inch aperture telescope, at the time the largest in the world, at his private observatory at Ferndene, Gateshead (Fig. 25); W. R. Birt’s picturesquely named Cynthia Villa Observatory at his home in Walthamstow. Visitors to Regent’s Park in London would have seen the Regent’s Park observatory built in 1836 by George Bishop at his South Villa, housing a 7-inch Dolland refractor.

![Image of the Craig Telescope]

**Figure 21** The Revd. Edward Lyon Berthon’s ‘Romsey’ observatory as built in the garden at Austwick Hall, Yorkshire, from George F. Chambers, *A Handbook of Descriptive and Practical Astronomy*, 4th edn., 1890

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Figure 22 Northfield Grange, East-Bourne, an example of an observatory built as part of a dwelling-house, from George F. Chambers, *A Handbook of Descriptive and Practical Astronomy*, 4th edn., 1890

Figure 23 The Craig telescope, Wandsworth Common, from the *Illustrated London News*, 1852
Figure 24 Henry Bessemer’s private observatory, Bessemer House, viewed from Green Lane, Dulwich, Camberwell, London, c. 1890

Figure 25 Robert Newall’s twenty-five inch telescope and his observatory dome, Ferndene, Gateshead, *Nature*, 1870
Telescopes were also cultural spectacles: books and periodicals carried descriptions of how telescopes worked and instructions on their use. Many writers, like George F. Chambers included large, often fold out, engravings of famous telescopes in observatories around the world. Cruchley’s guide listed ‘the reflecting telescope made by Newton’ in the museum of the Royal Society of London, as one of the important sights that could be seen by visitors to the capital. Likewise, visitors to the Great Exhibition of 1851 could also enjoy the spectacle of a large equatorial telescope of 11.5 inches aperture, and 18ft focal length manufactured by Ross, which was given prominent position in the centre of the British nave (Fig. 26).

Figure 26 Joseph Nash, ‘The British Nave’ showing Ross’s equatorial telescope at the Great Exhibition of 1851

85 Cruchley.
This chapter has revealed the huge extent to which astronomy and its technologies were part of everyday experience in Victorian society. The culture of self-improvement and the overwhelming interest in discovery and new technologies, bought astronomy to the streets of towns and cities, the exhibition hall and into the home. Astronomy became a spectacle, practised and enjoyed across all levels of society. Whether by naked eye or telescopic observation, or parlour learning aids, astronomy was greeted with enthusiastic awe and wonderment. As we shall see throughout this thesis, astronomy also played a particularly important role in the development of the imaginations of writers such as Tennyson, De Quincey, Hopkins and Hardy. This study will show how they were each influenced by the spectacle of astronomy and contributed to its prominence, their writing reflecting the most significant astronomical theories, events, and phenomena. But most importantly, as I shall demonstrate, beginning in the next chapter with Tennyson, their knowledge of astronomy had a profound effect on their poetic consciousness, creating an intensity of vision which they turned inward to reveal their hopes, fears and doubts.
‘My Mental Eye Grew Large’: Alfred Lord Tennyson and Astronomy

‘The pleasure of a peep’

My dear Aunt

I am sitting Owl-like and solitary in my rooms (nothing between me and the stars but a stratum of tiles) the hoof of the steed, the roll of the wheel the shouts of drunken Gown and drunken Town come up from below with a sea-like murmur. I wish to Heaven I had Prince Houssain’s fairy carpet to transport me along the deeps of air to your Coterie–nay, I would even take up with his brother Aboul-something’s glass for the mere pleasure of a peep. What a pity it is that the golden days of Faerie are over! What a misery not to be able to consolidate our gossamer dreams into reality!1

In this letter written while Tennyson was a student at Trinity College, Cambridge, the poet describes the pleasure he would derive from using a telescope. The analogy he employs comes from ‘The Story of Prince Ahmed and the Fairy Pari Banou’, in the Arabian Nights Entertainments. The prince who has a glass, a telescope, is actually Prince Ali: ‘by looking at one end, you see whatever object you wish to behold’. Prince Ali’s glass, an ‘ivory tube’, allows Prince Houssain to see beyond what is possible with the naked eye. Framed in the aperture of the glass is the ‘melancholy sight’ of Princess Nouronnihar on her deathbed. 2 Here the telescope becomes an extended eye, despite it also being a border between the eye and reality, just as is the retina of the eye. However, herein lays a visual paradox, for whilst the telescope extends the depth of vision possible, it also reduces depth of vision by bringing the distance nearer. This particular letter shows how the telescope was important to Tennyson: it allowed him to see

beyond reality into another world, that of the imagination. The idea of a ‘peep’ suggests a momentary viewing experience. Restricted in its time-scale, it is the stealing of a quick glance or peering through a small aperture. The telescope’s aperture might thus be said to act as a peephole for Tennyson. It brings to mind the idea that for Tennyson looking into a distant world beyond his immediate reality was a pleasurable experience, which had an effect on him beyond the pure rationality of scientific astronomical observation. It is suggestive of the ‘penny a peep’ pleasure offered by the street telescope exhibitor considered in the previous chapter where, coupled with the sense of awe and amazement at what the telescope revealed, there is also a voyeuristic pleasure gained from the looking-in on other possible worlds.

This chapter reveals how astronomy was a significant and positive muse for Tennyson that enabled him to explore questions of faith, doubt and immortality. In his ‘Locksley Hall’ (1837-8), Tennyson describes his own experience of astronomical observation. He tells the reader how ‘Many a night from yonder ivied casement, ere I went to rest / Did I look on great Orion sloping slowly to the West’. He also writes ‘Many a night I saw the Pleiads, rising through the mellow shade, / Glitter like a swarm of fire-flies tangled in a silver braid’ (7-10). In the same poem he uses astronomical references to describe widening ‘the thoughts of men’ with ‘the process of the suns’, and as enabling a visionary experience in terms that suggest telescopic vision: ‘When I dipt into the future far as human eye could see; / Saw the Vision of the world, and all the wonder that would be’(138; 15-16). In this chapter, I am particularly concerned to explore the poetic preoccupation with the shrinking of distance and intensity of vision that results from Tennyson’s interest in the science of astronomy.

In a letter he wrote to his future wife Emily Sellwood in 1839, Tennyson expressed the sense of certainty he found in envisioning the future and distant past as a ‘far-off world’:

To me often the far-off world seems nearer than the present, for in the present is always something unreal and indistinct, but the other seems a good solid planet, rolling round its green hills and paradises to the harmony of more steadfast laws.
There steam up from about me mists of weakness, or sin, or despondency, and roll between me and the far planet, but it is there still.

Tennyson was acutely shortsighted but here he can see the distant far better than the

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3 All references to Tennyson’s poems are from *The Poems of Tennyson*, 3 vols., ed. Christopher Ricks, Harlow: Longman, 1987.
near. This observation suggests Tennyson is thinking along the lines of telescopic vision. As we have found, the telescope as an optical instrument makes distant objects appear nearer and larger. Its arrangement in a tube of one or more mirrors and lenses by which rays of light are collected and reflected towards an eye-piece, brings distant objects into focus and magnifies them, making the ‘far-off’ world appear ‘nearer’. This immediate intense vision surfaces in his In Memoriam A. H. H (1850), where following the death of his beloved friend Arthur Henry Hallam his ‘prospect and horizon [are] gone’ (XXXVIII: 4). To Tennyson the ‘far planet’ brought into his immediate vision, is ruled by harmonic cosmic laws, and is a place of permanence and escape from earthly troubles. It is clear from the above letter, that Tennyson drew great comfort from his knowledge of astronomy. It is therefore surprising that, despite the recognition of his poetical debt to science, there has been little critical attention given to his interest in astronomy. Milton Millhauser’s Fire and Ice: Influence of Science on Tennyson’s Poetry, remains the seminal account of Tennyson’s interest in science. Accounts of Tennyson’s interest in astronomy, such as those by Jacob Korg, A. J. Meadows and Eleanor Bustin Mattes, have tended to be brief. Apart from Anna Henchman’s recent study, Tennyson scholars have yet to undertake a comprehensive discussion of astronomy in relation to Tennyson’s poetry.

Tennyson’s dream of peeping through a telescope would become a ‘reality’ to him. Later in life, he owned a 2-inch telescope, which he kept at his Aldworth home, and used to observe the heavens. His grandson, Charles Tennyson, writes of how Tennyson had ‘laid the foundation of his great love and knowledge of the stars and formed the

5 Optical telescopes are of two kinds: refracting, in which the image is produced by a lens (the object glass), and reflecting, in which it is produced by a mirror or speculum. In each case, the image is magnified by a lens or combination of lenses. Astronomers use large telescopes of both these kinds. The smaller hand-telescopes are always refracting, and consist of two or more tubes made to slide one within another for convenience, and for adjusting the lenses as required for focusing the image.

6 Hallam died in Vienna aged 22 on 15 September 1833 from a stroke. Tennyson heard the news on 1 October 1833 by letter from Hallam’s uncle Henry Elton: ‘Henry Elton to Alfred Tennyson’, 1 October 1833, Tennyson Letters, vol. 1, p. 93. Hallam was to marry Emily, Tennyson’s younger sister.


habit of close and accurate observation of Nature’, during nocturnal walks along the sand dunes near the Somersby rectory in Lincolnshire, that often lasted all night.\(^\text{10}\)

Whilst at Farringford on the Isle of Wight, Tennyson often took such walks, slipping out of the house unannounced and returning, as William Allingham recalled, to find the ‘door locked!’\(^\text{11}\) His grandson Charles also remembered how Tennyson had ‘a platform made on the roof of his house’ at Farringford, from which to observe the night sky.\(^\text{12}\) On 4th October 1863, Allingham wrote in his diary an amusing incident that occurred while he was visiting Tennyson at Farringford:

T. takes me upstairs to his ‘den’ on the top-story, and higher, up a ladder, to the leads. He often comes up here a-night to look at the heavens. One night he was watching shooting-stars and tumbled through the hatchway, falling on the floor below, a height of at least ten feet I should say. The ladder probably broke his fall and he was not hurt. I quoted ‘A certain star shot madly from his sphere’\(^\text{13}\).

In 1865, Allingham also recalled in his diary a visit to Farringford at the same time as the Dorset poet William Barnes when he and Tennyson viewed the constellation Orion: ‘Barnes to bed, T. and I up ladder to the roof to look at Orion’\(^\text{14}\). Tennyson’s son, Hallam, recalled how his father ‘on feast days’ would ‘blow bubbles and then grow much excited over the “gorgeous colours and landscapes, and the planets breaking off from their suns, and the single star becoming a double star” which he saw in these bubbles’\(^\text{15}\). Tennyson often made use of telescopes belonging to friends. On 8th April 1855, whilst in Bonchurch, Isle of Wight he wrote to his wife Emily, ‘If I stop another day here, I may have a chance of seeing double stars through a telescope of Dr. Mann’s’.\(^\text{16}\) Mann later offered to lend Tennyson a telescope, which he declined for fear of damaging it. However, it is interesting that his gardener was proficient in building


\(^\text{14}\) Allingham, p. 127.

\(^\text{15}\) Hallam Tennyson, *Alfred Lord Tennyson: A Memoir by his Son*, 2 vols., London: Macmillan, 1897, vol. 1, p. 370. It is important to recognise that such memoirs are to some extent anecdotal. Nevertheless, they often provide important insights into the interests of the writers in this thesis, which are not available elsewhere.

\(^\text{16}\) To Emily Sellwood Tennyson’, c. 8 April 1855, *Tennyson Letters*, vol. 2, p. 110.
telescopes: ‘it appears that my landlord here, Mr Seymour, had a large telescope and the gardener, who still remains here, says he knows how to put a telescope together and take it to pieces’. In her journal entry for September 11th 1868, Emily recorded her husband’s visit to Charles Pritchard, then President of the Royal Astronomical Society, who lived at Freshwater, near their Farringford home:

Last night he went to Mr Pritchard’s to look thro’ his telescope, and was charmed with the Nebular in Hercules, “that mighty firmament”; and with Jupiter and his four moons “filling all the field”.

Tennyson and Pritchard met regularly to discuss astronomical matters and Pritchard advised Tennyson on the best opportunities for observing astronomical phenomena. In a letter to Tennyson dated 10th September 1868 he wrote:

DEAR MR TENNYSON, — You expressed a wish to see some double stars. Four of the finest, the best cluster, the Dumb Bell Neb. and Jupiter are all now at their best, if the night is fine, from not later than 8.15-11 P.M., and Hercules gets low after 8.30, but wind E. is not propitious. To-night, if not to-morrow, if you will be alone, but bring only one for your own sake, to gaze quietly. — Yours very sincerely,

C. P.

Tennyson’s interest in astronomy was to last his lifetime: Hallam Tennyson recounts the astronomer Joseph Norman Lockyer’s visit to his father, at Aldworth in October 1890:

Mr Norman Lockyer visited us, and he was full of talk about Egypt, the orientation of the temples, and about meteorites. He said of my father: “His mind is saturated with astronomy”.

Lockyer also recalled how he and Tennyson met in Paris, and together visited the French mathematician and expert in celestial mechanics, Urbain Jean Joseph Le Verrier at his observatory in the city. He also remembered being introduced to Tennyson by the sculptor and poet, Thomas Woolner in 1864, and finding that Tennyson was ‘an enthusiastic astronomer’, with ‘full knowledge of the discoveries then being made’.

Tennyson often used the 6-inch Cooke Equatorial that Lockyer had erected in his garden in Fairfax Road, West Hampstead, and Lockyer recalled that ‘few points in the descriptive part of the subject [astronomy] had escaped him’.  

Throughout his life, Tennyson was well read in the science of astronomy: in particular, he subscribed to the *Quarterly Review*, an important site for the dissemination of scientific knowledge in nineteenth-century British culture, and collected books on astronomy by prominent scientists of the period.  

Hallam Tennyson recalls how his elderly father’s ‘eyes were tired with incessant reading of all manner of books, on Travel, on Astronomy, on Natural Science’. Amongst his collection were editions of John Herschel’s *Preliminary Discourse on the Study of Natural Philosophy* (1830), Mary Somerville’s *On the Connexion of the Physical Sciences* (1834) and John Pringle Nichol’s *Views of the Architecture of the Heavens in a Series of Letters to a Lady* (1838). Tennyson also owned John Bonnycastle’s *An Introduction to Astronomy* (1796), William Whewell’s *Bridgewater Treatise III, Astronomy and General Physics Considered with Reference to Natural Theology* (1834), and Robert Chambers’ *Vestiges of the Natural History of Creation* (1844). Later titles Tennyson owned included Richard Proctor’s *Half-hours with the Telescope* (1868) and *Poetry of Astronomy* (1881), and Lockyer’s *Spectroscopic Observations of the Sun* (1870).  

Hallam Tennyson’s memoir of his father, records many visits by prominent nineteenth-century scientists to the Tennyson family homes. In addition to Lockyer, John Tyndall and Thomas Henry Huxley were regular visitors, and Charles Darwin was a guest at Farringford on 17th August 1868. Alexander Macmillan, Tennyson’s publisher, held regular meetings in London attended by scientists. It was through

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26 Dates refer to the editions Tennyson owned. *Library of Alfred Lord Tennyson*, 27 October 2010

27 Later titles Tennyson owned also included Keith Johnston, *School Atlas of Astronomy* (1869); William Robinson, *First Chapter of the Bible and Last Chapter of Astronomical Science* (1856); Willis Nevins, *Christianity and Astronomy* (1876); William Huggins, *Solar Corona* (1885); Sir Robert Ball, *The Story of the Heavens* (1885) and (1890); *Library of Alfred Lord Tennyson*, 27 September 2010; Whewell’s text is listed in Campbell. First published 1833, 1834 is the 3rd edition; Charles Pritchard, *Occasional Thoughts of an Astronomer on Nature and Revelation* (1889): Tennyson also owned copies of books and pamphlets by Robert James Mann, probably Mann’s *Guide to Astronomical Science* (1856) or his *Guide to the Knowledge of the Heavens* (1852). The pamphlets are most likely his *Lessons in General Knowledge*, 1855 and 1856: see letter ‘To Robert James Mann’, c. 3 October 1856, *Tennyson Letters*, vol. 2, p. 160 n.1. It is also possible the letter refers to Mann’s *The Planetary and Stellar Universe* (1845) which is not mentioned in the editors’ note to the letter.

attending the meetings that Tennyson developed friendships with Huxley and Lockyer. Tennyson also became acquainted with the astronomer John Herschel, through their mutual friendship with the photographer Julia Margaret Cameron who called her meetings with the Tennyson’s ‘feasts of intellect’.

In 1865, Tennyson was elected a member of the Royal Society of London and, attending its meetings, he mixed with the leading scientists of his day. Notable among Tennyson’s personal supporters for election were Tyndall and Huxley, his election notice citing him as ‘Eminent as a Poet & Man of Letters. Attached to Science & anxious to promote its progress’ (Fig. 27). Throughout his life, the scientific community held Tennyson in high esteem. According to Huxley, ‘the insight into scientific method shown in Tennyson’s In Memoriam was quite equal to that of the greatest experts’.

Richard Proctor prefaced his essay published in the Cornhill Magazine, ‘Colours of the Double Stars’ (1863), with a quotation from Tennyson’s ‘The Palace of Art’ (1832). In 1881, Lockyer invited Tennyson to write for the scientific periodical Nature, on an unusual coloration of a rainbow Tennyson had seen at Aldworth, as he believed it would give ‘a fresh interest to sunset and sunset phenomena’. Tyndall, in a letter to Hallam following Tennyson’s death, wrote of how Tennyson’s influence had touched him ‘closely’. Tyndall wrote: ‘writings apparently far apart from science have often spurred me on in the pursuit of science’. Through his association with leading scientists and his membership of the Royal Society, Tennyson had access to scientific papers relating to astronomy, including those published in the society’s journal, Philosophical Transactions of the Royal Society of London. Scientists also allowed him access to their papers before publication. Lockyer recalled: ‘I visited Tennyson at Aldworth in 1890 […] I was then writing the ‘Meteoritic Hypothesis’ and he had asked for the proof sheets’ which he ‘bound together’, and ‘from the conversation we had I formed the impression that he had read every line’.

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31 Cited Beer, Open, p. 211.
35 Norman and Winifred Lockyer, Student, pp. 3-4.
Figure 27 Alfred Lord Tennyson, Certificate of a Candidate for Election, Royal Society of London, 2nd January 1865, showing the signatures of his supporters, including John Tyndall and Thomas Henry Huxley
‘And the thoughts of men are widen’d with the process of the suns’

A. J. Meadows’ observation that astronomy was a ‘terrible muse’ for Tennyson, reflects the common critical stance that science was a site of fear and despair for the poet. Critics often rely reductively on Meadows’ argument which he draws from Tennyson’s line in his ‘Parnassus’ (1889): ‘These are Astronomy and Geology, terrible Muses!’

Indeed, like the majority of his generation Tennyson was troubled by what science was revealing. It would not be reasonable to expect otherwise in the contemporary religious and scientific climate. Tennyson did question the manner in which science had altered man’s conception of his place in the universe, without further exalting his knowledge of God’s power:

In fact, when I think how much more important the world must have seemed when men believed it the centre of the universe, I am sometimes half-disposed to regret the discoveries of astronomy, because they have in no wise exalted men’s conception of God’s power, since they had already conceived of Him as Almighty, and all is comprehended in that term.

Pascal’s *Pensées* expressed similar concerns about the scientific abyss of secularism as Tennyson’s ‘secular abyss’ in section LXXVI of *In Memoriam* (6). Hallam had introduced the Tennysons to Pascal by enclosing a ‘little edition of Pascal’s Pensées’, in a letter to Alfred’s sister Emily in 1833. Hallam wrote: ‘we feel that God is nearer to us than any other thing – that his love is infinite […] That feeling is faith, which Pascal has so beautifully defined as “Dieu sensible au coeur” [God sensitive to the heart].’

Pascal’s belief: ‘It is the heart that experiences God, and not the reason,’ allowed the individual to become autonomous and thus free to experience God in their own way. Pascal stressed the importance of experience in faith: ‘We feel it in a thousand things.’

Likewise, for Tennyson in *In Memoriam*, faith comes from an inner consciousness, from ‘The likest God within the soul’ (LV: 4). The dread of the alienating abyss of secularism becomes tempered by the sublime moment of recognition of God’s power in the infinite nature of the universe. Equally ‘astounding’ for Pascal, is that all things, including, man are made of atoms, which are ‘without end or respite.’

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39 Pascal, IV: 278.
40 Pascal, IV: 277.
41 Pascal, XV: 199, p. 61.
and the Universe, ‘knowing infinity’, reveals the power of God. Tennyson encapsulates Pascal’s thinking in his lines in *Locksley Hall Sixty Years After* (1886):

‘[God] Sent the shadow of Himself, the boundless, through the human soul; / Boundless inward, in the atom, boundless outward, in the Whole’ (211-12). Tennyson aided by Pascalian ideas of the sublimity of the infinite therefore drew comforting analogies from astronomy. It is evident from reported conversations that his concerns were tempered by a sense of awe at the findings of astronomy:

But how amazing astronomy is. I am overwhelmed with awe when I think that in a space of the heavens that looks smaller than the palm of my hand, there are 60,000 suns; yet, did you ever reflect on the not less wonderful fact that the whole starry heavens are retained on your retina? Tennyson never ceased to be amazed by the fact that the human eye could perceive celestial bodies so far away. He is recorded as saying ‘Think of the proportion of one human eye to our earth; of our earth to the sun; of the sun to the solar system; of that to the Universe; and then think that one human eye can in some sense be in contact with the stars of the Milky Way’.

Writers of astronomical texts projected the same sense of awe that struck Tennyson, and they further expressed a belief in immortality and the infinite power of God that may have comforted him. Astronomical writing of the period is a mixture of observation, analysis, despair, awe and assurance. For example, John Herschel believed that astronomy widened thought and was not guilty of causing its ‘cultivators’ to ‘doubt the immortality of the soul’. He argued that science in general ‘unfetters the mind from prejudices of every kind, and leaves it open and free to every impression of a higher nature’.

In his ‘Locksley Hall’, Tennyson makes a positive analogy between the development of the solar system and growth in knowledge: ‘the thoughts of men are widened with the progress of the suns’ (138). Tennyson was not against change in knowledge and its effect on religious belief as he showed in his ‘Morte D’Arthur’ (1833-4), written while he was writing *In Memoriam*:

And slowly answered Arthur from the barge:  
‘The old order changeth, yielding place to new,  
And God fulfils Himself in many ways,  
Lest one good custom should corrupt the world’  

(239-242).

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42 Pascal, XV: 199, p. 62.  
43 Weld, p. 395.  
Here, despite change, God is always there to protect and will endure. Tennyson never lost his belief in the existence of God. Charles Pritchard’s daughter Rosalind writes of how her father said he

never should forget the deep impression made upon him when, sitting one day at Farringford with the Laureate and a scientific friend, the latter expressed his disbelief in the existence of a Supreme Being. With sudden vehemence down came Lord Tennyson’s hand upon the table, as he exclaimed with the solemn earnestness of one who knew the truth of what he was asserting ‘T ---- , there is a GOD!’

Writers often sought to temper the remit of astronomical findings and maintain the existence of a Divine figure at the source of creation. John Pringle Nichol, in his Views of the Architecture of the Heavens in a Series of Letters to a Lady (1837), detailed recent attempts by John Herschel to measure the depth of the universe. Nichol concluded: ‘We have made a step, indeed, but perhaps only towards acquaintance with a new order of infinitesimals’ which give ‘the sense of the presence of God’. Likewise, Robert Chambers in his Vestiges of the Natural History of Creation (1844), maintained the existence of a ‘Divine figure’, a ‘First Cause’, ‘a primitive almighty will’, to which all the laws ‘the beautiful regulations’ of the Universe ‘are merely the mandates’. For Chambers, despite all that astronomy seems to prove, there are still questions about God and his place in the universe that it cannot answer: ‘Here science leaves us, but only to conclude, from other grounds, that there is [...] That great Being, who shall say where is his dwelling-place, or what his history!’ When dealing with those theories of the development of the universe, that caused a questioning of biblical ideas of creation, Chambers’ seeks to soften the remit of his chapter. Here he ends with a note of consolation, invoking tropes of the aesthetic sublime that express a sense of awe and wonderment: ‘Man pauses breathless at the contemplation of a subject so much above his finite faculties, and only can wonder and adore!’

In this chapter, I will further consider how astronomy was a significant muse for Tennyson and how it had an important effect on his poetic imagination. Throughout his poetry, Tennyson expresses his wonder at the universe he beholds. As I will show, he also uses astronomical metaphors, such as that of the orb, to explore the questions surrounding faith, doubt and immortality that troubled him throughout his life. This

46 Pritchard, p. 100.
becomes most clear in his *In Memoriam*, where he specifically invokes Urania, the muse of astronomy. Indeed in section XXXVII he names Urania as stronger than Melpomene, an ‘earthly muse’ according to Tennyson but better-known as, more specifically, the muse of tragedy: ‘I am not worthy even to speak / Of thy [Urania’s] prevailing mysteries’ (12-13). This establishes Urania, and thus astronomy, as the most important muse for Tennyson in the poem.\(^{49}\) Urania is traditionally likened to the Holy Spirit, and is used to signify descent into grief, and ascension to a level of consolation that suggests immortality. John Milton used this image of Urania in Book III of his *Paradise Lost* (1667):

I sung of Chaos and Eternal Night,
Taught by the Heav’nly Muse to venture down
The dark descent and up to reascend
Though hard and rare. Thee I revisit safe
And feel thy sovereign vital lamp

(18-22).

Milton’s poetry had a profound effect on Tennyson, particularly his ‘Lycidas’ (1637), his elegy to his drowned friend Edward King. According to the writer and translator Edward Fitzgerald, a contemporary of Tennyson’s at Trinity College, Cambridge, Tennyson would quote Milton ‘as the sublimest of all poets’, and said that Milton’s “Lycidas” was a touchstone of poetic taste’.\(^{50}\) Tennyson’s attraction to Miltonic verse was common for the period. However, it is notable that it does have a particular resonance with astronomical writing, and Tennyson we know was attracted to astronomical passages in Milton’s *Paradise Lost*.\(^{51}\) He particularly liked the ‘mystical dance’ in Book 5: ‘which yonder starry sphere / Of planets and of fixed in all her wheels

\(^{49}\) This is contrary to Ricks’ suggestion that prevailing here should be read as derived from the Latin *praevalens* ‘very strong’, because ‘there is no reason why Urania should prevail over Melpomene’: vol. 2, p. 354 n. xxxvii 12.

\(^{50}\) Hallam Tennyson, *Memoir* vol. 1, p. 36.

Resembles nearest, mazes intricate, / Eccentric, interwoven, yet regular / Then most when most irregular they seem / And in their motions harmony divine’ (620-625).

Likewise, he said of the passage on the coming of Satan with his host, ‘Innumerable as the stars of night, / Or stars of morning’, ‘Milton beats everyone in the material sublime’.52

Astronomers often quoted Milton’s verse and his Paradise Lost in particular, provided the Victorians with a vocabulary to express what they saw during astronomical observation. His text acted as a form of emblem book during the period, offering a visual interpretation of astronomical phenomena and theory in poetic form. In 1826, John Herschel, paraphrasing a line from Paradise Lost, described the light effects of the part of the Great Nebula in Orion surrounding the Trapezium, as ‘Dark with excessive light his skirts appear’.53 Urania, the muse, is also significant for being etymologically associated with light, the name being derived from the Hebrew Or, or, Ur meaning light.54 Milton’s famous invocation to Book 3, his prayer to light, deals with the transition from the darkness of hell and chaos to the light of heaven, as first seen by Satan. It is also Milton’s personal plea to the heavenly light to shine inward, and aid the creativity of the now blind poet. The word light has its obvious theological meaning as a metaphor for the Holy Spirit. Likewise, it is connected through Urania with a more secular aid to the imagination, the telescope. This object relies on the reflection of light onto its mirrors for the user to see the image of the astronomical body under observation. Thus, light is triply linked. It is an autobiographical and theological metaphor. It also revives, in Milton’s mind, the metaphorical possibilities of astronomical light as representing an intensity of vision. In Book Three of Paradise Lost, ‘celestial Light’ is asked to:

Shine inward and the mind through all her powers
Irradiate. There plant eyes. All mist from thence
Purge and disperse, that I may see and tell
Of things invisible to mortal sight!

(52-55, Milton’s emphasis).

52 Hallam Tennyson, Memoir vol. 2, p. 521.
‘Things invisible to mortal sight’ can be two-fold: that which is beyond the capability of human vision owing to distance or that which lies within the human mind.\textsuperscript{55} Urania’s implanting of ‘eyes’ in the mind can lead to heightened perception of things usually invisible to ‘mortal sight’. In Tennyson’s early poem, ‘Armageddon’, the poet possesses the ability to discern with his keen eye objects at a ‘distance so ineffable’, so indescribable (I: 129). He sees ‘In the remotest chambers of the East / Ranges of silver tents beside the moon’, which without his keenness of vision, ‘might seem / But little shining points or galaxies, / The blending of the beams of many stars’ (I: 127-8; 130-32). The ability to see things usually invisible to ‘mortal sight’, also suggests that the poet becomes invested with a supernatural or almost divine sense of sight. In a very similar way in Tennyson’s ‘Armageddon’, the seraph commands the narrator (Tennyson) to open his eyes and ‘see’, and what he then ‘sees’ are his ‘own internal sensations’.\textsuperscript{56} As he experiences these visions, his ‘mental eye’ grows, and his thought is extended to such a vastness that confessing to ‘vanity’, he stands at the ‘outward verge and bound alone / Of God’s omniscience’ (II: 23-27). With this heightened ‘inward sense’ comes an intense perception of the universe around him:

> Each failing sense, / As with a momentary flash of light, / Grew thrillingly distinct and keen’ (III.3; II.27-29). In contrast to the flat, one-dimensional descriptions in Part I of ‘Armageddon’, the universe is now three-dimensional. The moon described in Part I as having a ‘ridged and uneven surface’, in Part II is seen in penetrating detail:\textsuperscript{57}

\begin{quote}
The Moon’s white cities, and the opal width
Of her small, glowing lakes, her silver heights
Unvisited with dew of vagrant cloud,
And the unsounded, undescended depth
Of her black hollows
\end{quote}

(1:115; II: 32-36).

This pastoral image of the moon is in contrast to the earlier grotesque images of the moon in the same poem, where it is described as ‘a dilated orb’ ‘marked with lines / Of mazy red athwart her shadowy face’ (I: 101-2). In Part One of ‘Armageddon’, the grotesque image of the moon is further enforced:

\begin{quote}
\textsuperscript{55} In his ‘Areopagitica’ Milton praises those ‘minds that can wander beyond limit and satiety’: p. 355. This is reflected in Paradise Lost where overcoming the limits of time and space can engender ‘those thoughts that wander through eternity’: Book 2, p. 148.
\textsuperscript{57} Tucker, p. 19.
The moon showed clearer yet, with deadlier gleam,
Her ridged and uneven surface stained
With crosses, fiery streaks, and wandering lines –
Bloody impressions!

(I: 114-17).

The turn to the pastoral image of the moon comes with the seraph’s plea to the narrator to ‘Open thine eyes and see!’ (II: 16). This heralds a release of the imagination, which has been ‘clogged with dull Mortality’ and ‘fettered with the bond of clay’ (II: 14-15). Furthermore, this release of the imagination leads to the ability to wonder at the self’s abilities ‘winged’ with an infinity of ‘knowledge’ and ‘Ideas’, which is also a ‘wonder at the universe it beholds’ (II: 41-42).58 In ‘Timbuctoo’ (1829), into which he incorporated these lines from ‘Armageddon’ describing his visionary experience, Tennyson added lines where he sees the galaxy of stars vividly: ‘the clear Galaxy / Shorn of its hoary lustre, wonderful, / Distinct and vivid with sharp points of light’ (103-105). Likewise, in ‘Armageddon’ the ‘vision of the night was changed’ as the ‘sooty mantle of infernal smoke’ lifted from the ‘plain’, and ‘All the crimson streaks / And bloody dapplings faded from the disk / Of the immaculate Moon’ (IV: 2-3; 19-21). Also seen clearly and distinctly are ‘the Moon’s white cities’ (II: 32). Interestingly, Tennyson’s father’s library contains a copy of John Keill’s An Introduction to the True Astronomy (1721), which is inscribed ‘Alfred Tennyson’. Keill’s book contains an extensive section on the features of the moon, which is very like Tennyson’s description of the ‘silver heights’ of the moon in his ‘Armageddon’ (II: 33). Keill’s ‘A Demonstration that there are Mountains in the Moon’, describes it as having ‘upon it most prodigious high Mountains, and deep Vallies [...] reached by the Sun’s beams’. In other parts, he identifies ‘many dark and obscure Spots, which seem to be only Caverns, or large Cavities’ (Fig. 28).59 Keill also refers to the lack of clouds on the moon: ‘THERE seems to be no Clouds nor Vapours in the Moon [...] for such Clouds would sometimes cover the Face of the Moon’.60 This is very like Tennyson’s moon in ‘Armageddon’, which is ‘Unvisited with dew of vagrant cloud’ (34). Tennyson was writing this poem in 1824 when he was about fifteen years of age, and so the idea of ‘The Moon’s white cities’ may have come from the claims made in the same year by the

58 Tucker, p. 20.
60 Keill, p. 108, Keill’s emphasis.
Figure 28 The ‘Caverns, or, large Cavities’ of the moon, from John Keill, *An Introduction to the True Astronomy; or Astronomical Lectures Read in the Astronomical School of the University of Oxford*, 1721
German astronomer Franz von Paula Gruithuisen. He reported that he had observed terraces belonging to lunar inhabitants, including a structure of interlocking pieces resembling a fortress, which he named the Wallwerk.  

With the heightened perception of the universe in his ‘Armageddon’, the intensity of Tennyson’s vision turns inward:

I wondered with deep wonder at myself:
My mind seemed winged with knowledge and the strength
Of holy musings and immense Ideas,
Even to Infinitude

(II. 40-45).

His mind is expanded to such an extent that he cannot comprehend it himself, as he looks into it. He experiences such ‘immense Ideas’ that ‘All sense of Time / And Being and Place [are] swallowed up and lost / Within a victory of boundless thought’ as he becomes ‘part of the Unchangeable [...] Eternal mind’ (II: 42-47).

