

**MARY SOMERVILLE AND THE CULTIVATION OF  
SCIENCE, 1815 – 1840**

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SCIENCE, 1815 – 1840

ELIZABETH CHAMBERS PATTERSON

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# MARY SOMERVILLE AND THE CULTIVATION OF SCIENCE, 1815 – 1840

*by*

ELIZABETH CHAMBERS PATTERSON

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Nearly 30 years ago the late Sir Brian Fairfax-Lucy, Bt. and his wife, the well-known writer and friend of scholarship, the Hon. Lady Alice Fairfax-Lucy, deposited at Somerville College, Oxford, a large collection of letters, papers and memorabilia that had come to him as the Fairfax heir. All had belonged to that remarkable nineteenth-century scientific lady, Mrs. Mary Fairfax Greig Somerville (1780–1872), after whom Somerville College is called. In time this material was transferred to the Bodleian Library, where in 1967 the author began, as a first step in its exhaustive study, the sorting, arranging and cataloguing of the more than 5000 items which now make up the Somerville Collection. This Collection and other pertinent pieces are the basis of this book, the first detailed scrutiny yet made of any part of Mrs. Somerville's life and accomplishments.

The writer is deeply indebted to the Fairfax-Lucys for permission to use the Somerville Collection and for their many kindnesses to her. She is grateful also to the Fellows of Somerville College for their interest and encouragement and for their warm hospitality during her stays in Oxford. Particular thanks are due the former Librarian of Somerville, Norma Lewis, now Lady Dalrymple-Champneys, who first brought the Collection to the author's attention and has since been a steadfast guide in its exploration, and to two recent Principals of the College, Dame Janet Vaughan, F.R.S. and Mrs. Barbara D. Craig, who also have given unstintingly of their time, knowledge and sympathy. The American Philosophical Society through two grants supported the cataloguing and microfilming of the papers, an invaluable assistance that is gratefully acknowledged.

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## INTRODUCTION

Among the myriad of changes that took place in Great Britain in the first half of the nineteenth century, many of particular significance to the historian of science and to the social historian are discernible in that small segment of British society drawn together by a shared interest in natural phenomena and with sufficient leisure or opportunity to investigate and ponder them. This group, which never numbered more than a mere handful in comparison to the whole population, may rightly be characterized as 'scientific'. They and their successors came to occupy an increasingly important place in the intellectual, educational, and developing economic life of the nation. Well before the arrival of mid-century, natural philosophers and inventors were generally hailed as a source of national pride and of national prestige. Scientific society is a feature of nineteenth-century British life, the best being found in London, in the universities, in Edinburgh and Glasgow, and in a few scattered provincial centres.

During the years 1815 through 1840 — the span of this study — the most evident changes in British science were the emergence of a multitude of specialities within the broad field of natural philosophy and the formation of their attendant specialist learned societies; the emergence of a kind of primitive professionalism among scientific practitioners; and the emergence of wider and more substantial recognition and support of science by the government and by the nation, as the utility and promise of this branch of learning became manifest. At the beginning of this period, for example, only the Royal Society of London — embracing all the sciences of the day — and three specialist societies — the Linnean, the Horticultural, and the Geological — were firmly established. By the end of the period, these four had been joined by ten new scientific organizations, three of which — the Astronomical, the Botanic, and the Geographical — were also designated 'Royal' and another of which — the British Association for the Advancement of Science — subsumed every recognized scientific speciality.

In 1815 science was considered by the public and by its practitioners an avocation. Natural philosophers thought of themselves as gentlemen amateurs and regarded their organized societies as gentlemen's clubs. By 1840, however, a man could reasonably give all his working hours to science and honourably gain a livelihood thereby. Furthermore, proficients in various branches of science were by then slowly beginning to formulate suitable courses of training for novices and to set down acceptable standards of performance and other requirements for admission to their fields. Indiscriminate election of fellows to scientific societies was under heavy attack from

within as demands grew to limit membership to gentlemen actively pursuing science and to regard election as a token of competence and esteem. Only the British Association could maintain in the coming years, as it had from its founding, a policy of admitting any man who wished to join.

