

## CHAPTER I

*Introduction*

Thirty-four years separate the travels of two literary figures of the end of the eighteenth, and the beginning of the nineteenth, centuries. These travellers across Europe looked at geology in markedly different ways. The first was Goethe travelling to Italy in 1786:

I spent the whole of this beautiful day in the open air. The moment I get near mountains, I become interested again in rocks and minerals. I seem to be an Antaeus who always feels new strength whenever he is brought into contact with his mother earth...On the way there, after leaving behind some sandstone hills, I came upon whole boulders of muscovite mica, sticking up out of the ground. The hill where spa is found is not far from a brick kiln and a stream formed by the conjunction of a number of brooks. At first I thought it was alluvial clay which had probably been washed down from the mountains by rain, but, on closer inspection, I found that its solid rock was a finely laminated schist, alternating with bands of gypsum.<sup>1</sup>

The second traveller was Dorothy Wordsworth in 1820 travelling with her brother, William, his wife, Mary, and other close friends over what was for them virtually sacred territory, the pass over the Alps that her brother had traversed as a young man. Mary and Dorothy were approached by a boy and a girl selling minerals: 'We had no dealings together in that line; but William dispatched them to bring us milk from their hut'.<sup>2</sup>

The surface message of these two pictures of travellers in Europe is that there is a distinction between a poet who respected geology and a near-contemporary poet and his family who appeared to reject any contact with this science. The contrast is superficial confirmation of a commonly held theory of the separation between science and forms of Romanticism. The line of that argument would be that the Romanticism displayed by the Wordsworths was markedly different from the 'Naturphilosophie' of Goethe's contemporaries, that the Wordsworths clearly found the universe of stones and minerals uninspiring, and that

on a visit to the grand setting of the Alps the last thing they wished to do was to ‘pry and pore’ over the minor components of the huge panorama before them. Further evidence could be produced from poems and letters to confirm this point of view. In a letter of 1827 from Dorothy to Mary Laing, for instance, the poet’s sister somewhat condescendingly declines to assist in finding rock specimens for her friend’s new hobby: ‘I am so ignorant of all that lies beneath the surface of this earth of ours that I think there is little chance of my bringing home anything that the geologist would care about. Whenever I find a very pretty stone I shall think of you and pick it up.’<sup>3</sup> Mary Laing must have persisted, because a year later Dorothy wrote that she was glad that Mary had ‘so many rational and agreeable amusements’, but she herself was ‘neither mineralogist nor geologist’.<sup>4</sup>

Mary Wordsworth was similarly modest, or perhaps accurate, about her interests in geology. Writing to John Kenyon in August 1827, she tells that a neighbouring cottage has been rented by two maiden ladies, ‘who are admirers of scenery and understand the ologies (in the latter we do not participate, the sciences do not flourish at Idle Mount)’.<sup>5</sup> Mary Wordsworth used a family joke for the name, Rydal Mount, but are we to assume that she was serious about the lack of interest in the ‘ologies’ and, in particular, geology? The traditional answer to this question is to find confirmation of a lack of sympathy with geologists in Wordsworth’s statement written in 1813 in book III of *The Excursion*, where the Solitary condemns

He who with pocket-hammer smites the edge  
 Of luckless rock or prominent stone, disguised  
 In weather – stains or crusted o’er by Nature  
 With her first growths, detaching by the stroke  
 A chip or splinter – to resolve his doubts;<sup>6</sup>

The simple view that the Wordsworths had no interest in geology is, however, contradicted by another incident from Dorothy’s *Journal* of 1820. Shortly after the rejection of the children’s offer of minerals, she records a signal of interest. She and Mary Wordsworth actually purchased two crystals: ‘the only treasure we have brought home from the Alps’.<sup>7</sup> This minor inconsistency of behaviour will serve as an emblem for one argument of this book, which is that the poet most clearly identified with the first flowering of English Romanticism, who eventually occupied in the eyes of a large section of the public the stature of a moral as well as a literary leader, was closer to the popular

and morally respectable scientific pursuit of his times than later generations have chosen to admit.

