

AUGUSTUS
DE MORGAN,
POLYMATH



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Fig. 12 Sophia Elizabeth De Morgan, from a photograph taken in 1886.
(Public domain, from *Threescore Years and Ten. Reminiscences of the late Sophia Elizabeth De Morgan* (London: Richard Bentley, 1895).)

9. De Morgan's Family: Sophia and the Children

Joan L. Richards

The marriage was a most happy one,
and surrounded by a family of seven children, ...
De Morgan sought his happiness ... in his home ...

— *Nature*¹

When Augustus De Morgan moved to London after his Cambridge education, his reputation as a creative mathematical thinker preceded him. Within months of his arrival, William Frend, an aging actuary and prominent political radical, enfolded the 'rising young man'² into his intellectual circle. The elderly activist and the budding mathematician were bound together by their Cambridge education. This rested on the conviction that mathematics constituted the purest form of reason: a message that inspired both Frend and De Morgan throughout their lives and committed them to bringing the people around them to the full exercise of the reason that defined their humanity.³ Frend's political liberalism was rooted in the conviction that despite their differences, all humans were alike in being reasoning beings, and he devoted his life to breaking down the barriers that cut Jews, dissenters and Catholics off from English political life.

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- 1 Robert Tucker, 'Augustus De Morgan', *Nature*, 4 Jan. 1883, pp. 217–20 (p. 220).
 - 2 Sophia Elizabeth De Morgan, *Memoir of Augustus De Morgan* (London: Longmans, Green, 1882), p. 20. For William Frend, see Frida Knight, *University Rebel* (London: Gollancz, 1971); Joan L. Richards, *Generations of Reason: A Family's Search for Meaning in Post-Newtonian England* (New Haven: Yale University Press, 2021).
 - 3 Richards, *Generations of Reason*.

Yet for all its liberality, the view of reason Frend and De Morgan learned at Cambridge was essentially gendered. Even as Frend fought for the rights of Jews and Muslims, it never occurred to him that women should be given the vote. De Morgan has long been lauded for teaching mathematics to Ada Lovelace, but he saw her as an exceptional being who was ultimately broken by her determination to study mathematics.⁴ The reason that both Frend and De Morgan furthered throughout their lives was essentially masculine. Frend was nonetheless completely committed to raising all of his seven children to be reasoning beings. He sent all of his sons to Cambridge, and did everything he could to educate his daughters at home. Frend taught his oldest daughter, Sophia, a great deal of mathematics and astronomy, but she agreed with her husband that women could be broken by pursuing academic subjects too assiduously.⁵ She was always much more interested in the reason that tied together the many different people she encountered in her life than she was in the abstractions of mathematics.

Sophia had plenty of opportunities to explore the practice of reason in her childhood home. She came of age listening to her father's conversations with the rag-tag group that flocked to the Frend house 'like martins in the summertime'⁶ and learned a great deal from the subset that was at once more respectable and comprehensible. She remembered this group as 'peculiar people', all of whom 'had leading thought or special study': Greek scholar Thomas Taylor; the engraver interested in Babylonian antiquities, John Landseer; self-taught Hebrew scholar John Bellamy; mythologist Godfrey Higgins.⁷ All these men believed that the truth they were seeking had been known in the past before the vagaries of human history had obscured it, and that the way

4 For De Morgan's views of Ada's health see Alison Winter, 'A Calculus of Suffering: Ada Lovelace and the Bodily Constraints on Women's Knowledge in Early Victorian England', in *Science Incarnate: Historical Embodiments of Natural Knowledge*, ed. by Christopher Lawrence and Steven Shapin (Chicago: University of Chicago Press, 1998), pp. 202–39.

5 S.E. De Morgan, *Memoir*, p. 176.

6 Sophia Elizabeth De Morgan, *Threescore Years and Ten: Reminiscences of the Late Sophia Elizabeth De Morgan to Which Are Added Letters to and from Her Husband the Late Augustus De Morgan, and Others*, ed. Mary De Morgan (London: Bentley, 1895), p. 97.

7 S.E. De Morgan, *Reminiscences*, p. 61.

to uncover that truth was through some form of etymology.⁸ They also struggled to make sense of the wide variety of objects and artefacts left by ancient peoples. Several were also astronomers. All were completely committed to reading the past through its objects, its languages and its peoples.

For Sophia, these men's visits constituted an ongoing archaeological, philological and ethnological seminar. From them she learned to use her reason to decipher and explore the deep truths that lay hidden in the world around her. She had access to the larger world through books, but was always at least equally interested in learning from the everyday experiences of all of the people around her, be they friends, neighbours, servants or children. All could be conduits into the deep truths of reason. The lessons she learned from her father's visitors laid the groundwork for what was to be a lifetime of trying to reason her way to an understanding of the deepest truths of human existence.

Sophia was just 19 years old when her father first invited 21-year-old Augustus De Morgan to their home. The young man immediately introduced a new critical perspective into the ongoing seminar that constituted the Frennd household. Augustus and Sophia were not married until ten years after they first met. The foundation of their life together was laid in the decade they spent more as siblings than as lovers in the benevolent reasoning world of William Frennd.

After their marriage in 1837, the De Morgans' life together was divided along clear gender lines: Sophia managed the household, while Augustus spent his time either teaching mathematics at University College London or writing in his book-filled study. In the first thirteen years of their marriage Sophia gave birth to seven children: Alice, William, George, Edward, Anna Isabella, Christiana and Mary. The division of labour in the household meant that she was in charge of the centrally important task of raising all of these children to be reasoning human beings. Her oldest son William remembered the result as 'a curious admixture of freedom of thought and outlook far in advance' of the times, 'combined with notions of conduct which even then were

8 Joyce Godwin, *The Theosophical Enlightenment* (Albany: State University of New York Press, 1994), p. 76.

held to be unduly strict and old-fashioned'.⁹ A more fine-grained picture of both sides of this dynamic may be seen in the two nursery journals that Sophia kept when her first children were young. Sophia began the first of these on 1 January 1840, when Alice was a year and a half and William nearly two months old, and the second in 1842.¹⁰ Sophia was completely devoted to all of her children from the moment of their birth, but the focus of her journals was on the development of their reason. She delighted in them as infants, but was even more fascinated by the thinking they revealed as they began to talk.¹¹

Sophia's 'unduly strict and old-fashioned' approach to her children's conduct fairly leaps from the pages of her first nursery journal. Alice 'has not yet a distinct idea of obedience', she wrote as her toddler was approaching her second birthday: 'this she must learn before she learns anything else'.¹² When it came to questions of obedience, Sophia was caught between contradictory positions. On the one hand stood her husband and his mother, both of whom insisted that 'obedience must be *instantaneous*'.¹³ On the other stood her mother and sisters, who, like the childhood experts Richard and Maria Edgeworth, questioned whether obedience was truly 'the virtue of childhood'.¹⁴ They agreed that children had to learn obedience, but recommended that Sophia do all she could to avoid the issue by creating a child-centred environment in which regularity reigned.