‘Can calm despair and wild unrest / Be tenants of a single breast’

The contradictory stances of doubt and faith, tempered by assurance appear throughout Tennyson’s poetry. In his ‘De Profundis’, the materialist analogies of the birth of his son with the development of worlds governed by ‘changeless law’, are softened by the spiritual view in the closing ‘The Human Cry’. Here Tennyson writes: ‘We feel we are nothing – for all is Thou and in Thee; / We feel we are something – that also has come from Thee’ (6; 62-63, Tennyson’s emphasis). Likewise, in ‘Vastness’ (1885) the different strains of thought are contrasted: ‘Star of the morning, Hope in the sunrise; / gloom of the evening, Life at a close’ (14-15). Assurance of immortality tempering despair comes from the speaker at the end, in a voice distinct from the rest of the poem: ‘Peace, let it be! For I loved him, and love him for ever; the dead are not dead but alive’ (36-37). Tennyson expresses his fear about the truth of immortality in XXXIV of _In
Memoriam: ‘life shall live for evermore, / Else earth is darkness at the core, / And dust and ashes all that is’ (2-4). For Tennyson, life on earth was endured as a stage towards immortality. ‘Two things […] I have always been firmly convinced of’, Tennyson said to the artist William Allingham, ‘God, - and that death will not end my existence’.63 ‘What I want’, he said to Allingham, ‘is an assurance of immortality’.64 In a manuscript note to his poem ‘Vastness’, Tennyson wrote ‘“What matters anything in this world without full faith in the Immortality of the Soul and of Love”’.65 In XLVI of In Memoriam, earthly existence for Tennyson is a stage in development towards the higher state of the afterlife. Without this aim, time spent on earth would be wasted ‘Had man to learn himself anew / beyond the second birth of Death (14-16).

Contemporary astronomical debates about pluralism and extraterrestrialism played an important role in shaping Tennyson’s ideas about the possibility and nature of immortality. The notion of the plurality of the worlds had been popularized by Bernard Le Bovier de Fontenelle in his Conversations on the Plurality of Worlds (1686). These had led to the famous sermons by the Scottish minister Thomas Chalmers published in his Astronomical Discourses (1817). Significantly, William Whewell, Tennyson’s tutor at Cambridge, had expressed his belief in the existence of other worlds in his 1833 Bridgewater Treatise, although he later changed his mind as shown in his Of the Plurality of Worlds: An Essay (1853).66 Early nineteenth-century other worlds were seen as part of God’s system, and the pluralist argument by those such as David Brewster propounded the idea that God would not have created just one world and placed life upon it.67 Tennyson reflected on man’s place in a universe defined by pluralist astronomy in his ‘The Two Voices’ (1833). Here he tells the reader that ‘Nature’ who ‘moulded man’ […] gave him mind, the lordliest / Proportion, and, above the rest, / Dominion in the head and breast (19-21). ‘The silent voice’ replies: ‘Self-blinded are you by your pride: / Look up through night; the world is wide’ (22-24).68

Tennyson maintained a life-long belief in the habitation of other worlds. In August

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63 Allingham, p. 329.
64 Allingham, p. 185.
66 In contrast the Scottish physicist, mathematician and astronomer, Sir David Brewster fought for the pluralist cause against Whewell through reviews and his 1854 book More Worlds than One: The Creed of the Philosopher and the Hope of the Christian. Brewster propounded that it illustrated God’s omnipotence and the infinite nature of the bodies of space. He argued for the existence of other inhabited worlds and that other planets might contain ‘a type of reason of which the intellect of Newton is the lowest degree’: cited Crowe, Extraterrestrial, p. 303.
67 Crowe, Extraterrestrial, p. 304.
68 Also cited Crowe, Extraterrestrial, p. 233.
1887, the classicist Professor Richard Jebb watched an eclipse of the moon with Tennyson, and Tennyson said that ‘according to analogy, at least one of the planets belonging to each sun should be inhabited, though perhaps with beings very different from ourselves’. Notably, an important part of the plurality of world’s debate was the idea that other worlds were home to the souls of the dead. During the period Tennyson was writing In Memoriam, this notion of the souls of the dead inhabiting other planets received impetus from Isaac Taylor’s Physical Theory of Another Life (1836). Taylor argued for the development of the body into a spiritual being. He combined his developmental process with the doctrine of the plurality of worlds to suggest the existence of two levels of being – the visible and invisible universe, the invisible world inhabited by invisible sentient beings. Taylor’s notion of the eternal nature of the soul may have been particularly comforting to Tennyson. Taylor declared the soul ‘eternal’ and pronounced, ‘let the universe perish or be changed – the soul shall live!’ In section LXXXII of In Memoriam, Tennyson writes in similar terms: ‘Eternal process moving on, / From state to state the spirit walks’ (5-6). Even in his early poetry, Tennyson thought of the heavens in such a way. In ‘Timbuctoo’, he writes ‘I have raised thee nigher to the spheres of Heaven, / Man’s first, last home’ (212-13). In In Memoriam, Tennyson’s aim is to ‘clasp’ Hallam once more. He wants to be sure that they will know each other when they meet: ‘And I shall know him when we meet’ (XLVII: 15; 8). For this to be possible, Hallam must survive as an ‘individual consciousness’ in an ‘after-world of individuals’. In his poem ‘To One Early Loved, Now in India’ Hallam had written ‘Oh tell me not, ye sages, that our end / Shall merge us in the godhead’. Like Hallam, Tennyson was against the idea of the merging of souls into a ‘general Soul’ after death, referring to ‘faith as vague as all unsweet’ (XLVII: 4-5). Tennyson discussed this problem with Tyndall on 28th June 1890, Tennyson professing his belief in “‘individual immortality’” with Tyndall replying “‘We may all be absorbed into the Godhead’”. The problem of whether Hallam will remember their earthly friendship when they finally meet again, is the subject of sections XLIII to XLVI of In Memoriam. Here Tennyson moves from a vague hope in the possibility of the dead remembering the past, to an assurance of this likelihood: ‘In

70 Mattes, pp. 40-43.
72 Mattes, p. 44.
that deep dawn behind the tomb, / But clear from marge to marge shall bloom / The eternal landscape of the past’ (XLVI: 6-8).\footnote{Mattes, p. 41.} This echoes Taylor’s idea that the dead retain memories of their past life: ‘Christianity requires us to believe [...] the unbroken recollection, in another life, of the events and affections of the present state’.\footnote{Taylor, p. 17; also cited Mattes, p. 41.}

In \textit{In Memoriam}, Tennyson takes a step further this notion of other worlds as the resting place of the souls of the dead. Here we find a mixture of Dantesque images of a universe of concentric spheres through which the soul climbs towards the Empyrean, the tenth heaven of paradise, and astronomical metaphors of orbit – of circles and spheres.\footnote{Dante’s images of Heaven and Hell are influenced by Aristotelian astronomy. Aristotle assigned all that is imperfect to the sub-lunar region, whilst the divine and perfect were located in the celestial region. In my analysis of Tennyson’s circle imagery, I am grateful to Taaffe’s in depth consideration of the significance of the circle in Tennyson’s \textit{In Memoriam}: James G. Taaffe, ‘Circle Imagery in Tennyson’s \textit{In Memoriam}’, \textit{Victorian Poetry}, 1.2 (1963), pp. 123-131.} Tennyson envisioned \textit{In Memoriam} as ‘a kind of \textit{Divinia Commedia}’ beginning with death, and ‘ending with happiness’ with the marriage of his youngest sister, Cecilia.\footnote{Hallam, \textit{Memoir}, vol. 1, p. 304.} Tennyson’s choice of Dante’s poem is appropriate, as Hallam was an accomplished scholar of Dante who had translated Dante’s \textit{La Vita Nuova} (1295).\footnote{Hallam also wrote two essays in reference to Dante ‘The Influence of Italian upon English Literature’ and ‘On Gabriele Rossetti’s Dante Theories’: \textit{The Writings of Arthur Hallam}, ed., T. H. Vail Motter, New York: Modern Language Association, 1943.} Nevertheless, it is the circle as the ‘primary architectural and thematic device’ of Dante’s poem, which appears to have significantly influenced Tennyson.\footnote{Taaffe, p. 123} Through this circle imagery Hallam’s body progresses from death, in which there is no hope of reunion following the return of his body from Italy, to a conquering of doubt in immortality. Tennyson’s own soul must ‘haste away / O’er ocean-mirrors rounded large’ to search for the ship that carries Hallam’s body back to England (XII: 8-9). However, instead of reunion it is left circling in air questioning the finality death has bought to their friendship: ‘circle[s] moaning in the air: / “Is this the end? Is this the end?”’ (XII: 15-16). Throughout \textit{In Memoriam} images of circles, whirls, and rounds contribute to a sense of spiral progression that moves towards a ‘landing-place’ on ‘the last and sharpest height’ (XLVII: 15; 13). Hallam evolves and morally develops as distinct, ‘mixing with his proper sphere’, he is with the ‘circle of the wise’ (LX: 5; LXI: 3).\footnote{Taaffe, p. 128.} As a ‘sphere’, Hallam is ‘unto vaster motions bound, / The circuits of thine orbit round / A higher height, a deeper deep’ (LXIII: 10-12). Like a planet, Hallam’s spirit...
moves in concentric orbit following its path around a central sun according to its gravitational pull. If the sun is Tennyson, then the circle of Hallam’s ‘motions’ are so vast they increasingly place him further and further away from Tennyson (LXIII: 10). Thus, the gravitational lapse that widens the distance of Hallam from Tennyson is death, and the pull, which brings him closer, is imagination. The imagination can bring about a closer relationship with Hallam, overcoming the separation caused by death. To this end, Tennyson, shows how astronomical metaphors in his poetry, and the imaginative possibilities they invoke, can enable him to connect his own world with the world Hallam now inhabits. By using planetary imagery of a central locus as himself, Tennyson uses circle imagery in terms of orbit to achieve spiritual reunion: ‘I prosper, circled with thy voice; / I shall not lose thee though I die’ (CXXX: 15-16).

As well as aligning Hallam with a planet and planetary orbit, Tennyson also figures Hallam as a star. This positions Tennyson’s In Memoriam within elegiac tradition. A traditional elegiac image was the stellification of the deceased. Tennyson names Hallam as a star: the earth is ‘compassed by the fires of Hell’, whilst Hallam, ‘dear spirit, happy star / O’erlook’st the tumult from afar, / And smilest, knowing all is well’ (CXXVII: 17-20). However, equating Hallam with a ‘star’, or indeed a planet, produces an epistemological problem for Tennyson (CXXVII: 18). In terms of the findings of nineteenth-century astronomy, it puts Hallam at an inconceivable distance from him. The problem of how to understand human life, in relation to the immensity of the distances stellar astronomy was revealing, had concerned Tennyson since his childhood. According to Hallam Tennyson, ‘Two of Alfred’s earliest lines were ‘The rays of many a rolling central star / Aye flashing earthwards, have not reach’d us yet’.

John Herschel, in his treatise Light (1827), found it was ‘demonstrable that light cannot possibly arrive at our system from the nearest of stars in less than five years, and telescopes disclose to us objects probably many thousand times more remote’. These huge distances between the earth and celestial bodies put the stars at distances beyond human conception. John Herschel explained that

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82 Meadows, Muses, p. 112.

83 John Frederick William Herschel, Light (1827), 2nd edn., vol. 4, Encyclopaedia Metropolitana, Royal Society of London copy, 1845, n.pub., p. 344.
the distance of the fixed stars is so immense, that every attempt to assign a limit, within which it must fall, has hitherto failed [...] The conclusion this strongly presses on us is, that [...] the distance of the stars must be a magnitude of such an order as the imagination almost shrinks from contemplating.\textsuperscript{84}

The philosophy of Bishop George Berkeley offered a means for Tennyson to overcome the distance of Hallam’s soul from himself. The nineteenth century saw renewed interest in Berkeley’s \textit{Essay towards a New Theory of Vision} (1709). In 1842 John Stuart Mill, writing in the \textit{Westminster Review}, described Berkeley’s theory of vision, as ‘one of the least disputed doctrines in the most disputed and most disputable of all sciences, the Science of Man’.\textsuperscript{85} Tennyson’s knowledge of Berkeley is attributed to his friendship with Hallam. This is because although his library contained an 1843 edition of Berkeley’s works, Tennyson did not acquire it until shortly after his marriage in 1850.\textsuperscript{86} Likewise, in an 1832 letter, Hallam revealed his ‘conviction, that, with regard to the Extent of Human Knowledge, no real advance [had] been made beyond Hume & Berkeley’.\textsuperscript{87} William Knight also gained the impression from a conversation with Tennyson in 1870, that Tennyson was a Berkeleian: ‘He was an idealist at heart [...] Underneath the realism of his nature, this other feature rose above it. He was not so much of a Platonist as a Berkelean [sic]’.\textsuperscript{88} In fact, Tennyson, as evident in Aubrey De Vere’s review of Tennyson’s ‘The Princess’, was very much of the Victorian age. The era subscribed to an eclectic combination, a ‘medley’, of thought, and therefore no one stance can be singled out.\textsuperscript{89} However, we can find traces of Tennyson’s knowledge of Berkeley’s philosophy in his very early poem ‘The Devil and the Lady’ (1823), where the Devil questions how he can know whether or not the solar system actually exists:

\begin{verbatim}
O suns and spheres and stars and belts and systems,
Are ye or are ye not?
Are ye realities or semblances
Of that which men call real?
Are ye true substance? Are ye any thing
[...]
I have some doubt if ye exist when none
Are by to view ye – if your Being alone
\end{verbatim}

\textsuperscript{84} John Herschel, \textit{Discourse}, pp. 277-78, Herschel’s emphasis.
\textsuperscript{85} Cited Donald S. Hair, \textit{Tennyson’s Language}, Toronto: University of Toronto Press, 1991, p. 44.
\textsuperscript{86} Hallam Tennyson, \textit{Memoir}, vol. 1, p. 308; Hair, p. 180 n.20; \textit{Library of Alfred Lord Tennyson} AT/513. In 1871, he also received a gift of the 1871, 4 volume edition from its editor Alexander Fraser Campbell AT/514.
\textsuperscript{88} Cited Hair, p. 45.
Be in the mind and the intelligence
Of the created, [...] (II: 40-44; 52-55).

The Devil decides that the solar system only exists in the mind, in similar terms to a later line in Tennyson’s In Memoriam: ‘I make a picture in the brain’ (LXXX: 9). Here Tennyson suggests, like Berkeley, that things cannot exist apart from an imaginative agent – all things only exist in the mind. Berkeley explained his immaterialist theory in his Treatise Concerning the Principles of Human Knowledge (1710):

For as to what is said of the absolute existence of unthinking things without any relation to their being perceived, that seems perfectly unintelligible. Their esse is percipi, nor is it possible they should have any existence, out of the minds or thinking things which perceive them.\(^90\)

According to Berkeley, the imagination perceives the world, orders it and gives it its meaning.\(^91\) Berkeley also rejected Newtonian ideas of absolute time and space, suggesting instead that ‘absolute measurements’ are a ‘relative judgement of the perceiving mind’, elevating the ‘creative imagination over empirical exactitude’.\(^92\) In a similar way, Tennyson rejects a materialist science of imposed uniformity and excluded imagination. Invoking Berkeley, space becomes dependant on the creative mind, and enables him to bring Hallam near to him once again. We see this in section CXXII, after the ‘strong imagination’ has rolled a ‘sphere of stars about [Tennyson’s] soul’ Hallam can ‘enter in at [Tennyson’s] breast and brow’ and then

\[
[...] all the breeze of Fancy blows, 
    And every dew-drop paints a bow, 
    The wizard lightenings deeply glow, 
    And every thought breaks out a rose 
\]

(6-7; 11; 17-20).

For Berkeley, ‘the visual sphere must be the total field of vision from a point, which seems spherical, but which has a zero radius, and therefore the objects in it are seen at no distance’.\(^93\) In In Memoriam when ‘The strong imagination roll[s] / A sphere of stars about [Tennyson’s] soul’, celestial objects are ideas in the mind (CXXII: 6-7). As such, they are seen at no distance, and therefore bring Hallam, as a ‘star’, immediately close to Tennyson again (CXXVII: 18). In LXXVI Tennyson invites the reader to

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\(^92\) Storhoff, p. 545.

Take wings of fancy, and ascend,
And in a moment set thy face
Where all the starry heavens of space
Are sharpened to a needle’s end

(1-4).
‘Sharpened to a needle’s end’ implies a point. It brings to mind the depiction of the universe as a series of dots or points of light in popular parlour devices, such as the umbrella and constellation cards like *Urania’s Mirror* that we saw in the first chapter of this thesis. Likewise, the idea of a point can be linked to published depictions of the universe as a series of dots, the most famous being William Herschel’s map of the Milky Way galaxy in his ‘On the Construction of the Heavens’ (1785) (Fig. 29). Illustrations following the idea of points of light, including William Herschel’s of the Milky Way, appeared in Nichol’s *Views of the Architecture of the Heavens*, which Tennyson owned. Related to the science of optics, as astronomy is, Tennyson’s analogy of the point also suggests the idea of rays of light converging to a point in the eye on ‘the nerve of vision’. Interestingly, Nichol’s book contained text and a supporting illustration detailing the effect of looking at celestial luminaries with the naked eye, and with refracting and reflective lenses as used in telescopes (Fig. 30). For Nichol, the use of a telescope caused ‘a virtual enlargement of the pupil of the eye’, increasing the amount of ‘luminous influence’ entering the eye. Nichols used the analogy of the ‘point’ of a ‘pencil’, and like Tennyson’s ‘needle’s end’, also suggests a viewing position where the heavens are contracted into a dimensionless point. Setting the face at this point implies zero distance and suggests immediate proximity to the eye, or even the brain of the observer. This could work in two ways. Firstly, as being so close to the object or star that it is seen at no distance. Therefore, Tennyson is asking the reader to ‘set’ their ‘face’ at the ‘luminous point […] raying out beams’ (LXXVI: 2). Secondly, and this is more probable, he is referring to viewing the heavens through a telescope. Here Tennyson may have been influenced by Nichol’s explanation, as both reflecting and refracting telescopes reduce the wide view to a point on the optic nerve. With this process, stars can therefore be immediate to the observer’s brain, and thus Hallam as a ‘star’ is now immediate to Tennyson’s thought. Even in the later middle part of *In Memoriam*, where Tennyson deals with his doubts and fears, Hallam is ‘Far off […] but

95 Nichols, *Architecture* 1837, p. 30, Nichol’s emphasis; p. 29.
96 Nichols, *Architecture* 1837, p. 29.
Figure 29 William Herschel's map of the Milky Way, from his ‘On the Construction of the Heavens’, *Philosophical Transactions of the Royal Society of London*, 1785

Figure 30 Illustration of the amount of light reaching the eye, i) Naked eye, ii) Refracting lens, iii) Reflecting lens, from John Pringle Nichol, *Views of the Architecture of the Heavens in a Series of Letters to a Lady*, 1837
ever nigh’ (CXXX: 13). Early in In Memoriam, the reader is told that ‘sorrow’ had ‘stunned’ Tennyson from the ‘power to think’ and made him ‘that delirious man’

Whose fancy fuses old and new,
And flashes into false and true,
And mingles all without a plan?

(XVI: 4; 15; 17-20).

Here Hallam’s death creates contradictory emotions between the past and present, which Tennyson’s imagination synthesises. This synthesis creates a way of keeping Hallam the same in his mind, and part of his present. It becomes most clear in section CXXI where Tennyson ‘fuses’ fragments in his identity by aligning himself with the planet Venus:

Sweet Hesper-Phosphor, double name
For what is one, the first, the last,
Thou, like my present and my past,
Thy place is changed; thou art the same

(XVI: 18; CXXI: 17-20).

Venus has dual identity as both the morning and evening star, as it reaches its maximum brightness shortly before sunrise or shortly after sunset. Tennyson’s use of images of the celestial phenomenon of Venus is framed within the structure of In Memoriam, which is full of contradictions. Indeed, the structure of section CXXI mirrors the whole elegy with its ‘classic thesis-antithesis-synthesis’: the first two stanzas place Venus as seen from a human perspective, as Hesper the evening star. The following two show the opposing aspect of Phosphor the morning star, and the last stanza above, synthesises the two, drawing a profound paradox of changing perceptions against a reality that is constant. Hesper and Phosphor are seen at different times in different places in the sky, but they are always there: ‘Thy place is changed; thou art the same’ (CXXI: 20).97 The doubling metaphor of Hesper-Phosphor mirrors the speaker’s development throughout In Memoriam, which also mirrors the greater ‘cosmic plan’: ‘the one far-off divine event, / To which the whole creation moves’ (Epilogue 143-44). The process of CXXI shows that opposites like ‘doubt and faith’, ‘despair and hope’, death and immortality can be transcended: ‘though there often seemed to live / A contradiction on the tongue, / Yet Hope had never lost her youth’ (CXXV: 3-5).98

John D. Boyd argues that ‘the narrative drama’ of In Memoriam ‘is a drama of

98 Boyd, p. 163.
progressively evolving perceptions, characteristically perceptions of the natural world’ producing what Robert Langbaum has termed “a total revolution in perception”. Astronomy provided Tennyson with just such revolutionary potential: astronomy altered Tennyson’s perception provoking his imagination, and producing visionary experiences as in his ‘Locksley Hall’ where he writes: ‘When I dipt into the future far as human eye could see; / Saw the Vision of the world, and all the wonder that would be’ (15-16). In In Memoriam, it is clear that his experience of viewing the heavens stirs his imagination and enables him to conceptualise Hallam, who on death has passed beyond vision, from the realm of the perceptual to the conceptual: ‘I felt and feel, though left alone, / His being working in mine own’ (LXXXV: 42-3). Tennyson explores the use of the imagination in this way in section CXXII:

Oh, wast thou with me, dearest, then,  
While I rose up against my doom,  
And yearned to burst the folded gloom,  
To bear the eternal Heavens again,

To feel once more, in placid awe,  
The strong imagination roll  
A sphere of stars about my soul,  
In all her motion one with law

(1-8).

Here ‘The strong imagination’ is that of God, and Hallam can be real again to Tennyson, through his experience of God’s imagination. The ‘strong imagination’ also produces an imaginative reordering of the world that connects God, the universe, and immortality through astronomical imagery. Tennyson gains a sense of Hallam’s presence in nature: he feels him there in ‘star and flower [...] mixed with God and Nature’ (CXXX 6; 11). Astronomy produces images in his mind that signify other images and emotions. Here, the soul becomes like a planet surrounded by stars. Tennyson appears wrapped and whirled with the motion of the heavens, and God as the strong imagination is the artificer. Tennyson rejected in theory ‘design’ as he felt when ‘applied to the Creator of all these worlds’, ‘it makes Him seem a mere artificer’. However, he was resigned to a certain amount of anthropomorphism because, as he told Agnes Weld, ‘though there may be infinitely higher beings than ourselves in the worlds

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beyond ours, yet to our conception man is the highest form of being’. In fact, here Tennyson produces an image, which in Berkeleian terms, is based in ‘passion or sensation in the soul’, and one that also imparts a spiritualised sense of connectedness between God and humankind. This is evocative of the philosophy of Berkeley who argued that only the imagination of God can bring reality into being, and God alone produces the ideas of the consciousness. Berkeley argues:

The ideas imprinted on the senses by the Author of Nature are called real things; and those excited in the imagination being less regular, vivid and constant, are more properly termed ideas, or images of things, which they copy and represent.

‘An orb repulsive of all hate’

For Tennyson, it is his friend Hallam who is beyond ‘mortal sight’ (Paradise Lost 3: 55). Thus, Hallam can only exist in his imagination, as in Berkeley’s terms as an idea or image, a copy or representation of what he knew of Hallam before his death. To Tennyson in In Memoriam, Hallam’s death causes him to be ‘like to him whose sight is lost’, and death has borne Hallam where he ‘could not see’ (LXVI: 8; XXII: 17). Tennyson’s concern is that death has parted him from Hallam. For Tennyson, Hallam is a ‘shadow’ that ‘somewhere in the waste’ ‘sits and waits for’ him. (XXII: 19-20). Hallam could be brought back within Tennyson’s mind: ‘I find / An image comforting the mind, / And in my grief a strength reserved’ (LXXXV: 50-52). To this end, Tennyson constructs a comforting image of Hallam using astronomical metaphors. This is most clear in an unpublished section in the manuscript of In Memoriam, held at Trinity College, Cambridge, ‘Young is the grief I entertain’, where Stanza IV refers to orbing:

A master mind with master minds,
An orb repulsive of all hate,
A will concentric with all fate,
A life four-square to all the winds

(13-16).

101 Weld, p. 395.
102 Hair, p. 49.
103 Storhoff, pp. 540-41.
104 Berkeley, vol. II, p. 54 sect.33, Berkeley’s emphasis.
105 Printed Hallam Tennyson, Memoir, vol. 1, pp. 306-7 from the Trinity manuscript of In Memoriam: See Ricks vol. 3, p. 596.
Here Tennyson finds in his mind an image of Hallam as perfect, as complete, ‘concentric’, an ‘orb’, suggesting a sphere or globe (15; 14). As a globe, Hallam would orbit the earth. In astronomical terms, an orbit is the path a heavenly body follows when moving in a gravitational field under the influence of a centrally directed force. Nineteenth-century astronomical science concluded the orbit of the planets to be circular, and that a circular orbit must have originated when a planet came into being. This was initiated, as William Whewell, explained, by ‘only one particular impulse, determinate in velocity and direction’. According to Whewell, a divine hand originated circular orbits. Whewell’s explanation rested on the geometrical notion that there are an ‘infinite number’ of ovoid shapes, ‘a long oval, a shorter oval’, but ‘there is but one circle’, so the ‘chances are infinitely against’ a circular orbit being formed. Therefore, ‘this circular character of the orbits’ must then be ‘the intention and will of a Creating Power’. In ‘Young is the grief I entertain’, as ‘a master mind’ and ‘an orb’, Tennyson equates Hallam with the will of God (13-14). This will is also compassionate: ‘An orb repulsive of all hate’ (14). At the end of In Memoriam, Hallam becomes a noble type a Christ-like figure: ‘Whereof the man, that with me trod / This planet, was a noble type’, who, caring not for ‘faith’ that ‘fix[es] itself to form’, knew a faith that ‘has centre everywhere’ (Epilogue: 137-8; XXXIII: 3-4). For Tennyson, Hallam’s memory will live on because he provides a model for all humankind to follow through his ‘songs and deeds’ (LXXVII: 3).

Tennyson’s notion of ideal manhood, found here in Hallam, continued into the poetry of his later years. In his ‘To the Queen’ part of his epic ‘Idylls of the King’, Arthur is ‘Ideal manhood closed in real man’, who provides an ideal for humankind to follow (38). For Tennyson, ideal manhood is achieved through a progressive development that will improve the future of the human race. We also find the idea of progressive development at the beginning of In Memoriam where he expresses his belief ‘that men may rise on stepping-stones / Of their dead selves to higher things’ (I: 3-4). There is an interesting link here to Chambers’ developmental idea of the human race from lower to higher forms. Tennyson purchased Chambers’ Vestiges soon after
its publication in 1844. He wrote to Edward Moxon:

I want you to get me a book which I see advertised in the Examiner, it seems to contain many speculations with which I have been familiar for years, and on which I have written more than one poem. The book is called ‘Vestiges of the Natural History of Creation’.  

Later in *In Memoriam*, Tennyson reasserted progression towards a nobler existence in the afterlife: ‘But trust that those we call the dead / Are breathers of an ampler day / For ever nobler ends’. (CXVIII: 5-7). This reflects Chambers’ argument for a universal, progressive development from lower forms of life to higher forms. He posited the question: ‘Is our race but the initial of the grand crowning type?’ foreseeing a ‘species superior to us in organization, purer in feeling, more powerful in device and act […], a nobler type of humanity’, that would ‘complete the zoological circle on this planet, and realize some of the dreams of the purest spirits of the present race’.  

Chambers found his Lamarckian-based idea of continual developmental process, not only in the growth of animals and man, but also in the development of the solar system. He claimed that God had performed only one single act of creation - the creation of the primal nebula from which, due to natural law, were produced the future stages of the development of the universe. As John Killham has shown, Tennyson may have been as much struck by the content of a ‘long notice’ in *The Examiner* on 9th November 1844, as the actual book. The notice insisted that the notion of a developing creation is far from ‘irreligious’, the development of ever more perfect species, revealing the workings of a divine hand. For Tennyson, Hallam is an example of the progressive development of man to a higher form of life. Hallam, who has achieved this position in the eyes of Tennyson, is an ideal type who provides the model for others to follow. By placing, him at the peak of achievement for the human race, Hallam’s soul most likely completed after 1846: vol. 2, p. 318 n.i. By then he would have read Chambers’ *Vestiges*; Mattes, p. 82. Tennyson was aware of progressive development before he read Chambers. In *In Memoriam* and in the 1832 version of ‘The Palace of Art, deleted in 1842 there are references to the biological theory of progressive stages of development: “From change to change four times within the womb / The brain is moulded, she began”’ (13-14). For its subscribers, embryonic stages of development of the higher forms resemble in succession different lower organisms: George Reuben Potter, ‘Tennyson and the Theory of Mutability in Species’, *Philological Quarterly*, 16 (1937), p. 328. Biological metaphors also appeared in progressive developmental theories of the Universe. William Herschel had proposed that that ‘every succeeding state of the nebulous matter is the result of the action of gravitation upon it while in a foregoing one’: *Scientific Papers*, vol. 2, ed. J. L. E. Dreyer, London: Royal Society & Royal Astronomical Society, 1912, p. 494.


112 Killham, pp. 253-54.
lives on, and Tennyson achieves the imaginative possibility of knowing Hallam still.\textsuperscript{113} Faced with a changing conception of the world’s place in the universe, and man’s in relation to it, as well as the death of Hallam, his personal and public universe had changed. To keep Hallam close to him he needed to introduce an unchanging element into his analogies. Describing Hallam as an ‘orb’ brings certainty into \textit{In Memoriam}. It works alongside the elegy’s sense of certainty inferred by the background of recurring Christmases and seasons. Likewise, as an archaic word for circle, ‘orb’ confers the idea of immortality, for a circle is continuous and never-ending.

Figuring Hallam as an ‘orb’ also suggests another meaning. Orb is traditionally used poetically as another word for an eye. Tennyson used it in this way to produce a visionary experience in the Trinity manuscript of ‘Armageddon’ where he describes the seraphs’ eyes as orbs.\textsuperscript{114} Here the seraphs eyes produce an ‘inutterable shining’, so strong that he is forced to ‘veil’ his eyes, as the effect is like looking at the sun (II: 5-6). He is momentarily blinded or at least his vision is distorted by ‘coloured spots as dance athwart the eyes / Of those that gaze upon the noonday sun’ (II: 8-9). This has the effect of rendering him like the blind seer, and produces a visionary experience as the eye that grows ‘large is his ‘mental’ one (II: 23). Interestingly, Tennyson uses the term orb in \textit{In Memoriam} to reinforce his idea of Hallam as the ideal type or higher being. Configured as an orb or eye, Hallam looks down on the earth, and is given the traditional or divine role of God as the seer of all. It suggests omniscience traditionally aligned with God, and is found historically in important astronomical texts. For instance, it is like the illustration in Thomas Wright of Durham’s \textit{An Original Theory or New Hypothesis of the Universe} (1750), where Wright emphasises the infinite depth of the universe in layers of planets and stars (Fig. 31). Each disk, representing a planet or star, contains the all-seeing eye of the creator at the centre. Tennyson invoked this popular conception in his ‘Armageddon’, where the moon configured as an eye looks down on the earth. Likewise, in Act II of his ‘The Devil and the Lady’ (1823), Tennyson describes the stars as eyes: ‘— Oh! ye eyes of Heaven, / Ye glorious inextinguishable lights’ (9-10).

In the Prologue to \textit{In Memoriam}, Tennyson attributes the sun and moon ‘these orbs of light and shade’ to God, also acknowledging him as the creator of life and death:

\textsuperscript{113} Mattes, pp. 84-85.
\textsuperscript{114} Ricks, vol. 1, p. 80 ii. n.5.
Figure 31 The Universe, from Thomas Wright of Durham, *An Original Theory or New Hypothesis of the Universe*, 1750
‘Thou madest Life in man and brute; / Thou madest Death (Prologue: 5-7). Tennyson’s difficulty here comes in Kantian terms: that whilst man can have knowledge of these systems in scientific terms, he cannot have knowledge of God: ‘We have but faith; we cannot know; / For knowledge is of things we see’ (Prologue: 21-22). He heralds the deepening knowledge of science in positive terms: ‘Let knowledge grow from more to more’, but he believes that this should result in greater ‘reverence’ for God (Prologue: 25; 26). Tennyson resolves this contradiction by asserting man should hold fast to faith in God, despite his inability to prove his existence: ‘Believing where we cannot prove’ (Prologue: 4). In this statement, Tennyson achieves a synthesis of his profound religious belief and contemporary scientific ideas. He combines the doctrine of the immortality of the soul that is rooted in his Christian faith, and the immortality of humankind through the scientific ideas of evolution: ‘One far-off divine event / To which the whole creation moves’ (Epilogue: 143-44).115 Throughout the course of In Memoriam, there is progress from grief to resignation to hope in immortality. The possibility that his beloved Hallam survives in a higher form culminates in the epithalamion, where Tennyson offers an expression of transcendent survival: ‘That friend of mine who lives in God / That God, which ever lives and loves’ (Epilogue: 140-41). The epithalamion, written to celebrate the marriage of Tennyson’s sister Cecilia to Edmund Lushington on 10th October 1842, suggests their marriage will lead to the birth of a child. This child represents new life after the death of Hallam, and the new birth represents Tennyson’s hope for human race as a whole. Tennyson’s concern with survival is not just personal. His poetry reflects the fear of extinction that dominated astronomical thought in the period he was writing In Memoriam. The suggestion of decay was a central tenet of the nebular hypothesis, the conjoining of the ideas of the development of the solar system of Immanuel Kant, William Herschel and Pierre Simon Laplace, by William Whewell in 1833.116 It claimed stars, and thus planets and suns, were formed when nebulous fluid spread in parts of the heavens, rotated at such a force it condensed into a small mass. As this mass contracted, rings of matter were thought to fly off into space and form a planet, the central condensed cloud forming a sun. Tennyson was well acquainted with the theory, as can be seen from his lines in ‘The Princess’ (1847), where Lady Psyche describes the origin of the universe according to the nebular hypothesis:

115 This famous phrase from In Memoriam was written before Charles Darwin’s On the Origin of Species (1859), and therefore refers to pre-Darwinian evolutionary theories.
116 Whewell, 1833 edn., p. 181.
This world was once a fluid haze of light,  
Till toward the centre set the starry tides,  
And eddied into suns, that wheeling cast  
The planets: then the monster, then the man

(II: 101-4).