There are many reasons why a general impression has persisted that Wordsworth and geology occupied separate and even antagonistic worlds. The common source for this impression has been the judgement by generations of historians of literature that English Romantic writers exalted the inner life, distinguishing its richness from what they judged to be the mechanical theories of mind and perception held by materialist philosophers of the eighteenth century and by utilitarian psychologists of the nineteenth century. Some modern critics have continued to endorse the distinction between an inner life and the outer material realms, linking imaginative literature with the first and science with the second. As late as 1984, Nicholas Maxwell represented this analysis in his study of scientific ideas, *From Knowledge to Wisdom*:

It never occurred to the 'philosophers' of the Enlightenment to divorce passionate concern for the inner life of man from passionate involvement with the imaginative and critical exploration of the natural world being undertaken by natural science. Romanticism created this divorce. Rousseau, Blake, Wordsworth, Keats, Tolstoy, Kafka, D. H. Lawrence and a multitude of other novelists, poets, dramatists and artists passionately pursued person-to-person understanding – exploration of the experiential world – in a way that was divorced from, if not actually hostile to, science.<sup>8</sup>

Even if we avoid taking up the sweeping historical simplification of this range of writers, we must weigh with care the value of the clause, 'Romanticism created this divorce.' The simple view that Romanticism can be summarized as one single movement, or that it was uniformly opposed to science, has been untenable for a long time. Seminal studies by Lovejoy and by Piper<sup>9</sup> were followed by detailed work on individual literary figures and the interaction between their writing and the work of contemporary scientists. Gliserman's analysis (1975) of Tennyson, Levere's work (1981 and 1990) on Coleridge and science, or Gillian Beer's subtle study, *Darwin's Plots* (1983), about the interrelationship of ideas found in Charles Darwin's writing with incidents in novels of George Eliot and Thomas Hardy, have established clear roads for anyone tracing the complexities of the relationship between literature and science in the nineteenth century. I hope by this work to add something more to correct the perception of a polarity between literature and science.

Any modern study that attempts to understand Romanticism in its relationship to science, must be indebted to those who remind us that

both 'Romanticism' and 'science' are themselves modern constructs, largely built by those who wrote in the years after the very active decades of cultural innovation between 1770 and 1850 (the period of Wordsworth's life). As Butler (1981) so succinctly states: 'Romanticism, in the full rich sense in which we know it, is a posthumous movement; something different was experienced at the time.'<sup>10</sup> The situation is doubly complex, not only do we inherit definitions of Romanticism by its successors, we have access to deeper strata of evidence: Romanticism's own statements about the way the world was changing and the role that poets and natural historians were playing in changing it. An example of the layered difficulties of understanding is provided by the problem of either accepting or interpreting from our historical position the historicism of a past age. Certainly, as Eichner (1982) has elaborated, the early nineteenth-century scientific temper was as strongly historicist as that of leading sections of literary and artistic culture. McGann (1983) warns us of the creation of a Romantic Ideology by an uncritical absorption of the age's own definitions, and de Man (1993) gives us an image of generations (rather than one generation) in theoretical conflict: 'From its inception, the history of romanticism has been one of battles, polemics, and misunderstandings: personal misunderstandings between the poets themselves; between the poets, the critics, and the public; between the successive generations.'<sup>11</sup> Discouraging though this may be for a modern interpreter seeking crisp definitions, there is, in the early nineteenth century, unexplored material which provides encouragement to search with more rigour for the evidence of relationships between those who made science and those who made poetry.

Even in the period after Wordsworth's death there were observers who attempted a reconciliation of Wordsworth and science. Although Leslie Stephen's 'Wordsworth hates science' stands at one extreme, at the other, as early as 1854, R. Spence Watson (1889) argued in a talk to the Wordsworth Society that the poet was not confronting science, but over-specialization. The two most dedicated Wordsworthians of the second half of the century, Canon Rawnsley and Herbert Rix, Assistant Secretary to the Royal Society, contributed to Knight's major edition of Wordsworth's poems a set of footnotes with detailed evidence of the poet's attention to natural history and to topographical detail. Wordsworth's interest in, and even passion for, Newton has, of course, never been doubted and continues to attract scholarly enquiry.<sup>12</sup>