Sophia tried, but the ideal of a child-centred ambience was difficult to achieve within the confines of the De Morgan household. The house at 69 Gower Street was not large, and its spaces needed always to be divided between Sophia's efforts to be a mother and homemaker and De Morgan's labour as a bread-winning educator and writer. Except for his nine o'clock and three o'clock lectures, he was either meeting private

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- 9 A.M.W. Stirling, *William De Morgan and His Wife* (London: Butterworth, 1922), p. 48.
- 10 The first of Sophia's Nursery Journals [henceforth NJ] is at Barnsley, De Morgan Collection, DMF_MS_0024. The second survives only as quoted in Chapter 2 of Stirling, *William De Morgan*, 'A Nursery Journal,' pp. 38–50.
- 11 For the genre of parents recording child talk, see W.F. Leopold, 'The Study of Child Language and Infant Bilingualism', *Word*, 4 (1948), 1–17.
- 12 NJ, 30 April [1840].
- 13 NJ, 9 Apr [1841].
- 14 Maria Edgeworth and Richard Lovell Edgeworth, *Practical Education*, 2 vols. (London: J. Johnson, 1798), p. 173.

pupils or writing in his home library. Every evening he had dinner with Sophia and spent a little time with his children, but otherwise the little society comprised of Sophia, Alice, William and nursemaid Jane had always to fit itself around his needs for peace and quiet.

Alice represented an enormous problem in this dynamic. Sophia began her journal with great hope, but her narrative quickly devolved into a whole series of efforts to control her little girl's behaviour—by ignoring her, closing her into a different room, holding her hands to restrain them, or tying her to her chair. Each seemed to work for a while, but Alice kept raising the stakes. On 20 January 1840 she became so angry that 'she screamed & fought Jane [the maid], yanked William's legs, and hit her mother.'¹⁵ This was just the opening volley of a week that devolved into 'an almost incessant scene of crying, disobeying, holding hands & forgiving'. Finally, Alice was given 'a grey powder & on Friday she was gentle & good with very few exceptions'.¹⁶ The 'grey powder' to which Sophia resorted was undoubtedly one of the opiates that Victorians imbibed in startling amounts. Although it seems to have been effective in calming the little girl, it had the side-effect of inducing vivid dreams. Sophia did not connect the medicine with her child's nightmares, but on some level it seems that Alice did, and she added 'grey powder' to the list of things she fought against. Sophia devoted pages to trying to work out how to respond to baby Alice's tantrums.

Sophia's entire programme of obedience was essentially a way to clear a space in which to encourage the growth of her children's reason. When she started her first journal, William was not yet two months old, but Alice was beginning to talk and her mother was entranced. Much of her attention focused on recording, interpreting and revelling in the many facets of her daughter's speech: 'She used to say "oh", instead of "Yes"—She has now learnt to say "Ye" and I heard her today say "Oh dear!" & correct herself to "Ye! Dear."' ¹⁷ A year later, Alice could still be difficult to understand, but Sophia found it well 'worth the trouble of puzzling it out'.¹⁸ She delighted in unexpected connections; when 'Jane

15 NJ, Monday [20 Jan, 1840]. Jane was Jane Day, a 30-year-old servant in the De Morgan household.

16 NJ, Tuesday Wednesday & Thursday [21-24 Jan. 1840].

17 NJ, Saturday, [July 1840].

18 NJ, 4 July 1841.

said something about *a jacket*,' Alice began singing Jack and Jill.¹⁹ As she grew older, Alice's connections became ever more intriguing. Alice 'calls the feathery white cloud "the juice of the sky" because I told her they were wet,' Sophia proudly recorded, and was delighted when her daughter called seeds 'the eggs of the flowers'.²⁰ 'Alice could frame a language' she glowed when her 3-year-old said 'open a light' instead of 'light a match'.²¹ Throughout the four years that she kept her journals, Sophia was fascinated by Alice's use of words.

As William became verbal, he was equally interesting, albeit in somewhat different ways. He was always more amenable than Alice, which Sophia saw as a reflection of inborn character, but which might equally be attributed to his being a boy, who was given wheelbarrows with which to play while Alice was having to sit still to have her hair combed or to hem handkerchiefs with neat little stitches. As William began to talk, Sophia noticed he was particularly interested in rhymes like 'Billy sees Clown/A-tumbling down',²² and was amazed by his ability to remember pieces of poetry.²³ At the age of 2, she reported, he spent hours studying a book of birds and enjoyed assigning their names to those around him: 'You're a silky starling!' he told his mother; when she asked him who he was, he responded with 'a three-toed Woodpecker'.²⁴ Whereas in Sophia's journals Alice displays a quicksilver verbal intelligence, William emerges as an acute observer.

Her children's imaginations provided Sophia with another revealing entry into their minds. From the age of about two and a half, Alice had an imaginary companion, named Marmee, whom she would often let stand in for herself as in 'Mama, My Marmee will yore [roar] an wake up hi[s] little brother dat *tiny* boy'.²⁵ As her daughter grew older, Sophia began introducing other characters designed to carry messages about good behaviour. When Alice resisted getting out of her warm bed on chilly mornings, Sophia told her a 'very interesting story' in which an imaginary Louisa had cured herself of the same behaviour 'by her own

19 NJ, Sunday, 15 Feb. [1840].

20 Stirling, *William De Morgan*, p. 42.

21 NJ, 10 Dec. 1840.

22 Stirling, *William De Morgan*, p. 41.

23 Stirling, *William De Morgan*, p. 42.

24 Stirling, *William De Morgan*, p. 42.

25 NJ, 2 Dec. 1840.

determination'.²⁶ Sophia's other stories could be more fun. She once 'induced Willie to walk instead of being carried, by pretending that they were people travelling through a strange country in which we met all kinds of wild animals, cats were panthers, horses—lions, and dogs—tigers, etc.'²⁷ Alice and William embroidered on this suggestion with such enthusiasm that passers-by stopped to check what was happening, and even they themselves had to be calmed when fears of various 'preten' [pretend] beasts became overwhelming.

