

LOOKING SKYWARD
MULVIHILL COLLECTION ACQUIRES MARY SOMERVILLE,
“QUEEN OF SCIENCE”

By **Maureen E. Mulvihill**, Guest Writer
Princeton Research Forum, Princeton, New Jersey
For Rare Book Hub, San Francisco. September, 2019.
With Image Gallery and Apparatus.

To the Memory of **Rosalind Franklin** (1920-1958),
Dark Lady of DNA.
תהבצנת ~ “Her soul shall be bound in the bundle of life”



From the Somerville College Collection

Self-portrait [undated]. Mary Fairfax Greig Somerville

(Jedburgh, Scotland, 1780 - Naples, Italy, 1872).

Oil on wood panel. 59 cm x 50 cm.

Family bequest to Somerville College, Oxford, 1958, Lt. Col. J. Ramsay Fairfax.
With kind permission of the Principal and Fellows of Somerville College.



Let me tell you a story. Well, it felt like a story at the time, and not without a dusting of magic. Book collectors, after all, are irrepressible raconteurs. For every book in their collection, they have a backstory to spin. Here is one of mine:

Bristol, England, sent me a lovely holiday gift in November, 2018. It was List 50 from James Burmester Rare Books: 124 offerings of English books, 1789-1900. This was a handsomely illustrated sale catalogue with reliable, detailed descriptions. My short list of possible buys included five items; it was then pared down to two rarities, both manageably priced.

At the top of my list was Item 76, a copy of the first issue of *The Royal Irish Academy: Charter and Statutes for Promoting the Study of Science, Polite Literature, and Antiquities* (Dublin: Printed by Order of the Academy, by Graisberry & Campbell, 1818; 4to., 14 pages, with large title-page vignette). This was a good condition, complete copy, but disbound; it is presently being restored to its original glory by my collection's Conservator, David H. Barry, a respected Welsh bookman, now in St Petersburg, Florida ([Griffin Bookbinding](#)). Adding this item to the Mulvihill Collection would be a handsome historical complement to the Collection's Irish items, by Eibhlín Dubh Ní Chonaill, Maria Edgeworth, Mary Tighe, Mary Shackleton Leadbeater, Anna Jameson, W.B. Yeats, and a fine letterpress facsimile of the iconic 1916 *Irish Proclamation* (broadsheet, 16" x 24"; Ray Nichols & Jill Cypher, Lead Graffiti, Newark, Delaware, 2016), a generous gift of Maureen (Máirín) Cech, Special Collections, Misericordia University Library, Pennsylvania.

My second purchase was a thrilling find, and for a long time desired. Burmester's item 83 was one of the most successful science books of its day, *On the Connexion of the Physical Sciences* (1834; 10th ed., 1877), by a remarkable Scotswoman, indeed the very "Queen of Science" (London *Morning Post*, 2 December 1872): **Mary Fairfax Greig Somerville (Jedburgh, Scotland, 1780 - Naples, Italy, 1872)**. By 2018, this international bestseller was not a rare item with high commercial value, but it certainly was a special book, highly collectible. (Rare Book Hub's sales database includes 23 "Somerville" records, now it has 24.)

My interest in accomplished women of science began a few years ago while preparing a piece on **Margaret (Cavendish), Duchess of Newcastle (1623-1673)**, for my Guest Series, *Old Books / New Editions*, hosted by Rare Book Hub (three scholarly essays, online, October-December, 2016). I titled my Cavendish essay, *Galactic Duchess*, owing to Cavendish's interest in the New Science (her *Observations*, 1666). Her personal collection of lenses, microscopes, and telescopes was essential context, I discovered, for her writings, especially her early 'science fiction'.

As these engagements tend to go, one writer led to another, and I soon discovered other 17thC learned women (savants) with special interests in astronomy and the new scientific instruments. There was the accomplished Maria Cunitz (Poland (1610-1669); the remarkable Sor Juana Inés de la Cruz (Mexico, 1651-1695); Caroline Lucretia Herschel (Germany, 1750-1848); and others, now identified and studied by feminist historians and history of science scholars. So what I had discovered in 2016 was a documentable continuum of women's early contribution to the field of scientific investigation, especially astronomy. Chancing upon a copy of the Somerville book in November, 2018, was ... *pure kismet*.