In 1815 official recognition of scientific endeavours and of those engaged in them was scant and highly personal. Humphry Davy's knighthood in 1812 was the first conferred for scientific work since Isaac Newton's in 1705. But a growing insistence, chiefly by the scientific community, on signs of Royal approbation and on greater financial assistance in carrying out researches and establishing needed facilities resulted, from the 1830s, in readier bestowal of civil pensions and titles on scientific personages and in the funding of several large scientific undertakings. In an industrializing Britain, science and scientists found an increasingly important role. All these trends would intensify as time passed.

In the metropolitan centres of early nineteenth-century Britain science was a fashionable pastime. Crowds of stylishly dressed men and women flocked to lectures at the Royal Institution in London and elsewhere. Every smart drawing-room boasted a mineral cabinet. Scientific toys and small pieces of apparatus were commonplace on sitting-room tables and in ladies' boudoirs. A passion — be it ever so superficial — for science was modish in well-to-do circles. It was a deep and sincere interest, however, rather than mere fashion that brought a remarkable Scotswoman, Mrs. Mary Fairfax Greig Somerville, to the study of science and mathematics and guided her through her long and distinguished career as a scientific lady. Conditions and attitudes prevailing in the early nineteenth century made her career possible. A growing appreciation of science, an energetic nationalism, and her own considerable talents sustained it.

The period 1815 through 1840 marks Mrs. Somerville's life in London science, the years between her husband's initial appointment to a London post and the family's relinquishment — because of his ill health — of a permanent London residence. During this particular quarter century she was at the heart of the London scientific community, actively engaged in study, experimentation, and writing both there and in Paris. She was on familiar terms with the leading scientific men of her own country and of Europe, all of whom regarded her as a cherished colleague. With their encouragement she was able, through her own gifts and knowledge, to fashion a clear, concise and authoritative account of current science at a time when such a statement was lacking and much needed. Her *On the Connexion of the Physical Sciences* (1834) presented a comprehensive picture of the newest researches and ideas in the physical sciences, calling to the attention both of specialists and of general readers much recent scientific work hitherto little noticed but subsequently important.

Further, by her very choice of material for the book, Mrs. Somerville helped to define the then unsettled term 'physical sciences'. Throughout its many editions this volume retained its topical authority; no more reliable and convenient descriptions of the state of received physical science at the dates of

its publication can be found. Earlier, through her mastery of French mathematics and her skill at exposition, she made an important contribution to the modernization of English mathematics through her *Mechanism of the Heavens* (1831). Often carelessly and foolishly dismissed by historians in the twentieth century as vapid popularizations of abstruse subjects by a mere woman, these seminal books were in their own times gratefully and enthusiastically received by scientific specialists, by many informed readers, and by a host of others whom they brought to science for the first time.

Largely self-educated until her arrival in London early in 1816, Mary Somerville served there, through good fortune buttressed by great talent and zeal, an informal apprenticeship under several of the foremost philosophers of the day. At that date no formal course of training had yet been designed or prescribed, and scientific men — safe from economic or professional threat from scientific women — were cordially welcoming to serious students be they male or female.

Nowhere could Mrs. Somerville have found better masters and her tutelage, similar in most respects to that given superior males, typifies the instruction then considered necessary and appropriate for a practising scientist. Her own experience, especially when contrasted with the difficulties experienced a few years earlier by an even more gifted aspirant to science Michael Faraday — young and of the labouring class — demonstrates the advantages derived from gentle birth, a ‘proper’ introduction into scientific circles, and previous and continuing ties to the cultivated and well-born. The readiness and ease with which Mrs. Somerville and her unusual interest in science were accepted by the London scientific community and the up-to-the-minute training she received from men who were at the very time creating the science of the day attests not only to the openness of scientific society to the talented and well-connected but also to the absence of any anti-female bias among scientists. That her apprenticeship and career flowered in London illustrates the importance of being at the centre of discovery. Mary Somerville was at the right place at the right time and had the ability and will to make good use of her situation.

The English Scientific Establishment in these decades was small and made up overwhelmingly of Fellows of the Royal Society. The importance of this association is emphasized in the text by the inclusion of the year of election along with the dates of birth and death of the chief persons in this study. Yet this Establishment, far from being monolithic, was beset with internal strains and differences arising principally from a new and gradually developing professionalism in science. Mary Somerville, liberal in all her views, was firmly attached to the reform elements in science, in society, and in politics. Nevertheless, through her sweetness of character and her good sense, she always maintained friendly and civil relations with conservative, even reactionary, circles. A strong, rational and compassionate woman, she was never a violent activist on behalf of change. Rather she preferred to work within the system, convinced that reason and pressing need for change would ultimately bring about transformations without sacrifice of valued traditions. Through

her words and her example, she staunchly supported those causes she thought just, whatever popular opinion maintained.