While Tennyson was writing *In Memoriam*, authors of astronomical texts were concerned that if the sun consisted of nebulous matter then under the tenets of the nebular hypothesis, the sun would be subject to the same laws of decay as other celestial bodies. Solar decay suggested the end of the earth, and thus the end of man as the sun’s light and heat are needed to nurture life on earth. The implications of the possibility were recognised by Whewell in 1834:

> It now appears that the courses of the heavens themselves are not exempt from the universal law of decay; that not only the rocks and the mountains, but the sun and the moon have the sentence ‘to end’ stamped upon their foreheads. They enjoy no privilege beyond man except a longer respite.\(^{117}\)

In *In Memoriam*, Tennyson refers to the idea of solar decay: ‘From out waste places comes a cry, / And murmurs from the dying sun’ (III: 7-8). Nevertheless, the authors of the astronomical texts Tennyson read offered comforting assurances, which are reflected in his poetry. Robert Chambers in his *Vestiges* dealt with the implications: the sun’s heat ‘could not be destroyed’, but ‘must simply have been reserved to constitute, at the last, a means of sustaining the many operations of which the planets were destined to be the theatre’. He suggested that with the ‘system [...] laid open to view, [...] we cannot well doubt that we are in the hands of One who is both able and willing to do us the most entire justice’.\(^{118}\) According to Tennyson in ‘The Princess’, the sun and moon are renewable, infinite sources of light: ‘They with the sun and moon renew their light / For ever’ (III: 238-9). Similar lines appear in his ‘O mother Britain’ (1833-4): ‘And with the sun and moon renews / Its light for evermore’ (23-4). Nichol in response to the possibility of stellar decay had also offered the comforting image of immortality. For Nichol, ‘the system, though strong, is not framed to be EVERLASTING; and our Hypothesis also develops the mode of certain decay and final dissolution of its arrangements’.\(^{119}\)

However, Nichol declared, ‘why should it be painful? [...] The phenomenon referred to would simply point to the close of one mighty cycle in the history of the solar orb’, and should it lead to the ‘dissolution and disappearing of all

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\(^{118}\) Chambers, *Vestiges*, pp. 31-32; 386.

\(^{119}\) Nichol, *Architecture* 1837, p. 188, Nichol’s emphasis.
these shining spheres [... ] not in that manhood or full maturity of being, will our fretted vault be forgotten or its pure inhabitants permitted to drop away'.

Like Nichol, Tennyson in section LIV of *In Memoriam*, believes ‘not one life shall be destroyed / Or cast as rubbish to the void, / When God hath made the pile complete’ (6-8). Nichol was a firm supporter of the nebular hypothesis, and as Simon Schaffer has shown, even when Lord Rosse disproved it, Nichol reconstructed his ‘story’ in its support. Tennyson also continued to use the nebular hypothesis, as a positive source of analogy in *In Memoriam*. In an early section of the poem, the ‘germ’ of which is in Tennyson’s notebook at Harvard University and dated 1833, Tennyson is undecided about what his reaction to the nebular hypothesis should be:

From out waste places comes a cry,
And murmurs from the dying sun: ....

And shall I take a thing so blind,
Embrace her [Nature] as my natural good;
Or crush her, like a vice of blood,
Upon the threshold of the mind?

(III: 7 -16).

At this time, Tennyson would not have read Nichol (1837), or Chambers *Vestiges* (1844), but by section CIII, in which Tennyson describes a dream on the eve of his leaving Somersby in the summer of 1837, images that are more positive occur. In CIII, Tennyson recounts a vision in which one maiden chants ‘the shaping of a star’, and in section CXVIII, the nebular hypothesis is progressive, moving from ‘tracts of fluent heat’ when the earth began, to the development of ‘man’, ‘the herald of a higher race’ (36; 9; 12; 14). Here, Tennyson’s source is most likely Chambers’ idea of primal nebulous matter as a ‘universal Fire Mist’. The nebular hypothesis appeared to give an explanation of the birth of worlds that was in line with popular developmental

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122 Ricks, vol. 2, p. 320 n.iii.
123 All these sections relating a positive response to the nebular hypothesis are only included in Tennyson’s Lincoln manuscript, and not the Trinity, and were therefore written from 1837 onwards, possibly not until 1842, the date of the Lincoln manuscript. By this time Nichol’s book had been published, and as Tennyson may have continued writing the Lincoln manuscript up to 1850, he may also have read Chambers’ *Vestiges*, by the time he composed these sections: Ricks, vol. 2, p. 311.
theories of the progress of man. However, the theory was by no means proven, and throughout the nineteenth century, astronomers watched the night-sky intently for signs that this was how stars and planets were formed. Examination of nebulae was, as the astronomer George Biddell Airy explained

not merely the inspection of a series of natural changes in which we have no greater interest than in the transitions from an egg to a moth, but it is the study of the successive steps by which worlds like that which we inhabit [...] may have been organized from the most chaotic of all conceivable states.

The most popular nebula to observe was the Great Nebula in Orion, its mass large enough to be seen with the naked eye, it appeared constantly changing. Astronomers watched it closely for signs of contraction into stars in a quest to prove, or disprove, the validity of the nebular hypothesis. John Herschel and William Parsons, Lord Rosse conducted the most famous of these observations. John Herschel first published engravings of the Great Nebula in 1826. From his observations of the Great Nebula at the Cape of Good Hope, South Africa in 1833-38, he concluded that there was no evidence of resolvability, and that the nebula was indeed a cloud of vapour. Lord Rosse constructed a huge telescope, a six-foot reflector, at Birr Castle in central Ireland. It hung between two massive masonry walls and was popularly known as the Leviathan of Parsonstown, (Fig. 32). Within weeks of its completion in 1845, Rosse successfully resolved the nebula in Orion into its component stars. Proving the nebula was only cloudy because of its vast distance from the earth, Rosse destroyed the most popular theory of the development of the solar system – the nebular hypothesis.

No longer could popular astronomy rely on the nebular hypothesis drawn from William Herschel’s version of the theory, based on the ordering principles of Newtonian mechanics. Now there were apparently unlimited stars and possible new worlds, in a more chaotic universe than had previously been believed to exist. Tennyson often enjoyed the pleasure of observing the Great Nebula in Orion. He described the nebula in a letter to his wife Emily in October 1853 as ‘amazing’, telling her that he was hoping ‘for another peep tonight’. If true nebulousity could be proved then the hypothesis was correct, and this then seemed to remove the possibility of a Divine hand

in the creation of the universe. However, for Tennyson, as we have seen in this chapter, the nebular hypothesis still acted as a positive metaphor. Within its tenets, he found images of renewal and hope that could be translated into the possibility of immortality for the soul. In contrast to Tennyson’s view, for other writers, the nebular hypothesis and its representation in popular images and texts invoked a sense of fear. In May 1846, whilst Thomas De Quincey was dining with Nichol at the Glasgow Observatory, Nichol received a letter from Lord Rosse advising him that he had resolved the nebula into stars. It was also during this dinner that De Quincey said to Nichol, ‘the stars always preach to me that I am a prisoner, that I am condemned, possibly for some sin I have committed in a previous, but now forgotten, state of existence’. In his essay, ‘System of the Heavens as Revealed by Lord Rosse’s Telescopes’, De Quincey re-represented

the most popular image connected with the nebular hypothesis as grotesque. As we shall see in the next chapter, he used this engraving by John Herschel to project his personal fears and demons, and to establish the importance of the grotesque to his wider aesthetic vision.
III

‘An abominable apparition’: Thomas De Quincey, the Great Nebula in Orion and the Victorian Grotesque

Such is the book, that, like a sick man’s dreams,
Varies all shapes, and mixes all extremes.  

‘System of the Heavens’

In 1846, Thomas De Quincey published an essay in *Tait’s Edinburgh Magazine* entitled ‘System of the Heavens as Revealed by Lord Rosse’s Telescopes’. It is essentially a review of John Pringle Nichol’s recently published *Thoughts on Some Important Points Relating to the System of the World* (1846). In the article, De Quincey discusses the perceptual spatial implications of Lord Rosse’s astronomical discoveries and their effect on the nebular hypothesis. Central to De Quincey’s discussion is a critique of an engraving of the Great Nebula in Orion after a drawing by John Frederick William Herschel included in Nichol’s book (Fig. 33). The section of the essay, subtitled ‘Description of the Nebula in Orion, as forced to show out by Lord Rosse’, takes the form of a prose poem. It is characterised as such by its fragmented form and its heightened attention to vivid imagery, language and metaphor. Their use means the section achieves an emotional affect that makes it stand out from the rest of the essay, and from what the reader would normally expect from a book review. Elisabeth Barrett Browning described De Quincey as a poet: ‘What a poet that man is! how he vivifies

1 Horace, *The Epistle to the Pisones (Ars Poetica)* Revd Mr. Philip Francis translation (1748). This version was widely republished during De Quincey’s lifetime, including in Alexander Chalmers, ed., *The Works of the English Poets: From Chaucer to Cowper*, vol. XIX, London: Johnson, 1810, p. 742: 9-10, subsequent references in text. De Quincey studied the classics and as a pupil at Winkfield, Wiltshire won third prize for his translation of Horace in *The Monthly Preceptor or Juvenile Library* and was described as being able to ‘harangue an Athenian mob, better than you or I could address an English one’: Morrison, pp. 34; 28-29.

2 Thomas De Quincey, ‘System of the Heavens as Revealed by Lord Rosse’s Telescopes’, *Works*, vol. 15, pp. 393-420, subsequent references in text.


Figure 33 Engraving of the Nebula of Orion inverted as instructed by Thomas De Quincey, ‘Nebula of Orion figured by Sir J. Herschel’, from John Pringle Nichol, *Thoughts on Some Important Points Relating to the System of the World*, 1846
words, & deepens them. In fact, De Quincey had harboured the desire to write poetry since he first discovered Wordsworth in 1800, and planned to write ‘A poetic and pathetic ballad’ about two children who perish on a ‘frosty moonlight night’, and ‘A pathetic poem describing the emotions (strange and wild)’ of a dying shipwrecked man.

De Quincey’s ‘System of the Heavens’, and in particular, the prose poem, has attracted critical scholarship by John Barrell, J. Hillis Miller, Robert Snyder, and Jonathan Smith. I am particularly interested in Barrell’s argument that De Quincey’s ‘distinction between the bust of Memnon and the nebula can be compared, up to a point, with the distinction made by Bakhtin, between the “classical body” and the “grotesque body”’. However, despite Barrell’s comparison, De Quincey’s commentary on Herschel’s engraving remains unexplored in relation to the Victorian fascination with visual and verbal concepts of the grotesque. Robert Platzner has argued for De Quincey’s ‘System of the Heavens’ as evidence of a revisioning of the sublime in De Quincey’s aesthetic. However, this article contains few references to the grotesque and claims that De Quincey ‘had little direct knowledge of his subject [astronomy]’.

Although our knowledge of De Quincey’s involvement with the science of astronomy may be slim compared, for instance with Tennyson’s, a close reading of his texts reveals his wide and varied incorporation of the science and the device of the telescope. In this chapter, I therefore redress this claim, and explore De Quincey’s employment of the grotesque in his re-representation of the Herschel engraving in Nichol’s book.

As long ago as the Augustan age, the Roman poet Horace in his Ars Poetica advised the poet against mixing bodily parts from animals and humans in poetry. Horace gives the example of the joining of ‘a human head’ with a ‘horse’s neck’ (1-2). The poet so doing risked absurdity and thus ridicule, as it prevented unity and harmony,

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5 Cited Morrison, p. 340, original grammar preserved.
6 Cited Lindop, Opium, pp. 31-32.
8 Barrell, Infection, p. 123.
as did the ‘monstrous’ mixing of ‘the cruel and the kind, / Serpents with birds, and lambs with tigers join’d’ (15-16). In the science of astronomy, Nicholas Copernicus in the preface to his *De revolutionibus orbium coelestium* (1543), chastised astronomers who mixed contradictory theories. He described it as ‘taking from various places hands, feet, a head, and other pieces, very well depicted, it may be, but not for the representation of a single person; since these fragments would not belong to one another at all, a monster rather than man would be put together from them’. Similar concerns were expressed in nineteenth-century science. In geology, strange monsters were being created from the piecing together of fossil remains. In 1837, Samuel Best wrote ‘let us not be too sure that in putting together the bones of extinct species […] we are not […] creating to ourselves a monster’.

Yet, as I reveal in this chapter, De Quincey is at pains to create a fragmented prose poem vivifying imagery taken from the poetry of Milton, the Bible, and the astronomical writing of John Herschel, that re-represents the most widely accepted illustration of the Great Nebula in Orion as a grotesque monster. This was a period of ‘epistemological rupture’ in the form of increasing delineation across scientific disciplines, the development of aesthetics as a field of philosophical enquiry, and the formulation of the idea of literature. Nichol sought to ‘produce an organic, systematic, and totalizing approach’ to the study of astronomy by reproducing the Herschel engraving. However, as we shall see in this chapter, in De Quincey’s hands it disintegrates into numerous connections and relationships.

Although, as Josephine McDonagh notes, De Quincey admired those systems that attempted to ‘unify knowledge’, ‘his impulse for coverage and incorporation militated against his pursuit of order’. In this chapter’s investigation of De Quincey’s ‘System of the Heavens’, his cross-disciplinary interests, become clear, and are emphasised in his construction of the Herschel engraving of Great Nebula in Orion as grotesque. Indeed, I want to suggest that De Quincey’s ‘System of the Heavens’ is an episode in which he shows the importance of the grotesque to his imagination as a writer. As we shall see, the vivid image De Quincey achieves through the bringing together of fragments of disparate

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13 McDonagh, p. 3. McDonagh also names Kant, Leibnitz, Ricardo, Niebuhr and Adelung as amongst De Quincey’s ‘heroes’, p. 3.
thought, turns an illustration that was considered factual and scientifically correct in popular and scientific circles into one that is terrifying to the imagination.

Ironically, the image from Nichol’s text was an out of date representation of the Great Nebula in Orion. Although De Quincey introduces his critique as a ‘Description of the Nebula in Orion, as forced to show out by Lord Rosse’, it is actually John Herschel’s first drawing of the Nebula completed in 1824 and published in 1826. In 1854, Nichol criticised De Quincey for the use of this out of date image. He had written to Nichol asking him for a copy of the plate, as he wanted to publish it in his Collective Edition. Nichol wrote: ‘The Nebula, as now known, is wholly different from what it seemed then. Its form is not the same - thanks to the great telescopes, which have revealed so much more of it, and its composition is not now a mystery’. In the same letter Nichol, acknowledging ‘the inveteracy of [his] own materialism’ recognises the imaginative capacity of the piece. He recollects that he ‘did state at the time [that De Quincey’s] resolution of the Nebula into something very different from Matter was hardly so effective as might have been’ due to the difficulty of detaching and substituting ‘anything else’ for ‘real ideas’.14 In the Westminster Review, Henry A. Bright found De Quincey’s exaggeration of the Herschel engraving, as ‘more worthy of one whom the moon has smitten, than of one who gazes calmly upon the stars’.15 De Quincey replied that they had ‘apparently misunderstood the case as though it required a real phenomenon for its basis’ (21: 148, De Quincey’s emphasis).16 De Quincey calls the Nebula in the Herschel engraving a ‘phantasma’, suggesting it is something that exists in perception only, and is therefore a mental representation (15: 403). Thus, De Quincey’s piece is based on an imaginative conceit and is as much about his ability to create images in the mind, as the importance of the engraving as a scientific article. Furthermore, I want to suggest that astronomy was particularly important to the development of De Quincey’s imagination as a writer. From a close reading of his

16 Here De Quincey also rebuked the criticism in the Westminster Review by arguing the ‘strange appearance in Orion [...] was originally created by’ Lord Rosse’s telescope and the article was conceived between Rosse’s first and second reports (Rosse’s first findings found no evidence of stars). Therefore, he sees no discrepancy between the engraving that represents Herschel findings and Lord Rosse’s when he claims he conceived the article. However, on reviewing Nichol’s text he must have been aware of the new findings by Rosse because Nichol included Rosse’s letter claiming resolvability in his chapter. Works, vol. 21, p. 148.
‘System of the Heavens’, it becomes apparent that De Quincey’s interpretation of astronomy was idiosyncratic but nevertheless, very much central to his larger aesthetic vision. It also reveals how astronomy, and the telescope, provided a medium for his dreams and visions.

De Quincey’s knowledge of astronomy went beyond his reading of Nichol’s *System of the World*. This is evident from our knowledge of his family library, other essays he wrote and his involvement with Nichol. In De Quincey’s library were copies of works by the physician Thomas Percival. Of particular note are the 1784 and 1789 editions of Percival’s *Moral and Literary Dissertations*. Percival’s chapter ‘Observations on the Alliance of Natural History, and Philosophy, with Poetry’ contains an extensive discussion of the use of astronomy by poets including Milton and Anna Barbauld. Percival was a regular visitor to the De Quincey family home, Greenhay in Greenhill on the outskirts of Manchester, and attended to De Quincey’s sister Elizabeth alongside Dr Charles White. White was also a regular guest at the De Quincey home. De Quincey’s father, Thomas, like Percival and White was a founder member of the Manchester Literary and Philosophical Society established in 1781, to promote knowledge of literature, science, the arts and public affairs. In November 1800, De Quincey was registered at Manchester Grammar School. The school was situated next to Chetham’s library, which had been established in 1653 for free public use. One of the advantages of the Grammar School was its location next to a ‘good’ library. Whether De Quincey used Chetham’s library is not known, but it is interesting to consider the possibility, especially as it held an important collection of astrological, astronomical and scientific texts.

During De Quincey’s visit to Edinburgh in 1814, the poet and essayist John Wilson introduced him to the astronomer Sir William Hamilton. Appointed Astronomer Royal for Ireland in 1827 Hamilton, like De Quincey, was a ‘diligent student of Kant’. De

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17 Thomas Percival, *Moral and Literary Dissertations; Chiefly Intended as the Sequel to a Father’s Instructions*, Dublin: Mary Graisberry, 1784, pp. 241-90.
18 Morrison, p. 11.
19 The society was the highest in stature after the Royal Society of London with its membership including famous scientists such as John Dalton, a member from 1794 until his death in 1844.
21 Lindop, *Optium*, p. 213.
Quincey was interested in the influence of Kant on astronomers, publishing an essay in the *Westmorland Gazette* ‘Immanuel Kant & Dr Herschel’ (1819) during his editorship. Whilst there he also published his essay, ‘The Planet Mars’ (1819). Like Hamilton, De Quincey was a friend of Wordsworth and corresponded with Samuel Taylor Coleridge. Coleridge had encouraged De Quincey’s scientific reading and in particular had suggested he should study publications on psychology and the senses. Later, in 1852 De Quincey published essays on Hamilton in *Hogg’s Instructor*. De Quincey was also well acquainted with Nichol who he first met at an Edinburgh dinner party hosted by the novelist Catherine Crowe. In 1841, he stayed with Nichol whose home was the Glasgow Observatory on Garnet Hill. His stay there was short, as his room was needed to store a large consignment of astronomical equipment for the new Glasgow observatory. He then took other lodgings in Glasgow but continued to visit the observatory, despite his near solitary existence due to almost constant illness whilst in the city. However, during his visits to Nichol’s observatory, he enjoyed the privilege of discussing astronomy with Nichol, and the use of the telescope to sweep the night sky.

Colin Rae-Brown in his chapter on De Quincey ‘Recollections of the Glasgow period’ recalling De Quincey’s last visit to Nichol in 1846 relates how:

> On the occasion of a previous visit to the Clyde city, De Quincey had made the Professor’s house his home for some time. The ‘Nebular hypothesis’ was then largely occupying the brain of the astronomical savant, and little else was talked of during the evening.

‘Affecting to the imagination’: De Quincey, the sublime and the grotesque

Throughout the section describing the Herschel engraving in his ‘System of the

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26 Lindop, *Opium*, p. 342; Morrison, p. 312.
27 Lindop, *Opium*, pp. 342-3; 359.
Heavens’, it is apparent that De Quincey wishes to establish the engraving, and by association the nebular hypothesis, as grotesque. To this aim, he draws extensively on the notion of the sublime as proposed by Edmund Burke in his *Philosophical Enquiry*. From his 1803 diary, we know De Quincey studied Burke’s text and that a copy was listed in his father’s library, which De Quincey inherited. Burke’s study of the grotesque as an essential constituent of the sublime was an important influence on gothic writing. The grotesque was an abiding feature of the gothic genre in which critics, such as Patrick Bridgewater, have positioned De Quincey’s writings. De Quincey’s own reading evidences his interest in the genre, and in his diary of 1803 he records his purchase of Anne Radcliffe’s *The Italian, or, the Confessional of the Black Penitents* (1797), and Friedrich Schiller’s *The Ghost Seer, or Apparitionist* (1789). De Quincey also published his own gothic novel *Klosterheim* in 1832.

De Quincey employs the idea of the sublime to introduce the reader to his description of the Herschel engraving of the Great Nebula in Orion. He begins by recalling a visit, ‘some four-and-twenty years ago’, to the British Museum. Here De Quincey had viewed what ‘struck’ him as ‘simply the sublimest sight which in this sight-seeing world [he] had seen. It was the Memnon’s head, then recently brought from Egypt’ (15: 403). The Memnon is a colossal statue of the head and shoulders of Ramesses II known as the Younger Memnon, brought from the mortuary temple in Thebes to the British Museum in 1816 (Fig. 34). The damaged statue is one of the largest and most imposing pieces of Egyptian sculpture on display in the museum. Visually spectacular, it has an engaging and enigmatic gaze that is directed downwards, and appears to command its audience to look up into its eyes. De Quincey relates his own viewing experience of the Memnon:

I looked at it, as the reader must suppose, in order to understand the depth which I have here ascribed to the impression, not as a human but as a symbolic head;

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29 *Works*, vol. 1, p. 68. It is interesting to note that the previous occupant of the De Quincey family home at Number 11, North Parade, Bath was Edmund Burke: Morrison, pp. 27-28. Bath was also a city saturated with science and particularly astronomy, with its two most famous previous residents being William and Caroline Herschel. From the garden of their house, 19 New King Street, William Herschel had discovered the planet Uranus in 1781.
33 The arrival of the Memnon in England inspired Percy Bysshe Shelley to write his sonnet ‘Ozymandias’ (1818).
Figure 34 Statue of Ramesses II, the Younger Memnon, c.1250 BC, British Museum, London
and what it symbolized to me were: 1. The peace which passeth all understanding. 2. The eternity which baffles and confounds all faculty of computation; the eternity which had been, the eternity which was to be. a. The diffusive love, not such as rises and falls upon waves of life and morality, not such as sinks and swells by undulations of time, but a procession - an emanation from some mystery of endless dawn. You durst not call it a smile that radiated from the lips; the radiation was too awful to clothe itself in adumbrations or memorials of flesh

(15: 403, original emphasis and grammar preserved).

De Quincey adheres to his ‘first opinion, that nothing so great was ever beheld’. The ‘atmosphere for this, for the Memnon, was the breathlessness which belongs to a saintly trance; the holy thing seemed to live by silence’. Yet he argues

there is a picture, the pendant of the Memnon, there is a dreadful cartoon, from the gallery which has begun to open upon Lord Rosse’s telescope, where the appropriate atmosphere for investing it must be drawn from another silence, from the frost and from the eternities of death. It is the famous nebula in the constellation of Orion….

(15: 403, De Quincey’s emphasis).

According to De Quincey the Great Nebula in Orion is historically ‘famous for the unexampled defiance with which it resisted all approaches from the most potent of former telescopes; famous for its frightful magnitude and for the frightful depth to which it is sunk in the abyss of the heavenly wilderness’. With the findings of Lord Rosse, the Orion Nebula is ‘famous just now for the submission with which it has begun to render up its secrets to the all-conquering telescope’, and it will be famous ‘in all time coming for the horror of the regal phantasma which it has perfected to eyes of flesh’ (15: 403). De Quincey is referring to the visual grotesque he believes is shown in Herschel’s engraving. Employing a poetic analogy from Milton’s Paradise Lost, De Quincey enforces the sense of dread he sees in Herschel’s image of the Great Nebula:

Had Milton’s ‘incestuous mother’, with her fleshless son, and with the warrior angel, his father, that led the rebellions of heaven, been suddenly unmasked by Lord Rosse’s instrument, in these dreadful distances before which, simply as expressions of resistance, the mind of man shudders and recoils, there would have been nothing more appalling in the exposure

(15: 403-404).34

De Quincey’s use of the term ‘exposure’ suggests the unmasking or showing up of something evil. No matter what further discoveries Rosse has made, it is Herschel’s image of the Great Nebula that is most terrifying to his vision, more so even than if

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34 In Paradise Lost, Sin is born from the head of Satan who copulates with his daughter. She then gives birth to Death: see Works, vol. 15, p. 702 n.58, and see Paradise Lost, 10: 602.
Rosse had revealed the evil protagonists of Milton’s *Paradise Lost*. Here also De Quincey achieves a link between his fear of the Herschel engraving and his fearful dreams under the influence of opium. In his last opium dream of ‘everlasting farewells’ and ‘heart-breaking partings’ from ‘female forms, and the features that were worth all the world to [him]; and but a moment allowed’, how the ‘sound’ of these ‘everlasting farewells’ ‘reverberated’: ‘With a sigh such as the caves of hell sighed when the incestuous mother uttered the abhorred name of Death’. Death is ‘abhorred’, because in Miltonic terms it is the result of the incestuous relationship between Sin, the mother and Satan the warrior angel (2: 264). De Quincey claimed in ‘The Pains of Opium’ section of his *Confessions*, to be deeply ‘moved’ by Miltonic verse, this time by the ‘Satanic speeches in “Paradise Regained”’ (2: 253). In his essay ‘Milton’ (1839), De Quincey described Milton’s *Paradise Lost* as ‘continuously sublime’ (11: 438). Milton’s verse was also widely used by Burke in his *Philosophical Enquiry*. It is the Miltonic image of Death that is for Burke ‘black […] as night; \ Fierce as ten furies; terrible as hell’ and is ‘sublime to the last degree’.35

De Quincey’s equation of his viewing experience of the Herschel representation of the Great Nebula in Orion with an ‘atmosphere […] drawn from another silence, from the frost and from the eternities of death’, suggests it invoked in him a psychological state that equates with the Burkean sublime (15: 403). As referred to in the Introduction to this thesis with the viewing of a partial representation of the heavens in the Herschel engraving, the sublime moment invoked by terror becomes more a study of De Quincey’s mind than of the object itself. Eternity, like infinity, for Burke is something of which we understand ‘so little’.36 He suggests our lack of knowledge invokes terror and makes the idea of eternity grotesque. Here, I specifically want to suggest, that De Quincey’s description of Herschel’s engraving of the Great Nebula in Orion, invokes the aesthetic discourse of the grotesque as residing within the sublime, and in particular the notion of essential obscurity. As a ‘pendant’ of the Memnon and thus the sublime, the grotesque is configured as a fragment. Dislocated, but simultaneously conjoined, in its uncertainty it achieves an uncanny or spectral dimension. This uncertainty is a characteristic of the sublime itself, which requires the suspension of understanding. Likewise, as a ‘pendant’ the grotesque image of the Great Nebula, and thus the

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35 Burke, p. 103, see *Paradise Lost*, 2: 670-71; De Quincey’s diary evidences his study of both Milton and Burke: he assesses Milton’s use of the sublime and concludes Milton ‘felt’ the sublime but Burke pointed out its causes: ‘Diary 1803’ *Works*. vol. 1, pp. 30-31, De Quincey’ emphasis.

36 Burke, p. 105.
grotesque, can be read as an ornament of the sublime, and in artistic terms one of a pair of images similar but different (15: 403). Fragmentation also characterises Herschel’s description of the Great Nebula in Orion. Comparing the Huygenian region of the nebula to the ‘breaking up of a mackerel sky’, he observes that it shows ‘no appearance of being composed of small stars, and their aspect is altogether different from that of resolvable nebulae’. Therefore, he is diffuse in describing this, because no singular simile exactly represents the object, and on account of the very remarkable nature of the phenomenon, which certainly forcibly suggests the notion of a breaking up and separation of the nebula into distinct parts.\(^37\)

Here the inherent nature of the Nebula suggests fragmentation, incompleteness, and works to render the image obscure. Indeed, Herschel’s 1826 paper is couched in terms of obscurity: ‘the nature and uses of the nebulous matter which exists in such abundance and variety of forms in the heavens, is a problem of much interest to astronomers, but at the same time of the greatest obscurity’.\(^38\) For Herschel, the difficulty of procuring firm evidence of the nature of the nebula, due to different observational circumstances such as telescopic power and ‘atmospherical circumstances’, adds to the obscurity of knowledge about the nature of the Nebula. Likewise, ‘the extreme difficulty of representing such appearances on paper, and the hardly inferior one of getting them faithfully engraved’, is made further problematic by astronomers who ‘are seldom draftsmen’ contenting ‘themselves with very general and hasty sketches’. As such, Herschel finds ‘it will be no matter of surprise that the published engravings of these objects present a mass of contradictions’.\(^39\)

De Quincey was interested in the writings of the German Romantics including the poems of Jean Paul Richter.\(^40\) In 1824, he published an article ‘Analects from Richter’ and a translation of Richter’s poem ‘Dream Upon the Universe’, from his Der Komet: oder Nikolaus Markgraf (1820-22).\(^41\) In his essay ‘Jean Paul Richter’, De Quincey discussed the sense of obscurity in Richter’s works in Burkean terms: ‘the fineness, and evanescent brilliancy of his oblique glances and surface-skimming allusions, often fling

\(^{37}\) Herschel, ‘20-feet’, p. 491, Herschel’s emphasis.
\(^{38}\) Herschel, ‘20-feet’, p. 487.
\(^{39}\) Herschel, ‘20-feet’, pp. 488-489.
\(^{40}\) Gerald Massey recalled the poet Thomas Hood’s description of ‘often finding De Quincey ‘at home, quite at home, in the midst of a German Ocean of literature in a storm—flooding all the floor, table, and chairs—billows of books tossing, tumbling, surging open’: ‘Life and Writings of Thomas Hood’, Quarterly Review, 114 (October 1863), p. 336.
but half a meaning on the mind’ (3: 24). For Burke, obscurity as the essence of the sublime makes the image ‘affecting to the imagination’. To Burke, ‘Great clearness helps but little towards affecting the passions, as it is in some sort an enemy to all enthusiasms whatsoever’. In his ‘System of the Heavens’, De Quincey recalls Jean Paul Richter’s poem. He focuses on the dreamer’s journey with an angel through the ‘Zaaras of darkness, through wilderesses of death, that divided the worlds of life’ past ‘planets’, the ‘blazing of suns’ and ‘mighty constellations’ until he wept and said ‘“Angel I will go no farther. For the spirit of man aches with this infinity”’. To this the angel ‘threw up his glorious hands to the heaven of heavens; saying, “End is there none to the Universe of God? Lo! also there is no Beginning”’ (15: 416-417). Here unending cosmic space is a site of perceptual contradictions, inciting feelings of awe simultaneously with terror. For De Quincey, the discovery of spaces beyond the Nebula provides infinitude of space for his dreams and visionary experiences.

‘The machinery for dreaming’

De Quincey sees the demise of the nebular hypothesis as heralding a ‘New era for the human intellect’: ‘Lord Rosse applied an ultimate test; and smash went the whole concern. Really I must have laughed, though all the world had been angry’ (15: 400; 15: 406). Ambivalence had always surrounded the nebular hypothesis. It had a difficult history being seen as atheistic and materialistic in the era of the Bridgewater Treatises. The most popular nineteenth-century version of the nebular hypothesis as proposed by Laplace, and promoted in Robert Chambers Vestiges of the Natural History of Creation (1844), suggested a chaotic universe devoid of an originating First Cause. Yet it was also associated through William Herschel, considered the father of modern astronomy, with providing an orderly narrative of the development of the universe based on Newtonian mechanics. Nichol suggested that Rosse’s evidence now implied a universe where humankind could ‘recognize no limit either to its stupendous extent or inconceivable variety’ and could only ‘bend [their] heads and silently ADORE!’ Nichol’s implication is that the huge abysses were beyond human comprehension. Encouraging acceptance of the power of God, Nichol quoted God’s admonishment to

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42 Burke, p. 103, Burke’s emphasis.
43 Burke, p. 104.
44 Smith, Abysses.
Job: ‘Hast thou an arm like God, or canst thou thunder with a voice like him? / Gird up thy loins and declare! / Canst thou bind the sweet influences of the Pleiades, or loosen the bands of Orion?’

Rosse’s findings heralded a release for De Quincey from his personal demons. He wrote to one of his daughters that Nichol was now ‘a far more interesting man to me: he has destroyed — utterly without mercy cut the lovely throat of — the Nebular Hypothesis’. Nichol in reporting Rosse’s findings under the heading ‘Fall of Herschel’s Theory’, and thus murdering the nebular hypothesis, had murdered the images of Satan and death that Herschel’s drawing had come to represent to De Quincey. De Quincey’s use of Herschel’s drawing should not be read as condoning the nebular hypothesis. According to De Quincey in his ‘System of the heavens’, Rosse had ‘revealed more by far than he found’, thus suggesting that a covering had been lifted (15: 400). The idea of uncovering is fascinating and is supported by astronomers’ reports of the nebula’s misty appearance. In 1774, William Herschel described it as ‘an unformed fiery mist’. Later, in 1826, John Herschel described it as resembling ‘clouds’ of a ‘cirrous’ appearance and ‘of matter feebly coherent floating in a transparent atmosphere of equal density and agitated by winds’. Such an impression of mistiness and diffuseness is conveyed by his 1824 engraving which formed the illustration in Nichol’s book, and his later 1837 drawing of the Nebular which suggests a cloud-like structure full of movement and change (Figs. 35; 36).