The career of Mary Somerville is an inspiring success story. While the facts of her long life, some nine decades, have been collected and published since the 19thC (see this article's Apparatus), we supply the following overview to Somerville newcomers:

"Mrs Somerville", as she was known, descended from durable Scots stock. Her paternal line, the Fairfaxes, was prominent for some centuries in British history (peerage, 1627). One of her predecessors, an earlier Mary Fairfax, married into the powerful Villiers line (the dukes of Buckingham). Though from a stable, educated family, Mary's kin had seen far better days by the early 19thC: "genteel poverty" is often mentioned in modern accounts of her family setting.

As many gifted girls of her era, Mary Fairfax was not encouraged to be an intellectual, much less a star gazer. Yet she found ways to work around immediate obstacles to her development, including a boorish first husband, Lieutenant Samuel Greig, who openly ridiculed his young wife's 'silly enthusiasms'. While she was not university-trained, Mary found enlightened mentors among family relations and associates who soon advanced her scientific interests. With their agency, she established herself on useful networks, both in Scotland and England, networks which included a second husband. William Somerville, M.D., appointed physician at Chelsea Hospital, London, appreciated his talented wife, and did much to encourage her reading, research, and forty-four years of professional publication (1825-1869).

Mrs Mary Somerville distinguished herself in scientific circles by her integrative approach and interdisciplinary methodology. As a telescopic observer of the skies and an accessible science writer, she was welcomed by established specialists of her day, notably Charles Darwin, who praised her first published work (Martha Somerville, *Recollections*, 1874, Chapter 9). Mary's principal contribution was her argument for "*connexion*": an interdependence of the "physical sciences" (astronomy, physics, chemistry, mathematics, geometry).

***"She made people look at science in a new way.
She was very interested in light and the idea that the ultraviolet
part of the prism could create magnetism. She did influential work
on electromagnetism, and worked on geography, geology, and chemistry."***

*Alice Prochaska, Fellow, Royal Historical Society.
Principal (2010-2017), Somerville College, Oxford.
[Recent Somerville paper](#) by Dr Prochaska.*

We imagine Mary Somerville was a strong personality, a 'bonnie fechter' as the Scots would say; and her skill set included science, painting, piano, and opera. The distinguished English painter, J.M.W. Turner, was one of her circle, and she visited his London studio to educate him in Newton's prism experiments and color theory. (Cinephiles will enjoy seeing a cameo appearance of Mary Somerville in the 2014 film, *Mr Turner*.) Her circle also included Irish writer, Maria Edgeworth, who visited Mary and William Somerville at their London residence in Hanover Square, Chelsea. And Mary often welcomed visits from Ada Byron, Lady Lovelace, an early pioneer in computer technology. Mrs Somerville's long life included two marriages, several children, published papers and books, travel, suffragette advocacy (she was a favorite of John Stuart Mill), and honorary membership in the Royal Astronomical Society. Somerville College, Oxford, is named in her honor. Upon news of her death, *The New York Times* printed a front page obituary, December 2, 1872, Page A1.

Following, an **Image Gallery** (13 selections):

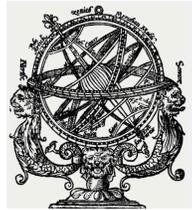


Image Gallery
Curated by Maureen E. Mulvihill

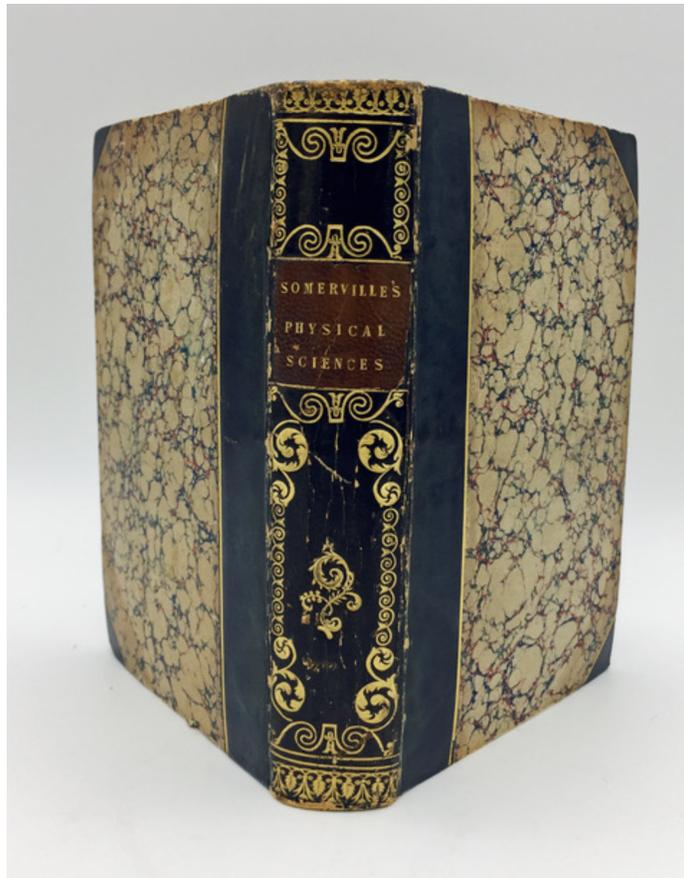


Image 1. Mary Somerville, *On The Connexion Of The Physical Sciences*.