Although on occasion Mrs. Somerville was criticized by unsympathetic persons — usually ill-informed or uncultured — for her ‘unwomanly’ pursuit of science, she also benefited greatly from the new respect accorded science and scientists in those years. At a time when national honours were largely reserved for the high-born and their connections, for politicians, or for military and naval figures and were rarely given intellectuals, she was handsomely recognized for her achievements by her country, her fellow countrymen and women, and by scientific colleagues. Before the middle of the century, she was accepted at home, abroad and overseas as the premier scientific lady of the ages. Before its end, a nation treasuring the image of itself as civilized, advanced, large-minded and innately superior had exalted her almost to the point of minor deification.

Adding greatly to her lustre in the eyes of her contemporaries was her exemplary fulfilment of her role as wife and mother. Displaying no tinge of blue, she moved easily and graciously in cultivated society, preserving all the traditional female traits and graces while adding to them extraordinary mental achievements. Moreover, she enjoyed the pleasures and gaiety of metropolitan life — music, art, the opera, the theatre, entertainments, excursions, and, above all, association with friends of like tastes. Sympathetic encouragement and useful assistance in her work from a husband who himself relished scientific society and gloried in her accomplishments played no small part in her career.

The present study considers only the scientific aspects of Mary Somerville’s life from 1815 through 1840. Other factors, such as the Somervilles’ financial circumstances, family crises, political conditions, international concerns and the like, necessarily enter but only insofar as they affect Mrs. Somerville’s intellectual life and her work. Simultaneously with her pursuit of science, she carried on an active and interesting daily existence in the best literary and political society of London and, on occasion, abroad. An examination of the Somerville Collection and of manuscripts and printed accounts of many of her contemporaries reveals that during her long lifetime, Mary Somerville met and was frequently on familiar terms with many celebrated figures in her own country, France, Italy and America. She was always much engaged with family affairs and family problems, carefully oversaw the education of her daughters and the advancement of her son in his profession, and managed a household with economy and style.

Any consideration of Mrs. Somerville’s own cultivation of science must of necessity be biographical and done against the mirror of the social and scientific history of her times. The present account, tracing as it does the development of her scientific interests, skills and career over a quarter of a century, is set out chronologically. The interaction between her individual cultivation of science and the larger cultivation of the subject in the western community — the ideas, opportunities, and limitations imposed on her by the times and so vital to her own participation in the enterprise — are stressed.

Mary Somerville was not a creative scientist in the sense that some of her contemporaries — men such as Wollaston, Herschel or Faraday — were creative scientists. She recognized this fact but knew too that she could make in her own way contributions to the studies that were of paramount importance to her and could bring knowledge of them to a wider public even as she herself satisfied her own inexhaustible thirst for learning. Her life, as related in her personal letters and papers and in those of many of her contemporaries, gives a firsthand account of the cultivation of science during these years, reflecting also the social and political pressures and the rewards encountered by scientists. Her pen delineates, with great fidelity and perceptiveness, the numerous men and women who made up the scientific, literary and political society she knew so well. Their responses to the march of events and to the changes they witnessed, their interactions with each other and with the larger world, and their relations with her and their part in her career emerge vividly from her pages.

After Mary Somerville's death in 1872, she was gradually forgotten by new generations whose limited perspective assigned value only to the science of their own times. Yet Mrs. Somerville's life in science from 1815 through 1840 yields, in many respects, a panoramic view of a period that begins with Waterloo and ends in the year that young Queen Victoria married her Prince Consort. In its particulars her career embodies the attitudes, opinions, the opportunities, the limitations and the many changes characterizing science over this span.

This study examines in some detail the factors that entered into her career, its unfolding, and its influences. Among the broad questions the work addresses are these: How did Mary Somerville move from self-taught provincial to celebrated scientific lady during the period of her London residence? How did she initially enter English and foreign scientific circles? How was she trained and who were her teachers? What actually did she do? Was it significant? Was it useful? Why was her work so well received and she so honoured? Never before have these questions been so fully treated. Their answers are given with the completeness and authenticity the Somerville Collection and other sources provide.