Even as Sophia was thrilling at her children's imaginations and telling stories to help them interpret the world around them, she was aware of a drawback. Following the twists and turns of her children's imaginations could be fun, but telling stories could shade into lying, and lying could blossom into an even more serious problem than disobedience. Concern about dishonesty was a persistent theme in the early Victorian world. Writers across the spectrum, from the Anglican William Whewell to the Unitarian Harriet Martineau, essentially agreed that lying was a temptation to be avoided at all costs. Sophia agreed completely, and as her children became ever more articulate and imaginative, she remained vigilant.²⁸ Weighing the wonder of her children's imaginations against the danger of their lying was always a delicate balancing act.

Sophia's concern about lies was rooted in the Lockean program of reason in which maintaining the clear connection between words and their proper meanings was absolutely essential to the pursuit of reason's truth. At work, her husband was constantly being reminded of the difficulty of maintaining those connections as his students combined symbols in meaningless ways or lost themselves in arguments and proofs.²⁹ The problem Sophia faced with her children was in many ways more complicated. Even as she delighted in the poetry of their speech, she had always to be equally alert that they did not ever completely lose sight of the connection between her words and their meanings.

26 NJ, 18 [Dec. 1840].

27 Stirling, *William De Morgan*, p. 41.

28 For more on Victorian views of lying in children see 'Lies and Imagination', in Sally Shuttleworth, *The Mind of the Child: Child Development in Literature, Science and Medicine, 1840–1900* (Oxford: Oxford University Press, 2010), pp. 60–74.

29 For more on Augustus De Morgan's pedagogically-inspired desire for accurate expression, as well as his fascination with language and symbolic notation, see the section on his philosophy of mathematics in Chapter 1 of this volume.

Although Sophia was the primary figure who negotiated the ups and downs of their children's lives, Augustus was also fascinated by watching their developing minds. He composed picture letters to engage the interpretative skills of children who were learning to read.³⁰ His letters to his friend, the Irishman William Rowan Hamilton, are filled with the kinds of challenges he liked to explore with them. "Take a child and say "now we are going to draw a house"; De Morgan directed, 'but then draw one in which the chimney is hugely out of proportion. As soon as the child says "that chimney is *too big*,"' he exulted, 'the remark was dictated by the presence and action of the notion of relative magnitude.'³¹ In another, he constructed an elaborate story about a boy rolling a hoop across parish lines as a way to define the meaning of the total area of a curve that intersects itself any number of times.³² He undoubtedly tested the self-evidence of what he saw as the 'four-colour axiom' on them.³³ Sophia watched all of these exercises with interest. Although she stopped keeping nursery journals, she remained as deeply invested in cultivating her children's reasoning powers as her husband.

De Morgan had 'in the earlier part of his life held man-like and masterful views of women's powers and privileges',³⁴ and he always liked pointing out that 'when we overcome a difficulty we say we *master* it, but if we fail we say we *miss* it',³⁵ but living with Alice had its effect. As he watched his daughter grow into a reasoning being, he agreed with Sophia that she needed a school that would give her all the opportunities to develop her reason to its fullest that her brothers would have at the University College School for boys. They threw themselves behind Elizabeth Reid to help create a secular school in which women

30 Senate House Library, University of London, MS 913/A/3.

31 Augustus De Morgan to William Rowan Hamilton, 31 Dec. 1863. Robert Perceval Graves, *Life of Sir William Rowan Hamilton* (Dublin: Hodges, Figgis and London: Longmans, Green, 1882–1889), vol. 3 (1889), p. 603.

32 Augustus De Morgan to William Rowan Hamilton, 26 Sept. 1849. Graves, vol. 3, pp. 278, 282. The question was posed in the *Cambridge and Dublin Mathematical Journal*.

33 For what De Morgan called the four-colour axiom, but is now known as the four-colour theorem, see: Robin Wilson, *Four Colors Suffice: How the Map Problem Was Solved* (Princeton: Princeton University Press, 2002); Rudolf Fritsch and Gerda Fritsch, *The Four-Color Theorem: History, Topological Foundations, and Idea of Proof*, trans. by Julie Peschke (New York: Springer, 1998).

34 S.E. De Morgan, *Memoir*, p. 94.

35 Stirling, *William De Morgan*, p. 32.

would hold the power. In 1849, Alice became one of the first pupils in the Ladies' College at 47 Bedford Square.³⁶ Long after the De Morgan girls were grown, the family connection remained strong enough for Joan Antrobus, Augustus and Sophia's great-granddaughter, to travel from South Africa to attend the College's successor tertiary institute, Bedford College, for the year 1925–26.

Establishing the Ladies' College in Bedford Square was one cause that drew in both of the De Morgans; abolition was another. Moved by the explosion on the English scene of Harriet Beecher Stowe's 1852 novel *Uncle Tom's Cabin*, which sold more than a million and a half copies there in its first year, Sophia vowed to do everything in her power to bring an end to the institution of slavery.³⁷ In autumn 1852 she drafted a letter to be signed by the people of England urging the people of America to give up their slaves. She acknowledged that the English shared the blame for slavery, having established the system at a time when 'Americans were not under their own laws and legislature'. Now, however, 'uninfluenced by those personal interests which involve and obscure the question on its own soil', the English had a clearer view of the pernicious effects of slavery than did those who were caught up in it. Sophia then laid out what she saw as the horrors of slavery, before closing with the hope that God 'will bring to your hearts a conviction of its enormity, & give you strength to abjure it'.³⁸ In her attempt to address the problem through a combination of rational argument and theistic conviction, Sophia showed herself to be her father's daughter. But her goal was political change, and that could not be achieved merely through writing. It was necessary to bring the letter to a larger audience.

Sophia shared her idea with Rachel Chadwick, who shared it with her husband, the social reformer Edwin Chadwick, and he told the great reformer, Lord Shaftesbury, about the plan. Shaftesbury wrote to *The Times* on Wednesday, 9 November. Subsequently, under the leadership

36 For the history of this institution, see Margaret J. Tuke, *A History of Bedford College for Women* (London: Oxford University Press, 1939). For the earlier history, see Chapter 8 of this volume and, for more detail, Rosemary Ashton, *Victorian Bloomsbury* (New Haven and London: Yale University Press, 2012), pp. 215–38.