London: John Murray, 1834; tenth edition, 1877. 12mo. 6 ½" x 4". xvi + 493 pp.

With five plates. Mulvihill Collection (copy, above), second edition, 1835.

Dedicated to **Queen Adelaide** (see Image 3). Five aquatint plates. Rebound. Dark blue morocco spine with elaborate gilt decoration and gilt-lettered red label. All edges gilt. Illustrated notes. Detailed index. Lunar frontispiece. The second edition includes evidently the author's own additional illustrations, calculations, diagrams, and her Preface to the Second Edition (see Image 5). Seller, James Burmester Rare Books, Bristol UK, List 50 (2018).

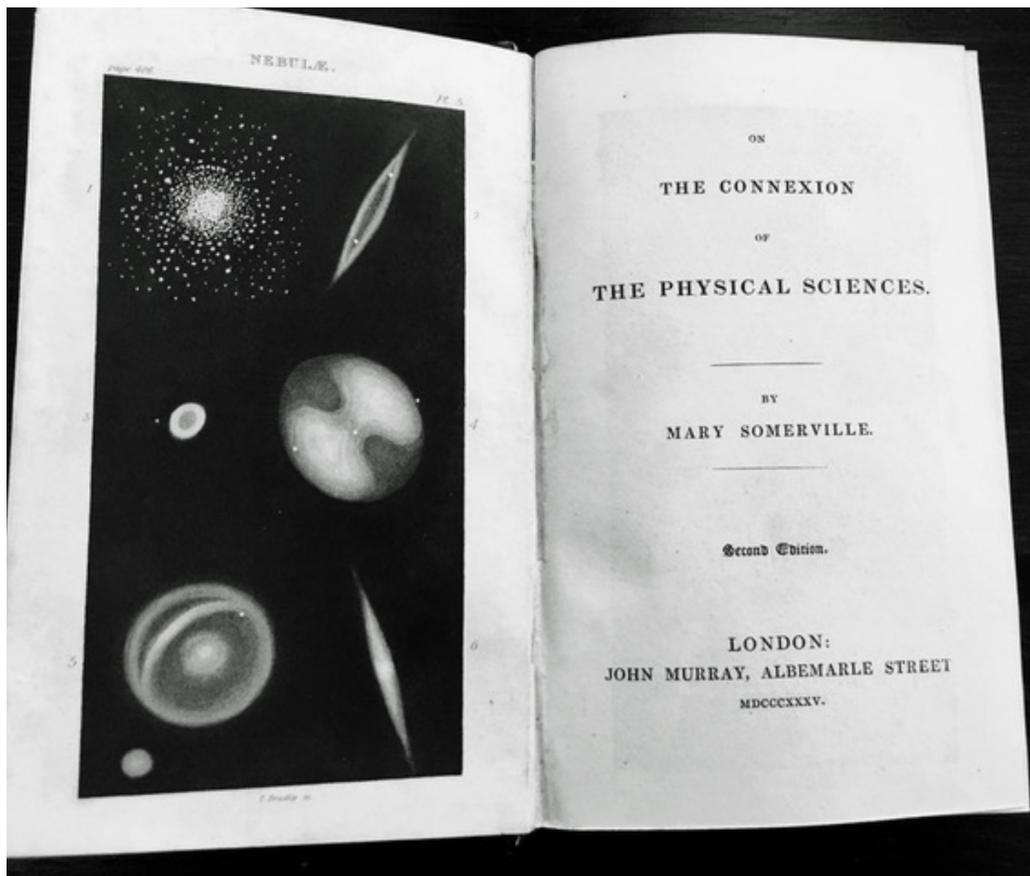


Image 2. Title-page, Mary Somerville's *On the Connexion Of The Physical Sciences*.
London: John Murray, 1834; second ed., 1835. Mulvihill Collection.