MRS. MARY FAIRFAX SOMERVILLE (aet. 55)

Painted from life in 1835 by Thomas Phillips, R.A., as one in the series  
'Eminent Personages' commissioned by the publisher John Murray.  
(Reproduced through the courtesy of the Scottish National  
Portrait Gallery, Edinburgh.)

## CHAPTER 1

### SCOTTISH BEGINNINGS

Mrs. Mary Fairfax Greig Somerville, who became ‘the queen of [nineteenth-century] science’,<sup>1</sup> was born on 26 December 1780 in the manse at Jedburgh, the home of an aunt, Martha Charters Somerville, who later became her mother-in-law. Her own mother, Margaret Charters Fairfax, who barely reached this border town before the baby arrived, was on her way back to Edinburgh from London, where she had seen her naval husband off on a long tour of sea duty. The new mother was very ill after her confinement and the infant was suckled by her sister, Mrs. Somerville, herself lately a mother. This sort of oddity — being born in the house of, and suckled by, a future mother-in-law — is characteristic of the unusual fortune, generally benign, that attended the child throughout her long life.

Her father was an Englishman, Lieutenant William George Fairfax, R.N. (1739–1813), who had gone to sea at the age of nine. The son of an army officer of Bagshot, Surrey, and a grandson of the Yorkshire branch of the family that had produced the great Cromwellian general Sir Thomas Fairfax and the Fairfaxes of the Virginia colony, W. G. Fairfax had long made Scotland his home. He had twice married Scottish wives, both from Burntisland in Fifeshire. It was his second wife, Margaret Charters, who was Mary Fairfax’s mother. One of a large family of children of Samuel Charters, Solicitor of Customs for Scotland, she was related to many of the ancient Scottish houses and, like her husband, had a strong sense of blood. Neither of them had any fortune, but birth and position placed them among the gentry.

Mary Fairfax was the fifth of seven children, three of whom died young. Her childhood was spent in Burntisland, a small seaport on the Firth of Forth. There, in a house sold to the Fairfaxes by Samuel Charters and still standing, Margaret Charters Fairfax reared her four young children — the eldest Samuel, then Mary and two younger ones, Margaret and Henry — on her husband’s slim navy pay. An indulgent and easygoing mother, she saw no need for any female education beyond learning to read the Bible and newspapers, to write family notes, and to keep household accounts. Her attitude was not unusual; in well-connected Scottish families at this time the sons customarily received excellent educations — attending university and entering the kirk, the legal profession or service in the East India Company — while the daughters mastered social and domestic arts but had only a minimum of book learning.

Not until young Mary’s father, returning from a period of sea duty when she was nine, discovered she was hardly able to read, unable to write, and had no knowledge of language or numbers, did this part of her education begin.

He dispatched her, at age ten, to a fashionable and expensive boarding school at Musselburgh — a drastic step for a man of his strong Tory convictions — where for the next twelve months she had the only formal full-time instruction of her life. She emerged from the experience, she recounts in her autobiography, ‘like a wild animal escaped out of a cage’,<sup>2</sup> but she had developed a taste for reading and acquired some notion of simple arithmetic, a smattering of grammar and French, poor handwriting and abominable spelling.

Over the next years she had occasional lessons in ballroom dancing, pianoforte playing, fine cookery, drawing and painting (under the landscapist Alexander Nasmyth), penmanship, needlework and the use of the terrestrial and celestial globes. A lively and persistent mind, immense curiosity and an eagerness to learn, supported by a robust constitution and quiet, unswerving determination enabled her to take advantage of every opportunity for enlightenment.

At Burntisland, although she had no intellectual guidance, she had freedom to roam the countryside and seashore, observing nature at first hand. She read through the small family library, teaching herself enough Latin for Caesar’s *Commentaries*. In Edinburgh during the winter months, family position brought her in contact with educated people in its upper circles and with the rich artistic life and the social gaiety of the Scottish capital at one of its most flourishing periods. A charmingly shy, petite and beautiful young woman — Edinburgh society dubbed her the ‘Rose of Jedwood’<sup>3</sup> in reference to her place of birth — she delighted in the parties, visits, balls, theatres, concerts and innocent flirtations that filled the days of popular Edinburgh belles at the turn of the century.