37 See Audrey Fisch, 'Uncle Tom and Harriet Beecher Stowe in England', in *The Cambridge Companion to Harriet Beecher Stowe*, ed. by Cindy Weinstein (Cambridge: Cambridge University Press, 2004), pp. 96–112.

38 Senate House Library, University of London, MS913B/2/3, Draft proposal on slavery in Sophia's hand.

of the Duchess of Sutherland, the plea from the *women* of England to the *women* of America (changed from Sophia's 'people' of England to those of America) gained enough signatures from women across all classes in the United Kingdom, Australia, Canada, New Zealand and Palestine, to fill twenty-six folio volumes. In spring 1853 Stowe visited England in order to receive them.³⁹ Sophia met Stowe several times at Mrs Reid's house.

On 23 December 1853 Alice De Morgan died of phthisis, or tuberculosis. The De Morgans were shattered. Sophia had apparently been trying to combat the teenager's 'weakness and delicacy' for some time, but Augustus 'did not realise the degree of illness till the end was near, and the blow fell heavily upon him'.⁴⁰ Twenty-five years later, Sophia was still unable to write of these events, and Augustus never tried. Thus *The Old Man's Youth*, the semi-autobiographical novel Alice's brother William wrote at the end of his life, is the clearest description of the family's experience. Even seventy years later, his memories of helplessness remained so vivid that 'I *am* that boy, the growing panic of that moment is on me still, and the gloom'.⁴¹

When Augustus returned to his office after Alice's burial, he felt as if he 'had been suddenly carried off, all round the world, and set down again at his desk'.⁴² The only work that penetrated his grief was Whewell's anonymously published *Of the Plurality of Worlds*, which speculated about whether there was life anywhere else in the universe.⁴³ By the time Whewell sent him the second edition of *Plurality*, De Morgan was becoming convinced that there were 'inhabitants', possibly including Alice, of other planets, with '*uses independent of us*' which he strongly suspected were '*also trusts, and therefore I suppose responsibilities*'.⁴⁴

39 Joan D. Hedrick, *Harriet Beecher Stowe: A Life* (New York: Oxford University Press, 1994), p. 232.

40 S.E. De Morgan, *Memoir*, p. 190.

41 William De Morgan, *The Old Man's Youth and the Young Man's Old Age* (London: Heinemann, 1921), p. 101.

42 Augustus De Morgan to William Rowan Hamilton, Jan 10, 1854. Graves, vol. 3, p. 470. De Morgan wrote this in the first person, so was 'set down again at my desk'.

43 William Whewell, *Of the Plurality of Worlds: An Essay*, ed. by Michael Ruse (Chicago: University of Chicago Press, 2001), p. 253 [295]. De Morgan later reviewed this work in Augustus De Morgan, *A Budget of Paradoxes* (Chicago: Open Court, 1915), p. 63.

44 Augustus De Morgan to William Whewell, May 21, 1854. S.E. De Morgan, *Memoir*, p. 230.

In answer to Whewell's expanses of emptiness, De Morgan offered a universe teeming with intelligences in which his daughter's life was not wasted.

Sophia agreed with her husband that the universe was filled with spirits, but her sense of its inhabitants was more domestic and immediate. In letters to Lady Byron, written after her sister Harriet died in 1836, she spent months developing a theory of life after death. In the immediate aftermath of her father's death in 1841, she found 3-year-old Alice's response affirming. In her nursery journal she described her efforts to give her little girl 'as *true* an idea' of Frennd's death as was possible with a 3-year-old. She told Alice that the doctor was trying to cure her grandfather, but that he would probably fail, and that when that happened, he 'will go away to a nice place where he will be made quite well'.⁴⁵ This attempt to construct a child's-eye view of the afterlife seems to have made sense to Alice, who spent several days exploring the idea of this 'nice place', and asking 'whether the birds sang & the trees were pretty & had buds and fruit'. Ever truthful, Sophia admitted that she did not know because she had not been there, but she repeated that it was a very nice place that was filled with good people. When Alice gave her opinion that '*he gathered the fruit from one of those trees, & eat it, & dat made him quite well*', Sophia was thrilled. 'What an extraordinary idea to enter a baby's head!' she exclaimed. Even though no one had told Alice the story of Adam and Eve, the little girl was talking of 'eating the fruit of the tree of life'.⁴⁶ All of Sophia's efforts to ensure that her little girl spoke the truth were rewarded by this glimpse into what William Wordsworth described as the 'heaven that lies about us in our infancy',⁴⁷ which Sophia saw as a description of the world of the afterlife.

Beyond this incident with Alice, there is little evidence of Sophia's interest in life after death in the 1840s, but as she was living at home with her ever-increasing brood, she was, like several other spiritualists, actively experimenting with the invisible forces of mesmerism. The attraction of this approach is suggested by an experience described in the Nursery Journal, in which one-year-old William was all but killed by the standard medical treatments of leeching, blistering, lancing and

45 NJ, 26 March, [1841].

46 NJ, 26 March, [1841].

47 William Wordsworth, 'Ode: Intimations of Mortality'.

starving prescribed to combat a fever. Making passes over a feverish child's body was a considerably more attractive approach. Sophia was aware that mesmerism did not guarantee a cure—success required the action of invisible forces that were poorly understood—but the outcomes of many medical treatments were not predictable either.

Sophia never claimed particular mesmeric prowess. She did say that 'many patients have spoken of *light* which they said they saw streaming from my fingers' when she made passes over their bodies,⁴⁸ but even as she offered this credential, she included herself among 'those who had no power of vision', and therefore saw nothing.⁴⁹ In one instance she did claim to see the effects of her efforts. When a neighbour brought her a ten-week-old baby whose legs seemed poorly aligned, Sophia decided there was no harm in trying mesmerism before turning to the bandages the doctor had recommended. After about six passes 'from the knees to the end of the little feet', the legs began to move into their natural position, and 'the muscles gained a power which they never had before'.⁵⁰ This success carried Sophia through years of experimentation.