Nichol pronounced that Lord Rosse’s powerful telescope was able to ‘penetrate’ this ‘diffused haze’, and the ‘veil of mystery’, beneath which its constitution was ‘shrouded’, to find the ‘nebula abounding with stars’. According to Nichol with Rosse’s telescope, this wonder of ‘Stellar Creation’ could be viewed in all its ‘unveiled magnificence’. This is reminiscent of the slippage that occurs between the imagination and the actual view in the phantasmagoria or magic lantern show. The fading of the

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45 Nichol, System, pp. 56; 58; 56, Nichol’s emphasis.
47 Nichol, System, p. 56. This chapter leads into Nichol’s reconstruction of the nebular hypothesis as truth.
49 Published in 1826: Herschel, ‘20-feet’, p. 491.
50 Nichol, System, pp. 54; 50; 52; 55.
51 Nichol, System, p. 56.
52 Armstrong also connects Herschel’s representations of nebulae, with the dissolving view: pp. 298-308.
Figure 35 John Frederick William Herschel, the Nebula in the Sword Handle of Orion, 1824

Figure 36 John Frederick William Herschel, detail from the Great Nebula in the Sword-handle of Orion as seen in the twenty-feet reflector at Feldhausen, Cape of Good Hope, 1837
slides from one to the next as the slide is changed, creates a transitorily diffused haze, which the eye then penetrates to reveal the astronomical phenomena detailed in the next slide. The magic lantern, as we saw in Chapter One of this thesis, was a popular visual device used in astronomical lectures. In the case of Orion, it is Rosse’s telescope, which like the eye of the magic lantern viewer, has penetrated the haze and revealed the stars that make up the Great Nebula in Orion. The lifting of the veil produces a view beyond the nebulous haze, which until now has shielded humankind’s eye from what is behind it. Illimitable spaces beyond and between the stars, are revealed as being filled with individual stars. In lifting the veil, by penetrating through the mist of Orion, Rosse had opened up never-ending vistas revealing more and more abysses deeper and deeper into nowhere. For De Quincey, these never-ending depths provide an important analogy for his exploration of the infinite depths of his own mind; exploring the external depths of space replicates his personal internal process of self-discovery. De Quincey used the simile of the mind as a ‘great abyss’ to describe the mind of the scientist Francis Bacon: “Bacon’s mind appears to me like a great abyss - on the brink of which the imagination startles and shudders to look down”." In the following passage from his ‘System of the Heavens’, De Quincey repeated this simile to describe the possibilities of the abyss reflected on to his own mind:

Great is the mystery of Space, greater is the mystery of Time; either mystery grows upon man, as man himself grows; and either seems to be a function of the godlike which is in man. In reality the depths and the heights which are in man, the depths by which he searches, the heights by which he aspires, are but projected and made objective externally in the three dimensions of space which are outside of him. He trembles at the abyss into which his bodily eyes look down, or look up; not knowing that abyss to be, not always consciously suspecting it to be, but by an instinct written in his prophetic heart feeling it to be, boding it to be, fearing it to be, and sometimes hoping it to be, the mirror to a mightier abyss that will one day be expanded in himself

(15: 401).

Like opium as the ‘machinery for dreaming’, Rosse’s telescope had made possible the ability to enter both the depths of space and time (15: 130). For De Quincey, this depends on one’s being able to withdraw from the intrusions of the modern world. Astronomy provides the perfect occupation for such a withdrawal. In the Introductory Notice to his Suspiria De Profundis, De Quincey expresses concern with the adverse effects on the ‘power of dreaming’, of ‘too intense life of the social instincts’ (15: 130, De Quincey’s emphasis). The ‘gathering agitation of our present’, the ‘colossal pace of

advance’ are detrimental to the ‘power of dreaming’, the ‘machinery for dreaming’ that is ‘planted in the human brain’ (15: 130). For De Quincey ‘meditative habits’ require ‘observing persons’ to retire ‘from crowds’: ‘No man ever will unfold the capacities of his own intellect who does not at least chequer his life with solitude’. (15: 130). In his ‘System of the Heavens’ the new Glasgow observatory overlooks ‘so vast a city’ which ‘draws so deeply upon that fountain of misery and guilt’, and is ‘tarnished with eternal canopies of smoke, and sorrow’ (15: 411). In contrast, the ‘solemn Observatory’: ‘How serene, how quiet, how lifted above the confusion and the roar, how liberated from the strifes of earth’, is a place of escape for the ‘labouring astronomer’ ‘just when the toil of over-wrought Glasgow is mercifully relaxing’ (15: 411). Here De Quincey aligns the modern astronomer with the Babylonian astronomer priests. Every great Assyrian city ‘boasted an observatory erected on the summit of a lofty tower’. In De Quincey’s ‘astronomical watch-towers’, ‘secret eyes are lifted up to heaven’, and they ‘keep watch and ward over spaces that make us dizzy to remember’. These eyes ‘register the promises of comets, and disentangle the labyrinths of worlds’ (15: 411).

The heavens, like the ‘Babylonian confusion’ of labyrinthine London with its ‘vastness and illimitable proportions’ De Quincey describes in his ‘Autobiographic Sketches’, are a place of ‘lonely exile’ (19: 112). Astronomical analogies enable De Quincey to describe his terrestrial and spiritual disorientation. De Quincey’s view of the London streets becomes like the astronomer breaking through a nebulous haze: ‘the great length of streets’[…] the continual opening of transient glimpses into other vistas equally far-stretching […] and the murky atmosphere which, settling upon the remoter end of every long avenue, wraps its termination in gloom and uncertainty’ (19: 112). Within this infinite disorder, the soul wanders. London like the heavens is without centre:

We could not traverse the whole circumference of this mighty orb; that was clear; and: therefore, the next best thing was to place ourselves as much as possible in some relation to the spectacles of London, which might answer to the centre. Yet how? That sounded well and metaphysical; but what did it mean if acted upon? What was the centre of London for any purpose whatever – latitudinarian or longitudinarian – literary, social, or mercantile – geographical, or astronomical…?

(19: 113).

55 Miller, Disappearance, p. 25.
A similar sense of confusion also occurs when De Quincey’s relates his disorientation to the biblical discovery of immortality in the resurrection story in his *Suspiria De Profundis*. He writes that ‘Jerusalem as the *omphalos* (navel) of the earth’ was once ‘the *omphalos* of mortality’ but ‘mortality had been trampled underfoot’ when ‘mortality had opened its very gloomiest crater [...] and the human had risen on wings’ (15: 143, De Quincey’s emphasis). Here the centre to his known world is lost. We are given a further sensation of dislocation in *Suspiria De Profundis*. Here he recalls his visit to his sister Elizabeth’s bedroom after her death and finding her deathbed moved he sees not her face but the infinity of space:

[...] turning round, I sought my sister’s face. But the bed had been moved; and the back was now turned. Nothing met my eyes but one large window, wide open, through which the sun of midsummer at noontday was showering down torrents of splendour. The weather was dry, the sky was cloudless, the blue depths seemed the express types of infinity

(15: 142).

Unable to see his sister’s body forces the realisation of the gap left in his life by his sister’s death. It highlights his awareness of the solitary nature of the self and its place in the infinity of space and time. The view framed by the window emphasises for De Quincey the sense of depth he equates with infinity. Inner reality merges with outer reality and is expressive of the desire to merge with that beyond. For De Quincey in his *Suspiria De Profundis*, ‘love, grief; the passion of reverie, or the myster[ies] of devotion’, are ‘haunters of solitary places’ (15: 148). Those that are ‘summoned to travel into God’s presence [...] must walk those mighty galleries alone’ (15: 151). ‘Solitude’ to De Quincey, ‘though silent as light, is like light, the mightiest of agencies; for solitude is essential to man. All men come into this world *alone* - all leave it *alone*’ (15: 150), De Quincey’s emphasis). To De Quincey, solitude is also a reflector of all that is unseen: ‘Like the vast laboratory of the air [...] solitude for a child is the Agrippa’s mirror of the unseen universe’ (15: 151). The German occultist philosopher Henricus Cornelius Agrippa had suggested in his *De Occulta Philosophia libri tres* (1531-33), that the air was a looking-glass that received and reflected images which become the basis for dreams. Seeking to be ‘Nursed by solitude’, De Quincey tells the reader:

I wearied the heavens with my inquest of beseeching looks. I tormented the blue depths with obstinate scrutiny, sweeping them with my eyes and searching in them for ever after one angelic face that might perhaps have permission to reveal itself for a moment

(15: 148).

Astronomers would sweep the skies with their telescopes hoping to determine, like De Quincey, a ‘gleam of brightness’ that might suggest another world (15: 148). A spot of light could furnish the imagination and provide ‘sufficient basis’ for ‘this creative faculty’ (15: 148). At church on Sunday with its ‘proportions majestic’, De Quincey saw, on days when the sun was shining, a spectacle as affecting as ever prophet can have beheld. The sides of the windows were rich with storied glass; through the deep purples and crimsons streamed the golden light; emblazonries of heavenly illumination mingling with the earthly emblazonries of what is grandest in man. There were the apostles that trampled upon the earth, and the glories of earth, out of celestial love to man. There were the martyrs that had borne witness to the truth through flames, through torments, and through armies of fierce insulting faces. There were the saints who, under intolerable pangs, had glorified God by meek submission to his will. And all the time, whilst this tumult of sublime memorials held on as the deep chords from an accompaniment in the bass, I saw through the wide central field of the window, where the glass was uncoloured, white fleecy clouds sailing over the azure depths of the sky; were it but a fragment or a hint of such a cloud, immediately under the lash of my sorrow-haunted eye, it grew and shaped itself into a vision of beds with white lawny curtains; and in the beds lay sick children, dying children, that were tossing in anguish, and weeping clamorously for death

(15: 148-149).

This crucial passage in his Suspiria De Profundis shows De Quincey’s privileging of the link between eye, mind and soul. It involves a perceptual shift from material form to mental expression to a visionary experience, which suggests metaphysical understanding. Like De Quincey’s juxtaposition of the sublime Memnon with the grotesque nebula, sublime memorials to Christianity emphasise the grotesque images of death that play on his mind.

Viewing through the ‘central field of the window’ suggests viewing through a small aperture. Surrounded by the coloured glass of the ‘sublime memorials’, it is an opening in an opaque surface through which only a partial image is viewed (15: 149). As such, it signifies partial knowledge.\(^57\) The restricted visual field suggests the need to make visible the absent. Here there is a direct correlation to the concept of anorthoscopic perception, where the view through a small aperture or a slit in an opaque

surface results in a partial viewing. De Quincey resolves the fragment or a ‘hint’ of a cloud, ‘immediately under the lash of [his] sorrow-haunted eye’ into the whole shape of his ‘vision’. De Quincey’s mind must make up the whole. In his desire to merge with that which is beyond, De Quincey thus restores that which is absent in the ‘sublime’ tales of Christianity – the grotesque moment before death ‘the dreadful chasm’ (15: 149). The partial view focuses De Quincey’s mind on the truth of suffering and death.

In the same way, the concept of anorthoscopic perception can be applied to a reading of De Quincey’s response to the Herschel engraving. Indeed, Herschel’s engraving of the Great Nebula in Orion, offers only a fragment of the vast universe to the reader. On the page of the book, the engraving acts like a small aperture or a slit in an opaque surface. The dark engraving framed by the white border of the page adds to this effect. This results in a partial viewing of the heavens, and thus replicates monocular telescopic vision. There is an overriding sense of incompleteness: as a monocular perception it acts, to use Maurice Merleau-Ponty’s terms, as a phantom and a pre-thing; it is the moment before binocular or ‘true vision’ which achieves a totality of perception. As such, it allows De Quincey an opening into another world, his imagination. Here, he sees grotesque reminders of his personal demons such as animals with sharp teeth and his sister’s death, which I discuss in detail later in this chapter. We might also say that the uncoloured ‘central field of the [church] window’ acts like a telescope lens by creating a partial view (15: 149). Here the instance of total perception only comes when De Quincey focuses his imagination and resolves the fragmented view into a whole. The fragmented view consisting of ‘hint[s]’ of clouds is resolved by De Quincey’s ‘sorrow-haunted eye’, into a vision of sick and dying children rising heaven-ward (15: 149). This is like the attempts of astronomers to resolve the misty unclear image of the Great Nebula in Orion into clear images of individual stars. Like the telescope lens, the imagination brings the ‘hint’ of what is seen vaguely into sharper focus.

Therefore, De Quincey’s focussing of the eye and mind on the distant view is like the telescope that probes the deep heavens. De Quincey raises this analogy in his comparison of the ‘machinery for dreaming’ with the telescope as a ‘tube’ with ‘mirrors’.

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The machinery for dreaming planted in the human brain was not planted for nothing. That faculty, in alliance with the mystery of darkness, is the one great tube through which man communicates with the shadowy. And the dreaming organ, in connexion with the heart, the eye, and the ear, compose the magnificent apparatus which forces the infinite into the chambers of a human brain, and throws dark reflections from eternities below all life upon the mirrors of the sleeping mind

(15: 130, original spelling preserved).

We also find a similar use of the telescope as a device for dreams and visionary experiences, in his diary entry for ‘Thursday morn, May 5, 1803’. Here De Quincey recounts a dream he had the night before where he imagined himself looking through a telescope:

Last night too I image myself looking through a glass. “What do you see?” I see a man in the dim and shadowy perspective and (as it were) in a dream. He passes along in silence, and the hues of sorrow appear on his countenance. Who is he? “A man darkly wonderful — above the beings of this world; [...] There is something gloomily great in him; he wraps himself up in the dark recesses of his own soul [...] and upon his latter days (and truly on his whole life) sit deep clouds of mystery and darkness and silence

(1: 22).

This interesting entry reminds us of Tennyson’s vision through a telescope, discussed at the beginning of Chapter Two, which was related to his fascination with the Arabian Nights. De Quincey is well-known to have shared a love of the tales, and enjoyed reading them with his sister Elizabeth. His sister, he writes was ‘much beyond’ him in ‘velocity of apprehension, and many other qualities of intellect’, and they only ‘differed’ by degrees ‘on cases of the dark sublime, where it rested upon dim abstractions, and when no particular trait of moral grandeur came forward’. As with Tennyson’s telescope, the telescope in this passage, allows De Quincey to see beyond reality. It enables a visionary experience, and is evidence of how the telescope is a prominent device that aids his imagination. However, this passage is also notable for its grotesque features, it basks in obscurity, De Quincey being unable to reveal whether the ‘shadow of him’ is the ‘shadow of a man long since passed away or of one yet hid in futurity’ (1: 22). De Quincey’s telescopic vision thus becomes grotesque.

For De Quincey the eye is also subject to distortion through ‘streaming eyes’ or a ‘defect’ in visual ability (15: 148-149). This can cause an intensity of vision, as in the deepening of the ‘purples and crimsons’ through the church window (15: 148). In his Confessions, he explores the ‘mechanic affection of the eye’, a child-like state of the

60 ‘Autobiographic Sketches’, Works, vol. 19, p. 74, De Quincey’s emphasis.
‘power of painting, as it were, upon the darkness, all sorts of phantoms’ which are
‘drawn out by the fierce chemistry of [his] dreams, into insufferable splendour that
fretted [his] heart’ (2: 66). Likewise, in his dreams

the sense of space, and in the end, the sense of time, were both powerfully
affected. Buildings, landscapes, &c. were exhibited in proportions so vast as the
bodily eye is not fitted to receive. Space swelled, and was amplified to an extent
of unutterable infinity. This, however, did not disturb me so much as the vast
expansion of time; I sometimes seemed to have lived for 70 or 100 years in one
night; nay, sometimes had feelings representative of a millennium passed in that
time, or, however, of a duration far beyond the limits of any human experience
(2: 66-67).

This ‘mechanic affection of the eye’ has a similar effect to Lord Rosse’s ‘almost awful
telescope’ (2: 66; 15: 400). The telescope as essentially an enlarging microscope,
swallows up astronomical distances bringing the distant to the immediate, enabling the
study of otherwise hidden realms. For De Quincey, ‘the minutest incidents’ can be
‘revived’ in opium dreams just as they were in the near-death experience of a relative
(2: 67). De Quincey was attracted to his relative’s description of her experience, who
having fallen into a river, and being on the very verge of death but for critical
assistance which reached her, she saw in a moment her whole life, in its
minutest incidents, arrayed before her simultaneously as in a mirror; and she had
a faculty developed as suddenly the whole and every part

(2: 67).

In Suspiria De Profundis, De Quincey describes the trance that ‘fell upon’ him as he
viewed the dead body of his sister:

A vault seemed to open in the zenith of the far blue sky, a shaft which ran up for
ever. I in spirit rose as if on billows that also ran up the shaft for ever; and the
billows seemed to pursue the throne of God; but that also ran before us and fled
away continually

(15: 144, De Quincey’s emphasis).

The opening ‘vault’ or ‘shaft’ is also like a telescope probing the darkened skies after
the ‘obscuring’ ‘veil’ of ‘daylight’ is ‘withdrawn’ (15: 144; 2: 67). The analogy of the
shaft appears again in De Quincey’s explanation of the ‘intolerable grief’ in his ‘own
childhood’ and its relation to his ‘latter opium experiences’ (15: 133-134):

It is certain that [...] from the depth of my sensibility; from the exaltation of this
by the resistance of an intellect too prematurely developed, it resulted that the
terrific grief which I passed through, drove a shaft for me into the worlds of
death and darkness which never again closed, and through which it might be
said that I ascended and descended at will, according to the temper of my spirits

(15: 134).
De Quincey’s writings are littered with imagery of ascent and descent. In the *Confessions* he writes: ‘I seemed every night to descend, not metaphorically, but literally to descend, into chasms and sunless abysses, depths below depths, from which it seemed hopeless that I could ever re-ascent. Nor did I, by waking, feel that I *had* re-asceded’ (2: 66, De Quincey’s emphasis). His fear of being ‘immured’ in ‘subterraneous chambers’ had been with him since he read the story of Aladdin (19: 74). De Quincey’s comparisons of the recesses of the mind, with chasms and sunless abysses, depths below depths produce images of burial to the reader. As Patrick Bridgwater suggests they act as places of ‘metaphorical live burial’ to De Quincey.61 Live burial was full of vivid imagery to De Quincey. He had seen the grandfather clock-case containing the mummified body of Hannah Beswick at Dr Charles White’s house museum. Beswick famously known as the Manchester Mummy or the Mummy of Birchin Bower had lived in fear of live burial, and had asked White not to bury her, but keep her above ground and check her body periodically for signs of life. Instead, when she died in 1758, White embalmed her body and added it to his personal collection of anatomical curiosities, which were regularly viewed by his guests.62

The notion of travelling up a shaft finds analogy in Dante’s *Divine Comedy* (1306-21), and his dream of ascending to the Empyrean, the tenth and last heaven, through the nine concentric spheres of his Ptolemaic universe. Like Dante’s dream, De Quincey’s trance is synonymous with the imagination and, perhaps, a near-death experience. Not ready yet for death, in his *Suspiria De Profundis* De Quincey is repelled by the ‘Sarsar wind of death’, and returned to earthly experience (15: 144). A painting by Hieronymus Bosch, *Ascent of the Blessed* (1505-16), illustrates this idea of ascent through a shaft-like structure, and a similar theme appears in the illustrations to the 1850 edition of Nichol’s *The Architecture of the Heavens* (Fig. 37).63 This edition contained a posthumous engraving by William Bell Scott, of his brother David Scott’s drawing titled, ‘Audacious Psyche seekest thou to ascend / Coveting the inaccessible?’ (Fig. 38). Scott’s drawing is the frontispiece to Part III ‘Psyche or Evolution’, of Nichols’ book.

61 Bridgwater, p. 69.
62 This was like many people of the time. Her brother had been revived after being placed in his coffin. In 1867, Hannah Beswick’s body was given to the Manchester Natural History Society, Peter Street, Manchester, where it was shown in entrance hall. In 1867, the collections were transferred to Owens College (University of Manchester) and on 22 July 1868, Hannah Beswick was buried by the Bishop of Manchester at Harpurhey Cemetery.
Figure 37 Hieronymus Bosch, *Ascent of the Blessed*, 1505-16, oil on panel, Palazzo Ducale, Venice, Italy
Figure 38 David Scott, Audacious Psyche! from John Pringle Nichol, *The Architecture of the Heavens*, 1850
the section in which he discusses the nebular hypothesis. These plates only appear in the much expanded 1850 edition of Nichol’s *The Architecture of the Heavens*, published after De Quincey’s 1846 essay. Nevertheless, they are important in illustrating the mutual fascination with Dante’s poetry between De Quincey, Nichol and Scott. It is possible De Quincey saw David Scott’s original drawings executed in 1848 as he was acquainted with Scott. Ralph Waldo Emerson recalled that on 13th February 1848 whilst in Edinburgh he dined at the home of the novelist Catherine Stevens Crowe with De Quincey, David Scott and Dr Brown. After this meeting, De Quincey visited Scott’s studio where he admired his picture ‘of the Resurrection on the day of the Crucifixion’, finding him ‘the most interesting of men’.Nichol’s 1850 edition of his *The Architecture of the Heavens* also contained a section ‘The Spirit Meeting the Infinite’, in which he writes of a ‘ranging of the human mind’ ‘before the view […] ever vaster and vaster, until […] the semblance of ETERNITY, appears’. For Nichol, the ‘human mind’ seeks ‘an end only to find that all is endless’, and the heavens are ‘a SYMBOL’ that enable ‘our souls [to] have sight of that immortal sea’. This is similar to the recollection of Richter’s ‘Dream upon the universe’ in De Quincey’s ‘System of the Heavens’, where he writes of an astronomical labyrinth encountered by the dreamer, in which endless repetitions are suggestive of spatial infinity:

To the right hand and to the left towered mighty constellations, that by self-repetitions and answers from afar, that by counter-positions, built up triumphal gates, whose architraves, whose archways – horizontal, upright – rested, rose – at altitudes, by spans – that seemed mostly from infinitude. Without measure were the architraves, past number were the archways, beyond memory the gates. Within were stairs that scaled the eternities above, that descended to the eternities below: above was below, below was above, to the man stripped of gravitating body: depth was swallowed up in height insurmountable, height was swallowed up in depth unfathomable.

The gates ‘beyond memory’ sit at the very edge of infinity, in the eternal spaces beyond knowledge (15: 417). Lost in the abyss of infinity indicates the dreamer is ‘lost’ in

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67 There are similarities here to De Quincey’s reaction on being shown Piranesi’s *Carceri d’Ivenzione* by Coleridge as detailed in his *Confessions of an English Opium Eater*. Arden Reed provides a detailed analysis in his ‘Abyssal Influence: Baudelaire, Coleridge, De Quincey, Piranesi, Wordsworth’, *Glyph* 4, Baltimore: John Hopkins University Press, 1978, pp. 189-206.
obscurity (2: 68). For Burke, ‘in nature dark, confused, uncertain images have a greater power on the fancy to form the grander passions than those have which are more clear and determinate’.  

Burke associates poetic obscurity, which acts as a grotesque, with the sublime. De Quincey’s description of the visual form of the Great Nebula in Orion as ‘a vision “to dream of not to tell”’ is similar to Coleridge’s lines from his ‘Christabel’ (1816): ‘Behold! Her bosom and half her side / A sight to dream of, not to tell’ (15: 405). De Quincey also invokes the Burkean idea of ‘sublimity [as] principally due to the terrible uncertainty of the thing described. Burke writes:

\[In \text{thoughts from the visions of the night, when deep sleep falleth upon men, fear came upon me and trembling, which made all my bones to shake. Then a spirit passed before my face. The hair of my flesh stood up. It stood still, but I could not discern the form thereof.}\]  

Such poetic obscurity is as W. J. T. Mitchell explains, is a ‘frustration of the power of vision’, which psychologically ‘induces pain by making us strain to see that which cannot be comprehended’. In his diary entry May 14, 1803, De Quincey refers to this as ‘judicious obscurity’ and as evidenced in Milton’s ‘awfully sublime picture of Death’ as the product of feeling:

When Milton conceived his awfully sublime picture of Death – where he says – “What seemed his head “The likeness of a kingly crown had on” – &c. I do not believe that, in these passages of “judicious obscurity”, Milton was guided by any previous discussions and discovery of the effect which mystery has in producing the sublime: no – he was guided by nothing; – he thought nothing; – but he felt that this was sublime – perhaps without even asking himself afterwards why it was so. It was left for Burke to point out, by an effort of the understanding in his more cool and philosophical moments, the causes of that sublime which no doubtless had so deeply impressed his imagination in his warmer and more poetical ones

\[1: 30-31, \text{De Quincey’s emphasis and structure}.\]

De Quincey is referring to Section III Obscurity in Burke’s \textit{Philosophical Enquiry} where Burke aligns obscurity with terror finding:

No person seems better to have understood the secret of heightening, or of setting terrible things, […] by the force of a judicious obscurity, than Milton. His description of Death in the second book is admirably studied; it is

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68 Burke, p. 106.
70 Burke, p. 106, Burke’s emphasis.
astonishing with what a gloomy pomp, with what a significant and expressive uncertainty of strokes and colouring he has finished the portrait of the king of terrors.72

De Quincey applies a similar vein of poetic obscurity to his description of the Great Nebula in Orion, as depicted by Herschel. He highlights for the reader the sense of obscurity in his description: ‘What should be its skull wears what might be an Asyrian tiara’ (15: 404, De Quincey’s emphasis). Burke had used as an example a passage from Book II of Milton’s Paradise Lost, in which the vision of death also has on ‘what seemed his head […] a kingly crown’:

The other shape,
If shape it might be called that shape had none
Distinguishable, in member, joint, or limb;
Or substance might be called that shadow seemed,
For each seemed either; black he stood as night;
Fierce as ten furies; terrible as hell;
And shook a deadly dart. What seemed his head
The likeness of a kingly crown had on.

For Burke, ‘in this description all is dark, uncertain, confused, terrible, and sublime to the last degree’.73

‘An abominable apparition’

De Quincey’s analysis of the Herschel engraving relies on the importance of the Burkean conceptualization of terror. John Ruskin later defined the mind’s encounter with grotesque images: ‘the mind, under certain phases of excitement, plays with terror’.74 Samuel H. Monk has observed that in opposition to the Neo-classical privileging of beauty, the sublime, in conjunction with the strange ‘came as a justifiable category into which could grouped the stronger emotions and the more irrational elements of art’.75 Playing with terror is effected through the fragmented nature of the grotesque image, which through incompleteness and confusion of forms, becomes indistinct. As such, it inscribes the notion of unboundedness central to the idea of the sublime. Edmund Burke had developed the idea under the terms of ‘obscurity’ and

72 Burke, p. 103.
73 Burke, p. 103, Burke’s emphasis. See Paradise Lost, Book 2, pp. 666-73 with variation of ‘he’ for ‘it’, Book 2, p. 670 and ‘deadly’ for ‘dreadful’, Book 2, p. 672.
'infinity'. For Burke in his *Philosophical Enquiry*, ‘terror is in all cases whatsoever, either more openly or latently the ruling principle of the sublime [...] and to make any thing very terrible obscurity seems in general to be necessary’. To Burke, ‘the notions of ghosts and goblins, of which none can form clear ideas, affect minds’. Likewise, for De Quincey, the spaces between worlds experienced in his dreams are peopled with monstrous creations, which he uses in Burkean terms, for ‘affecting’ the imagination.\(^77\)

De Quincey begins his description of the Herschel engraving by instructing the reader to view Nichol’s illustration, by turning ‘the wretch upside down’ to ‘reveal’ the ‘dreadful creature’ (15: 404). For De Quincey, the viewer will then observe that the ‘mouth, in that state of the apocalypse which Sir John Herschel was able to arrest in his eighteen-inch mirror, is amply developed’, and that ‘brutalities unspeakable sit upon the upper lip, which is confluent with a snout; for separate nostrils there are none’ (15: 404). Further aligning his description, and the engraving, with the discourse of the sublime and its constituent the grotesque, De Quincey identifies in the representation evidence of both beauty and ugliness: a ‘mysterious a mixture of the angelic and the brutal’, the beautiful attributes only serving to emphasise to the viewer the ‘ghostly ugliness’ (15: 404). The grotesque was typically associated with disturbances to the mind in the form of the unusual, the incongruous and the bizarre. In 1864, Walter Bagehot contrasting the pure, ornate and grotesque art in English poetry explained the grotesque as ‘the type, so to say, *in difficulties*’ as ‘encumbered with incongruities’ and taking the form of ‘abnormal specimens’\(^78\)

Abnormal specimens are a feature of the language and imagery both Herschel and De Quincey use to describe the Great Nebula in Orion. Prominent, is the ‘purposeful confusion of categories’ which Carol T. Christ has pointed to as an essential constituent of the grotesque image.\(^79\) This confusion of categories featured in John Herschel’s description of the Great Nebula in his paper of 1826. It explains in part De Quincey’s hybrid, part human, and part animal interpretation of the image. In De Quincey’s hands, Herschel’s terminology becomes grotesque. John Herschel described protrusions on the head of Orion nebula in entomological terms as a ‘proboscis’, thus likening its form to

\(^{76}\) Burke, pp. 102; 115.

\(^{77}\) Burke, pp. 102; 103, Burke’s emphasis.


\(^{79}\) Christ, p. 69.
the tubular feeding appendage of some insects.\textsuperscript{80} Herschel’s description also has more sinister connections to the fatal human foetal condition in which the obits of the eye fail to divide into two cavities. Typically, the condition is characterised by an abnormal forehead appendage, the nose being either missing, or replaced, with a non-functioning nose in the form of a proboscis located above the eye. There is a link here to De Quincey’s use of the condition in his grotesque description of the one-eyed coach driver in his essay ‘The English Mail Coach’ (1849), who he names Cyclops, ‘Cyclops diphrélates (Cyclops the charioteer)’ (16: 435, De Quincey’s emphasis).

During the nineteenth century fairs, show grounds, museums and private collections fulfilled the popular appetite for looking at curiosities of nature. Specimens and bodily remains were often displayed in jars, and offered the public and scientists the chance to explore otherwise hidden mysteries of nature. It is interesting to note that when De Quincey wrote about his experience at Dr White’s museum in his ‘Autobiographic Sketches’, he was unable to recall ‘the objects which gave a scientific interest to the collection’. This is a fact he seems pleased about: ‘Heaven be praised, I have forgotten everything; all the earthly trophies of skill or curious research; even the aerolithes, that might possibly not be earthly, but presents from some superior planet’ (19: 260, original emphasis and spelling). However, what De Quincey could remember were the specimens of humans: ‘Nothing survives [in his mind], except the humanities of the collection’. He goes on to ‘molest’ the reader with the stories of two grotesque specimens in Whites’ museum: the ‘mummy’ of Hannah Beswick and the ‘skeleton’ of Thomas Higgins, a notorious highwayman from Knutsford ‘executed for a robbery’ and ‘manufactured into a skeleton by the famous surgeon, Cruikshank, assisted by Mr White and other pupils’ (19: 260, De Quincey’s emphasis; 19: 264).\textsuperscript{81}

One of the most famous grotesque specimens in nineteenth-century literature is the monster in Mary Shelley’s \textit{Frankenstein, or the Modern Prometheus} (1818). De Quincey’s description of the Herschel engraving shows remarkable resemblances to Victor Frankenstein’s description of the monster he has created in Shelley’s novel. Frankenstein describes the monster as a ‘wretch’, but also as having ‘limbs’ in ‘proportion’ and features selected to be ‘beautiful’.\textsuperscript{82} Likewise, for De Quincey as we

\textsuperscript{80} Herschel, ‘20-feet’, p. 494.
have seen earlier, the monstrous ‘wretch’ he sees in the Herschel engraving is both ‘awful’ and ‘beautiful’: ‘his head rests upon a beautifully developed neck and throat’. In these descriptions, any beauty and proportion in features only serves to emphasise the monsters’ ‘ugliness’ (15: 404). Found in both descriptions, is a ready opposition of the sublime and beautiful that echoes Burke. Most notable in both is the reference to whether or not the monster has eyes: Shelley writes ‘eyes, if eyes they may be called’ and De Quincey ‘(or eyes, if eyes it had)’ (35; 15: 404). Dr Frankenstein has an adopted sister Elizabeth, who he lovingly dotes on and misses having left her at home in Geneva to attend the university in Ingolstadt. Here there are similarities to the fondness in De Quincey’s relationship, with his sister also called Elizabeth and the agony he feels about their parting when she dies. After looking at the monster he has created, Frankenstein has a grotesque dream vision of his sister. At first, he visualises Elizabeth ‘in the bloom of health, walking in the streets of Ingolstadt’ (34). However, when he embraces her and imprints ‘the first kiss on her lips’ they become ‘livid with the hue of death; her features appeared to change’, and he thinks that he holds ‘the corpse of [his] dead mother in [his] arms’ with ‘grave-worms crawling in the folds’ of her shroud (34).

In the same way, De Quincey experiences reminders of the horrors surrounding his sister’s death when he looks at the Herschel engraving. His sister had died of hydrocephalus and in his Suspiria De Profundis, he recalled the visit of the doctors the day after her death to dissect her skull. This process was repeated on the death of his own son William from the same condition. De Quincey had also suffered a hydrocephalus scare and the surgeon had suggested trepanning. In his ‘System of the Heavens’ the ‘serrated’ edge of the shaft he sees in the Herschel engraving is evocative of a trepan, a serrated blade used to dissect a skull (Fig. 39).

Frankenstein’s monster which is ‘lifeless’ and an ‘inanimate body’ needs to have life infused into it (34). The nebular hypothesis, which is monstrous to De Quincey, needs proving by astronomers to give life to the theory. Likewise, Frankenstein’s monster, has been pieced together over a period of ‘nearly two years’ from body parts.

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83 It is also interesting to speculate a connection to natural history specimens of the fossil group trilobites that possessed either well developed eyes, or were blind, starved of light in deep ocean habitats. They possess antennae for combat and smell that remind of De Quincey’s apparitions ‘sense of odour’ that worked by a ‘compensatory organ’ and it is ‘dressed’ with ‘plumes’ and ‘armed’ (15: 404-405). They also exit their exoskeleton through a cavity in the head, which is like the shaft De Quincey sees in the apparitions head. In 1846, the same year as De Quincey’s article, Joachim Barrande named a subgenus Hydrocephalus which may link the fossils to De Quincey’s family history.