Another and less conventional interest also absorbed her during these years, one that she — in contrast to other scientific women of the nineteenth century — came to without family urging or support and with no example to follow. Between the ages of 13 and 15, a chance glimpse in a ladies’ fashion magazine of some strange symbols, said to be ‘algebra’, aroused her curiosity. Mathematical problems and puzzles were a usual part of such periodicals, inserted for the amusement and entertainment of readers. None of her close relatives or acquaintances could have told her anything of ‘algebra’, even had she the courage — and she did not — to ask. Her unguided efforts to learn something of this mysterious but strangely attractive subject were fruitless until, overhearing a casual remark by Nasmyth about perspective and Euclid, she was led to persuade her younger brother’s tutor, the Rev. Peter Craw — a good-natured young cleric who knew nothing of mathematics — to buy for her copies of Euclid’s *Elements* and Bonnycastle’s *Algebra*. At the date it would have been unthinkable for a young lady of her position to enter an Edinburgh bookshop and ask for these volumes.<sup>4</sup> After reviewing arithmetic — at which she never became proficient — she began to study these texts on her own. When her father discovered her reading mathematics, he instantly forbade it, fearful that the strain of abstract thought would injure the tender female frame. This view was one widely and long held; Mrs. Somerville herself later believed that her injudicious encouragement of her oldest

daughter's intellectual precocity hastened the child's death at age 10. In the late 1790s, Captain Fairfax's strictures against arduous mental effort, together with outspoken criticism of her 'unwomanly behaviour' by aunts and female cousins,<sup>5</sup> drove Mary Fairfax to secret, intermittent application to mathematics but sharpened her resolve to learn the subject. Only her uncle by marriage (and her future father-in-law), the Rev. Thomas Somerville, encouraged her, once he saw her determination to learn. His own four daughters, although better educated than most, had 'little turn for reading'.<sup>6</sup>

Fairfax was an excellent officer — serving twice on the American station, often engaged against the French (who captured him in 1778 and held him on parole for some years) — and advanced steadily in command. In 1797 he was Captain of the 'Venerable', Admiral Duncan's flagship at the Battle of Camperdown. After that great victory, Fairfax, who brought the dispatches to London, was made a knight banneret, given a handsome sword and promised further bounty, which never came. During his years in naval service, he was not often on half-pay, but at a time when many successful naval commanders reaped large profits from their victories, he was singularly ill-rewarded. His children, growing up in genteel poverty, learned to live simply and be self-reliant, honest and truthful, to expect to make their own ways in the world, and to manage what they had to good advantage. They were responsible and clear-headed about money, neither greedy nor miserly. Their fierce Scotch pride drove the family to show a good face to the world, but they avoided extravagance and debt. They believed that Captain Fairfax had been ill-treated but were not embittered by their lack of fortune. From examples they saw all about them and from their own limited experience, they knew how useful a powerful patron could be. They also saw how talent, hard work, determination and a bit of luck could bring rewards of money and position. All these lessons and attitudes shaped Mary Fairfax's character and outlook and later stood her in good stead. Her contemporaries described her as sweet-tempered, cheerful and industrious, ambitious 'to excel in everything she did'.<sup>7</sup>

In 1804 she married a cousin, Samuel Greig, who had come to Scotland from Russia for naval training aboard Captain Fairfax's vessel. Young Captain Greig was son of Admiral Sir Samuel Greig (1735–1788) of the Russian navy and his wife, Sarah Cook, said to be related to the circumnavigator. Sir Samuel himself was a Charters through his mother, Samuel Charters' sister. He and four other young British naval officers had been sent to Russia in 1763 when Catherine II appealed to Britain for aid in reorganizing her navy. The success of that project was due largely to Greig, who remained in the Empress's service until his death. She rewarded him handsomely with promotion, a knighthood, money and large estates in Livonia. His two older sons, Alexander Samuilovich (1775–1845) and Samuel (1778–1807), both found places in the Russian navy and the former also became an admiral.