The evidence of Coleridge's and Wordsworth's close connection

with radical politics, which was also the world of radical science, has also provided further support for a reconciliation between poetry and scientific interest. Roger Sharrock's article of 1962 on the origins of the enlarged 'Preface' to *Lyrical Ballads* of 1802 led the way in this field. Coleridge's notes of Humphry Davy's Royal Institution lectures on chemistry in 1802 enabled Sharrock to begin a reconstruction of a network of poets who had aspirations to engage in science and a network of scientists who aspired to be poets.<sup>13</sup> It may well be that an unexpected outcome of these studies on the early poetry of Wordsworth has been to neglect the later years of the poet's life, or more likely to confirm that the later poems are problematic. So, political and social criticism of Wordsworth has tended to see his poems written after 1807, not only in the way early twentieth-century critics saw them, as a falling off of lyrical vision, but also as recantations of radicalism and a defensive compensation for loss of political liberalism.<sup>14</sup> Critics of our own generation, like Shelley in his, have taken an opportunity to give the conservative Wordsworth a stern dressing down for abandoning the opportunities that were opened to him by his early radical friends and by their enlarged, liberated vision. I shall argue later that a close analysis of Wordsworth's middle and later years gives no support to the notion that he retreated from the scientific community. On the contrary, the work of these years demonstrated a connection with a new and different subgroup of that community.

Before moving to the details of Wordsworth's association with geologists and what this association meant for him and for them, it is worth considering further why it is difficult to trace the interest shown by literary figures of the early nineteenth century in scientific activity. One immediate difficulty is the word 'Science' itself. In the period of Wordsworth's life, the term continued to mean what it had largely conveyed in previous centuries (an organized body of knowledge); and yet simultaneously it gained the special, more limited range of meaning it has in our day. An example of the semantic trap waiting to catch the unwary observer can be found in a remark by Wordsworth to Crabb Robinson in 1837 on visiting the archeological sites at Nimes: 'I am unable through ignorance to enjoy these sights. . . I have no science and can refer nothing to principle.'<sup>15</sup> Here Wordsworth does not mean he lacks knowledge of the techniques of archeological investigation; rather he claims an inability to exercise an orderly investigation based on principles. Less technically, the Wordsworth's family idiolect could use 'scientific' to mean 'orderly' or 'systematic'. Dorothy Wordsworth

refers to Derwent Coleridge and his quality of mind thus: 'He is very clever. I should wish him to be put in the way of some profession in which scientific knowledge would be useful; for his mind takes that turn. His is uncommonly acute and accurate.'<sup>16</sup>

Sometimes, as in book II of *The Prelude* of 1805, Wordsworth uses 'Science' to cover a range of studies which we would call 'philosophy' or 'social science':

Thou, my friend, art one  
 More deeply read in thy own thoughts; to thee  
 Science appears but what in truth she is,  
 Not as our glory and our absolute boast,  
 But as a succedaneum, and a prop  
 To our infirmity.<sup>17</sup>

Wordsworth was not unique in applying 'science' to a wide range of intellectual activities. His contemporaries, whom we would now call scientists, frequently referred to themselves as philosophers or natural philosophers. A significant date in the history of the word 'scientist' occurred long after the establishment of many organizations for the study of the sciences. It was in 1832 that the newly created British Association for the Advancement of Science discussed the appropriateness of the term. No less a figure than Coleridge addressed the assembly on the subject and solemnly warned the Association members against their continued use of the word 'philosophy' for their burgeoning activities and techniques.<sup>18</sup> Two of the geologists considered in the following chapters were still at odds with the term 'scientist', as late as 1840. William Whewell mused on the right term for a growing profession in *The Philosophy of the Inductive Sciences* thus: 'We need very much a name to describe the cultivator of science in general. I should incline to call him a *scientist*, thus we might say that as an Artist is a Musician, Painter or Poet, a Scientist is a Mathematician, Physicist or Naturalist.' Adam Sedgwick, the geologist, wrote in the margins of his copy: 'better die of this want than bestialise our tongue by such barbarisms'.<sup>19</sup> In this pithy comment there is a message for succeeding historians: our assumption of two separate worlds of science and philosophy was far from commonly accepted. Whatever Coleridge in his most dogmatic mood may have determined, men who dealt with material things saw themselves as part of a unified high culture.