84 Barrell, Infection, pp. 112-13.
supplied by the ‘dissecting room and the slaughter-house’, and therefore the monster has been a continual process of development (34; 32). As De Quincey shows in sketching the stages of the development of the nebular hypothesis and the discoveries about the Great Nebula in Orion, it had been an emergent process of discovery. In astronomical science, knowledge about the nebula had developed in stages from an accumulation of observations. Noting that the observations made by him were different from Huygens - Huygens had published the first engraving of his 1656 observation of Orion in his *Systema Saturnium* (1659) - William Herschel stated in December 1810 his belief that the form of the nebula had changed. John Herschel in 1847 noted that that several stars had dispersed their nebulosity and that there were changes in the appearance of the nebula’s internal structures. Likewise, John Herschel’s representation of the Great Nebula in Orion was a process of development ‘afterwards [...] worked in’ 

**Figure 39** Surgical instruments for trepanning including Mr. Hey’s large straight saw, with its serrated blade, 1819
from ‘skeleton’ drawings, made from an ‘accumulation of the micrometric measures’ from his telescopic observations, and ‘other drawings from time to time obtained, compared inter se’.\(^{85}\)

Herschel’s drawing of the nebula is multi-layered, as is the nature of the nebula itself. In his 1826 paper, John Herschel describes the Huygenian region of the Orion nebula: ‘The line of the forehead is continued across the insertion of the trunk, offering an appearance as if one well-defined nebula were laid upon another, which graduates away insensibly into what may be called the subnebulous region’.\(^{86}\) For De Quincey, the human brain is a ‘natural and mighty palimpsest’ composed of ‘everlasting layers of ideas, images, and feelings’, and although ‘each succession has seemed to bury all that went before […] in reality not one [layer] has been extinguished’ (15: 175). Here, clarity is avoided, and is suggestive of the grotesque obscurity Burke defines using Milton’s simile of Satan as ‘a tower’ in his *Paradise Lost*:

> Here is a very noble picture; and in what does this poetical picture consist? in images of a tower, an archangel, the sun rising through mists, or in an eclipse, the ruin of monarchs, and the revolutions of kingdoms. The mind is hurried out of itself, by a croud of great and confused images; which affect because they are crouded and confused.\(^{87}\)

De Quincey translates this process into a description of the ‘solemn uncovering’ of the Great Nebula in Orion by ‘Sir Herschel, secondly, by his son, and finally by Lord Rosse’. He explains that William Herschel had discovered the monster with its ‘horrid chasm’, his son John had ‘filled up the scattered outline with a rich umbrageous growth’ that appear as ‘the plumes of a sultan’, and finally Lord Rosse ‘glorifies’ him with ‘the jewellery of stars’ (15: 405). According to De Quincey, even for Lord Rosse ‘yet other and more fearful *nebulae* may loom in sight’ as ‘in the spiritual heavens are many mansions: in the starry heavens, that are now unfolding and preparing to unfold before us are many vacant areas upon which the astronomer may pitch his secret pavilion’ (15: 414). However, De Quincey’s main concern is with Herschel’s revelation of a ‘vision’ which has its

head thrown back, and raising its face, (or eyes, if eyes it had,) in the very anguish of hatred, to some unknown heavens. What *should* be its skull wears what *might* be an Assyrian tiara, only ending behind in a floating train. His head

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\(^{85}\) Sir John F. W. Herschel, *Results of Astronomical Observations Made During the Years 1834, 5, 6, 7, 8, at the Cape of Good Hope; Being the Completion of a Telescopic Survey of the Whole Surface of the Visible Heavens, Commenced in 1825*, London: Smith, Elder, 1847, pp. 29; 26; 29.

\(^{86}\) Herschel, ‘20-feet’, p. 491.

\(^{87}\) Burke, pp. 105-6, original spelling preserved, see *Paradise Lost*, Book 1, p. 591.
rests upon a beautifully developed neck and throat. All power being given to the awful enemy, he is beautiful where he pleases, in order to point and envenom his ghostly ugliness

(15: 404, De Quincey’s emphasis).

As an ‘abominable apparition’, De Quincey’s monster is like Milton’s description of the monsters of Hell in Book Two of *Paradise Lost*: ‘Perverse all monstrous, all Prodigious things, / Abominable, inutt’rable, and worse’ (2: 625-626). De Quincey also uses lines from Book 10 of Milton’s *Paradise Lost*, to describe the ‘meagre shadow’ looking down on the earth ‘apprehending from afar the savour “of mortal change on earth”’: ‘“Such a scent’, (he says) ‘I draw / Of carnage, prey innumerable [...] Sagacious of his quarry from so far’” (15: 404-405). De Quincey’s description rendered the Great Nebula a grotesque gargoyl - like a gargoyle in the vaults of roof, it peers down on its prey. The late-medieval building Chetham’s library, contains a particularly potent example in the form of a boss depicting a monster with a child in its mouth, which De Quincey may have seen whilst a pupil at Manchester Grammar School, or on a later visit (Fig. 40). Immediately noticeable in this monstrous boss, are the horrific teeth which clench the child in its mouth, and similar grotesque references are found amongst De Quincey’s possessions. In his library was a programme of Carl Maria de Weber’s Opera *Der Freyschütz or the Wild Huntsman of Bohemia* (1821), performed in London in 1824. In Weber’s opera, Kaspar’s corpse is thrown into the demonical chasm of the Wolf’s Gorge. De Quincey had translated the tale by Johann Apel under the title ‘The Fatal Marksman’ in 1823. In the De Quincey collection at Manchester Central Library, there is small handwritten snippet of paper, which refers to cases of children being carried off by wolves. Likewise, autobiographical references indicate De Quincey’s fear of animals with sharp teeth such as crocodiles, lions and dogs.

88 See *Paradise Lost*, Book 10, pp. 264-281.
90 De Quincey’s translation of the Apel text based on the tale of William Tell was published anonymously in Volume III of Johann Heinrich Bohte’s *Popular Tales and Romances of Northern Europe* (1823) and in Volume 1 of William Hazlitt’s *The Romanticist, and Novelist’s Library*, London: Clements, 1839, and then included in De Quincey’s collected writings in 1859: *Works*, vol. 3, p. 291.
91 It appears to refer to the events as taking place in Bude, Cornwall, England. De Quincey Collection, Manchester Central Library; IV. Autographs and Manuscripts: BR Box349/351.4. Curious fragments relating to cases of children being carried off by wolves.
92 Also in Manchester Central Library is an 1808 edition of Thomas Percival’s *A Father’s Instruction: Morals, Tales, Fables and Reflections Designed to Promote the Love of Virtue, a Taste for Knowledge and an Early Acquaintance with the Works of Nature* (1775) which was presented to the family by the author. Book sequence 993, De Quincey Collection. De Quincey refers to it as ‘The Father’s ...
Figure 40 Boss depicting a monster with a child in its mouth in the Audit room, Chetham’s Library, Manchester

De Quincey was bitten by a dog and convinced himself wrongly that he had rabies, and in his *Suspiria De Profundis*, he remembers how his dog Turk had bitten off the cheek of his cousin Emma and killed his kitten. 93

Horrendous teeth are also found in Gottfried Wilhelm Leibniz’s *Protogaea*, (1749). We know that De Quincey studied the philosophy of Leibniz who he described as ‘the one sole potentate in the fields of intellect whom the Germany of [the 17th cent.] produced’. 94 Leibniz concluded Glossopetrae to be petrified shark’s teeth. He illustrated his discussion with an engraving of the head of a monstrous shark mouth wide open revealing sharp, serrated teeth (Fig. 41). 95 Animals, whether real or mythological, were

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93 Lindop, *Opium*, p. 232
94 De Quincey also makes many references to Leibniz throughout his essays including in a very long footnote on the problem of Achilles and the tortoise in his ‘First Paper’ on Sir William Hamilton *Works*, vol. 17, pp. 166-68. Cited McDonagh, p. 3 n.7.
95 Gottfried Wilhelm Leibniz, *Protogaea* trans. and eds., Claudine Cohen and Andre Wakefield, Chicago: University of Chicago Press, 2008. Leibniz used this image from the Danish anatomist and naturalist
demonic to De Quincey. Notably, in his Diary of 1803 De Quincey describes his intention to write ‘a treatise [...] to prove that all animals are animated by demons’. In ‘The English Mail Coach’ the recollection of ‘Fanny on the Bath Road’ calls up the vision of a crocodile, dressed in the royal livery of the mail-coach with ‘a dreadful host of wild semi-legendary animals – griffins, dragons, basilisks, sphinxes […] unutterable horrors of monstrous and demoniac natures’ (16: 421). They are grotesque ‘monstrous creations of darkness that shock the belief, and make dizzy the reason of man’ (15: 404; 16: 421). De Quincey’s re-representation of Herschel’s engraving as grotesque continues the traditional grotesque animal imagery in star-atlases. For example, Stansilaw Lubieniecki’s *Theatrum cometicum* (1666–8) featured the constellation Cetus in its antique interpretation as a huge sea monster, its open mouth, a great chasm

Nicolaus Steno’s ‘A Carcharadon-Head Dissected’ (1669): see *Protogaea*, p. 83. On dissecting the head of a shark in 1666, Steno showed that glossopteræ were shark’s teeth and not petrified snake’s tongues as popularly thought: Claudine Cohen and Andre Wakefield, ‘Introduction’, Leibniz, *Protogaea*, p. xxv. Leibniz’s *Protogaea* was not translated into English until the Cohen and Wakefield edited edition 2008. De Quincey excelled in Latin: see Morrison, pp. 28-29.

Figure 42 Stanislaw Lubieniecki, ‘Cetus’, *Theatrum cometicum*, 1666-68

Figure 43 Johann Bode, ‘Piscis Notius’, *Uranographia*, 1801
engulfing comets (Fig. 42). The largest and most popular star atlas ever published, Johann Bode’s *Uranographia* (1801), represented Pisces as a grotesque sea creature with pointed teeth (Fig. 43).

The tradition of representing the constellations with grotesque, open mouths and cruel teeth, continued into the nineteenth century. This is seen in the illustration of the northern hemisphere in Charles F. Blunt’s *The Beauty of the Heavens* (1840), with its fierce serpents and lions (Fig. 44). Likewise, Leviathan, the name of Rosse’s telescope, has grotesque associations with Leviathan, the sea monster in Hebrew poetry, whose ‘teeth are terrible round about’. Particularly noticeable in these representations is the focus on the mouth. According to Mikhail Bakhtin, ‘the most important of all human features for the grotesque is the mouth. It dominates all else. The grotesque face is actually reduced to the gaping mouth; the other features are only a frame encasing this wide-open bodily abyss’. There is a history of describing the Great Nebula in Orion as an orifice or mouth. The chasm in Herschel’s drawing was referred to in scientific articles as the ‘jaws’. John Herschel had named the parts in a map of the nebula after ‘a rude resemblance […] to the head, snout and jaws of some monstrous animal’ which he noted had originally ‘suggested itself to GENTIL’. In 1758, the French astronomer Guillaume Le Gentil, described it as appearing ‘to have the shape of the open jaws of some animal’, and his drawing of the nebula does in fact resemble the head of a dog (Fig. 45).

Latin references in John Herschel’s paper of his observations of Orion further enforce the anatomical conception of the Great Nebula in Orion. Describing stars not previously noted in his observation of 1824 Herschel notes that ‘Two exceedingly minute, but undoubted stars, Nos. 75 and 78 of our Catalogue are very remarkably placed on or very near the edge of the nebula at the bottom of the “fauces” or “great sinus”’. Fauces is the Latin term for throat and Sinus commonly the nose is a cavity in any organ or tissue, or an abnormal cavity caused by the destruction of tissue.

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100 Herschel, ‘20-feet’, p. 490, Herschel’s emphasis.
102 Herschel, *Cape*, p. 30.
**Figure 44** Constellations of the Northern Hemisphere, from Charles F. Blunt, *The Beauty of the Heavens*, 1840
Reference to Bakhtin enlightens the significance of these features in terms of the grotesque:

The artistic logic of the grotesque image ignores the closed, smooth, and impenetrable surface of the body and retains only its excrescences (sprouts, and buds) and orifices, only that which leads beyond the body’s limited space or into the body’s depths.\(^{103}\)

Herschel’s greatest attribution of anatomical features to the Great Nebula in Orion comes with his use of the Latin term *Occiput*, which translates in anatomy as the back, or posterior, part of the head or skull, the region of occipital bone, and in zoological terms as a plate that forms the back part of the head of insects. John Herschel also described the surface of the Great Nebula in Orion as consisting of ‘a multitude of nebulous branches, [and] convolutions’ suggesting a discontinuous surface.\(^{104}\)

In a description that reflects the discontinuous surface of the Great Nebula, De Quincey entreats the viewer to ‘Look upwards to other mysteries’ in the ‘abominable

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\(^{103}\) Bakhtin, pp. 317-18.

\(^{104}\) Herschel, *Cape*, p. 25.
apparition’ in Orion (15: 405; 15: 404):

In the very region of his temples, driving itself downwards into [his] cruel brain, and breaking the continuity of his diadem is a horrid chasm, a ravine, a shaft, that many centuries would not traverse; and it is serrated on its posterior with a harrow that perhaps is partly hidden

(15: 405).

According to De Quincey, Orion is famous ‘for all time coming for the horror of the regal phantasmas which it has perfected to eyes of flesh’ (15: 403). It is this ‘horror’ that concerns De Quincey. A horror previously experienced in the trance state at his sister Elizabeth’s deathbed becomes relived again. Invoking the terms ‘apparition’ and ‘phantom’ for the ‘dreadful’ creature he perceives in the Orion nebula, suggests he has seen a ghost when viewing Herschel’s engraving of Orion (15: 404). This again suggests De Quincey’s interest in the cultural spectacle of the phantasmagoria or magic lantern show that often produced frightening optical effects of ghosts. In his Confessions De Quincey describes the ‘phantasmagoria’ in his brain. It represents to him, a disturbing mental condition in which ordinary experience is overthrown by the terrifying visions revealed. Therefore, Herschel’s engraving considered in terms of a ‘phantasmagoria’, moved De Quincey’s mind beyond its function as a scientific illustration of an astronomical phenomenon, to a visionary experience of horrors that lay repressed in the depths of his mind.

Tracing the development of the Orion engraving, De Quincey concludes that the sultan with his plumes he sees in the engraving is ‘now a vision “to dream of, not to tell”: he is ready for the worship of those that are tormented in sleep’ (15: 405). For De Quincey

the stages of his solemn uncovering by astronomy, first by Sir Herschel, secondly, by his son, and finally by Lord Rosse, is like the reversing of some heavenly doom, like the raising of the seals that had been sealed by the angel in the Revelations

(15: 405).

Here De Quincey invokes the apocalyptic tone of John in the biblical Book of Revelation, where the breaking of the seven seals results in the disintegration of the fixed and stable world. In this case, it is the destruction of the stable cosmogony of the nebular hypothesis. The raising of the seals was essential in biblical terms for the defeat of Satan and Death. Returning to De Quincey’s appropriation of Herschel’s drawing rather than Rosse’s, raises the fact that De Quincey sees the images of Satan and Death in Herschel’s drawing of unresolved nebula, a drawing that upheld the feasibility of the
nebular hypothesis. Lord Rosse, as the ‘murderer’ of the nebular hypothesis, has destroyed, and thus made safe the images and reminders of the materiality of death De Quincey sees in Herschel’s original drawing. De Quincey’s monster is an uncertain body that disturbs, and brings to the surface repressed traumas. It embodies a particular cultural moment, a time when accepted scientific discourses about the origins of the universe were called into question by new astronomical discoveries. Personally, for De Quincey, it embodies his questioning of his self: the monster he creates is literally formed from his fears, anxieties and fantasies. It becomes a construct produced from fragments of different knowledge to be read as signifying something other than itself – reborn again it is no longer purely a scientific illustration. As a hybrid it ‘refuses easy categorization’ and ‘to participate in the classificatory “order of things”’. Thus, De Quincey’s monster becomes dangerous, threatening the accepted order of Victorian astronomical discourse, because it sits on the edge beyond the precise laws of the science. Yet, this edge is a productive space for De Quincey. It provides an escape from established laws, allowing the exploration of new ways of perceiving the universe. Rationality crumbles in its wake, and the monster is a rejection of bounded thought. In its fragmentary construction, obscurity produces imaginative creativity. Obscurity achieved through fragmentation feeds the architecture of De Quincey’s piece as grotesque. Resolution of obscurity for De Quincey is not necessarily a good thing. Influenced by Burkean obscurity attained by terror, and thus the grotesque as an essential factor in the achievement of the sublime state, as he writes in his Suspiria De Profundis, ‘without a basis of the dreadful there is no perfect rapture’ (15: 189).

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105 Smith, Abysses.

106 For my concluding remarks to this chapter I draw on Jeffrey Jerome Cohen’s chapter ‘Monster Culture (Seven Theses)’, in his edited volume Monster Theory: Reading Culture, London: University of Minnesota Press, 1996, pp. 3-25. Cohen argues ‘In the face of the monster, scientific inquiry and its ordered rationality crumble’, and that ‘the monster’s very existence is a rebuke to boundary and enclosure’: pp. 7; 6.
IV

‘I am like a slip of Comet’: Gerard Manley Hopkins and the astronomical fragment as form and identity

‘Look at the stars’
Like Thomas De Quincey, Gerard Manley Hopkins was attracted to the fragment as a literary and poetic form. As I have shown in the preceding chapter, De Quincey used a scientific illustration of the Great Nebula in Orion to provide a vehicle for the exploration of both his fears and demons, and the philosophical basis of his aesthetic vision. However, in contrast to De Quincey, Hopkins uses an actual astronomical phenomenon in the form of a comet. On 13th September 1864, Hopkins wrote the following poetic fragment:

— I am like a slip of comet,
Scarcely worth discovery, in some corner seen
Bridging the slender difference of two stars,
Come out of space, or suddenly engender’d
By heady elements, for no man knows:
But when she sights the sun she grows and sizes
And spins her skirts out, while her central star
Shakes its cocooning mists; and so she comes
To fields of light; millions of travelling rays
Pierce her; she hangs upon the flame-cased sun,
And sucks the light as full as Gideon’s fleece:
But then her tether calls her; she falls off,
And as she dwindles shreds her smock of gold
Amidst the sistering planets, till she comes
To single Saturn, last and solitary;
And then goes out into the cavernous dark.
So I go out: my little sweet is done:
I have drawn heat from this contagious sun:
To not ungentle death now forth I run.1

It is suggested that ‘I am like a slip of Comet’ is part of a play Hopkins was writing called ‘Floris in Italy’ that he set in Renaissance Italy. 2 If this is so, Hopkins’ fragment

can be regarded in a classical sense: as a part of a whole to which it is structurally linked and which receives its meaning from that piece. However, a more productive reading comes from dealing with Hopkins’ ‘I am like a slip of comet’ as a poem or fragment standing alone, divorced from any whole. ‘I am like a slip of comet’, as Margaret C. Patterson suggests, is a ‘carefully worked-out metaphor, complete in itself’.\(^3\) There is little evidence that this fragment was part of Hopkins’ ‘Floris in Italy’. Indeed, in a letter to Alexander William Mowbray Baillie, written three days before ‘I am like a slip of comet’, Hopkins wrote that he was turning ‘Floris’ into a play, and that the only writing he had recently done was ‘a fragment, being a description of Io (transformed into a heifer)’.\(^4\)

As we can see from this letter to Baillie, Hopkins subscribed to the idea of the fragment as a poetic form. From his letters and note-book entries, it is clear that Hopkins shared the Victorian interest in German Romanticism, and in particular the writings of August and Friedrich Schlegel. In another letter to Baillie in September 1863, he expressed his admiration for August Schlegel:

> You speak with horror of Shaksperean criticism, but it appears to me that among Shakspere’s critics have been seen instances of genius, of deep insight, of great delicacy, of power, of poetry, of ingenuity, of everything a critic should have. I will instance Schlegel, Coleridge, Charles Lamb, Mrs Jameson.\(^5\)

In his note-book for 1864, Hopkins also refers to the Schlegels in notes on the ‘German movement’ for an essay on ‘Some aspects of Modern medievalism’.\(^6\) This suggests Hopkins was aware of the older brother Friedrich Schlegel’s writings such as his

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\(^3\) Margaret C. Patterson, ‘Young Hopkins, Anglican Student: “— I am like a slip of comet”’, *Hopkins Quarterly*, IV.I (Spring 1977), p. 29.


\(^6\) I refer to the manuscript as a note-book rather than a diary as MacKenzie observes that Hopkins’ note-books have been miscalled as they contain few dates: ‘Introduction’, *Early Poetic* p. 2; Gerard Manley Hopkins, *The Journals and Papers of Gerard Manley Hopkins*, eds., Humphry House and Graham Storey, Oxford: Oxford University Press, 1959, p. 26 and see p. 314 n.26.4, that states the essay is untraced and the notes part of a private plan.
‘Fragments’, first published in the Athenaeum in 1798. In his Athenaeum fragment 206 Schlegel defined the literary fragment as exhibiting unity: ‘A fragment, like a miniature work of art, has to be entirely isolated from the surrounding world and be complete in itself like a hedgehog’. 7 This may seem an odd analogy but the hedgehog’s ability to roll into a ball enables a detachment from the world, yet its spines project into the world weakening that closure. 8 A fragment therefore, suggests detachment from some ‘absent whole’ that projects the need for resolution. 9 Thus, as a fragment, Hopkins’ ‘I am like a slip of comet’ demands an imaginative reading towards a ‘resolution beyond the text’. 10 The very nature of the word fragment suggests incompleteness, a working towards a future completion. Fragments as poetic form are thus complete and incomplete – they are as Athenaeum fragment 22 suggests ‘the subjective embryo of a developing object’. 11 It is this dynamic incompleteness, that I want to suggest, Hopkins recognised and that for him, the fragment as poetic form, could project a reading ‘beyond the text’. 12 In particular, I suggest it enabled him to reflect his personal conflicts and torments.

Fragments of poetry influenced by astronomical knowledge appear throughout Hopkins’ note-books and journals. For example, in his early note-book (1864), a fragment describes the star-lit sky and the impression of the Milky Way as viewed from the earth: ‘Stars waving their indivisible rays. / Sky fleeced with the milky way.’ 13 To Hopkins the sky he observes appears ‘fleeced’ and overspread with a substance like sheep’s wool. This is an apt description of the Milky Way galaxy, in which our solar system lies. It appears as a hazy band of white light in the night sky arching across the celestial sphere. This phenomenon originates from the stars and other material within the galactic plain. These fragments, although often only a few lines long, represent Hopkins’ testing of form and words, and are valuable in determining his mindset in his early writing, and the development of his poetic imagination. Their astronomical

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10 Bradshaw, p. 73.
11 Cited Thomas, pp. 25; 27; 25. Thomas identifies the Romantic fragment as exhibiting a ‘dynamic of complete incompletion’: p. 25.
12 Bradshaw, p. 74.
13 This sits between two other fragments describing the night sky: ‘How looks the Night’, and the lines ‘Night’s lantern / Pointed with piercèd lights, and breaks of rays / Discover’d everywhere’, Early Poetic, Second Early Note-book, Campion Hall MS.C.ii. p. 4, plate 83, p. 135.
content also appears repeatedly throughout Hopkins’ mature poetry. The ‘Milky Way’, for instance, appears with descriptive and religious allegorical significance. In ‘The Wreck of the Deutschland’ (1876), the ‘moth-soft Milky Way’ is described, whilst in his ‘The Loss of the Eurydice’ (1878), Hopkins invokes the medieval metaphorical significance of the Milky Way as pointing towards the correct spiritual path to take: ‘That a starlight-wender of ours would say / The marvelous Milk was Walsingham Way’ (26: 6; 101-2). The Milky Way galaxy was known to medieval pilgrims as the Walsingham Way because when they saw it in the night sky it seemed to point towards Walsingham, and the house of the Virgin, indicating the right road. Thus, astronomical phenomena are endowed with two levels of meaning, a poetic device that Hopkins later termed ‘overthought’ and ‘underthought’. In 1883, Hopkins wrote to A. W. M. Baillie of what he saw as ‘two strains of thought running together and counterpointed’ in the lyric passages of the Greek poets:

the overthought that which everybody, editors, see […] the other, the underthought, conveyed chiefly in the choice of metaphors etc used and often only half realised by the poet himself, not necessarily having any connection with the subject in hand but usually having a connection and suggested by some circumstance of the scene or of the story.

Hopkins’ theory of ‘overthought’ and ‘underthought’ is important to any critical reading of his poetry. This is not only confined to his later poetry contemporaneous with this letter to Baillie. Hopkins’ concepts of ‘overthought’ and ‘underthought’ are particularly relevant to this study of his ‘I am like a slip of comet’, as it is a poetic fragment which on the surface displays astronomical knowledge and theory in relation to comets. This is the ‘overthought’ element, whereas Hopkins’ ‘choice of metaphors’, although maybe only ‘half realised’ by him, leads us to consider another level of meaning to this particular poem, the ‘underthought’. As Gillian Beer notes ‘shifting a metaphor from its initial field may bring to light homologies (or dissonances) that will propel new work’.

Likewise, Hopkins’ early poetry cannot be read without a critical awareness of his later theories of instress and inscape. In 1864, Hopkins was beginning to formulate his

notions of instress and inscape: he transcribed a passage from J. C. Shairp on Wordsworth’s ‘spots of time’ printed in the North British Review that clearly influenced his ideas. This passage explains that

Each scene in nature has in it a power of awakening, in every beholder of sensibility, an impression peculiar to itself, such as no other scene can exactly call up. This may be called the ‘heart’ or ‘character’ of that scene. It is quite analogous to, if somewhat vaguer than, the particular impression produced upon us by the presence of each individual man. Now the aggregate of the impressions produced by many scenes in nature, or rather the power in nature on a large scale of producing such impressions; is what, for want of another name, I have called the ‘heart’ of nature.\(^\text{17}\)

Tom Zaniello suggests ‘Hopkins would have called “that impression peculiar” to “each scene in nature” inscape and the “power in nature [...] of producing such impressions” instress.’\(^\text{18}\) Instress enables the viewer to reflect on Christ’s sacrifice in the crucifixion for humankind. For the impression to affect the viewer there must be an intensity of concentration. In Hopkins’ observations recorded in his note-books, this comes in ‘fidelity’ to detail that is Ruskinian in its approach. Patricia Ball argues Hopkins demanded an intensity of observation to enable experience of the ‘individual essence’. This Ball suggests is inherited from the Romantics, and is at the root of Hopkins’ ‘concept of inscape’.\(^\text{19}\)

Inherent to Hopkins’ references to astronomical phenomena, is a sense of immediate firsthand experience of nature, which reflects his inheritance of the Romantic intensity of experience. Hopkins demands this immediacy of the reader in later poems such as ‘The Starlight Night’ (1877). Here Hopkins calls upon the reader to look with him when he is looking: ‘Look at the stars! look, look up at the skies!’ (1). Hopkins’ plea is essential to the creation of the shared imaginative fantasy that the poem becomes. Indeed, it is very like the ‘instinctive imaginative power’ that Walter Pater writing about Plato, regards as ‘a sort of visual power [...] causing others also to see what is matter of original intuition for him’.\(^\text{20}\) Hopkins recorded that he began ‘coaching with W. H. Pater’ at Oxford in April 1866, and continued until the Greats examinations


\(^{18}\) Zaniello, p. 73. Phillips, p. 61.


in June 1867. In his essay ‘Style’ (1888), Pater believes the artist says to the reader, - ‘I want you to see precisely what I see’. Although this is later than Hopkins’ fragment, this idea enables us to see how the reader is drawn into sympathy with Hopkins. In ‘I am like a slip of comet’, it is the visual image of a comet sweeping the night sky, which dominates the reader’s mind. It is the poet’s sense of sublime awe and wonder contained in the ‘overthought’ of the poem at apprehending this phenomenon, which takes over the reader’s attention. Here, Hopkins appeals to a shared sense of wonderment fuelled by popular images of comets sweeping the night sky and disappearing out of view, to both the naked and the telescopically aided eye. The crescendo-like structure of Hopkins’ fragment adds to this sense of intense contemplation: the comet at first is scarcely visible coming from the depths of space into view, where it is described in rich detail before losing its ‘tether’ and moving away from the sun, disappearing into the ‘cavernous’ space, beyond view (12; 16).

The note-books establish Hopkins as a first hand observer of nature and often record his experiences in terms of the sublime, as detailed in the Introduction to this thesis. For example, on 13th July 1874, he recorded he had felt ‘a certain awe and instress, a feeling of strangeness [...] and of threatening’ on sighting Coggia’s comet (1874 III) ‘at bedtime in the west’. In 1875, Hopkins wrote to his mother of the possibility that he may have discovered a new comet: ‘I have seen one three nights. It appears to be in Cancer. It is small and pale but quite visible. If it is not a comet it must be a nebula and then it is strange I should not have noticed it before’. However, he later realised it to be Praesepe, a cluster of hundreds of distant stars often mistaken for a comet when low in the sky: ‘what I took for a comet […] turned out to be a well known nebula of great size, Praesepe it is called, in Cancer’. Hopkins was also confident enough in his knowledge of astronomical science to offer advice to Coventry Patmore on his use of a comet analogy in his ‘Wedding Sermon’ that concludes his poem, ‘The Victories of Love: Book II:’ (1862):

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24 Further Letters, p. 252.
25 Journals and Papers, p. 249. Levy identifies as Coggia’s comet, p. 147
26 ‘To His Mother’, Christmas Eve, 1875, letter LXXIII in the Further Letters, pp. 135-36.
27 ‘To His Mother’, 2 March 1876, letter LXXIV in the Further Letters, p. 137.
To move
Frantic, like comets to our bliss,
Forgetting that we always miss,
And so to seek and fly the sun.
By turns, around which love should run...\textsuperscript{28}

Hopkins responded to Patmore’s poem suggesting that he believed Patmore was trying to illustrate ‘a contrast between the long elliptic orbits of comets, with the sun almost at one end, and the short ones, practically circles, of the planets, with the sun at the centre’ but that his image ‘might be clearer’.\textsuperscript{29}

Hopkins’ intense contemplation of astronomical phenomena is found in two note-book entries of 1868, which are accompanied by a sketch, showing the position of Venus to the moon (Fig. 46). This drawing belongs to the tradition of sketching to accompany scientific observation. In astronomy, drawing from observation was essential to the science particularly before the arrival of astronomical photography in the 1850’s. Astronomers often included small line drawings as insets to the text of their scientific papers and letters to journals. Such small sketches appear frequently throughout Hopkins’ note-books: they are often of clouds, sunsets, tracery around church windows and even mould growing on milk. The regularity with which they appear in his note-books suggests that note-taking and sketching were ‘habits of mind’ to Hopkins.\textsuperscript{30} Hopkins was very concerned with the accurate portrayal of nature, and in 1863, he wrote to Baillie seeking his approval of his ‘sketches in a Ruskinese point of view’.\textsuperscript{31} Hopkins’ drawing of the position of Venus to the moon is the type of ‘outline drawing’ Ruskin later recommended as ‘the most valuable of all means for obtaining such memoranda of any scene as may explain to another person, or record for yourself, what is most important in its features’.\textsuperscript{32} Hopkins had followed the advice of Ruskin by

\textsuperscript{29} ‘To Coventry Patmore’, 7 October 1883, letter CLXX in the Further Letters, p. 317.
\textsuperscript{32} John Ruskin, ‘Lectures on Landscape delivered at Oxford in Lent term, 1871’, Works, vol. XXII, p. 28. During February – March 1865 Hopkins included Ruskin’s Modern Painters in his list of ‘Books to be read’: Journals and Papers, p. 56. Other influences on Hopkins’ meticulous style were the contributors to the magazine Once a Week who included John Everett Millais and Percy Macquoid; Phillips, pp. 6-7.
completing the drawing exercises in his *Elements of Drawing* (1857), and developing a painterly eye for colour, which is reflected in his note-book and journal entries. His journal entry 2nd March 1868 describing the night-sky illustrates:

Mar. 2. Dull and damp. At night sky swept with mare’s-tail clouds in bold strange comit shapes, stars scattered, Venus — now very bright — with a watery nimbus and like a lamp, moon with a milky-blue iris. NB. Both the edges of this blue are amber and sometimes rosy; the *floor* between the iris and the moon’s disk passes (inwards from the amber) from yellowish to blueish green.

This entry is remarkable for Hopkins’ use of painterly words, within the context of recording what must have been a night of intense contemplation of the moon and Venus. Like his ‘I am like a slip of comet’, it also displays Hopkins’ accurate scientific knowledge. From this journal entry, it is clear he knew where to look in the night sky to study the planets such as Venus and other phenomenon.

During his undergraduate years at Balliol College, Oxford, from 1863 to 1867, Hopkins was literally in the right place at the right time to develop his scientific interest. Despite the tradition of ‘Oxford for Arts, Cambridge for Science’, during the mid-
Victorian period of university reform, Oxford was rapidly becoming a centre for science. In 1860 the Oxford Museum was opened with ‘divisions’ to accommodate all the sciences, including astronomy where ‘the Astronomer, with his apparatus, may here introduce the student to the phenomena observed in that space of which we occupy an infinitesimal portion, and may explain the means and the powers by which these phenomena have been observed and can be predicted’. Oxford was also home to the Radcliffe Scientific Library, which, as reported in the journal *Nature*, ‘contained the finest collection of scientific books almost in the world’ and ‘as far as possible, complete sets of all the Transactions and Publications of every recognised Scientific Society in the world’. Although he received no formal scientific education, Hopkins’ curricular reading included texts such as Francis Bacon’s *Novum Organum* (1620). Likewise, with Oxford being the site of the Huxley – Bishop Wilberforce debate on Darwin’s *On the Origin of Species*, it meant the natural science of Lyell, Spencer and Darwin was rigorously debated. Hopkins also read leading nineteenth-century journals such as the *Cornhill Magazine* and the *North British Review*. At the Old Mortality and Hexameron clubs, theological, philosophical and scientific matters were discussed.

Although for Hopkins his religious sensibilities usually dominated, the poetry he wrote in this early period often shows his concern with philosophical questions of perception, and with scientific theories such as the workings of optics. His poetry does not divide these concerns, but is characterised by his crossing of disciplinary boundaries and therefore provides a ready example of the lack of divide between science and

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38 This now legendary debate occurred at the annual meeting of the British Association 27 June to 3 July 1860. Wilberforce failed to provide a serious answer to Huxley’s defence of Darwin’s theory responding by asking whether Huxley was descended from a monkey on his grandmother or grandfather’s side. Huxley replied that he was not ashamed to have a monkey as an ancestor, but was ashamed to know a man who used his abilities to hide the truth. Higgins, ‘Introduction’, p. 26; Hopkins lecture notes ‘Plato’s Philosophy – R. W.’ show how Darwin’s theories were readily referred to: see Essay D.VIII, *Collected Works*, vol. IV Oxford Essays and Notes, pp. 235-255.
39 Hopkins’ note-books and journals also evidence his reading of amongst others the *Spectator, Church Times, Englishman’s Magazine* and *National Review: Journals and Papers*, p. 574.
literature. His later conversion to Roman Catholicism, and his joining of the Society of Jesus, was to place him within a community in which scientific inquiry was important for the divine revelation of the mysteries of the universe. Science was therefore compatible with the demands of faith.\textsuperscript{41} This compatibility was expressed by Dr Pusey, a leader of the Oxford movement, who is reported as saying that ‘The desire to acquire scientific knowledge and the power to attain it are alike the gift of God, and are to be used as such’\textsuperscript{42} Hopkins’ poem of 1864, ‘It was a hard thing to undo this knot’ shows he believed these concerns to be inextricably knotted together and therefore difficult to separate:

\begin{quote}
It was a hard thing to undo this knot.
The rainbow shines, but only in the thought
Of him that looks. Yet not in that alone,
For who makes rainbows by invention?
And many standing around a waterfall
See one bow each, yet not the same to all,
But each a hand’s breadth further than the next.
The sun on falling waters writes the text
Which yet is in the eye or in the thought.
It was a hard thing to undo this knot
\end{quote}

(1-10)\textsuperscript{43}

This poem particularly relates Hopkins’ concerns with perception and reality. These matters were also the subject of his discussions with Edward Bond, a friend and undergraduate at Oxford. Hopkins’ journal entry of March 23, 1870 refers to his earlier discussions with Bond, regarding dream images and how they are traceable, ‘to something or other in your waking life’. Hopkins concludes the entry by stating that the mind can have ‘ken at the same time of what the eye sees and also of the belonging images of our thoughts’.\textsuperscript{44} As in ‘It was a hard thing to undo this knot’, the process for Hopkins is the holding together of two images simultaneously: the created image ‘in the thought’— the imagined, and the image ‘in the eye’— the scientifically observed (2; 9).