Mary Fairfax's parents would not agree to her going to Russia, so Samuel Greig left active service to become commissioner of the Russian navy and Russian consul for Britain in London. His bride had never been outside

Scotland and had rarely been away from her family. London was strange, she was lonely, and she missed the vigorous, independent life she had known at Burntisland. Her husband took her to ‘his bachelor’s house [No. 6 Great Russell Street, Bloomsbury] which was exceedingly small and ill-ventilated’. Decades later she wrote in her autobiography:

. . . I was alone the whole of the day, so I continued my mathematical and other pursuits, but under great disadvantages; for although my husband did not prevent me from studying, I met with no sympathy whatever from him, as he had a very low opinion of the capacity of my sex, and had neither knowledge of nor interest in science of any kind. I took lessons in French, and learnt to speak it so as to be understood. I had no carriage, so went to the nearest church; but, accustomed to our Scotch kirk, I never could sympathise with the coldness and formality of the service of the Church of England . . . I went to . . . [the Italian Opera] as chaperone to Countess Catharine Woronzow [daughter of the Russian ambassador], afterwards Countess of Pembroke, who was godmother to my eldest son. I sometimes spent the evening with her, and occasionally dined at the embassy; but went nowhere else . . . [except to visit] the family of Mr. Thomson Bonar, a rich Russian merchant, who lived in great luxury at a beautiful villa at Chislehurst . . . which . . . [later] became the refuge of the ex-Emperor Napoleon the Third and the Empress Eugenie. . . .<sup>8</sup>

Her first child was born on 29 May 1805, a boy whom they called ‘Woronzow’ after the Russian Ambassador, Count Simon Woronzow (1744–1832). Another son, William George Greig, arrived before Samuel Greig’s death on 23 September 1807. Vice-Admiral Fairfax — promoted the previous year — came to London to help his daughter settle her affairs and escort her and her infants back to the parental roof.

With the newly acquired independence of widowhood and a modestly comfortable inheritance from her husband, Mary Greig set out openly to educate herself in mathematics, ignoring the ridicule and censure of relations and acquaintances who at best thought her foolish and eccentric.<sup>9</sup> The greater part of each day was occupied with her children, and evenings with filial obligations, yet she managed to study ‘plane and spherical trigonometry, conic sections and Fergusson’s [*sic*] *Astronomy*’<sup>10</sup> before attempting Newton’s *Principia*, which she later declared she ‘certainly did not understand . . . till I returned to it some time after, when I studied that wonderful work with great assiduity . . . and obtained the loan of what I believe was called the Jesuit’s edition, which helped me’.<sup>11</sup>

When she went again into society, she found great help and encouragement for these pursuits from Edinburgh intellectuals. She and another young Scottish widow, Mrs. Jane Kerr Apreece (1780–1855), whose English husband had died within a month of Greig, became great favourites of the elderly Professor John Playfair (1748–1819; F.R.S. 1807), long the leading figure in Edinburgh mathematics and natural philosophy. Playfair liked ‘female society and . . . [was flattered by] marked attention from the sex . . . [and] Mrs. Apreece afterwards Lady Davy did her best to captivate him’,<sup>12</sup> but Mrs. Greig’s dealings with him were mathematical rather than flirtatious. When Playfair learned that she was reading Laplace’s *Mécanique céleste*, he advised her

how to get over some of its difficulties. She found him always ‘a severe though just critic’, his manner ‘gravely cheerful, he . . . perfectly amiable and . . . both respected and loved’.<sup>13</sup>

Moreover Mary Greig found support among some of the young Whigs in her social circle, including some of the founders of the successful *Edinburgh Review*, a journal that had long urged widened educational opportunities, including education for women. In this pretty, quiet and liberal-minded young widow — unlike the rest of her family her sympathies were never with the Tories — they saw all the capacity and zest for learning that they asserted for her sex. She in turn admired them for the ‘consummate talent . . . [with which] their powerful articles gave a severe and lasting blow to the oppression and illiberality which had hitherto prevailed’.<sup>14</sup> In her memoirs she recalled that she had met at this time ‘Henry Brougham who had so remarkable an influence on my future life — his sister had been my early companion’ and how she had seen ‘the Revd. Sidney [*sic*] Smith, that celebrated wit and able member of the *Review* at Burntisland where he and his wife came for seabathing’.<sup>15</sup> In time she came to know the other founders of the *Review*, Francis Jeffrey and the two Horner brothers.