The *locus classicus* for the study of the differentiation between science and the humanities is Wordsworth's own manifesto on the responsi-

bility of the poet in the 1802 revised 'Preface' to the second edition of *Lyrical Ballads*. The famous argument about the difference between the Poet and the 'Man of Science' has been taken to be the schismatic moment for the two cultures. It deserves closer consideration. There are two important distinctions in the central section of the 'Preface'. The first is in a footnote to the debate on the distinction between poetry and prose, where Wordsworth notes that the true distinction should be between 'Poetry and Matter of Fact, or Science'.<sup>20</sup> Once again, 'Science' in this antithetical statement has a wider reference than the specific knowledge field of natural history. It is to do with 'fact' in opposition to affairs of poetic or imaginative activity. The second distinction between poetry and science in the 'Preface' is more important for my argument at this point. It arises from the section on the appropriateness of language for depicting 'real passion' which, Wordsworth says, is a valid subject not only for poets but also for other men whatever their specialized roles. A distinction which has been well and truly aired in twentieth-century debates is the separation of 'the two cultures'; but which culture is Wordsworth discussing in 1802? A quotation from the same 'Preface' reveals that Wordsworth is not separating a literary from what we now call a scientific culture: 'Poetry is the image of man and nature, the obstacles which stand in the way of the fidelity of the Biographer and Historian, and of their consequent utility, are incalculably greater than those, which are to be encountered by the Poet who comprehends the dignity of his art.'<sup>21</sup> Wordsworth's intention is to identify the Poet as a figure distinct from, yet inextricably also in membership of a social category, 'Man in general'. Because of his concentration and narrowness, the (non-Poet) specialist can possess neither 'fidelity', nor 'utility', and, most important, he is separated from 'the image' of reality. Wordsworth, Davy, and Coleridge were fully aware that the recording of reality by numerical formulae, by creating new words, or by maps and diagrams was a major preoccupation of the scientific community of the early nineteenth century. As an emerging group the 'Men of Science' were evolving a new language, but were still not clear about their difference from 'men of letters'. Wordsworth's analysis of such distinctions in the revised 'Preface' was inspired by one Man of Science's attempt at a definition of science as a legitimate activity of a well-established cultural society. We shall see further tussles with such definitions in the chapters that follow.

This study intends to consider one branch of scientific activity, geology, in order to illustrate in closer detail the intricacies of the

connection between literature and science in the first half of the nineteenth century. Because Wordsworth has been considered for too long as one of the originators, if not the originator, of an anti-scientific faction, I have concentrated on the evidence to the contrary in his writing, with particular attention to the second half of his creative life, from 1810 onwards. The work of Wordsworth's later years has recently received respectful attention. For simple convenience, I refer to the period as the middle and later years of the poet's life.<sup>22</sup> A number of reasons come together to endorse that special period as one of interest. In the first place, although these years are traditionally regarded as providing evidence of the declining powers of the poet after his remarkable decade of creative endeavour from 1798 to 1807, as far as his contemporaries were concerned, the poetry of Wordsworth from *The Excursion* (1813) onwards was truly significant. There are hidden, unexpected pleasures in the later poems, but it was not for rare gleams of lost glory that Wordsworth's contemporaries either loved or disliked them. There is no doubt of the importance of the later poems in helping to confirm ways of thought amongst a younger generation of readers, some of whom established the major institutions for the study of science in England. Prominent amongst these enthusiastic readers were members of the Geological Society of London who were also Fellows of Trinity College, Cambridge. The interconnection of these geologists, all of whom achieved their maturity as scholars after 1810, is one of the themes of this book. Adam Sedgwick (1785–1873) and William Whewell (1794–1866) are the two chief characters under consideration in the pages that follow.

In the period 1810 to 1850, there were many other eminent geologists who respected Wordsworth. Some, like William Buckland, Reader in Geology at the University of Oxford, met the poet in the Lake District and possibly in Oxford and London, although the evidence of their meeting is slight.<sup>23</sup> A major figure of a younger generation, Charles Lyell, read Wordsworth and quoted him, but there is little information about whether they actually met. Both Buckland and Lyell, as giants in their territory, are considered in the following pages, but without the close attention given to Adam Sedgwick and William Whewell with whom Wordsworth had a continuous and warm friendship.