Over time, she began to see that the powers she had first observed in a medical context might extend to larger phenomena. In 1849, when she had induced a mesmeric trance in an effort to treat 'fits' in a 'young and ignorant girl', she found herself a startled witness to 'the state of clairvoyance'. While under the mesmeric influence, the girl talked Sophia through the streets of London to a house where she observed with minute detail the room in which Augustus was visiting one of his friends. Although she never left her chair, the girl's descriptions of the house, the room and the conversation within it were so complete, detailed and accurate that Sophia and Augustus were both convinced that she had made an actual 'mental' journey to the place she described.⁵¹ That this unschooled girl had the power to see reality while travelling in thought was powerful support for the existence of a transcendent world

48 Sophia Elizabeth De Morgan, *From Matter to Spirit: The Result of Ten Years' Experience in Spirit Manifestations. Intended as a Guide to Enquirers* (London: Longman, Green, Longman, Roberts & Green, 1863), p. 45.

49 S.E. De Morgan, *From Matter to Spirit*, p. 46.

50 S.E. De Morgan, *From Matter to Spirit*, pp. 43–44.

51 Augustus's version of this experience is in a letter to the Rev. William Heald [1849] in S.E. De Morgan, *Memoir*, pp. 206–08. Sophia's version is in S.E. De Morgan, *From Matter to Spirit*, pp. 47–49.

of mind that lay behind the material one. Sophia's interest was part of a far wider contemporary fascination with spiritualism.⁵²

In 1853, an American spiritualist, Mrs. Hayden, burst onto the London scene. This formidable woman was interested in moving past impersonal forces to a world of spirits who could use those forces to communicate with people. Having for decades been convinced that Harriet and her father still lived in some other-worldly realm, Sophia found the project very attractive. She wanted to believe herself sceptical, but her defences began to weaken within the first hour when Mrs. Hayden delivered the message that Harriet was 'happy'. When, on her second visit, her father tapped out '*Why do you doubt the holy attributes of God, when this is in perfect accordance with His teaching?*'⁵³ she was entranced. The message was certainly not delivered in the way Frennd would have phrased it, but it was 'the sort of sentiment'⁵⁴ she would have expected from him. It was hard for her to resist the evidence that Mrs. Hayden had the power to communicate with the dead. Sophia was so impressed that she invited Mrs. Hayden to Camden Street so that Augustus could meet her.⁵⁵ After Alice died, the issues became much more immediate, and Sophia plunged into an investigation of the spirit world that would occupy her for the rest of her life.

Sophia's sense of the universe that Alice had entered was much more familiar than her husband's thoughts about *uses, trusts, and responsibilities*. She never claimed to be a 'sensitive', which meant that her personal glimpses into Alice's world were rare and fleeting, but she energetically engaged with those who claimed that capacity. In autumn 1857 she started a diary in which she followed her daughter through a visionary world that included a rich cast of characters from Cupid

52 For an overview of the English experience of table-turning and mesmerism in the 1850s and beyond, see Alison Winter, *Mesmerized: Powers of Mind in Victorian Britain* (Chicago: University of Chicago Press, 1998), pp. 276–306.

53 S.E. De Morgan, *From Matter to Spirit*, pp. 13–14.

54 S.E. De Morgan, *From Matter to Spirit*, p. 14.

55 Sophia De Morgan was among the minority in being impressed by Mrs Hayden. See Maurice Leonard, *People from the Other Side: The Enigmatic Fox Sisters and the History of Victorian Spiritualism* (Stroud: History Press, 2008), p. 82. For a full but, at the time of writing, not very accessible account of Mrs Hayden, see Sharon DeBartolo Carmack, *In Search of Maria B. Hayden: The American Medium Who Brought Spiritualism to the UK* (Salt Lake City: Scattered Leaves Press, 2020).

to glimpses of God and Christ.⁵⁶ It is difficult to make narrative sense of the place Sophia found Alice to be living in. What is clear is that Alice's mother was doing everything she could not to lose touch with her beloved child.

A decade after Alice's death, in 1863, the De Morgans presented their visions in *From Matter to Spirit: The Result of Ten Years' Experience in Spirit Manifestations Intended as a Guide to Enquirers*. The title page of the book stated simply that it was 'By C.D. with preface by A.B.' but those pretensions of anonymity were fleeting. Within days, everyone knew that the book was written by Sophia, the 'Preface' by Augustus. In it she followed the model of reason she had learned from her father and his many visitors into the wider nineteenth-century world in which she lived. Sophia was typical of her age in regarding spiritualism as a science.⁵⁷ One of the changes that had occurred in the twenty-five years since she tried to make sense of the death of her sister Harriet lay in the variety of sources she found relevant. She devoted nine pages to a close reading of the discussion of death in 1 Corinthians 15.35–57 that had supported her earliest conviction that Harriet still lived, but those pages are embedded in a fifty-five-page chapter that included sources from Plato to Swedenborg. The Christianity she learned from her father remained Sophia's touchstone, but he had also taught her to be open to other perspectives. Her book was the product of a Victorian who gave credence to many sources beyond the Bible. It remains a lasting testimony to a particular brand of spiritualism of which she, together with various other middle-class intellectuals and professionals including William and Mary Howitt and Royal Physician John Ashburner, were early propagators.⁵⁸

It was not easy for Sophia to carry her father and husband's views of reason beyond the sheltered classrooms of Cambridge and UCL into her woman's world of deathbed scenes, near-death experiences

56 Senate House Library, University of London, MS 913B/2/2.

57 See Richard Noakes, 'The Sciences of Spiritualism in Victorian Britain: Possibilities and Problems', in *The Ashgate Research Companion to Nineteenth-Century Spiritualism and the Occult*, ed. by Tatiana Kontou and Sarah Wilburn (Farnham: Ashgate, 2012), pp. 25–54, especially pp. 29–32, and Tatiana Kontou and Sarah Wilburn, 'Introduction', in the same volume, pp. 1–16 (pp. 1–4).

58 Alex Owen, *The Darkened Room: Women, Power and Spiritualism in Late Victorian England* (London: Virago, 1989), p. 21.

and ghost stories. She knew that she was not a medium, which meant that she had to collect information from others. Sophia was like her father in her willingness to listen seriously to those around her. But his strict standards of linguistic rationality did not work in her world of 6-year-olds, nursemaids, neighbours and mediums. She could, and did, routinely screen her informants for truth-telling, but she could not guarantee that they either spoke or wrote precisely and properly. It was very difficult for her to imagine her father saying things like *'we long to clasp you in our arms in this bright world of glory'*⁵⁹ and simply impossible that he would make spelling errors that turned 'Beautiful' into *'butiful'*, 'writing' into *'riting'*, and so on.⁶⁰ The power of reason was thus transmogrified as it moved from the masculine world of its usual defenders into the predominantly female world that existed by its side.