Her most helpful mentor at this period, however, was one of Playfair’s protégés, the self-educated mathematician William Wallace (1768–1843). Born in Fifeshire in humble circumstances, Wallace had been apprenticed to a bookbinder and had met Playfair while working in an Edinburgh bookshop and attending classes at the university. He had taught himself French, Latin and mathematics, and his abilities so impressed the eminent philosopher that he found the young man a place as assistant mathematical master at Perth Academy. There Wallace remained for nine years, contributing papers on mathematics to the Royal Society of Edinburgh and writing for the *Encyclopaedia Britannica*. In 1803, again at Playfair’s urging, he competed in the examination for the post of mathematics master at the Royal Military College at Great Marlow and won. He and Mrs. Greig began a mathematical correspondence, exchanging solutions to problems in the *Mathematical Repository* and discussing difficulties and methods by mail. Wallace was an excellent teacher by post, thorough but encouraging, ready to point out pitfalls and suggest remedies, thoughtful in his approach and clear in his explanations.<sup>16</sup> His own struggles to gain an education made him sympathetic to anyone trying alone to master mathematics. His brother John (d. 1820) was also a mathematics teacher, and when Mrs. Greig began work ‘on the higher branches of mathematics and physical astronomy’, William Wallace suggested that she engage his brother to read Laplace’s *Mécanique céleste* with her. ‘I was glad however to have taken this resolution’, she later wrote, ‘as it gave me confidence in myself and consequently courage to persevere’.<sup>17</sup> In 1811 one of her solutions to a prize problem gained her a silver medal, especially cast, the first of many awards and honours that would come to her. Wallace sent it to his brother, who forwarded it to the winner.<sup>18</sup> It is now at Somerville College, Oxford.

Shortly afterward Mrs. Greig ‘put an end to scientific pursuits for a time’.<sup>19</sup>

On 18 May 1812 she married her first cousin, Dr. William Somerville (1771–1860). He had recently returned to Scotland after a long stay in Canada, where he was inspector-general of hospitals and controller of the customs in Quebec. He and his cousin had seen little of each other since childhood, but on meeting again as adults discovered that they had much in common. Both were liberal and tolerant, interested in intellectual matters, ambitious and openminded. Their marriage endured for almost half a century, until William Somerville's death in 1860.

He was the eldest child of the Reverend Dr. Thomas Somerville (1741–1830) of Jedburgh and his wife, Martha Charters. The Somervilles of Cambusnetham were an ancient family but without fortune. Thomas Somerville, whose father had been minister of the kirk at Hawick, received through the patronage of his kinsman, the sixth Lord Somerville, and of his neighbour, the statesman Sir Gilbert Elliot (1722–1777), first the living at Minto and then, in 1772, that at Jedburgh, where he remained for the rest of his life. A man of learning, useful in the business of the church, he knew Hume and other intellectuals of the Scottish Enlightenment. In his early days at Minto he was tutor to Sir Gilbert Elliot's two sons, the elder of whom became the eminent diplomat and statesman, the first Earl of Minto (1751–1814; F.R.S., 1803); the friendship between the two families continued throughout the next century. Thomas Somerville himself won modest fame as the historian of the reign of Queen Anne.

His family — two sons and four daughters — grew up at Jedburgh. The boys from the first were taught that they must find professions; the elder became an army doctor, the younger a writer to the signet. All but one of the daughters married and themselves reared families at Jedburgh. A listing of family events with their dates, compiled by Thomas Somerville and designated his 'Almanac',<sup>20</sup> suggests that William Somerville had some difficulty in fixing upon his path in life. Both sons were sent to Edinburgh to university but William never took a medical degree there. In 1788 he left Jedburgh with his uncle, William Charters, intending to go to Russia to seek appointment as an agent to the Russian fleet. There were many Scots in Russia at that time and opportunities to make fortunes in trade. The two travellers had reached Copenhagen when war broke out and forced them to return home. For a time William acted, rather unsuccessfully, as tutor to the Elliott children at Minto,<sup>21</sup> then in 1794 went to London under the patronage of an important army surgeon, Walter Farquhar (1738–1819),<sup>22</sup> a Scot who had long been in Lord Howe's service.

After some months, Somerville, with the Elliots' help,<sup>23</sup> obtained appointment as a hospital mate.<sup>24</sup> He served in Brazil, then in the forces that were being sent out to take the Cape of Good Hope. He was present when the British seized the colony from the Dutch and remained there for almost eight years. He quickly won the regard of the first governor, General James H. Craig (1748–1812), who appointed him garrison surgeon. After Craig left, Somerville continued to be useful to a succession of Cape governors. He was sent on a variety of missions, including two to unexplored Kaffir country. His