With “Nebulae” frontispiece (Plate 5 of five aquatint lunar plates; see p. 406ff, and Index. Engraved by “T. Bradley SC [sculpsit]”, very likely **Thomas Bradley** (1799-1869), draughtsman and engraver (Geometrical Drawings, Kings College, Cambridge). In view of her painterly skills, Somerville may have supplied the original drawings for the book’s plates. Minor repair to the above opening to be managed by David H. Barry, [Griffin Bookbinding](#), St Petersburg, Florida, conservator, Mulvihill Collection.

Owing to the book’s successful reception, Mary Somerville was elected Honorary Member (1835) to the Royal Astronomical Society, London, sharing this distinction with German astronomer and comet discoverer, **Caroline Herschel (1750-1848)**. This is the book which established Somerville’s reputation. For its clarity and utility, sections were adopted as classroom texts by British educators.

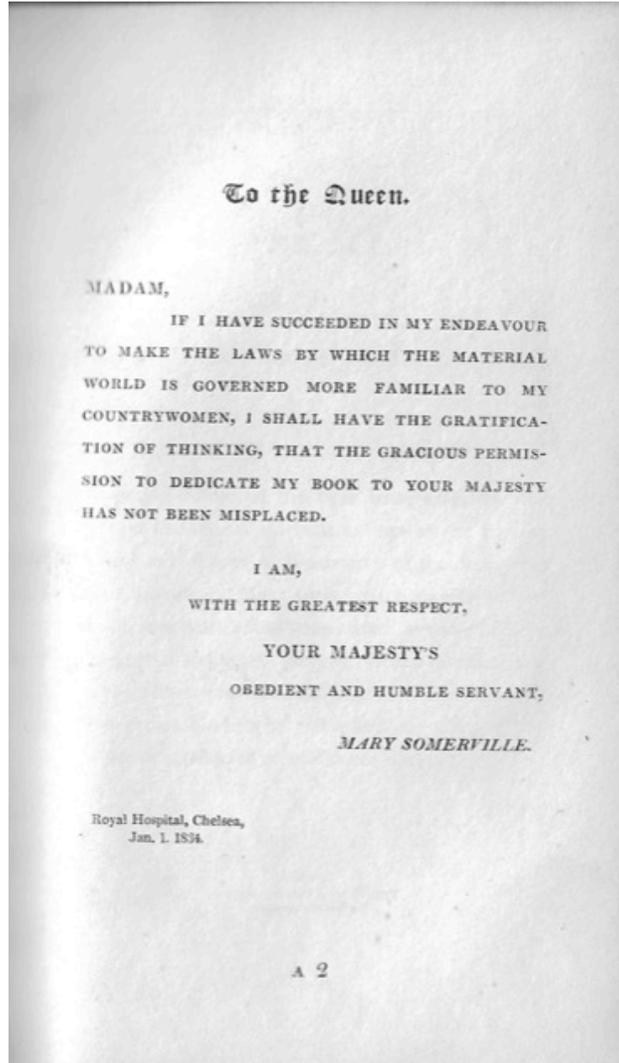


Image 3. Fit for a Queen.
A Royal Dedicatee for Somerville's *Physical Sciences* (1834).

Somerville's book is dedicated to **Adelaide**, Queen Consort to William IV of England. The Dedication bears Somerville's (printed) signature, in italic; and date and place of composition, January 1, 1834, Royal Hospital, Chelsea [London]. The Dedication emphasizes Somerville's goal: to educate her "countrywomen". Mulvihill Collection.

Mary's second husband, Wm. Somerville, MD, 1771-1860, Royal College of Physicians of London, and Fellow, Royal Society of Edinburgh, was appointed Physician, Chelsea Hospital, London. The Somervilles resided in a government-provided house in the Chelsea Hospital complex. There is no overstating the deep contribution of Dr Somerville to Mary's development and career opportunities.

P R E F A C E.

THE progress of modern science, especially within the last five years, has been remarkable for a tendency to simplify the laws of nature, and to unite detached branches by general principles. In some cases identity has been proved where there appeared to be nothing in common, as in the electric and magnetic influences; in others, as that of light and heat, such analogies have been pointed out as to justify the expectation, that they will ultimately be referred to the same agent: and in all there exists such a bond of union, that proficiency cannot be attained in any one without a knowledge of others.

Although well aware that a far more extensive illustration of these views might have been given, the Author hopes that enough has been done to show the connexion of the physical sciences.

Image 4. Somerville's Preface, her *Physical Sciences*.

London: John Murray, 1834.