One major figure who is considered in some detail alongside the two Trinity men is George Bellas Greenough (1778–1855), the first President of the Geological Society. His voice is introduced as evidence at various points of the argument, not because he was any closer to



### Introduction

9

Sedgwick and Whewell than to other Council members of the Geological Society, but because, through a reading of his private notebooks, we can see the formation of the mind of an organizer of geology which complements the detailed knowledge we possess from letters, personal records, and scholarly writing by the Cambridge academics. In addition, Greenough's association with Coleridge, chiefly from 1798 to 1805, makes an indirect link with Wordsworth. The significance of Coleridge as an influence on the younger Wordsworth (and Wordsworth's influence on him) is beyond doubt. Greenough therefore steps on stage in the early period of Wordsworth's life. In later acts he figures, as I have said, as a complement to the philosophical and literary interests of his friends in the Geological Society. A similar actor, again most closely associated with Coleridge, though within the milieu of Wordsworth at least until 1815, is Humphry Davy. Davy's interests as a geologist occupy attention in my argument at certain points, because, like many of his contemporaries, his literary and philosophical thinking was far from peripheral to his scientific interests.

Humphry Davy is at first associated with younger Wordsworth's residence in Alfoxden and the early years of residence in the Lake District. Wordsworth's understanding of geology in this early period has received a degree of attention recently. Major studies (for example, Nicolson (1963), Sheats (1973), Kelley (1988), and Bewell (1989)) have paid close attention to the sources of Wordsworth's knowledge of seventeenth- and eighteenth-century geology as it is revealed in poems written before 1807 and in the key prose work, *A Topographical Description of the Country of the Lakes*, first published anonymously in 1810. Although my main attention, for reasons indicated above, is given to Wordsworth's later poetry, it is important to recognize the continuities of the poet's life and the complex but permanent influence of the eighteenth century on his work. Continuity of the same two periods is also a theme of the history of English geology as Laudan (1974), Rudwick (1976), and Porter (1977) have shown. I have therefore summarized in chapter two the main examples of geological understanding in Wordsworth's early writing as well as in works of his later years. The major geological concept for the first decades of the nineteenth century, Catastrophism, will be considered in that section. There are interesting modern studies that illustrate Wordsworth's comprehension of Catastrophism and of the associated hypothesis, Diluvialism, and I have added suggestions of my own. I also put forward the case for a closer consideration of the

late eighteenth-century geologist, James Hutton, not as a teacher of a rival school or as a theorist offering alternatives to Catastrophism, but as an instance of the many variants of geological ideas in active circulation during Wordsworth's younger years. It is true that there is considerable diversity in the history of early nineteenth-century geology, just as there is in the history of literature. Often uniformity and coherence have been qualities imported by later generations.

The word 'influence' has already appeared in this introduction and it has to be grappled with in any consideration of the relationship between literature and geology. Modern critical theory, whether from sociology, history, or literary criticism, is justly suspicious of the search for influences. Foucault's strictures are severe:

To ransack history in order to rediscover the play of anticipations or echoes, to go right back to first seeds or to go forwards to the last traces, to reveal in a work its fidelity to tradition or its reducible uniqueness, to raise or lower its stock of originality, to say that Cuvier had more predecessors than one thought; these are harmless enough amusement for historians who refuse to grow up.<sup>24</sup>

Suspicion of a search for 'influences' is not a modern phenomenon. This is from Coleridge on 'influence': 'Hume – and the French imitated him and we the French – and the French us – and so philosophies, fly to and from a series of imitated Imitations – Shadows of shadows of a farthing candle placed between two looking glasses.'<sup>25</sup>

My theoretical position in this study is not to eschew 'influence', but to consider evidence provided by Wordsworth's own accounts of his reading of past authors and of contemporary sources. 'Influence' is a linguistically convenient device for referring to correlations between different discourses. It is clear that Wordsworth was a reader with wide-ranging tastes who had access to many different sources of information in the libraries of friends and in his own book collection. He was a writer who did not hesitate to appropriate themes and sometimes phrases from his predecessors, as both he and modern editors acknowledge. What is not so well understood is that his reading ranged over books and journals which included scientific articles or excerpts, although their titles do not always indicate to our specialist age that they are about science. In chapter three I elaborate on this theme, but do not confine myself to printed material in the pursuit of 'influence'.

Rom Harré (1983) suggests that in seeking correlations between the