Sophia was nonetheless determined to use reason to identify the basic structures that underlay not only spelling mistakes, but a bewildering array of blowing curtains, turning tables, spirit writings and trance descriptions. She began by organising spiritual experiences on a hierarchical scale of materiality. The least exalted experiences were those like table-turning, which occurred on a material level that even she could observe. Somewhat higher up the scale was 'spirit writing', in which someone holding a pen was guided by spirit power. In this case the act of writing could be observed by many, but the force behind it was experienced only by one (or sometimes two) people. Highest of all were visions, dreams and voices perceived directly in the mind, because these had no inter-subjective material manifestations at all.

An elaborate theory of human development underlay this hierarchy of experiences. All people, Sophia explained, are made of a material body, an animating spirit, and an ever-developing soul. At the moment of death, the soul 'passes away' from the material realm, 'and, animated by the spirit, becomes the body of the next life'.⁶¹ In this new form, the process of development continues; the spirits move ever closer to God and farther from the material world. Spirits who communicated through material manifestations like table-turning were at the lowest

59 S.E. De Morgan, *From Matter to Spirit*, p. 15.

60 S.E. De Morgan, *From Matter to Spirit*, p. 23.

61 S.E. De Morgan, *From Matter to Spirit*, p. 268.

level of spirit development, whereas those who communicated without such manifestations were higher on the developmental scale.

Sophia distilled these hierarchies of experience and development from her conversations, readings, and experiences, but she needed a rational ground for her spiritual theorising. She rested hers on what she called 'the Principle of Correspondence', defined as 'the law by which the external of one state agrees with the internal of that below it'.⁶² She acknowledged that this principle might at first glance appear 'mystical and imaginary', but she insisted that it was 'intelligible enough' to render any conclusions drawn from it 'as certain as any branch of knowledge which can be deduced by well-marked steps from indisputable principles'.⁶³ Sophia's principle of correspondence provided a stable platform from which to evaluate a set of otherwise confusing and untethered phenomena. Over the course of years of contemplation, the aspects of the principle that seemed at first obscure became ever clearer until they were incontrovertible. The process of insight was the same as that experienced by students studying geometry. In the end the self-evidence of her principle supported Sophia's work in the same way that self-evident postulates supported geometry. Her effort to build a theory upon a principle that could be understood clearly and distinctly reflected the reasoned approach that De Morgan was teaching his students year after year in mathematics classes.

In 1859, the De Morgans moved to a new house on Chalcot Villas, soon renamed Adelaide Road, in Primrose Hill that was well suited to their growing brood. As Augustus put it, in the immediate aftermath of Alice's death, he could '*understand*' but not '*feel* that six left made any set-off against one gone',⁶⁴ but now both he and Sophia began again to enjoy their children's company. It was not difficult to do; their offspring were a sophisticated and fun-loving group. At the time of the move, William was 20 and, having spent three years at University College School followed by a year at UCL, was veering off to study at the Royal Academy of Arts. At 18 and 16 respectively, George and Edward were following the early stages of their own trajectories. A contemporary portrait captures the three of them before a house, with

62 S.E. De Morgan, *From Matter to Spirit*, p. 274.

63 S.E. De Morgan, *From Matter to Spirit*, p. 267.

64 Augustus De Morgan to a Friend, Jan. 19, 1861. S.E. De Morgan, *Memoir*, p. 304.

William playing the role of rakish art student, George a stolid scholar, and Edward a somewhat impish younger brother. Not pictured are their sisters—Annie aged 14, Chrissy aged 12 and Mary aged 9—but the girls were equal members of the tight group of De Morgan children. They enjoyed musical evenings in which Annie played the piano, Augustus his flute and Edward his violin.⁶⁵ They played elaborate games in which some would draw pictures and challenge the rest to write the stories to accompany them. They shared an interest in anagrams; 'Great gun, do us a sum!' is just one of a list of over two thousand created from Augustus's name, which Sophia carefully preserved.⁶⁶ As time went by and the boys began to venture out on their own, they still returned all but daily for time with the family on Adelaide Road.

William's decision to leave UCL after only one year confused and disappointed his father, but George thrived there. After graduating, George looked for other ways to pursue mathematics in London, and by 1866 had secured the position of mathematics teacher at University College School that he and his brothers had attended. This was not enough to support the development of his mathematical ideas, however, so in 1864, George and his friend Arthur Cowper Ranyard decided to form a society that focused on mathematics. At first they were thinking of a school group—either the London University Mathematics Society, or the 'University College Mathematical Society'—but by the time of their first regular meeting in January 1865 the group they co-founded had expanded its vision to become the London Mathematical Society, or LMS.⁶⁷ De Morgan was warmed by his son's enterprising spirit and thrilled to be named the new society's first president. The Society

65 Stirling, *William De Morgan*, p. 61.

66 Stirling, *William De Morgan*, pp. 64–65. Stirling attributes the list to William, but it was in fact created by De Morgan's fellow mathematician and professor of jurisprudence at UCL, John Thomas Graves. The collection is to be found in UCL Special Collections, MS Graves 36. A selection of these anagrams may also be found in Augustus De Morgan, *Budget*, pp. 82–83.

67 For the founding of the society see: S.E. De Morgan, *Memoir*, pp. 281–86; Adrian C. Rice, Robin J. Wilson and J. Helen Gardner, 'From Student Club to National Society: The Founding of the London Mathematical Society in 1865', *Historia Mathematica*, 22 (1995), 402–21; Adrian Rice, 'London Mathematical Society Historical Overview', in Susan Oakes, Alan Pears, and Adrian Rice, *The Book of Presidents 1865-1965* (London: London Mathematical Society, 2005), available on the London Mathematical Society's website at: https://www.lms.ac.uk/sites/default/files/About_Us/history/lms_full_history.pdf.

continues to flourish as the United Kingdom's premier learned society for mathematics in De Morgan House on Russell Square, with over 2,700 members worldwide. It confers triennially the De Morgan Medal, Britain's highest mathematical honour, and influenced the formations of similar bodies abroad, such as the French and American Mathematical Societies.⁶⁸

Ever since his triumphant graduation from UCL, George had been in declining health. He died in October 1867. Soon Chrissy began to exhibit the delicacy that had presaged Alice and George's early deaths. She too died and was buried in Bournemouth in August 1870. Seven months later, on 18 March 1871, Augustus De Morgan died at home. He was buried with Alice and George in the family plot in Kensal Green Cemetery.