This journal entry and the influence of the science of optics in this poem, show how Hopkins was not against the progresses of science but advocated instead, a ‘knot’, a synthesis of science and metaphysics.\textsuperscript{45}

Hopkins’ knowledge of mechanistic science is found in his references to

\begin{itemize}
\item \textsuperscript{41} Nixon, \textit{Death}, p. 132.
\item \textsuperscript{42} Acland, p. ix.
\item \textsuperscript{43} Beer, \textit{Open}, pp. 244-45; Phillips, pp. 247-50.
\item \textsuperscript{44} \textit{Journals and Papers}, p. 194.
\item \textsuperscript{45} Beer links this poem with the scientific work of Hermann von Helmholtz and John Tyndall: \textit{Open}, Chapter 11.
\end{itemize}
spectroscopy in his undergraduate essay, ‘The Tests of Progressive Science’. Here Hopkins believes Spectrum analysis, as a ‘development of optics’, represents the ‘complete widening or alteration of [the] beat’ of science. Here Hopkins seems aware of how spectrum analysis rebuked the claims of the Positivist, Auguste Comte, that the knowledge of astronomy had reached its limit, and nothing more would be discovered about the chemical constitution of the bodies of the universe. Nevertheless, Hopkins did harbour doubts about the materialistic ideology he believed science imparted. He expressed his concern that the factual reliance of science should not override the need for metaphysics. In his essay, ‘The Probable Future of Metaphysics’, he argued against those positivists who announce the end of metaphysics. He believed metaphysics should govern future scientific enquiry, as materialism will never be able to account for the spiritual:

Material explanation cannot be refined into explaining thought and it is all to no purpose to show an organ for each faculty and a nerve vibrating for each idea, because this only shows in the last detail what broadly no one doubted, to wit that the activities of the spirit are conveyed in those of the body[...]. It will always be possible to show how science is atomic, not to be grasped and held together, ‘scopeless’, without metaphysics: this alone gives meaning to laws and sequences and causes and developments.

Hopkins’ concern was that the ‘study of physical science’ could lead to people ‘conceiving only of a world of formulas’ and believing ‘in God less’. For Hopkins, a direct sense of transcendence should come from contact with the natural world. That transcendence is an ‘identity’ rather than a symbolic referent is expressed clearly in Hopkins’ line from his poem ‘Hurrahing in the Harvest’ (1877): ‘And the azurous hung hills are his world-wielding shoulder’ (9, my emphasis). Hopkins, therefore, does not accept the laws of science as unequivocal truth, he looks to all sides metaphysical, scientific and the natural world – all have a place in his ontology, and he requires them to work together.

47 Cited Brown, p. 53.
48 Brown, p. 53.
49 Journals and Papers, p. 118.
'I have drawn heat from this contagious sun'

Although critics recognise Hopkins’ interest in science, his astronomical fragment, ‘I am like a slip of comet’ stands out for the lack of attention it has received. The exceptions are Margaret Patterson’s paper, which discusses the poetic techniques Hopkins uses, and Levy’s article where he establishes the probability that Hopkins personally observed the most significant comets of the period. Whether this is because Hopkins’ intensive application of cometary theory has frightened critics off is not clear. However, a close reading of the poem reveals that the year it was written (1864), was a significant period of personal and spiritual conflict for Hopkins. This is reflected in the form and structure of ‘I am like a slip of comet’. As a fragment, an isolated bit or portion, it implies feelings of insecurity and instability. It is also evidence of Hopkins’ interest in the small, the minute parts of nature. It shows his knowledge of Kant’s idea of the atoms of nature being as important to a transcendental knowledge of a divine power as the vastness of the universe, as shown in the Introduction to this thesis. In his observations recorded in his note-books, Hopkins is delighted by the parts in nature that make up the whole: ‘I saw the wholeness of the sky and the sun like its ace’. This leads us to think about Hopkins’ ‘I am like a slip of comet’, in relation to the nature and form of comets as astronomical bodies, and their translation into Hopkins’ poetic piece. A comet is essentially a fragment of the solar system, a relatively small extraterrestrial body formed from the gradual accumulation of matter, as detailed in the nebular hypothesis. The catastrophist counter theory, proposed by J. L. Lagrange in his Sur l’origine des comètes (1814), suggested that comets were the result of a planet, such as

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52 Gillian Beer has made the important link between Hopkins’ poetic imagination and the work of the German physicist Hermann von Helmholtz on the science of optics and acoustics: Beer, Open, p. 245 n.8. Beer also reveals that Hopkins participated in the discussion of physical theories in his letters to Nature in the 1880’s. She also notes he proposed, though never completed, works relating to the science of light and ether: p. 245. Daniel Brown, Jude. V. Nixon and Tom Zaniello have also established the scientific influences on Hopkins’ work: Brown Hopkins’ Idealism; Nixon, Death, pp. 131-55; Zaniello Darwin. Jerome Bump discusses Hopkins’ ‘The Wreck of the Deutschland’ in relation to the dynamic sublime with no mention of the astronomical phenomena such as Orion that it features: ‘The Wreck of the Deutschland and the Dynamic Sublime’, ELH, 41.1 (Spring 1974), pp. 106-129. Peter Kitson notes how Brown is ‘strangely silent on how Hopkins’s solar speculations speak to Victorian sun worship or the cosmic copulation (and orgasmic death) brilliantly poeticized in “I am like a slip of comet”’: The Year’s Work in English Studies: 1997, vol. 78, Oxford: Blackwell, 2000, p. 618.

53 Levy, pp. 139-150.

54 Hopkins came into contact with Kantian philosophy whilst a student at Oxford through his friend Robert Bridges and his tutors Walter Pater and T. H. Green; see Hilary Fraser, Beauty and Belief: Aesthetics and Religion in Victorian Literature, Cambridge: Cambridge University Press, 1986, p.77.

55 Fraser, p. 74.
Jupiter or Saturn, exploding and sending particles into cometary orbit.\textsuperscript{56} Both ways, comets were formed from fragments, and were fragments of the universe - and we find this notion translated into Hopkins’ ‘I am like a slip of comet’. Not only is it structured as a fragment, but also Hopkins’ persona as the speaker in the poem takes on the form of a fragment. Hopkins figures the comet as a ‘slip’ - a slip is a scion or a cutting, and therefore a piece, a fragment (1). The comet is also ‘scarce worth discovery’ (2). This suggests the comet, and thus the speaker, is insignificant in relation to the size of the universe. It is also a term associated with derogatory phrases, such as a slip of a girl, which suggests immaturity.\textsuperscript{57}

A very similar sense of insecurity occurs in another of Hopkins’ poems also written in 1864: ‘A Soliloquy of One of the Spies left in the Wilderness’. This begins with a scornful questioning of Moses:

\begin{quote}
Who is this Moses? Who made him, we say,
To be a judge and ruler over us?
He slew the Egyptian yesterday. To-day
In hot sands perilous
He hides our corpses dropping by the way
Wherein he makes us stray
\end{quote}

(1-6).

Despite his questioning of Moses the leader, the speaker, recognises in Stanza 3 that God through Moses feeds him: ‘He feeds me with His manna every day’ (13). In spite of this benevolence, he is spiritually weak and insecure: ‘My soul does loathe it and my spirit fails’ (14). However, despite his questioning Hopkins’ speaker dies ‘contented here to lie’ (55). The peaceful ending suggests Hopkins believed it is right to challenge religious leaders and not follow them without question. Banishing the rest of his fellow travellers ‘Go then’, he dies alone, a solitary figure unlike the rest who will ‘Take Canaan with [their] sword and with [their] bow’, further enforcing a sense of marginalisation (55-56). In ‘I am like a slip of comet’, the comet is a solitary entity that is banished to the extremes of the universe. The solitariness is evident at the beginning of the fragment where the comet as the speaker is figured as marginalised. ‘Scarce worth discovery, in some corner seen’, the speaker appears to lack importance expressing personal insecurity (2). The speaking subject figured as marginalised is a common positioning throughout Hopkins’ poetry. In ‘The Windhover’ (1877), the

\begin{flushright}
\textsuperscript{57} Levy, p. 140.
\end{flushright}
Speaking subject is ‘in hiding’ and in ‘The Alchemist in the City’ (1865), the subject is an alienated individual who dies unable to integrate into the city: ‘The making and the melting crowds: / The whole world passes; I stand by’. (7; 3-4). The same sense of alienation also appears in the final lines of Hopkins’ ‘I am like a slip of comet’ where the comet ‘dwindles’ and ‘shreds her smock of gold / Amidst the sistering planets’, and ‘goes out into the cavernous dark’, giving the reader the idea that she is lost forever (2; 13-14; 16). 58

‘Sistering’ in this poetic fragment implies the comet and planets are part of the same family or solar system. 59 and thus is Hopkins, as part of the Oxford community. Likewise, it promotes the idea that the comet passed between the earth and Venus, since Venus is often referred to as the earth’s sister planet, due to similarities in size, composition and bulk. Equally, the comet bridges ‘the slender difference of two stars’ suggesting that the speaker is placed between two camps (3). Benjamin Jowett and others at Oxford were using Greek studies, particularly Plato, to reform the course of classical studies, the Literae Humaniores, or Greats. This was the Plato of George Grote’s History of Greece (1846-56) that was divorced from Classical, and traditional Romantic and Christian interpretations. It was influenced by the utilitarianism of J. S. Mill’s On Liberty (1859) that promoted individuality and intellectual freedom. Likewise, Jowett was mixing Classical thought with the contemporary Positivism of those such as Comte. Leslie Higgins drawing on Hopkins’ undergraduate essay ‘Platonic Dialogue’ has made the analogy of Hopkins as ‘one of the undergraduate shuttlecocks’ ‘pulled every which way’ between those Professors, dons and clergymen anxious to prove the truths of their thought to the undergraduates of Oxford. He sees Hopkins’ intellectual abilities and ‘attainments’ as being ‘coveted as emblems of various factions’ power and success’ 60. Hopkins expresses the notion of differing factions in his reference to the divided opinions about the origin of comets. In his ‘I am like a slip of comet’, the line ‘Come out of space, or suddenly engender’d’ reflects the

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58 Comets are classified as either periodic, those that have been observed on more than one occasion and are expected to return in a set number of years, or non-periodic which has an orbital period of 200 years or more, including single-apparition comets that pass through the inner solar system only once. They are usually on near-parabolic orbits that will not return close to the sun for thousands of years if ever. The term non-periodic comet is sometimes used to refer exclusively to comets that will never return to the vicinity of the sun. Some periodic comets are classed as lost comets due to their failure to return. The most famous nineteenth-century lost comet is Comet Biela, which was observed separated into two in 1846 and in 1852 failed to make its expected return. The Andromedids or Bielids, a huge meteor shower of 27 November 1872, is thought to be Biela’s disintegration as the earth crossed its trajectory.

59 Levy, p. 146.

two most popular accounts of the nineteenth century: Pierre Simon Laplace’s theory of the interstellar origin of comets, and J. L. Lagrange’s catastrophist theory of gigantic eruptions within the solar system (4). In contrast to Lagrange, Laplace argued that comets were evenly distributed throughout interstellar space, and arrive in view from the earth randomly from all directions: ‘Their proper motions are extremely complicated; they have place in every direction, and are not restricted, like the planets, to a motion from west to east, and in planes very little inclined to the ecliptic’. In opposition, as referred to earlier, Lagrange suggested that comets were the result of planetary explosion.

The reference to Gideon, the Israelite in ‘I am like a slip of comet’ is interesting. As Alison Sulloway notes, the Israelites were ‘being ground to destruction between two warring tribes’. This analogy further enforces the idea of Hopkins as positioned between the different mindsets prevalent in Oxford. When Hopkins arrived at Oxford in 1863, the city was still influenced by the Tractarian movement of Keble, Pusey and Newman. The Oxford Movement, as it was known, sought to protect Anglicanism from the rise of liberal theology and practice. It maintained the Apostolic and sacramental worship tradition using ritualistic customs. Central to the Oxford Movement was a ‘sense of awe and mystery in religion’ and the use of poetry and symbolism was important for the expression of religious truth. As Nixon has suggested, ‘the storms of Hopkins’ poem ‘Heaven-Haven’ (1864), could allude to the liberalism of the 1860’s, from which he wishes to escape’. Exemplary of the liberal position were Pater’s essays. Pater's two unpublished essays of 1864, ‘Diaphaneitè’, and the lost ‘Subjective immortality’ on Fichte, promoted the two positions, on religion and sexual orientation. The Fichte essay denied the existence of a Christian afterlife. It so outraged the Revd. Dr Henry Parry Liddon, an active defender of the high-church party at Oxford, and Hopkins, that they formed a rival, Christian, society, the Hexameron.


Liddon’s diaries provide evidence that the original idea was Hopkins’: ‘Hopkins mentioned to [me?]
‘talking two hours against Xtionary’ and *Bright’s Journal*, March, 1864 recorded that Pater at ‘his essay society in Brooke’s hearing averred his unbelief in a future state’. Also in 1864, Pater burnt his poetry, much of which had been religious, emphasising his break, with Christianity. In the same year Pater circulated his essay ‘Diaphaneité’ amongst his friends. This essay celebrated a man of ‘clear crystal nature’, who was ‘part saint, and part philosopher-artist’, whose life is one of ‘colourless, unclassified purity’, and who possess ‘a moral sexlessness, a kind of impotence’. Pater’s ‘crystal-souled’ man exists as an ‘interstice’ between ‘clashing’ mind sets and ideas. ‘He exists “to fill up the blanks between contrasted types of character”, like a soothing interstice between clashing temperaments and philosophies’.

Although Hopkins recognized Pater’s aesthetics as rejecting metaphysics, he also saw them as employing ‘Christian paradigms’ and ‘methodology’. Pater sought to recover the Hellenistic tradition behind Christianity, his Hellenistic renaissance, whereas Hopkins sought a Christian revision of the Hellenic paradigm. If for Pater the manliness is Hellenic in spirit, of same-sex love, manliness for Hopkins requires the self-discipline of monastic ascesis. Hopkins seems to fit the Paterian model as the speaker in his ‘I am like a slip of comet’ does, by ‘bridging the slender difference of two stars’ (3). Yet, Pater’s religious position would be clearly objectionable to Hopkins for whom the authority of the Church and its teachings must outweigh personal judgment. Hopkins’ conviction about this is expressed in his friend Edmund Geldart’s novel *A Son of Belial*:

> Gerontius Manley and I had many talks on religion. He was quite at one with me on the hollowness of Protestant orthodoxy, but he had a simple remedy – the authority of the Church. The right of private judgment must in the long run inevitably lead to rationalism, as historically it has done.

These convictions were also shared by Newman, an early dissenter who accepted the project of an essay club, of a church character, as set-off against the Old Mortality”: cited Nixon, Liddon, p. 92.

66 Liddon also wrote to the Bishop of Salisbury 17 March 1864 describing a very similar incident. *Journals and Papers*, pp. 138; 353: 138: n.7, original emphasis.


69 Sulloway, p. 45. Pater, ‘Diaphaneité’, p. 248


71 Sulloway, p. 47.

Hopkins into the Roman Catholic Church in 1866. In 1864, Newman was involved in a publicly played out controversy with Charles Kingsley, which provides a further focus for the personal conflict within Hopkins’ ‘I am like a slip of comet’. Kingsley was objecting to Newman’s claim to the ‘truth’ of the Roman Catholic Church, its clergy and its practices. A series of letters and pamphlets from both sides pursued the argument. One of the most striking aspects of Kingsley’s anti-Catholicism was his attitude towards religious celibacy, and the satisfaction of repressed sexual urges through contemplation. Newman taught that celibacy was ‘a high state of life to which the multitude of men cannot aspire’. However, Kingsley saw it as a threat to conventional sexual relations within marriage as a site of procreation and the family. He also seems to have believed it was a ‘mask for homosexuality’, and led to ‘hysteria’ due to the repression of sexual urges. Likewise, Kingsley insisted the celibates’ ‘prudence’ or ‘lust’ was satisfied through mysticism, and visions, including the cult of the Virgin Mary. Kingsley also renounced religious ascesis as ‘foppery’, making no distinction between heterosexual and homosexual desires, and in fact ‘unsexing’ the Catholic priest. He argued it encouraged ‘self-indulgent’ ‘sensuality’ disguised as religious devotion to a life of denial that imitated the life of Christ.

In his early poetry, it is possible to trace a change in the way Hopkins deals with religious denial. In ‘Il Mystico’ (1862), another early fragment by Hopkins written two years before ‘I am like a slip of comet’, the speaker rejects ‘sensual gross desires’ in an attempt to rescue from sin ‘the shaken plumage of [his] Spirit’s wings’ (1; 10). The speaker in this poem, then ‘may drink that ecstasy / Which to pure souls alone may be ....’ (141–42, original spelling preserved). Yet, in ‘I am like a slip of comet’, spiritual ecstasy becomes a source of hazard, which suggests Kingsley’s rallying against the sensual self-indulgences of celibacy and ecstasies. If we figure the comet as Eve and the sun as Adam we have the classic ecstasy moment followed by the fall from grace and banishment into the unknown when the speakers’ ‘sweet is done’, after feeding off the

73 The argument inspired Newman’s 1864 Apologia Pro vita Sua (A Defence of One’s Life).
77 Fasick, p. 225.
78 Fasick, pp. 226; 224-226.
masculine ‘flame-cased sun’ ‘suck[ing] the light as full as Gideon’s fleece’ (17; 10; 11).79 Here Hopkins alludes to the biblical image of Gideon’s Fleece soaking up water whilst the ground around it remains dry, suggesting the comet absorbs light from the sun. In Hopkins’ ‘I am like a slip of comet’, the sun is both creator and destroyer; it is both productive of life but also possesses a ‘dangerous energy able to pierce and destroy’.80 The sun’s rays of light also penetrate. As Hopkins’ comet approaches the sun, ‘she comes’:

To fields of light; millions of travelling rays
Pierce her; she hangs upon the flame-cased sun,
And sucks the light as full as Gideon’s fleece

(8-11).

By breaking the line after ‘rays’ and placing ‘Pierce’ at the beginning of the next line the sharpness of the word ‘pierce’ is stressed.81 Thus the ecstatic devotional moment, which reminds of Bernini’s sculpture of Saint Teresa pierced by rays of light, becomes hazardous.82

There is also a close similarity in Hopkins’ description of the sun in these lines, to representations of the solar corona in astronomical texts. The idea of ‘millions of rays’ of a piercing shape and formation characterises an engraving of a drawing of the total eclipse of the sun on July 8th 1842 by Francis Baily in the Memoirs of the Royal Astronomical Society (Fig. 47). Likewise, it is noticeable that in John Herschel’s analysis of the life of a comet in the 1864 edition of his Outlines of Astronomy (1833) the sun is also gendered masculine, the comet being ‘lost in his beams’. Hopkins’ description of the life of a comet compares with Herschel’s, which was contemporarily the most popular account of the life of a comet. Herschel explained that comets

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79 Judges 6. 36-38, Holy Bible, p. 240. Levy, p. 145. The question of how comets are lit was still a matter of scientific exploration. Arago’s investigation of the tail of Comet Tralles (C/1819 N1) found the light to be polarized, and therefore consisting of reflected sunlight. This was confirmed by William Huggins’ spectroscopic observations of comet 55P/Tempel-Tuttle (1865 Y1): Julio Angel Fernández, Comets: Nature, Dynamics, Origin, and Their Cosmogonical Relevance, Netherlands: Springer, 2005, p. 49. Hopkins’ description of the ‘flame-cased sun’ relates to observations of the phenomena of ‘Red Flames’ visible during a total eclipse of the sun: George Frederick Chambers, A Handbook of Descriptive and Practical Astronomy (1861), rpt., Cambridge: Cambridge University Press, 2010, p. 99. The ‘protuberances’ as they appeared to ‘Mr. Dawes in July 1851’ were ‘red’ and of ‘vivid brightness and very deep tint’ and at the ‘northern edge’ a ‘deeper colour than the rest’ a ‘rich carmine’: Chambers, Handbook, 1861, rpt., 2010, p. 100. Many astronomers including Sir George Biddell Airy and Warren de la Rue also observed the total eclipse of 18 July 1860 showing ‘conclusively that the red flames in solar eclipses belong not to the Moon but to the Sun’: Chambers, Handbook, 1861, rpt., 2010, p. 124.
81 Patterson, p. 32.
82 Phillips connects this sculpture and its moment of ‘ecstatic devotion’ to Hopkins’ ‘The Windhover’, but not to his ‘I am like a slip of comet’: p. 251.
accelerate, enlarge, and throw out from this appendage [tail], which increases in length and brightness till (as always happens in such cases) they approach the sun, and are lost in his beams. After a time they again emerge, on the other side, receding from the sun with a velocity at first rapid, but gradually decaying [...] As they continue to recede from the sun, their motion diminishes and the tail dies away, or is absorbed into the head, which itself grows continually feeble, and is at length altogether lost sight of, in by far the greater number of cases never to be seen more.  

The idea of the forbidden pleasures leading to the penalty of death was also visited by Hopkins in another poem of 1864, ‘Glimmer’d along the square-cut steep’, written in his note-book close to entries about the Pre–Raphaelite Brotherhood. The poem bears a

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close resemblance to Holman Hunt’s painting *Our English Coasts or Strayed Sheep* (1852)\(^84\):

Glimmer’d along the square-cut steep.
They chew’d the cud in hollows deep;
Their cheeks moved and the bones therein.
The lawless honey eaten of old
Has lost its savour and is roll’d
Into the bitterness of sin.

What would befall the godless flock
Appear’d not for the present, till
A thread of light betray’d the hill
Which with its lined and creased flank
The outgoings of the vale does block.
Death’s bones fell in with sudden clank
As wrecks of minèd embers will

(1-13, original spelling preserved).

Hopkins’ description of a flock of animals that ‘chew’d the cud in hollows deep’ bears analogy with a flock of sheep (2). Likewise, as in Hunt’s painting, the sheep are hemmed in by a hill, which blocks the ‘outgoings of the vale’, and are forced to stray over the edge of the cliff (11). Hopkins’ reference to ‘lawless honey eaten of old’ that ‘has lost its savour and is roll’d / Into the bitterness of sin’ represents the ‘forbidden joy of straying’ now realised as a forbidden pleasure (4-6).\(^85\) This is very like the realisation in ‘I am like a slip of comet’ that the speaker’s ‘little sweet is done’ (17). The similarity persists in the ‘not ungentle death’ of the comet (speaker) in Hopkins’ fragment, with the death the sheep (or those who sin) endure going over the edge of the cliff: ‘Death’s bones fell with sudden clank / As wrecks of minèd embers will’ (19; 12; 13).

‘I am like a slip of comet’ is less religious than the majority of Hopkins’ poetic works – the crux of the fragment is the speaker’s self-awareness, and I believe relates Hopkins’ concerns over the male-male social bonds that he was a part of in Victorian Oxford. The final three lines of the fragment express this concern. As the comet is lost forever in the ‘cavernous dark’, so is the speaker: ‘So I go out: my little sweet is done’ sweet suggesting a pleasure now over which must be given up (17). Thus the speaker enters a state of necessary denial of past pleasure. He has ‘drawn heat’ from the masculine ‘contagious sun’ which represents the male dominated world of Oxford (18). The use of the analogy with contagion suggests Hopkins literally caught this way of life

\(^84\) Norman White, ‘Hopkins as Art Critic’, *All My Eyes See*, pp. 91-93.
\(^85\) White, p. 93.
in Oxford. The result of this infection is the double imperative of a ‘not ungentle death’ suggesting torture and eternal punishment, and thus the personal torture of Hopkins’ self denial, as well as the effect of the social constraints of Victorian society on sexuality (19).

Whether Hopkins was in denial of male-male sexual desire at this stage is not clear, and differing critical opinions have historically existed as to the nature of Hopkins’ sexuality. Nevertheless, entries in Hopkins’ note-books contain erotically charged observations of male bodies, for which Hopkins chastises himself and admits to as part of his confessional practice: a ‘long ago temptation in drawing Baillie, before May 12’; ‘Physical danger while having my arm in Baillie’s and speaking affectionately’; ‘looking at temptations, esp. at E. Geldart naked’. His fragmentary poem ‘Epithalamion’ is similarly erotically charged. Although intended as a nuptial song for his younger brother Everard and Amy Sichel, the poem, despite its generic links, makes only a passing reference to marriage and female presence. This is left until the final stanza:

What is ……….the delightful dean?
Wedlock. What the water? Spousal love.

. . . . . . . . . . . . . .
. . . . . . . . . . . . . .
. . . . . . . . . . . . . .

turns
Father, mother, brothers, sisters, friends
Into fairy trees, wildflowers, woodferns
Rankèd round the bower

. . . . . . . . . . . . . .

(46-51).

Despite the poem having been read as a baptismal allegory, and as “‘a pilgrimage, a

86 Notable is that the term homosexual did not exist until the publication of Havelock Ellis’ and John Addington Symonds Sexual Inversion in 1897. An informative analysis of these opinions is provided by Dennis Sobolev in his ‘Hopkins’s “Bellbright Bodies”: The Dialectics of Desire in His Writings’, Texas Studies in Literature and Language, 45.1 (Spring 2003), pp. 114–40.

87 Ernest Geldart, younger brother of Hopkins’ friend Edmund Martin Geldart. Hopkins saw Ernest whilst staying with his family near Manchester in July 1865: Journals and Papers, p. 339 n71.4; Early Poetic, pp. 167; 196; 174. Hopkins recorded his preoccupations with questions of religious obedience and sexuality in a note-book now known as C.II in which he obsessively listed his sins. This note-book is dated by Hopkins 9 September 1864 and continues to 30 March 1866. It contains many instances in which Hopkins records observations of males which can be construed as sexualized. For example, see Early Poetic, Fyffe (pp. 164, 167, 168, 169, 195, 201), Maitland (p. 191), Buchanan (p. 195), ‘Newman’s friend’ (p. 165), an ‘organ-boy and other boys’ (p. 174), ‘men at Worcester sports’ (p. 195), ‘looking at a chorister at Magdalen, and evil thoughts’ (p. 195).
spiritual journey”, the erotic overtones particularly in the bathing scene cannot be avoided. In this scene, the ‘unseen’ ‘listless stranger’ voyeuristically watches the ‘bellbright bodies’ of the bathing boys, and feels a ‘zest / Of summertime joys’ that causes him to undress and dive in (15; 14; 17; 20-21). The undressing passage is so literal and particular in its content and structure that it adds to the erotic charge of the poem. As in the erotically charged middle passage of ‘I am like a slip of comet’, the passage is full of energy and speed, emphasized by the fragmentary nature of its structure. The ‘task’ of undressing is ‘finger-teasing’ and ‘fast’:

... down he dings
His bleachèd both and woolwoven wear
Careless these in coloured wisp
All lie tumbled-to; then with loop-locks
Forward falling, forehead frowning, lips crisp
Over finger-teasing task, his twiny boots
Fast he opens, ...

(28-34).

The passage climaxes with the stranger, ‘froliclavish’ laughing and swimming (42). Like the comet (speaker) who is a stranger, ‘Come out of space, or suddenly engender’d’ in ‘I am like a slip of comet’, the ‘listless stranger’ draws a momentary ecstasy from the spectacle of the naked boys which is nevertheless self-censored (4; 14). In ‘I am like a slip of comet’ her ‘little sweet is done’ and she breaks her ‘tether’ from the sun (17; 12). In his ‘Epithalamion’ there is ‘self-censorship’, concealment and the maintenance of distance in Hopkins’ removal of the events from a ‘concrete’ place: ‘Southern dean or Lancashire clough or Devon cleave’ (4). Likewise, the events are removed from everyday experience and can only take place in the imagination, in the world of ‘make believe’ and ‘fairyland’ (1; 24). Although with poems such as ‘Il Mystico’, Hopkins began his turn towards more traditional Christian ideals in his poetry, traces of this longing to exist in a private world can still be found in his ‘I am like a slip of comet’. Here avoidance comes in Hopkins’ switch from the ‘I’ identification in the first line, to ‘she’ in the highly charged middle passage to a return to the ‘I’ in the final three lines of punishing death. As such there is an ascetic denial or avoidance of the sexual metaphorics of the middle passage. However, at the same time...

88 Sobolev, p. 128.
89 Sobolev, p. 131. The conjoining of verse and drawing was a direct influence of Rev. John Eagles’, *The Sketcher* (1833-5), London: William Blackwood and Sons, 1856: Bump ‘Hopkins Drawings’, *All My Eyes See*, pp. 71; 79-80; 86 n.4; 87 n.10.
Hopkins’ words are also sensually expressive, suggestive of bodily and spiritual pleasure. The comet imagery allows Hopkins to assume a feminized position of submission. The virginal innocence of the comet as a ‘slip’ drawing light from the masculine sun becomes an image of both spiritual and sexual ecstasy. The intonation of the passage is explosive: it reads in a hurry, consisting of broken fragments that speed up before they slow down. This fragmentation, inherent to the notion of a ‘slip’ as a fragment, also produces and reinforces the dynamism of the passage, and mirrors the form of the whole piece with its build-up, panting, release and fall. Indeed, it mirrors the path of the comet in her passage towards the sun, her perihelion passage around it caught in its gravitational ‘tether’, her release and falling away as ‘she dwindles’ and ‘shreds her smock of gold’ (12; 13). Overall, the form of Hopkins’ fragment moves from a build-up towards euphoria, then falls into despair, as the speaker enters a state of necessary denial of past pleasure.

The orgasmic eroticism of the middle passage suggests knowledge beyond words that is related, both to a sexual knowledge beyond the constraints of Victorian morality, and to knowledge of God. Likewise, the sun / comet relationship can be figured as in Solomon’s ‘Song of Songs’, a popular biblical reference for Hopkins which is also erotically charged.90 The sun as Christ becomes the lover or bridegroom of the feminized soul figured as the comet. However, here too the sun as Christ becomes both the redeemer and wielder of pain. Hopkins recorded the sun in a note-book entry in January 1864 as having ‘spearlike rays’.91 To imitate the life of Christ requires painful denial, and a submission to the ‘rays’ that ‘pierce’ (9, 10). Thus, this imitation can be seen to result in the ‘pleasure of masochistic eros’, the ascetic mortification and denial proving ‘sensually and erotically satisfying too’.92 In 1868, Pater described this duality: ‘To be the servant of love, to have offended, to taste the subtle luxury of chastisement, of reconciliation – the religious spirit, too, knows that, and meets just there, as in Rousseau, the delicacies of the earthly love’.93 In his ‘Easter Communion’ (1865), Hopkins deals with the results of acute ascesis: ‘You striped in secret with breath-taking whips’ and ‘the ever-fretting shirt of punishment’ gives sensual ‘myrrhy-threaded golden folds of ease’ (3; 11; 12). Here, the spiritual focus of the sonnet in the form of

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91 Journals and Papers, p. 17.
92 Saville, pp.70; 5.
‘Christian devotional poetry’ is disturbed by implications of ‘masochistic pleasure’. On Sunday 3 May 1863, Hopkins was introduced to Liddon by fellow Balliol student Frederick Gurney. Liddon reported in his note-book 8 February 1864 a ‘long talk [with Hopkins] about Eternal Punishment’. Hopkins’ obsessive self-examination with the aim of ‘self-affirmation’ was what he called ‘selving’. It operated through a realization of a relationship with God that was part of the confessional strategy of the Anglican high church with its tendencies towards the Catholic example. Hopkins took confession with Liddon who owned a copy of the popular pamphlet Questions for Self-Examination, For Common Use (1861) that aimed for the ‘conquest’ of sin. Although Hopkins’ asceticism is also linked to his readings of Newman’s sermons such as his ‘Sins of Ignorance and Weakness’ and ‘Secret Faults’, Liddon was particularly influential on Hopkins’ ascetic tendencies. Hopkins regularly attended Liddon’s Sunday-evening lectures on 1 Corinthians and made notes in a copy-book. The influence on Hopkins’ celibacy of 1 Corinthians 6 and 7 was a likely result of Liddon’s ‘tea-and-toast-and-testament’ lectures as Geldart called them. Hopkins’ notes pick out the concerns with the sanctity of marriage, and the ‘escape’ it provides from ‘fornication’ as ‘a sin against the body’ which is a ‘temple of the Holy Ghost’.

There has been much speculation about Hopkins’ part in the intense homosocial climate that he experienced during his undergraduate years at Oxford. Oxford was a small intense male-bonded community that Benjamin Jowett in an 1865 letter, compared to a ‘monastery in the reign of King John’. Long letters which Hopkins wrote to his mother during his first terms at Oxford in 1863, detail his new-found friends, and activities with them such as meals and walks. These letters reveal his happiness with Oxford life and how easy he found it to adapt to its masculine

94 Saville, p. 41.
96 Higgins, ‘Introduction’, p. 34.
100 Nixon, Liddon, p. 91; Pick, p. 15. Also cited Nixon, Liddon, p. 88; p. 103.
The curriculum was also male-dominated; female authors and historical figures were not studied. This is reflected in Hopkins’ Oxford Essays and Notes which contain only four mentions of female figures: Phaenarete, Xanthippe, Dido and Elizabeth I. Further confusing the debate as to Hopkins’ sexuality are the note-book entries he makes while away from Oxford recording his ‘temptation to adultery of the heart with Mrs. Gurney’ and to his ‘evil thought abt. Magdalen’ However, the contradicting of the more obvious male attractions with these entries by critics such as MacKenzie, seems fraught with attempts to deny any likelihood of homoerotic thoughts by Hopkins. Hopkins’ regarding Mrs. Gurney is a ‘temptation of the heart’ and of the ‘heart’, does not imply a sexual urge. Likewise, the reference to his cousin Magdalen which records ‘weakness’ due to ‘evil thoughts’ could mean he just didn’t like her and wished her ill, not any sexual feeling towards her. Of more concern in the note-books might be Hopkins’ entries ‘Temptation for myself on washing’ and ‘Weak scrupulosity in looking at Bramley’s picture’. For such ‘temptations’, Hopkins wrote ‘I fear mortal sin’. It is notable that the entries are full of reproach and stress vigilance against their development beyond temptation.

Any interpretation of Hopkins’ sexuality will remain controversial, as it is, in view of the climate of the time as David Hilliard has argued, ‘unrealistic to expect documented proof of homosexual behavior’. However, Hopkins’ note-books provide evidence of a ‘striving and self-tormenting’ frame of mind for which celibacy must have seemed attractive. This was not just for the avoidance of forbidden sexual contact, but also for an idealistic desire to find fulfillment in ‘a counsel of perfection’ by which celibacy was sought for its ‘intrinsic excellence’. It is also difficult to make a distinction in the Victorian period, between the language of male affection and homosexual feeling. It was an age where there was an acceptance of ‘romantic friendships’ between men without sexual relations. Notable of the Oxford Movement, were the intense friendships which developed among male followers. Such relationships were not regarded as unnatural as they were seen as a development from the childhood

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102 See Further Letters, pp. 68-88.
103 Higgins, ‘Introduction’, p. 34.
104 Early Poetic, pp. 182; 198.
106 Early Poetic, pp. 198-99.
107 Early Poetic, p. 195.
109 Hilliard, p. 186.
friendships of public school. Hopkins appears to have taken some comfort from a fascinating article published in the *Cornhill Magazine* entitled ‘The Ethics of Friendship’. Three days before composing ‘I am like a slip of comet’ Hopkins wrote to A. W. M. Baillie recommending he should read the article: ‘Read if you can a paper on *The ethics of friendship* in the September 1864 *Cornhill’.*110 This piece condoned the ‘sincere friendship’ that ‘exists among a limited and chosen few’ as especially attractive to those who are endowed with considerable powers of the imagination and poetry, or who are of an original or sarcastic turn of mind, for such are sure to be either lightly appreciated or imperfectly understood.

The anonymous writer brings to the reader’s attention that there is at present an obvious tendency among men of keen sensibilities and thoughtful character, to limit themselves to a smaller circle, and to accord to the members who compose it a friendship of the most exclusive, intimate, and unreserved kind.

The article argues that such an ‘alliance’, a ‘charmed circle’ is a ‘rarity’ and ‘one form of Paradise’, for it allows ‘a great development in individuality and a fearlessness in asserting it’. Likewise, within this circle, ‘there is an atmosphere of sympathy at once personal, vivid, and profound, well calculated to have a stimulating or almost intoxicating effect on the powers of those who breathe its perfume’.111 The article advanced a respectable ‘desexualized’ idea of friendship that detached homosocial bonds from the homoerotic.112 Hopkins’ interest in this article again reflects the torments and conflicts that we find portrayed in the ‘underthought’ of ‘I am like a slip of comet’.

This chapter has shown how Hopkins used the nature and form of the comet as a fragment of the solar system to poetic advantage, to encourage a reading beyond the text. Astronomy offers Hopkins a way of approaching difficult questions of sexuality. Through language, especially the metaphor of the comet, he can express culturally unmentionable or transgressive issues. Part of this fragment is very much concerned with using the nature of the comet’s movement during its perihelion passage. Comets are particularly visible in their motion across the sky and are often seen with the naked eye. This raises questions about how the motion of the heavens and astronomical


111 ‘The Ethics of Friendship’, *Cornhill Magazine*, 10 (September 1864), pp. 300; 301.

phenomena influenced poetic creativity. An example of a poet, who was intrigued by the motion of the earth in relation to the rest of the universe, is Thomas Hardy. As we shall see in the next chapter, depictions of motion whether celestial or terrestrial pervade Hardy’s work, and are directly related to his knowledge of astronomy.
V

Thomas Hardy, Astronomy and ‘the poetry of motion’

Well do I know that I am mortal, a creature of one day.
But if my mind follows the winding paths of the stars
Then my feet no longer rest on earth, but standing by
Zeus himself I take my fill of ambrosia, the divine dish

Ptolemy Almagest Epigram.¹

A synthesis: poetry and astronomy

Gazing at the heavens on a clear night from a viewing site unhindered by light pollution, experiencing the seeming movement of the earth through the stars and planets, has its roots far back in history. Ptolemy’s mind wandering amongst the stars allowed him to sense the ageless immortality enjoyed by the gods, in this case the heroic Zeus, king of the gods and god of the sky. Likewise, contemplating the reasons for human existence, ancient agricultural cultures, such as the Vedic civilisation of Bharat, now India, derived a survival calendar from watching the night sky, witnessing the rotation of the heavens and observing the same constellations rising over the eastern horizon. Shepherd Gabriel Oak in Thomas Hardy’s Far From the Madding Crowd (1874), relies on his ‘constant comparisons with and observations of the sun and stars’ rather than his watch with its ‘peculiarity of going either too fast or not at all’.² Hardy places Oak in the landscape of Wessex through an in depth description of the sensations he gains from standing on Norcombe Hill, at midnight on St Thomas’s Eve 21st December, and observing the stars:

To persons standing alone on a hill during a clear midnight such as this – the roll of the world eastward is almost a palpable movement. The sensation may be caused by the panoramic glide of the stars past earthly objects, which is perceptible in a few minutes of stillness; or by a fancy that the better outlook upon space afforded by a hill emphasises terrestrial revolution; or by the wind; or by the solitude; but whatever be its origin the impression of riding along is

² Thomas Hardy, Far From the Madding Crowd (1874), ed. Rosemarie Morgan, London: Penguin, 2003, p. 4, subsequent references in text. This edition reproduces Hardy’s original manuscript prior to editorial alteration by Leslie Stephen for serialization in the Cornhill Magazine in 1874.
vivid and abiding. The poetry of motion is a phrase much in use, and to enjoy the epic form of that gratification it is necessary to stand on a hill at a small hour of the night, and, first enlarging the consciousness with a sense of difference from the mass of civilized mankind, who are horizontal and disregardful of all such proceedings at this time, long and quietly watch your stately progress through the stars. After such a nocturnal reconnoitre among these astral clusters, aloft from the customary haunts of thought and vision, some men may feel raised to a capability for eternity at once

This passage is often quoted in critical texts on Hardy’s writing. However, it is usually used in passing as an illustration of Hardy’s interest in the science of astronomy, and its narrative role in establishing the character, and pastoral and Darwinian consciousness of Gabriel Oak. Whilst these are valid approaches to this seminal passage in Hardy’s work, a close reading can tell us a great deal more about what the science of astronomy meant to Hardy, and how he used his astronomical knowledge in his poetry. In particular, I want to inquire into just what Hardy meant by his phrase ‘the poetry of motion’, its relationship to astronomical discourse and how its usage is played out in his poetry. For Hardy, I argue, the objective nature of scientific observation leads to a discovery, not just of astronomical phenomena, but also his own subjectivity. I suggest that there is a dynamic movement, a ‘poetry of motion’ between the distant astronomical and the immediate view, which is translated into a view of his self.

It is particularly notable that discussions about motion in Hardy’s work, including his references to the motion of the heavens, pay little attention to his knowledge of astronomy. Likewise, most critical accounts of Hardy’s use of astronomy tend to focus on his Two on a Tower (1882), matching his astronomical references to contemporary astronomical texts. In view of the large body of critical work on this novel, this thesis looks for other, perhaps more enlightening evidence of Hardy’s knowledge of astronomy. The aim is to off-set those claims that have been dismissive of the importance of Hardy’s use of astronomy. For instance, Richard Carpenter describes Hardy’s astronomical references as exhibited with ‘tiresome […] mechanical regularity’, F. B. Pinion as ‘little more than a backcloth’, and Michael Millgate as being ‘often of a painfully obvious, off-the-peg kind’. Indeed, this view has subsisted since

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4 See for example Irwin.
the *Saturday Review* in 1882, described astronomy in *Two on a Tower*, as ‘mere matters of episode’.\(^6\) Notably, Herbert B. Grimsditch has identified Hardy as possessing the ‘rare capability of seeing life from the scientific side and at the same time realising all its artistic potentialities’.\(^7\) By ‘scientific’, Grimsditch is referring to Hardy’s ‘bedrock’ of ‘accurate and enlightened observation’, rather than any particular disciplinary knowledge of science.\(^8\) He further explains that ‘very seldom are the scientific and poetic visions combined in one mind, and it is indeed from the strife between these viewpoints that Hardy creates his art’.\(^9\) This idea of Hardy’s poetic ‘vision’ as divided into irreconcilable dualities has traditionally dominated Hardy criticism. Much of this criticism is linked to developments in evolutionary science.\(^10\) For example, James Persoon suggests there is a dualism between ‘external reality’ and ‘human consciousness’, that arose ‘evolutionarily from an unconscious world and is thus alien to that world and yet a part of it’. This he sees as linked to the dualisms in contemporary thought resulting from the publication of Charles Darwin’s *On the Origin of Species* (1859).\(^11\) The historically reductive nature of this criticism has overlooked the exploration of a key influence on Hardy’s creative imagination. Indeed, it is the very ‘regularity’ with which astronomical references appear in Hardy’s work and their relationship to contemporary astronomical discourses, that points to the importance of astronomy to his imaginative output.\(^12\) However, recent interdisciplinary studies have heralded a turning point in Hardy criticism: Gossin, Anne DeWitt and Henchman have explored the importance of astronomy to Hardy in terms that are more positive. Gossin discusses Hardy’s knowledge of astronomy and its ‘relation to the internal spaces of Hardy’s mind’.\(^13\) Providing an overview of Victorian astronomy and its historical grounding, Gossin relates popular theories to specific examples in Hardy’s novels to show that the science was an important influence on the characterisation and scene setting of his

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\(^6\) ‘Two on a Tower’, *Saturday Review*, 18 November 1882, p. 675.

\(^7\) Herbert B. Grimsditch, *Character and Environment in the Novels of Thomas Hardy* (1925), New York: Haskell House, 1966, p. 23.

\(^8\) Grimsditch, p. 27.

\(^9\) Grimsditch, p. 23.

\(^10\) Carpenter, p. 63.

\(^11\) Gossin, p. xv.
nourisc. Anne De Witt shows how Hardy employs astronomical facts and events in a way that ‘intensifies the gloomy potential of his source, and suggests a ‘universe remote from or inhospitable to humanity’. Henchman reveals Hardy’s use of astronomy by exploring how the stargazers in his novels can overcome the ‘obstacles to accessing other minds’. For Henchman, the ‘minimal visual information’ available to the stargazers’ contrasted with the ‘thick sensory detail of earthly life’ becomes a starting–point for the imagination.

Yet, there is a peculiarity about Hardy’s ‘vision’ when it comes to his use of astronomy. The realist eye and the Romanticizing eye that originate in contrary epistemologies, become noticeably integrated complementing and emphasising each other. In his essay ‘Moments of Vision and After’, Laurence Lerner offers a definition of vision in relation to his study of Hardy: ‘vision is what your oculist treats, and it is what the mystic experiences, it means both what comes through the eye and what transcends ordinary sight’. However, the two are not mutually exclusive – that which the eye perceives affects the imagination. There is a tendency to forget that empiricism, the essence of Hardy’s way of experiencing the world, is also fundamental to both science and Romanticism, and does not necessarily divide the world into ‘opposite and irreconcilable parts’. In practice, astronomy has a particular reliance on visual empirical observation of the natural world. The Romantic re-discovery of nature and its translation into poetry, was more a revolt against the ‘poetic techniques and conventions that held them to an outmoded and imitative poetry of nature’, than scientific materialism. Persoon suggests that Hardy is ‘imprisoned in the categories that his empiricism creates’. However, the language and mechanism of astronomy enable Hardy, as in the Norcombe Hill passage, to dissolve the divisions between science and imaginative art. They enable him to show that both are important in making the universe knowable and for understanding humankind’s place in relation to its natural processes.

I believe Hardy is precisely breaking down the dichotomy between science and

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14 DeWitt, p. 484.
18 Persoon, p. 2.
20 Persoon, p. 3.
poetry, and that Hardy’s astronomical references in the Norcombe Hill passage are particularly illustrative of this. Hardy’s appreciation of the ability to synthesize poetry and science is found in his letter to the animist and anthropologist Edward Clodd: ‘I am glad to see what due honour you give to that glorious Double-man — poet and scientist — Lucretius’. Hardy also described his own ‘infinite trying to reconcile a scientific view of life with the emotional and spiritual, so that they may not be inter- destructive’. In his Literary Notebook, Hardy transcribed passages that seemed to concur with this view, such as John Addington Symonds’s review of Matthew Arnold’s Selections from Wordsworth (1879). Hardy included Arnold’s claim that ‘What Science is not called upon to supply, the fervour & the piety that humanize her truths, & bring them into harmony with permanent emotions of the soul, may be found in all that W. [Wordsworth] wrote’. Hardy also recorded Leslie Stephen’s opinion that the time was ‘not yet ripe for poetry to resume the results of science with imaginative grasp’, and in his next entry Stephens’ claim: ‘Yet signs are not wanting […] shorter poems of Tennyson’. These entries infer Hardy’s interest in poetical and scientific synthesis.

In his essay ‘Literature and Science’ (1882), Matthew Arnold argued that the way science describes the world differs from the way humans experience it. Science was limited, it being ‘knowledge not put for us into relation with our sense for conduct, our sense for beauty, and touched with emotion by being so put; not thus put for us, and therefore, to the majority of mankind, after a certain while, unsatisfying, wearying’. For Arnold, only literature can permeate scientific knowledge with emotion by connecting it to the other ‘powers which go to the building up of human life’. Arnold’s characterisation of science refuses the claims of scientific naturalists like T. H. Huxley who saw science as appealing ‘to the full range of human needs’ as it ‘has a direct bearing on human life’. Arnold recognized science as only one way of viewing the universe. It deals with the complex and abstract aspects of things and as such is limited by its observational and theoretical practices. Poetry celebrates nature and remains true

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24 Thomas Hardy, Literary Notebooks, vol. 2, p. 44, entry 1867; 1868.
to the personal experience. Arnold introduced these ideas in his *Literature and Dogma* (1873) which Hardy read, and transcribed passages from in his *Literary Notebooks*. Hardy discusses the power of poetry to humanize the truths of nature in his essay the ‘The Science of Fiction’ (1891), identifying in poets an innate ‘power of observation informed by a living heart’. I suggest that when Hardy was writing the Norcombe Hill passage he saw the possibility of reconciliation, of connecting science to emotion and the imagination. For Hardy, in *Far From the Madding Crowd*, and in his poetry, scientific and instinctive ways of understanding the world may be contrary epistemologies, but they are not necessarily in conflict.

‘In his mind’s eye’: Hardy, astronomy and *Far From the Madding Crowd*

Hardy’s interest in astronomy was nurtured at an early age by his reading of Cassell’s *Popular Educator*. His family owned a telescope although there is no record of its astronomical use. However, Hardy may have made observations of stellar space using his childhood friend Handley Moule’s telescope mounted on the roof of Fordington vicarage (Fig. 48). Hardy’s life-long interest in astronomy and other sciences was strongly linked to his personal friendships. The publisher Alexander Macmillan introduced Hardy to T. H. Huxley. In 1890, Hardy became friendly with the writer and anthropologist, Edward Clodd who was interested in astronomy, and a past member of

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27 Hoffmann, makes a similar point in regard to Whitehead: p. 263.
28 Anne DeWitt (2007) makes a similar connection between Hardy and Arnold’s quest to ‘harmonize’ literature and science suggesting that Hardy’s *Two on a Tower* shows the impossibility of such a reconciliation and that scientific values should not be applied to human relationships: p. 487.
Figure 48 The Vicarage, Fordington, showing the tripod for Handley Moule’s telescope

the Royal Astronomical Society. Clodd’s circle of friends included Proctor, Huxley, Tyndall and W. K. Clifford. Amongst Hardy’s friends was the surgeon and polymath, Sir Henry Thompson who owned a private observatory at his home Hurtside House in Molesey. Hardy was also acquainted with Alfred Lord Tennyson and Francis Martin an amateur meteorologist.

Like Tennyson, as we have seen earlier in this thesis, the works of Dante and Milton with their references to astronomy influenced Hardy. Alongside poetic and literary texts, Hardy also owned scientific and astronomical texts such as Sir Richard

34 The date of Hardy’s first meeting with Huxley is not clear but it was certainly prior to the summer of 1878: Pinion, Life and Friends, p. 156; Clodd was a member of The Royal Astronomical Society from 1869 to 1878. Clifford took part in the 1870 eclipse expedition to Sicily. Hardy owned a selection of Clodd’s publications including his A Primer of Evolution (1895) and Animism (1905): Millgate, Library 2007. He also visited Clodd’s Aldeburgh home: Hardy’s letter ‘To Edward Clodd’, 20 January 1892 recalls one such visit in the company of Walter Besant and J. M. Barrie: Collected Letters, pp. 254-5.


36 In February 1880, Hardy lunched with the Tennysons in Belgrave Square, London and was invited to visit them on the Isle of Wight: Pinion, Life and Friends, p. 170; Francis Martin owned the Kingston Maurward estate and Hardy’s father did construction and renovation work there. The young Thomas spent a lot of time on the estate, with the childless Mrs. Martin doting on him and teaching him to write: Pinion, Life and Friends, pp. 17-18.

37 Gossin, pp. 106; 117; 117 n.7.
Phillips’, *The Wonders of the Heavens Displayed, in Twenty Lectures* (1821). In 1857, his friend and mentor Horace Moule gave him a copy of Jabez Hogg’s *Elements of Experimental and Natural Philosophy* (1853). Later titles Hardy owned included the seventh edition of Amédée Guillemín’s *The Heavens: An Illustrated Handbook of Popular Astronomy* (1878). He also owned Richard Anthony Proctor’s *Essays on Astronomy* (1872) which included a chapter on the forthcoming Transit of Venus.\(^{38}\) His surviving notebooks suggest his knowledge of other texts by Proctor such as his *Other Worlds than Ours* (1870) and *The Expanse of the Heavens* (1873).\(^{39}\) Proctor’s chapters on John Herschel’s completion of his father William Herschel’s research, and John Herschel’s observations at the Cape of Good Hope, are thought to have played a major part in Hardy’s characterisation of the astronomer Swithin St Cleeve in his *Two on a Tower* (1882).\(^{40}\) Hardy’s *Literary Notebook* also directly references Proctor’s descriptions of astronomical phenomena as can be seen in his entries about Mercury and Neptune: ‘*The Planet Mercury* is always seen on the bright background of full twilight sky & does not make a striking appearance even if the most brilliant of the planets’; and ‘*Unknown Something* Neptune was the unknown something which made the motions of Uranus irregular – so that astronomers felt him before they saw him – After Proctor’\(^{41}\).

According to Proctor in his *Essays on Astronomy*, forming an astronomically correct visual idea of the universe provides, ‘valuable mental training’ for the student astronomer:

> It is not merely necessary that astronomical facts should be so presented to the student that he may become possessed with a feeling of their reality, but the student cannot be rightly said to ‘have astronomy’ at all (to use Shakespeare’s apt. expression) until he is capable of picturing to himself, however inadequately, the truths of the science. A man may have at his fingers’ ends the distances, volumes, densities, and so on of all the planets, the rates at which they move, the physical features they present, and a hundred other facts equally important; but, unless he has in his mind’s eye a picture of the solar system, with all its wonderful variety, and all its yet more amazing vitality, he has not yet passed even the threshold of the science.

For Proctor facts alone would not provide ‘the apt means for disciplining the mind, and


\(^{39}\) As Björk notes Proctor was a ‘repetitive’ writer and therefore Hardy may have gleaned his information from several of Proctor’s works particularly as many of his ideas were also published in periodicals such as the *Cornhill Magazine: Literary Notebooks*, pp. 262; A122; 263; A125.


\(^{41}\) *Literary Notebook*, pp. 122; 125.
fitting it for the noblest work of which it may be capable. But, besides the study of astronomical facts [...] the actual study of the heavens, either with the unaided eye or with the telescope’ is essential for a ‘securer grasp’ of astronomical knowledge. There is evidence in Hardy’s writing that he possessed in his ‘mind’s eye’ just such ‘a picture of the solar system’. In *Far From the Madding Crowd*, Hardy makes detailed references to the stars visible from Norcombe Hill at ‘nearly midnight on the eve of St Thomas’ (8). Plotting the movement of the constellation Ursa Major, Hardy details the colours of the stars:

The north star was directly in the wind’s eye, and since evening, the Bear had revolved round it outwardly to the east, till it was now at a right angle with the meridian [...] The kingly brilliancy of Sirius pierced the eye with a steely glitter, the star called Capella was Yellow, Aldebaran and Betelgeux shine with a fiery red.

(9).

Here Hardy’s knowledge can be linked to Proctor’s essay ‘Coloured Suns’, published in his *Essays on Astronomy*, where he describes the colour and power of the stars visible in the Northern hemisphere: Sirius is ‘noble’ and ‘scintillates’ exhibiting ‘vivid colours,’ whilst Betelgeux and Aldebaran are ‘red’ and Capella is ‘yellow’. In *Far From the Madding Crowd* Hardy’s description: ‘A difference of colour in the stars – oftener read of than seen in England – was really perceptible here’, also finds reference in Proctor’s essay (9):

In tropical countries the colours of the stars form a very obvious and a very beautiful phenomenon. The whole heaven seems set with variously coloured gems. In our latitudes, none but the brightest stars exhibit distinctly marked colours to the naked eye.

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Hardy offers a further description of the stars when Oak has returned a separated lamb to its mother. Oak ‘carefully examined the sky to ascertain the time of night from the altitudes of the stars’:

The Dog-star and Aldebaran, pointing to the restless Pleiades were half way up the southern sky, and beneath them hung Orion which gorgeous constellation never burnt more vividly than now as it swung itself high above the rim of the landscape. Castor and Pollux with their quiet shine almost rested on the ground:

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43 The prominence of these stellar descriptions led to the suspicion that the author of Hardy’s *Far From the Madding Crowd* was George Eliot. Leslie Stephen wrote to Hardy that ‘Besides the gentle Spectator, which thinks that you must be George Eliot because you know the names of the stars, several good judges have spoken to me warmly of the Madding Crowd’: Hardy, *Life*, p. 98.
44 Proctor, *Essays*, pp. 256-7; since writing this chapter, Gossin has published her book on Thomas Hardy and Astronomy and I note she also makes this connection, pp. 138-39.
the barren and gloomy Square of Pegasus was creeping round to the north-west; far away through the plantation Vega sparkled like a lamp suspended amid the leafless trees; and Cassiopeia’s Chair stood daintily poised on the uppermost boughs.

‘One o’clock’, said Gabriel (12).

Oak is conversant with the structure and constellations of the heavens. The passage reads like a textbook description of the night-sky, and points to a familiar technique of Hardy’s. In his Return of the Native, Clym scans the moon, the ‘silvery globe’, and is familiar with the names of the features of the moon. The passage reads like Amédée Guillemin’s description of the moon in his Wonders of the Moon (1873): ‘the Bay of Rainbows, the sombre Sea of Crises, the Ocean of Storms, the Lake of Dreams, the vast Walled Plains, and the wondrous Ring Mountains’ (193). It is notable that following Oak’s description, he gives an aesthetic judgement of the starlit night sky. Oak regards the night sky as not only ‘a useful instrument’ but also in ‘an appreciative spirit, as a work of art superlatively beautiful’ (12). In doing so, Hardy blurs the distinction between facts and beauty; facts or truths as we have seen in the Introduction and throughout this thesis can also be aesthetic. In Hardy’s case, his descriptions of the night-sky perform as aesthetic scenery as well as being educational and instructive to the reader. In similar vein, the country-person speaker in Hardy’s poem ‘Afterwards’ (1917) enjoys the sights and sounds of nature:

When the Present has latched its postern behind my tremulous stay,
And the May month flaps its glad green leaves like wings,
Delicate-filmed as new-spun silk, will the neighbours say,
‘He was a man who used to notice such things’?

(1-4).

Here, as in Far From the Madding Crowd and The Return of the Native, Hardy establishes the country-person as one who has a special, even innate, ability to notice the beauty of nature. Astronomical references establish a framework of background knowledge that is essential for the reader to have, in order to share in this aesthetic appreciation alongside Oak and Clym. In the two novels, Hardy acknowledges the widespread dissemination of astronomical science in Victorian culture appealing directly to the readers’ knowledge. Havelock Ellis commented on Hardy’s references to astronomy: ‘The astronomical enthusiasm is wanting in spontaneity. We prefer Mr.

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46 J. O. Bailey, ‘Hardy’s “Imbedded Fossil”’, Studies in Philology, 42.3 (July 1945), p. 667 n.27.
Proctor for popular astronomy’. According to Edmund Blunden, Coventry Patmore accused Hardy of indulging in the ‘detestable lingo of the drawing-room ‘scientist’’. In contrast, David Cecil saw in Hardy’s use of science an ‘opportunity for a new sort of poetry - an awe-inspiring vision of infinite spaces and mysterious, irresistible forces’. Indeed, this is evident in the Norcombe Hill passage, and in the more subtle, less explicit astronomical analogies, Hardy makes in his writing. For instance, the swarming of bees in Far From the Madding Crowd is described in terms of a nebula: ‘The bustling swarm had swept the sky in a scattered and uniform haze, which now thickened to a nebulous centre: this glided on to a bough, and grew still denser, till it formed a solid black spot upon the light’.

Rather than diverting aesthetic attention, knowledge of the science of astronomy becomes a focus for the expansion of the imagination in Hardy’s work. This ability to go beyond the known world is particularly discernable in Hardy’s 1874 version of the Norcombe Hill passage: ‘aloft from the customary haunts of thought and vision, some men may feel raised to a capability for eternity at once’ (9). Hardy further expresses his belief in the ability of astronomical observation to expand human consciousness, in a description by Tess Durbeyfield in his Tess of the D’Urbervilles (1891):

‘but I do know that our souls can be made to go outside our bodies when we are alive’ [...] ‘A very easy way to feel ‘em go’, continued Tess, ‘is to lie on the grass at night, and look straight up at some big bright star; and, by fixing your mind upon it, you will soon find you are hundreds and hundreds o’ miles away from your body’.

Whether by actual observation, or through knowledge gained from astronomical texts, Hardy places astronomical phenomena within the ‘mind’s eye’ of the reader. Alongside Hardy and his characters, the reader observes the night sky with a vivid actuality. They almost appear to become one with the universe they observe; this strong sense of unity Hardy expressed in his late poem ‘I Am the One’: ‘We stars must lend / No fierce regard / To his gaze, so hard / Bent on us thus, — / Must scathe him not. He is one with us / Beginning and end’ (19-24). To use scientific language from texts of the period is the ultimate expression of anthropocentrism. This might increase the

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49 Cecil, p. 73.
51 Proctor, Essays, p. 37.
separation of the human from the natural world, when it is Hardy’s particular aim to unite his readers with the natural world. As Gillian Beer argues, writing is a marker of ‘human distinctiveness’ and ‘human language is necessary for our apprehension and description of events beyond the human’. Language, including the scientific, can be both ‘a limiting condition on knowledge and a liberating discipline which makes possible the formulation of knowledge’.52 As I show in this chapter, it is precisely Hardy’s implicit expression of the period’s intoxication with the science of astronomy, his engagement with ‘the tastes of the hour’, that actually promotes connection with the natural world through recognition, rather than distancing his readers.53

‘The poetry of motion’

In the Norcombe Hill passage, Hardy uses the Romantic trope of viewing the landscape from an eminence to observe the night sky. For Hardy, the hill is a vantage point from which to ‘enjoy the epic form of [the] gratification’ of the ‘poetry of motion’ (9). Hardy states that ‘The better outlook upon space afforded by a hill emphasises terrestrial revolution’, to those standing ‘alone’ (9). As such, the solitude it provides enables an intimate connection between landscape and subject: Oak becomes part of the moving landscape and the glide of the heavens (9). Rather than suggesting detachment and de-personalization, a sense of commanding power over nature, Hardy’s use of the eminence in this passage promotes a Romantic intimacy with the natural world. This passage is not about controlling nature but more about achieving a oneness with the landscape.54 Oak is placed in a situation of nearness to the heavens due to his standing on the height of Norcombe Hill, and to nature as he stands on the earth as part of the landscape. Likewise, astronomical language and facts translated into the passage energize his landscape with motion, enhancing the connection between the poet and nature.55

52 Beer, Open, p. 155.
53 Blunden, p. 199.
As Hardy notes in the Norcombe Hill passage, the ‘poetry of motion’ was ‘a phrase much in use’ (9). During the second half of the nineteenth century, articles frequently appeared in journals discussing the origin of the phrase. An 1874 letter in *Notes and Queries* translated from Aristotle’s *Art of Poetry*: ‘‘The Iambic and Trochaic have more motion; the latter being adapted to dance, the other to action and business’’.56 Another article in the same journal in 1876 attributed ‘the germ of the phrase’ to Byron’s *The Waltz* (1812) quoting his lines: ‘‘Back to my theme, O Muse of Motion! Say, / How first to Albion found thy waltz her way!’’57 The articles connect dance to the motion of the heavenly bodies, invoking Aristotle’s music of the spheres. This was both an important poetical trope, and an astronomical theory first advanced by Pythagoras. It appears, for example, in the ‘‘mystical dance’’ of the spheres in Milton’s *Paradise Lost*.58 The platonic and stoic idea of the contemplation of the heavens as beneficial to the soul may have influenced this train of thought. It also connects with Hardy’s writing. The Roman emperor Marcus Aurelius, influenced by Plato and the Stoics, suggested the stresses of this world are lightened by placing oneself in motion with the heavens. He wrote: ‘Look round at the courses of the stars, as if thou wert going along with them; and constantly consider the changes of the elements into one another; for such thoughts purge away the filth of the terrene life’.59

It is significant that Horace Moule gave Hardy a copy of the 1862 edition of the *Thoughts of the Emperor M. Aurelius Antoninus* in 1865.60 Likewise, there is a link to eighteenth-century poetic and artistic representations of landscape. ‘Motion of nature’ was considered one of the ‘most attractive qualities’ the artist and poet could ‘strive to depict’.61 For example, Addison was enthralled by the view through a camera obscura because of ‘the Motion of the Things it represents’.62 Hardy owned a copy of James Thomson’s poem *The Season’s* (1730), in which descriptions of organic natural

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57 Frederick Rule, ‘Dancing “The Poetry of Motion”’, *Notes and Queries*, VI (20 September 1876), p. 277, original emphasis.
62 Cited Hagstrum, p. 255.
movement abound. In particular, Hardy may have been influenced by Thomson’s description of planetary motion in the ‘Autumn’ section of his poem *The Seasons*:

> Snatch me to heaven; thy rolling wonders there,  
> World beyond world, in infinite extent  
> Profusely scattered o’er the blue immense,  
> Show me; their motions, periods, and their laws,  
> Give me to scan; thro’ the disclosing deep  
> Light my blind way ...

Here Thomson asks ‘Nature’ to show him the immensities of the universe and the motion of its worlds, whilst lighting his ‘way’ as he moves through the heavens. 63 Thomson’s movement through the heavens resonates with Hardy’s ‘nocturnal reconnoitre’ through ‘astral clusters’ in the Norcombe Hill passage. It also gives a sense of the vastness of the heavens that is also found in Hardy’s Norcombe Hill passage, but which is probably most acute in the 1912 Wessex edition. This edition ends the passage with the lines ‘After such a nocturnal reconnoitre it is hard to get back to earth, and to believe that the consciousness of such majestic speeding is derived from a tiny human frame’. In this later version, the consciousness is bodily: there is a stronger sense of the smallness and futility of the human body, in relation to the vastness and power of the forces of the universe. Yet, there is also a sense of paradox in that the ‘tiny human frame’ has the capability of perceiving the motion of the earth. Hardy projects a sense of wonder, both at the abilities of human consciousness, and at the awe-inspiring ‘majestic speeding’ of the earth. 64 Hardy’s notion of ‘majestic speeding’ is found in the chapter ‘On Motion and Forces’, in the 1853 edition of Jabez Hogg’s *Elements of Experimental and Natural Philosophy*, he owned. Here Hogg describes the motion of the earth in remarkably similar terms to Hardy:

> Common Motion is that in which we participate with other objects; thus, on the earth’s turning on its axis daily, and revolving round the sun annually, we unconsciously move with it; so calmly majestic is this motion, that few think they are on the surface of a body twirling round at a rate of nearly one thousand miles an hour, and advancing in a circle, at the same time round the sun with a velocity of 68,040 miles every hour, or nineteen miles every second of their existence. 65

Likewise, Proctor’s *Essays* influenced Hardy’s recognition of the effect of the motion of the universe on the mind of the observer. Proctor writes in his chapter on the study of

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astronomy:

And I know of no consideration which tends more clearly to bring this idea before the mind of the student than the thought that our sun, with his attendant family of planets, is speeding through those abysses with a velocity altogether past our powers of conception, while yet no signs of his motion and our motion with him, can be recognised, even after the lapse of centuries, save by taxing to the utmost the powers of our noblest telescopes.66

This passage places the same emphasis on ‘speeding’ as Hogg’s text and the Norcombe Hill passage. Like the Norcombe Hill passage, it promotes the idea that this motion is unrecognisable and beyond human ‘conception’. At the end of his chapter, Proctor writes ‘The mind cannot but be strengthened and invigorated, it cannot but be purified and elevated, by the contemplation of a scene so full of magnificence’.67 He thus, reiterates the sublime sense of the awe he believed was created in the mind of the student of astronomy, by the ‘contemplation’ of the motion of the universe.68

This idea of a universe of motion pervades Hardy’s Far From the Madding Crowd. Leaves, hedges grasses all move with the wind. Sheep move about in the darkness and the heavens are full of activity. Stars that twinkle are ‘but throbs of one body, timed by a common pulse’ and constellations move: ‘The north star was directly in the wind’s eye, and since evening the Bear had revolved round it […] till it was now at a right angle with the meridian’(9). Astronomical images of the motion of the spheres appear throughout Hardy’s fiction and poetry. In The Return of the Native, Clym and Eustasia are ‘like those double stars which revolve round and round each other, and from a distance appear to be one’.69 In The Hand of Ethelberta (1876) ‘silent as to her thoughts’, Ethelberta ‘wore an air of unusual stillness. It was the silence and stillness of a starry sky, where all is force and motion’.70 In Far From the Madding Crowd, Oak’s work is defined in terms of motion – lambing is ‘the first movement in his new progress’ (10). Likewise, Oak’s lifestyle is mobile, his shepherd’s hut, the ‘image’ of a ‘small Noah’s Ark’, ‘stood on small wheels’ and could be ‘dragged into the fields’ during the

66 Proctor, Essays, p. 39.
67 Proctor, Essays, p. 48. Also see Richard A. Proctor, ‘The Study of Astronomy’, Fraser’s Magazine, 4.21 (September 1871), p. 292. Gossin also links this passage in Proctor’s Essays to what she terms the ‘cosmic sublime’ but she does not draw out the connection to the idea of motion in Hardy’s Far From the Madding Crowd, instead using Proctor’s Essays to begin her analysis of Hardy’s The Woodlanders, Tess of the D’Urbervilles and Jude the Obscure: p. 199.
68 Proctor, Essays, p. 48.
lambing season (9-10). His mental capacity is also defined in terms of celestial motions: although if occasion demanded he could do or think a thing with as mercurial a dash as can the men of towns who are more to the manner born, his special power, morally, physically, and mentally, was static, owing little or nothing to momentum in any case, as a rule

This passage particularly emphasises Hardy’s knowledge of celestial mechanics. Hardy links human bodies in movement with celestial objects in motion, drawing upon astronomical explanations of motion in the solar system. Like an object in the Newtonian universe, where forces and counter forces cause movement, Oak requires an external cause, an ‘occasion’ to rouse him from a state of rest. Oak’s ‘static’ quality is opposite to his ability for speed. ‘Mercurial’ refers to Mercury, the Greek winged messenger of the Gods, who the planet Mercury was named after. When Hardy was writing *Far From the Madding Crowd*, the planet Mercury was calculated as having a rotational period of 24 hours. Therefore, it was considered the fastest moving planet in the solar system.\(^7\) Contained in Hardy’s description of Oak are the Aristotelian / Galilean conceptions of inertia. Defending the Copernican hypothesis, Galileo argued that the tendency of objects to remain in motion once moving was as ““natural”” as Aristotle’s idea that things tend towards rest.\(^7\) Oak thus straddles the two worlds of the old and new astronomy, yet his ‘static’ ‘special power’ importantly emphasises his links with the past. As we have seen in the chapter on Tennyson in this thesis, the very notion of planetary rotation suggests cyclical repetition and thus eternity.