In the years surrounding Chrissy and Augustus's deaths, the remaining members of the family reorganised themselves. Edward, who was concerned about his own health, moved to South Africa for its weather, and Annie married Dr Reginald Edward Thomson in 1872.⁶⁹ In the same year Mary and Sophia moved to a yet smaller house on Cheyne Row, Chelsea, where both women turned their attention to writing. Sophia had already gathered De Morgan's notes and articles into *A Budget of Paradoxes*, a popular book which was published in 1872.⁷⁰ In Cheyne Row she turned her attention to establishing the righteousness of Augustus's causes in a *Memoir of Augustus De Morgan*. Finding the best way to present her husband's life's work entailed considerable negotiation with family and friends, but by 1882 she was finally satisfied that she had succeeded in explaining his life of reason. Sophia then turned to writing her own reminiscences in *Threescore Years and Ten*. Working with Mary to draw her memories together sustained her through the last decade of her life.

68 See London Mathematical Society, <https://www.lms.ac.uk>; Adrian C. Rice and Robin J. Wilson, 'From National to International Society: The London Mathematical Society 1867–1900', *Historia Mathematica*, 25 (1998), 185–217.

69 Their son was the archaeologist and Assyriologist Reginald Campbell Thompson, on whom see Clyde Curry Smith, 'Thompson, Reginald Campbell (1876–1941), Assyriologist and Archaeologist', *Oxford Dictionary of National Biography*, online edn (Oxford: Oxford University Press, 2004-).

70 See Chapter 7 of this volume.

Mary was also hard at work at her own writing. Her first work, *Six by Two*, was a collection of fictional stories about schoolgirls, co-edited with Edith Helen Dixon.⁷¹ It was published in 1873, thirteen years before L.T. Meade's *A World of Girls*, the girls' school story seen as the starting point of what was to become an exceedingly popular genre. She was more interested in writing fairy tales, however, and published *On a Pincushion and Other Fairy Tales* in 1877. In the next decade she published two other collections: *The Necklace of Princess Fiorimonde* and *A Choice of Chance*.⁷² In the same way that her mother had used imaginary characters to teach Alice good behaviour, Mary's fairy tales carried social messages. But whereas her mother's goal was to encourage Alice to cooperate, Mary wrote with an iconoclastic feminist slant: 'The Toy Princess', for example, was a satirical dig at the prim Victorian young lady expected to hold no opinions.

Like her brother William's writings, Mary's stories were popular in their own time, described by her obituarist in *The Times* as being 'of very distinguished quality, and ... the delight of more than one generation of children'.⁷³ Unlike William's, they have stood the test of time, republished sporadically throughout the twentieth century: as single anthologised stories and as collections, both illustrated by the original artists and interpreted by newer illustrators.⁷⁴ Scholarly interest

71 Edith Helen Dixon and Mary De Morgan, *Six by Two, Stories of Old School Fellows* (London: Virtue, 1873); repr. as *The French Girl at Our School and Other Stories* (London: Virtue, 1887).

72 Mary De Morgan, *Complete Fairy Tales* (New York: F. Watts, 1963).

73 'Obituary', *The Times*, 10 June 1907, p. 6. Repr in Marilyn Pemberton, *Out of the Shadows: The Life and Work of Mary De Morgan* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2012), pp. 243–44 (p. 243).

74 Posthumous editions are: *On a Pincushion and Other Fairy Tales; The Necklace of Princess Fiorimonde and Other Stories*, introd. by Charity Chang (New York and London: Garland, 1977; facsimile reprints of the first editions); *On a Pincushion and Other Fairy Tales*, ill. by Jean Walmsley Heap (London: R. Ingram, 1950); *The Necklace of Princess Fiorimonde and Other Stories*, ed. by Roger Lancelyn Green and ill. by William De Morgan, Walter Crane and Olive Cockerell (London: Gollancz, 1963); ill. by Sylvie Monti (London: Hutchinson, 1990); and, most recently (Dinslaken: anaboco, 2016). Anthologies with a story by Mary De Morgan (usually 'A Toy Princess') include: *A Staircase of Stories*, ed. by Louey Chisholm and Amy Steedman (New York: Putnam's, 1920); *A Book of Princesses*, ed. by Sally Patrick Johnson (Harmondsworth: Penguin, 1965); *Beyond the Looking Glass, Extraordinary Works of Fairy Tale and Fantasy: Novels and Stories from the Victorian Era*, ed. by Jonathan Cott (New York: Stonehill, 1973; 'Through the Fire'); *The Revolt of the Fairies and Elves*, ed. by Jack Zipes (London: Routledge, 1987); *The Oxford Book of*

in female writers and in Mary's chosen genre have assisted survival, although a monograph was devoted to her only in 2012.⁷⁵

Mary was clearly a product of her family. Even if one discounts the statement in her *Times* obituary that she 'inherited from both parents very considerable literary power' as a value judgement and a very general one at that, her exposition of the position of women marks her as Sophia's daughter, while her satirical strain, independent thought and inventiveness are reminiscent of Augustus. From Augustus, too, could come astronomical awareness, shown in her 'The Story of the Opal', and from use of scientific phenomena in her tales.⁷⁶

In 1872 William moved into a house just three doors down from his mother and sister on Cheyne Row where he began to set up a pottery studio. It took him several years and many mistakes to master the complicated processes involved in making pots and tiles, but when he succeeded in taming his medium, the ebullient imagination that was relegated to the margins of his father's reasoned world exploded in images of adventuring ships, fire-breathing dragons, contemplative mermaids and imps peering out from among flowers. The colours he finally mastered flashed in exuberant peacocks' tails, deep blue oceans and bees that positively buzz with redness. He easily matched the playfulness his father expressed in his doodles; in fact, Charles Dodgson, better known as Lewis Carroll, is said to have written *The Hunting of the Snark* in response to the De Morgan tiles he had installed in his college rooms.⁷⁷

In the years that surrounded their father's and siblings' deaths, William and Mary grew close. Mary enjoyed making tiles in her brother's studio, while William developed a novel technique for etching the illustrations for *On a Pincushion*. William was a rather sociable person, whose range of artistic friends included Edward Burne-Jones

Modern Fairy Tales, ed. by Alison Lurie (Oxford: Oxford University Press, 1993); *The Oxford Book of Children's Stories*, ed. by Jan Mark (Oxford: Oxford University Press, 1994; 'Nanina's Sheep').