In the Norcombe Hill passage, there is a sense of Hardy’s ‘insistence on the recurrence of primordial, mythic events, embedded in the structure of the cosmos’.\(^7\) Comets, for instance, which are traditionally steeped in mythological associations, frequently appear symbolically in Hardy’s poetry and prose. In *The Woodlanders* (1887), Grace Melbury is ‘agonised’ by Giles’ look: ‘His soul seemed to be passing through the universe of ideas like a comet: erratic, inapprehensible, untraceable’.\(^7\) In *Two on a Tower*, the chance of sighting a comet has a powerful impact on the mind of the dying astronomer, Swithin St Cleeve. It restores his ‘vitality’, giving him ‘the

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\(^7\) In 1800 Johann Schröter erroneously estimated the planet’s rotational period at approximately 24 hours. In the 1880s Giovanni Schiaparelli mapped the planet more accurately, and suggested that Mercury’s rotational period was 88 days, the same as its orbital period due to tidal locking.

\(^1\) Cited Gossin, p. 69.


strenuous wish to live and behold the new phenomenon’ (97). He has lost the will to live after an American astronomer published a pamphlet that ‘announced a conclusive discovery with regard to variable stars’, which had also been his (92). However, ‘the limitless and complex wonders of the sky resumed their old power over his imagination’, with the possibility of sighting a comet (97). In his poem ‘The Comet at Yell’ham’ (1902), Hardy describes Donati’s comet of 1858, viewed from ‘Yell’ham Height’ with ‘its fiery train, / So soon to swim from sight’, as it ‘bends far over Yell’ham Plain’ (I: 1-4). 75 In the second part, the returning comet will endure beyond human lifetime, emphasising the permanence of nature in contrast to mortality of humankind:

\[
\begin{align*}
\text{It will return long years hence, when} \\
\text{As now its strange swift shine} \\
\text{Will fall on Yell’ham; but not then} \\
\text{On that sweet form of thine}
\end{align*}
\]

(II: 1-4).

It is noticeable that the viewer is not the solitary astronomer or sky watcher in Hardy’s ‘The Comet at Yell’ham’. It is as if the celestial occurrence is a theatrical event, staged for the community of Yell’ham. The emphasis on the word ‘Stand’ implies the comet has a commanding presence, that it causes the viewer to ‘stand and regard’ in awe ‘its fiery train’ (I: 3). Many contemporary illustrations show Comet Donati being observed by groups of onlookers. The comet is as much a cultural spectacle as a scientific one. This is seen in the view of Comet Donati over the Cambridge observatory, published in the Illustrated London News (Fig. 49). 76 Hardy’s division of the poem into two parts reinforces the theatricality of the event in ‘The Comet at Yell’ham’, making it appear as two Acts of a dramatic performance. Hardy also describes the comet as ‘bend[ing] far over Yell’ham plain’ (I: 1). The comet was commonly portrayed as arching over a landscape. Notably, this is the style Hardy chose for his own drawing to illustrate his poem ‘A Sign-Seeker’ in the 1898 Wessex edition

75 Martin Ray identifies, I believe correctly, the comet as Donati of 1858: ‘Hardy’s “The Comet at Yell’ham” and Donati’s Comet’, Notes and Queries, 49.4 (December 2002), p. 491. Carl J. Weber has suggested Hardy refers to Encke’s comet: Hardy of Wessex: His Life and Literary Career, New York: Columbia University Press, 1965, p. 133. Encke’s comet was seen in 1858 but was barely visible. It would not return ‘long years hence’ as in Hardy’s poem, as its orbital period of 3.3 years is the shortest of any periodic comet (II: 1). Hardy also wrote to T. Herbert that the comet ‘had appeared, I think, in 1858 or 1859 - a very large one - & I remember standing and looking at it as described’: see Ray, p. 491. Gossin also offers this line of identification, p. 185.

76 An exception is the painting by William Dyce, Pegwell Bay, Kent: A Recollection of October 5th, 1858 (1858-60) where the comet is a faint object in the distance ignored by the people in the painting. It was also painted by Samuel Palmer in his The Comet of 1858, as seen from the Skirts of Dartmoor (1858).
Figure 49 Donati’s Comet, as seen from the Cambridge Observatory, on October 11, 1858, from the *Illustrated London News*

Figure 50 Thomas Hardy, illustration to ‘A Sign-Seeker’, from his *Wessex Poems and Other Verses*, 1898
of his poems (Fig. 50). Hardy’s description of the comet at Yell’ham as ‘bend[ing]’ is also scientifically correct evidencing Hardy’s astronomical knowledge. Comets near perihelion rotate the sun so quickly that their tails exhibit a bending appearance.

‘The Comet at Yell’ham’ is a poem of motion. Just as the comet as a celestial object moves across the sky and into sight and out of it, so there is temporal and spatial movement in Hardy’s poem. Temporally the Comet is sited in the present: in the title ‘at Yell’ham’, and in the first part ‘regard[ed]’ ‘from Yell’ham Height’ (I: 2-3). Later, in the second stanza, it is imagined in the future: in ‘long years hence’ (II: 1). There is a movement spatially from the immediate to the distant - a movement from the localised self who is part of universal comet watching: ‘And we, from Yell’ham Height’, to the dislocated self, experienced with the comet ‘so soon to swim from sight’ (I: 2; 4).

The movement from localisation to dislocation is based in the role of comets as portents of change. In particular, they were often regarded as omens of disaster, a subject Proctor discussed in his essay ‘Comets as Portents’. In Hardy’s poem, the comet acts as a portent of change: it hints at the changing world being experienced by the on-lookers in which their cultural roots are fast being lost ‘from sight’ (I: 4). The motion of the comet, reflected in Hardy’s invocation of movement structurally in his poem, is further emphasised in its language. In the first stanza the comet ‘swim[s]’, and in the second stanza, the comet’s ‘strange swift shine’ unbroken by commas suggests speed and visual movement (I: 4; II: 2). Speed here is also aural; the SSS sound of the three words portrays movement aurally and visually on the page.

In his poem ‘A Sign-Seeker’, Hardy’s speaker looks for evidence or signs of immortality amongst natural phenomena. The speaker has ‘Mark[ed] the months […]The noontides many-shaped and hued’ and has ‘seen the lightening-blade, the leaping star, / The cauldrons of the sea in storm (1; 2; 9-10). He has tried the astronomical scientific approach:

I learn to prophesy the hid eclipse,
    The coming of eccentric orbs;
    To mete the dust the sky absorbs,
    To weigh the sun, and fix the hour each planet dips

(13-16).

Likewise, he has tried ‘to glimpse’ in the ‘graveyard green’ ‘a phantom parent, friend’

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78 Andrew Webb.
and ‘lain in dead men’s beds’ and ‘walked / The tombs of those with whom [he] had talked’ (26; 25; 26; 42; 43). However, although he has ‘Called many a gone and goodly one to shape a sign’ ‘none replies’, and instead ‘Nescience mutely muses: When a man falls he lies’ (44; 45; 48). Nescience implies that for Hardy, there is that which is ultimately unknowable despite his sign-seeking in nature; without the knowledge he seeks in nature, there is no evidence of an afterlife. In ‘The Comet at Yell’ham’, ‘A Sign-Seeker’ and ‘To Outer Nature’, Hardy is looking for signs or omens in nature. In ‘To Outer Nature’ he uses the phrase ‘Omen-scouting, / All undoubting’ to describe his early faith in nature which suggests a belief in biblical creation: ‘Love alone had wrought thee — / Wrought thee for my pleasure’ (3-4; 5-6). Hardy’s poem turns into a reflection on what has faded in his beliefs: ‘that old endowment [...] Time forbids with scorning — / Makes [him] see things / Cease to be things / They were in [his] morning’ (12-20). This sign-seeking is also the province of Hardy’s rural characters, like Gabriel Oak, who looks for signs in nature. Uninfluenced by ‘Time’, Oak is still in touch with the vitality of the earth and with ‘older way[s] of seeing’, that Hardy’s speaker in his ‘To Outer Nature’ has lost connection with.79

The association of celestial events with omens or portents also has a superstitious import. Such superstition as knowledge implies a world that is mysterious and is therefore beyond human control. It is significant that the astronomical viewing on Norcombe Hill in Far From the Madding Crowd takes place on St Thomas’s Eve, 21st December. With the moon at its perigee, the closest point in its orbit to the earth and the sun at its greatest angular distance on the other side of the equatorial plane, it is the shortest day or longest night of the year. Known as the winter solstice, in the northern sky the three stars in Orion’s belt align with Sirius, the brightest star in the eastern sky. This shows where the sun will rise in the morning after the winter solstice giving rise to Pagan associations with the notion of rebirth. The inclusion of such astronomical events steeped in myth, implies that Hardy sees them as part of the processes of life which lie beyond scientific knowledge. In his Two on a Tower, the night sky shows ‘patterns steeped in history and legend’, superstition and ancient mythology (278).80 Folk wisdom, as Martha A. Turner explains in relation to Walter Scott’s The Bride of Lammermoor (1819), does not ‘provide an accurate picture of the “real world”’, yet

80 Millgate, Career, p. 186.
such lore does grasp an important truth about the human condition to which the empirical, rational approach is blinded: the universe may in theory be fully knowable but there is still much that is mysterious. As long as this is so [...] people will [...] need to rely on more than just observed facts and inductive inference to make sense of their lives.\textsuperscript{81}

Hardy uses both scientific and intuitive ways of knowing to describe the events of the world of his characters in \textit{Far From the Madding Crowd}. After the Norcombe Hill passage, Hardy uses analogies connected with the movement of the planets to describe mental or physical motion. Oak’s hut is ‘a small dark object’ and the newborn lamb a ‘little speck of life’, emphasising terrestrial smallness and futility against the vastness of the universe (9; 11). In such descriptions, important juxtapositions are present in Hardy’s viewing distances. ‘Continuous’ movements occur between the large and the small.\textsuperscript{82} They reveal Hardy’s ‘poetry of motion’ (9). Motion for Hardy is not just the description of the physical motion of people or the heavens. It involves the use of a ‘shifting set of images of varying focal length’, a movement from the telescopic to microscopic.\textsuperscript{83}

Clearly, Hardy’s focus on motion emulates metaphysical poetry’s focus on the dynamic – where descriptions of objects and their backgrounds and actions of the mind are interpreted in terms of motion. The nineteenth century saw a revival of metaphysical poetry sparked by Alexander Grosart’s edition of John Donne’s poems in 1872, two years before Hardy’s \textit{Far From the Madding Crowd}.\textsuperscript{84} Hardy’s friend Edmund Gosse was also interested in the metaphysical poets publishing a biography of Donne in 1899. For Gosse, Donne’s poetry exhibited an ‘abundance of mental movement’.\textsuperscript{85} Notably, Gosse connected Donne to the theories of the astronomer Johannes Kepler, pointing out the ‘hitherto escaped notice’ that Donne was ‘completely captivated by the recent epoch-making discoveries in the science of astronomy’. Gosse writes of Donne’s ‘rapture’ with Galileo and the ‘sensational expansion of the New Astronomy’.\textsuperscript{86} Kepler, it should be noted, discovered the three laws of planetary motion. As a result astronomy focused on the study of the forces that make planets move as they do – dynamics, rather than the study of how planets move – kinematics.

\textsuperscript{81} Turner, pp. 75-76.
\textsuperscript{82} Ian Gregor, ‘Hardy’s World’, \textit{ELH}, 38.2 (June 1971), pp. 279; 288.
\textsuperscript{83} Gregor, pp. 276; 288.
\textsuperscript{86} Gosse, vol. 1. p. 257.
In Hardy’s poem ‘At a Lunar Eclipse’, the focus on the motion of earth as it moves across the moon, gives rise to deliberations about the state of life on earth:

Thy shadow, Earth, from Pole to Central Sea,
Now steals along upon the Moon's meek shine
In even monochrome and curving line
Of imperturbable serenity.

How shall I link such sun-cast symmetry
With the torn troubled form I know as thine,
That profile, placid as a brow divine,
With continents of moil and misery?

Observing the lunar eclipse invokes Hardy’s imagination, and he questions how he can compare the serene and ‘sun-cast symmetry’ of the shadow of the earth, with the knowledge he has of its ‘continents of moil and misery’ and ‘nation at war with nation’ (5; 8; 17). In this process, motion also occurs in the movement from the distant view of the eclipse to his immediate earthly concerns. As such, there is a movement from telescopic distance to the microscopic. However, these analogies might also suggest spectator detachment. Both imply mediated vision and thus a perceptual gap between the object viewed and the eye, which translates into a Nature: Spectator dichotomy. Nevertheless, the Norcombe Hill passage and likewise his poem ‘At a Lunar Eclipse’ do not fit this pattern. The viewer’s observations of the night sky result in an overriding sense that Hardy is aware of the ‘overall pattern of Natural Law’, of its continuance and endurance ‘indifferent’ to humankind. Also undetectable, is the ‘dichotomy [...] between human consciousness and an indifferent universe’ that Hardy expresses in his later poem ‘Shut Out That Moon’ (1904). Here the endurance of the moon, and the imaginative possibilities observation of astronomical phenomena invoke, must be contained. Here, too, the indifference of nature to man’s concerns is implicit in the sense of endurance, suggested by the moon’s place in deep time:

She wears too much the guise she wore
Before our lutes were strewn
With years-deep dust, and names we read
On a white stone were hewn

The moon that ‘wears too much the guise she wore / Before our lutes were strewn’ is a

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87 Gregor, p. 283.
88 Lawrence Jones, ‘Thomas Hardy’s “Idiosyncratic Mode of Regard”’, *ELH*, 42.3 (Autumn 1975), pp. 435-436.
reminder of the past (3-4). Hardy wishes to escape these reminders and demands in the first line ‘Close up the casement, draw the blind, / Shut out that stealing moon’ later asking for a ‘prison’ for his ‘eyes and thought’ (1-2; 20). Hardy continues the association of memory with viewing astronomical phenomena in the second stanza:

Step not forth on the dew-dashed lawn
To view the Lady's Chair,
Immense Orion's glittering form,
The Less and Greater Bear:
Stay in; to such sights we were drawn
When faded ones were fair

(7-12).

When Hardy wrote ‘Shut Out That Moon’ his wife Emma was still alive. However, here the last lines instill the sense of regret and sadness Hardy felt that they had grown apart. Watching the constellations was an activity they shared but now Hardy wishes to contain the ‘sentiments’ experiencing nature might remind him of:

Brush not the bough for midnight scents
That come forth lingeringly,
And wake the same sweet sentiments
They breathed to you and me

(13-16).

In this poem, Hardy places his own thoughts and concerns against the background of the ‘cosmic canvas’. A particularly astute analysis by Leo J. Henkin uses the analogy of telescopic vision to explain Hardy’s thinking: ‘Hardy viewed man from both ends of the telescope. From the one, man loomed large, dominating the scene, from the other, he shrank into insignificance against a cosmic canvas’. This very much reflects the situation in Hardy’s Norcombe Hill passage, and in poems such as ‘In Vision I Roamed’ (1866), where observing the heavens or depictions of astronomical phenomena become offset against his personal fears. The astronomical prospect creates a particularly inward psychological experience for Hardy. As for Tennyson in his poem ‘Armageddon’, it results in an expansion of the ‘mental eye’, and we see this particularly emphasised in Hardy’s use of the trope of the celestial journey (II: 23).

In his ‘In Vision I Roamed’, there is a movement in distance from the distant to the immediate. This results in ‘thankfulness’ that the woman who is the present object of his affections is close to him, at least that she is also on this earth rather than ‘set on

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90 Henkin, p. 225.
some foreign Sphere’ (10-11).\textsuperscript{91} Here, Hardy sets his fear of being apart from the woman he is presently infatuated with, against the background of a visionary astral journey. Hardy’s poem ‘In Vision I Roamed’ belongs to the tradition of celestial voyage poems where the observer or his spirit journeys through space often looking back at the earth. Examples of celestial dream voyages can be found in eighteenth–century poems such as John Hughes ‘The Ecstasy’ (1720). Here lifted above the earth the speaker is ‘rais’d sublime on Contemplation’s Wings’ and ‘stray[s], / From Orb to Orb; and now behold[s] / Unnumber’d Suns’ and sees the remnants of the earth’s past – Palmyra, Babylon, Rome, and War and Pestilence’ wrecking the globe.\textsuperscript{92} Much later, Tennyson in his ‘Locksley Hall Sixty Years After’ (1886), also suggests that the reader must quit momentarily what is familiar, and stand on Venus or Mars and look back at the earth: ‘Hesper-Venus – were we native to that splendour or in Mars, / We should see the Globe we groan in, fairest of their evening stars’ (187-88).\textsuperscript{93}

The trope of the celestial journey was popular with Hardy. Examples are found in the Norcombe Hill passage in his Far From the Madding Crowd, and in his The Return of the Native. When Clym in The Return of the Native observes a lunar eclipse his eye travels ‘over the length and breadth’ of the moon ‘- till he almost felt himself to be voyaging bodily through its wild scenes, standing on its hollow hills, traversing its deserts, descending its vales and old sea bottoms, or mounting to the edges of its craters’ (193). It is noticeable that Hardy uses the words ‘nocturnal reconnoitre’ to describe such journeys, both in the Norcombe Hill passage, and in his Two on a Tower to describe Swithin’s telescopic observation of the heavens (9; 233). In Two on a

\textsuperscript{91} This may have been the servant-girl Eliza Nicholls, to who he seems to have been almost engaged to from 1863 to 1867 while in London: Ingham, Thomas Hardy, p. 17.

\textsuperscript{92} Anne Janowitz, “‘What a rich fund of images is treasured up here’: Poetic Commonplaces of the Sublime Universe’, Studies in Romanticism, 44.4 (Winter 2005), pp. 474-75.

\textsuperscript{93} Hardy owned a 1776 edition of Edward Young’s Night Thoughts in which the narrator finds reconciliation to mortality in an astral voyage. He was also interested in the works of Jean Paul Richter and in his notebook entry for 1 July 1868 he recorded ‘Cures for despair: - ‘To read ... Carlyle’s ‘Jean Paul Richter’: Hardy, Life, p. 59. Literary Notebooks, vol. 2, p. 565: A108. Most likely Hardy is referring to Thomas Carlyle’s German Romance (1827), or his 1827 and 1830 essays on Richter published in the Edinburgh Review. In his German Romance, he observes that Richter’s ‘Imagination opens for us the Land of Dreams; we sail with him through the boundless abyss’: Thomas Carlyle’s, Collected Works, London: Chapman, 1869, vol. 6, p. 358. Hardy owned Carlyle’s The Complete Works (‘People’s Edition’) 37 vols., London, 1872-4 and n.d.: Millgate, Library, 2007. Hardy’s ‘1867’ notebook contains a number of transcriptions from Richter’s works. One from his Levana; or, The Doctrine of Education, relates to the motion of the earth: ‘The little human being ... borne upon a flying earth’: Literary Notebooks, vol. 2, p. 468 entry 129 and see vol. 2, p. 567 A128. Hardy may have read his ‘Dream upon the Universe’ from his Der Komet: oder Nikolaus Markgraf with its astral voyage. Likewise, he may well have read Richard Proctor’s The Expanse of Heaven: A Series of Essays on the Wonders of the Firmament, London: Henry S. King, 1873, which begins with a dream journey through the ‘glowing’ orbs of the solar system, p. 5.
Tower, it is used in the sense of scouting or exploration in the hope of new discovery. A reconnoitre is a journey to explore, an act of reconnoitering; a reconnaissance, often with the goal of finding something or somebody.\textsuperscript{94} Hardy’s use of the astral journey results in a rediscovery of subjectivity. His characters quite literally find themselves: there is a discovery of the self through astronomical observation. Characteristic of the celestial voyage trope is the voyager turning back to look at the earth, and in Hardy’s case we find this in his ‘In Vision I Roamed’\textsuperscript{95}.

The word ‘vision’ works in two ways in this poem; in optical terms describing the ability to see or the sense of sight, and as in having a visionary experience, which is emphasised in Hardy’s poem by the description ‘in footless traverse’\textsuperscript{(5)}\textsuperscript{96}. In this poem, as in the Norcombe Hill passage, there is sense of seeing what is beyond ordinary sight, beyond earthly viewing. In terms of astronomy, this suggests there is more to be discovered beyond reality as viewed with the naked eye or the telescope. Such nocturnal reconnoitres among ‘astral clusters’ are as Hardy tells us in the Norcombe Hill passage of Far From the Madding Crowd, ‘aloft from the customary haunts of thought and vision’ (9). Nevertheless, it is notable that the containing ‘dome’ of the heavens remains un-penetrated. In ‘In Vision I Roamed’ Hardy describes the night sky as ‘the monstrous Dome’: ‘In footless traverse through ghast heights of sky, / To the last chambers of the monstrous Dome, / Where stars the brightest here are lost to the eye’ (5-7). As a ‘Dome’, the night sky is figured as contained, as boxed in and bounded. In the same poem, the containment metaphor is continued: ‘I lived unaware, uncaring all that lay / Locked in that Universe taciturn and drear’ (13-14). This poem is usually read as describing the insignificance of humankind in an uncaring universe, and the adjective ‘uncaring’ as equally referring to the speaker who thus identifies with the universe.\textsuperscript{97}

We find the same idea in a passage in Hardy’s Two on a Tower, which in its grotesque descriptions, also strongly resonates with the picture of the heavens we gained from De Quincey earlier in this thesis. Here Swithin St Cleeve describes the sky as a dome, a ceiling to the earth:

\textsuperscript{94} Since writing this chapter, I have come across Anna Henchman’s paper ‘Hardy’s Stargazers and the Astronomy of Other Minds. Henchman also identifies Hardy’s use of the term reconnoitre and its connotations.

\textsuperscript{95} Janowitz points out that this idea of self-discovery through observing the heavens has its roots in Romanticism and begun with Coleridge’s ‘Frost at Midnight’. Here, the poet looks back at the impulses to his vocation as a poet declaring that as a child in the city of London, he saw ‘nought lovely but the sky and stars’, p. 491.

\textsuperscript{96} Henchman makes a similar observation: ‘Stargazers’, p. 53.

\textsuperscript{97} Persoon, pp. 25-6.
‘The imaginary picture of the sky as the concavity of a dome whose base extends from horizon to horizon of our earth is grand, simply grand, and I wish I had never got beyond looking at it in that way. But the actual sky is a horror’[...]'horrid monsters lie up there waiting to be discovered'[...]
‘Impersonal monsters, namely. Immensities [...] monsters of magnitude without known shape. Such monsters are the voids and waste places of the sky’

(57).

Therefore, in Two on a Tower the bounded space of the dome makes safe the ‘ghastliness’ of ‘those minds who exert their imaginative powers to bury themselves in the depths of that universe’, and who ‘merely strain their faculties to gain a new horror’ (58).

Hardy had the problem of how to portray the immensity of the astronomical prospect, and how to picture the experience of it to his reader. Knowledge of the ‘alien immensity of the universe’ created a problem for the nineteenth-century pastoral writer, just as it had in the eighteenth century. With increasing astronomical knowledge, the landscape poetry of looking in georgic mode, reliant on totalising the vista, could not be applied. As Anne Janowitz explains: ‘For the poet of the night sky [...] who looks up, not out, the task is to totalize something that cannot be encompassed: the infinitude of the universe itself’. The difficulty lies in imaging a celestial prospect that is without bound, without a horizon. Astronomical knowledge presents a space ‘alienated from the mind’, visually and mentally unintelligible.98 To overcome this, Hardy uses the metaphor of the dome to signify bounded space. Yet, figuring the night sky as bounded space is also problematic for the poet, as in limiting the view it also places a limit on the imagination. Ruskin had touched on such a problem in his Modern Painters II (1860):
‘For the sky of night, though we may know it boundless, is dark, it is a studded vault, a roof that seems to shut us in and down, but the bright distance has no limit, we feel its infinity, as we rejoice in its purity of light.99 The prevention of recessional space by the night sky, for Ruskin, prevents transcendence as it also works to bring perceptual space back to the immediate, to the present.100 Thus figured, Hardy uses the idea of containment to his poetic advantage. Keeping the astral journey within the ‘dome’ ensures there is ‘poetry of motion’ of the ‘mental eye’, from the distant prospect back to personal subjectivity: observation of the heavens becomes a study of the self.

Richard Benvenuto has described ‘the small free space in Hardy’s poetry’,
suggesting that when Hardy’s vision is personalised, moments of freedom and moral action are possible. In contrast, he argues the cosmic viewpoint makes Hardy’s universe appear ‘as a giant prison’, because ‘from the cosmic standpoint the conditions of all things are uniform and the same’, and they are governed by an impersonal mechanical universe.  

This idea of a ‘small free space’ is a useful concept, and leads to the consideration of astronomy as forming a creative space for Hardy’s imagination. Hardy faces a universe of enduring law where the workings of nature, including the motions of planets and the earth are beyond human control. Not only is astronomy objective as a science, but the universe is indifferent, moving and enduring for all time. However, Hardy harnesses this objectivity in service of subjectivity. Inquiring into his fascination with, and use of astronomy in his poetry and prose, reveals that for Hardy, the night sky is invested with personal meaning, and that it affected his poetic imagination.


102 Here, I draw on Benvenuto’s alignment of Hardy with the Romantic belief that the imagination ‘possesses the power of making the objective subjective, of investing nature with personal meaning and value’, p. 40.
Conclusion

Whatever modifies our intellectual conceptions powerfully, in due time affects art powerfully

Edward Dowden, ‘The Scientific Movement and Literature’¹

In 1877 the literary scholar and poet, Edward Dowden published his essay ‘The Scientific Movement and Literature’ in the *Contemporary Review*.² It opens with a statement which is particularly relevant to the inquiry this thesis has conducted. For Dowden, ‘the time has not yet come when it may be possible to perceive in complete outline the significance of science for the imagination and the emotions of men, but that the significance is large and deep we cannot doubt’. Dowden employs De Quincey’s distinction between the literature of power and the literature of knowledge, to claim that that ‘from one point of view’ ‘the literature of power’ can ‘be described as essentially non-scientific, and even anti-scientific’.³ He explains that the ascertaining and communication of facts is the role of science whereas the quickening of ‘our life into a higher consciousness is the function of art’. However, he claims that our ‘emotions rest on and are controlled by our knowledge’: ‘art is aroused by every discovery of new fact, every modification of old theory, which in open or occult ways can enter into connection with human emotion’. For Dowden, the poet possesses a special ability to put in harmony ‘the altered conceptions of the intellect’, in a period when ‘conceptions of God and His relation to the universe are being profoundly modified by science’.⁴

According to Dowden, ‘a great poet is great, and possesses a sway over the spirits of

² Amongst Dowden’s poems are some with astronomical content. See for example, ‘The Secret of the Universe’ in his *Poems*, London: King, 1876.
³ Dowden, ‘Scientific Movement’, p. 558. De Quincey distinguished ‘two separate offices’ to literature ‘that may blend’ or are ‘capable’ of a ‘severe insulation’ as they are ‘naturally fitted for reciprocal repulsion’. For De Quincey firstly there is the ‘Literature of knowledge’ where the ‘function ... is – to teach’ which ‘speaks to the mere discursive understanding’. Secondly there is the ‘Literature of power’ where the ‘function ... is – to move’ and which speaks ‘to the higher understanding or reason, but always through affections of pleasure and sympathy’: ‘The Works of Alexander Pope, Esquire’, *North British Review*, IX (August 1848), pp. 299-333, *Works*, vol. 16, p. 336. See also undated manuscript ‘The Literature of Knowledge and The Literature of Power’, Wordsworth Library, Dove Cottage, Grasmere, MS 1989:161.46, *Works*, vol. 20, pp. 398-400.
⁴ Dowden, ‘Scientific Movement’, p. 558.
men, because he has perceived vividly and received powerful impressions from some of the chief facts of the world and the main issues of life. What Dowden identifies is the influence of science on the creativity of the poet. He raises the issue of the public and private concern of poets and Victorian society, for the changes in traditional thought and established scientific theories about the nature of the cosmos, astronomy was revealing. These concerns affected both astronomers and poets. Unlike Dowden, we are now in the privileged position of being able to look back at the Victorian period to assess the impact of science, and in this case astronomical science, on the poetic imagination. This thesis has revealed how astronomers and writers of poetry and prose, sought to come to terms with the new discoveries that characterised the science in the Victorian period.

Studying both the writings of astronomers and the poet-astronomer has shown how they were simultaneously affected by fear and wonderment. It has revealed how tropes of the sublime theorised by those such as Pascal, Burke and Kant were an important influence on their writing. Likewise, we have seen how the heavens were regarded both as beautiful and dreadful, and how the revelation of the facts or truths of astronomy invoked a sense of wonder and awe, and were used to create aesthetic descriptions. This thesis shows how both scientific and literary works are vehicles for the recording and transmission of those feelings. The writers studied in this thesis looked to astronomical works and their own observations of the heavens for the language, structure and metaphor to employ in their own writings. Victorian poetry and astronomical science were both cultural objects, and each shaped the cultural environment of the other.

Likewise, Victorian society was intoxicated with astronomy; its methods and technologies were part of the period’s cultural spectacle and ranged from the observatory of the disciplined expert to the parlour of the family home. The Victorians’ knowledge of the science of astronomy, and their use of the telescope, caused the writers studied to question their personal hopes, fears and doubts, and to work them through in a process of self-discovery. The alteration of distance resulting from the use of telescopes provided important analogies for the writers’ investigation of their own subjectivity. In their writing astronomy became part of larger conversations, often adding another level of meaning to the reading of their work. For example, questions of immortality and sexuality are intertwined with the narratives of astronomy in the works of the writers in this thesis. No one sole narrative stands alone, each arouses other

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stories in their work.

These personal concerns widened into concerns for the place and future of humankind in what seemed an ever-growing and more complex universe. Bertrand Russell eloquently sums-up these concerns in his essay *A Free Man’s Worship* (1903). Following a description of the origins of the earth in terms reminiscent of the nebular hypothesis he writes\(^6\):

Such, in outline, but even more purposeless, more void of meaning, is the world which Science presents for our belief. Amid such a world, if anywhere, our ideals henceforward must find a home. That Man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual life beyond the grave; that all the labours of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of Man's achievement must inevitably be buried beneath the debris of a universe in ruins — all these things, if not quite beyond dispute, are yet so nearly certain, that no philosophy which rejects them can hope to stand. Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built.

Russell asks, ‘How, in such an alien and inhuman world, can so powerless a creature as Man preserve his aspirations untarnished?’ In reply, he argues that ‘Nature, omnipotent but blind, in the revolutions of her secular hurrying through the abysses of space’, in humankind has produced beings ‘subject still to her power, but [...] free, during his brief years, to examine, to criticise, to know, and in imagination to create’. In response to the facts of astronomy the writers in this thesis examined, criticised, gained knowledge, and in imagination created discourses about these ‘resistless forces’ that were being discovered.\(^7\) Indeed, poetic and scientific writers often occupied ‘common ground, common purpose and common means’ in their employment of the imagination.\(^8\) Astronomical writers required their readers to engage the creative faculty as they painted them pictures in words, diagrams, and engravings of that which was not always

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\(^6\) Since Lord Rosse’s evidence refuting the nebular hypothesis, it was accepted again. In 1864, William Huggins using his spectroscope discovered that the nebulae are formed from gas so supporting the nebular hypothesis of the origin of stars and planets by condensation from luminous masses of fluid material.


visible to their naked eye or through their telescope. In the same way, the writers in this study create pictures in words of what exists only in their mind, and is therefore invisible to the reader. As we have seen, poetic descriptions of astronomical phenomena often give rise to visionary experiences, or to intense introspection.

C. P. Snow’s 1959 Rede Lecture aroused the now much rehearsed ‘two cultures’ debate, where ‘literary intellectuals’ and scientists, were in Snow’s opinion, divided by a ‘gulf of mutual incomprehension’. As Russell pointed out in response to Snow’s lecture, this ‘divide between the cultures was of fairly recent origin’. Indeed, as this thesis has revealed, in the nineteenth century, these divisions were less prominent. Science was part of ““public culture””, and both scientists and literary figures were concerned with discovering the meaning of existence. Snow believed that for twentieth-century disciplines, ‘the clashing point of two subjects, two disciplines, two cultures – of two galaxies, so far as that goes – ought to produce creative chances’. This thesis has shown how Tennyson, De Quincey, Hopkins and Hardy engaged with the ‘creative chances’ the science of astronomy offered.

9 Snow, pp. 1; 4.
11 Ruston, p. 2.
12 Snow, p. 16.
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