75 Pemberton, *Out of the Shadows*.

76 Discussed in Laurence Talairach-Vielmas, *Fairy Tales, Natural History and Victorian Culture* (Houndmills: Palgrave Macmillan, 2014), pp. 65–79.

77 June Barrow-Green, 'Euclid, William De Morgan and Charles Dodgson', in *The London Mathematical Society and Sublime Symmetry* (London: London Mathematical Society, 2018), p. 17.

and William Morris. Mary was a more mercurial character, who either charmed or repelled those who encountered her.

Outside of Cheyne Row, the family's troubles continued. In 1877 Edward died after falling from a horse in South Africa, and in 1884 Annie died of the same disease that had taken Alice, George and Chrissie. Sophia's communion with the dead sustained her through all of these losses. Until the very end of her life, she remained as warmly interested in everyone around her as was the father she so adored. She became actively involved in the movement against vivisection, and from the time of its founding in 1882 continued her explorations of the afterlife as a member of the Society of Psychical Research in London. In 1895, at the age of 87, Sophia De Morgan died in her sleep and was buried with Augustus, Alice and George.

In 1887, at the age of 48, William married Evelyn Pickering, who was fifteen years his junior and had already established herself as a painter. The talented new member of the family was in many ways a suitable heiress to Sophia's world of strong women. On her canvases, resilient sea maidens stand united among ocean waves, and powerful women direct thunderstorms. Sophia's ways of understanding pain are reflected in Evelyn's later works, where spirits pull away from exhausted bodies, and Christ rises from a graveyard supported by angels. In her work, Evelyn expanded upon the reflections on matter and spirit that her mother-in-law had begun.

Despite decades of hard work William's studio was a commercial failure, and in the early twentieth century he followed his sister and turned to writing. The novels he wrote were in their time a runaway success, and William was compared in complimentary terms with Dickens and Thackeray.⁷⁸ According to A.C. Ward, his fiction 'amused, touched, consoled, and inspired a widespread multitude as hardly any English novelist had done since Dickens died in 1870'.⁷⁹ His writings are clearly fictional, but it is not difficult to detect signs of his family background in them. The portrayal of the life of the young artist in

78 For evidence of complimentary reception, with quotations, see Mark Hamilton, *Rare Spirit: A Life of William De Morgan 1839–1911* (London: Constable, 1997), pp. 119–23.

79 William De Morgan, *Joseph Vance: An Ill-Written Autobiography*, ed. by A.C. Ward (London: Oxford University Press, 1954), p. xiii.

Alice-for-Short reflects a warm experience with siblings coming and going through a parental home with a welcoming spiritualist matriarch.⁸⁰ The childhood pictured in *Joseph Vance* is a darker reflection of the struggles to be found in Sophia's nursery journals, with a demanding mother and emotionally distant father.⁸¹ As historical sources, William's novels are opaque at best, but clearly William spent his final years ruminating on his experiences growing up as a De Morgan.

The success of William's novels supported him well financially until his death in 1917. They dated quickly, however, such that even *Joseph Vance*, reprinted as an Oxford University Press World's Classic in 1954, has been out of print for more than half a century. Despite public revulsion against Victorian art in the first half of the twentieth century, it is William's ceramics that have stood the test of time. He has been described since as having 'as conspicuous a mastery as did William Morris in his undertakings in design'; 'an artist in the true sense of the word'; 'perhaps the greatest of all English ceramic artists', with unique achievements and imaginative powers, and credited as the re-inventor of lustre.⁸² In 1968 the De Morgan Foundation was established to preserve his and his wife's work.⁸³ It continues to flourish, and William's works are displayed in several English galleries—most strikingly, the Victoria and Albert Museum—as well as Cardiff Castle Museum in Wales and, in continental Europe, the International Museum of Ceramics at Faenza.

William did not claim to be practising reason when he created his designs, but the intense experiences of insight that inspired his father's and mother's research leap directly from his pieces. The symmetries that supported his father's logical thinking hold his imps in place, control the rolls of his dolphins, shape the flights of his dragons, and structure whole walls covered with carnations, roses, daisies and swans.

80 William De Morgan, *Alice-for-Short: A Dichronism* (London: Heinemann, 1907).

81 William De Morgan, *Joseph Vance: An Ill-Written Autobiography* (London: Heinemann, 1906).

82 William Gaunt and M.D.E. Clayton-Stamm, *William De Morgan* (London: Studio Vista, 1971), pp. 150–51; *Joseph Vance* (1954), p. ix; Hamilton, pp. 184–85.

83 For the continuing activities of the Foundation, see De Morgan Foundation, De Morgan Collection (2019), <https://www.demorgan.org.uk/>. The date of the Foundation's establishment is taken from Alan Crawford, 'Morgan, William Frend De (1839–1917)', 2009 version, *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004-); Gaunt and Clayton-Stamm (p. 155) give the date of establishment as 1969.

In his and Evelyn's world the nature, power, and limits of reason were being actively redefined, and they responded in and through his work. William's ceramic pieces and Evelyn's canvases stand as portals into the transcendent understandings that the De Morgans had entered through the reason they had learned from William's namesake, William Frend.

As literary studies move beyond the major canon, rediscovery of William De Morgan's novels is feasible. Following a surmise that they might be republished, Mark Hamilton ends his study of William with the words: 'It is very rare that someone can be a successful novelist ... an artist and an inventor, and, perhaps, equally rare to find someone of such varied talents who is also altogether an admirable and likeable human being.'⁸⁴ The areas of achievement differ from Augustus De Morgan's, but in the possession of variety of talent and human attraction, William clearly resembles his father.

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⁸⁴ Hamilton, p. 185.

- , *Joseph Vance: An Ill-Written Autobiography*, ed. by A.C. Ward (London: Oxford University Press, 1954).
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Fig. 13 Augustus De Morgan pictured in the 1860s. (Public domain, via Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Augustus_De_Morgan.jpg)