Owing to its clarity of intention and usefulness to the common reader, Somerville's original Preface (1834), displayed above, was reprinted in the book's second edition (1835) and in the book's many subsequent editions in the 19thC. The first Preface is notable for Somerville's emphases on a simplicity within the laws of nature and the need to "unite detached branches [of science] by general principles", thus demonstrating "in all, a bond of union." Image, Mulvihill Collection (second edition, 1835).

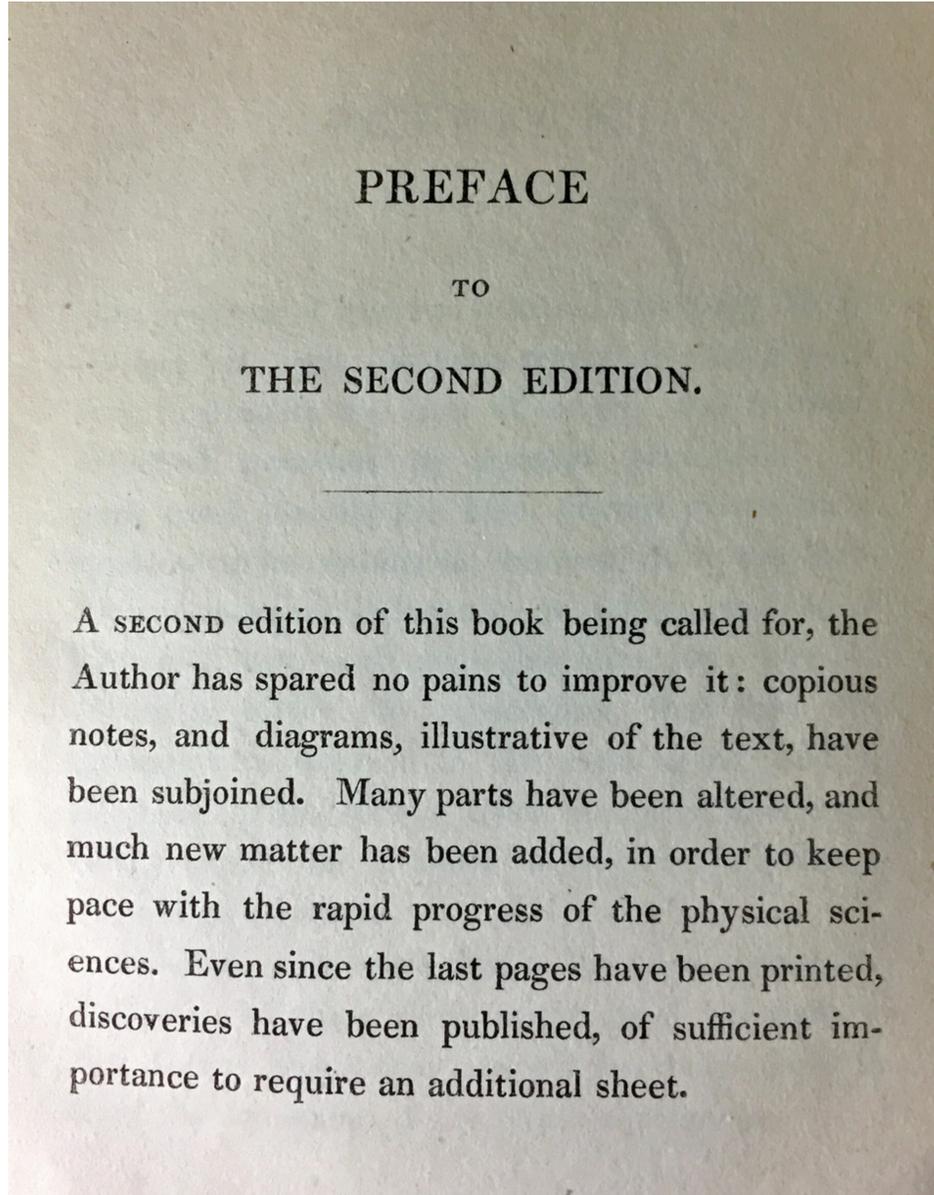


Image 5. Somerville's Preface, Second Edition, *Physical Sciences*.

London: John Murray, 1835. Mulvihill Collection.

The voice and relative urgency of the new Preface (1835) demonstrate Somerville's responsibility as a science writer to supply readers with the most current research on "the physical sciences" and lunar investigation. She is adding to her book's first edition (1834) evidently her own "copious notes, and diagrams...[revisions] and much new matter...."

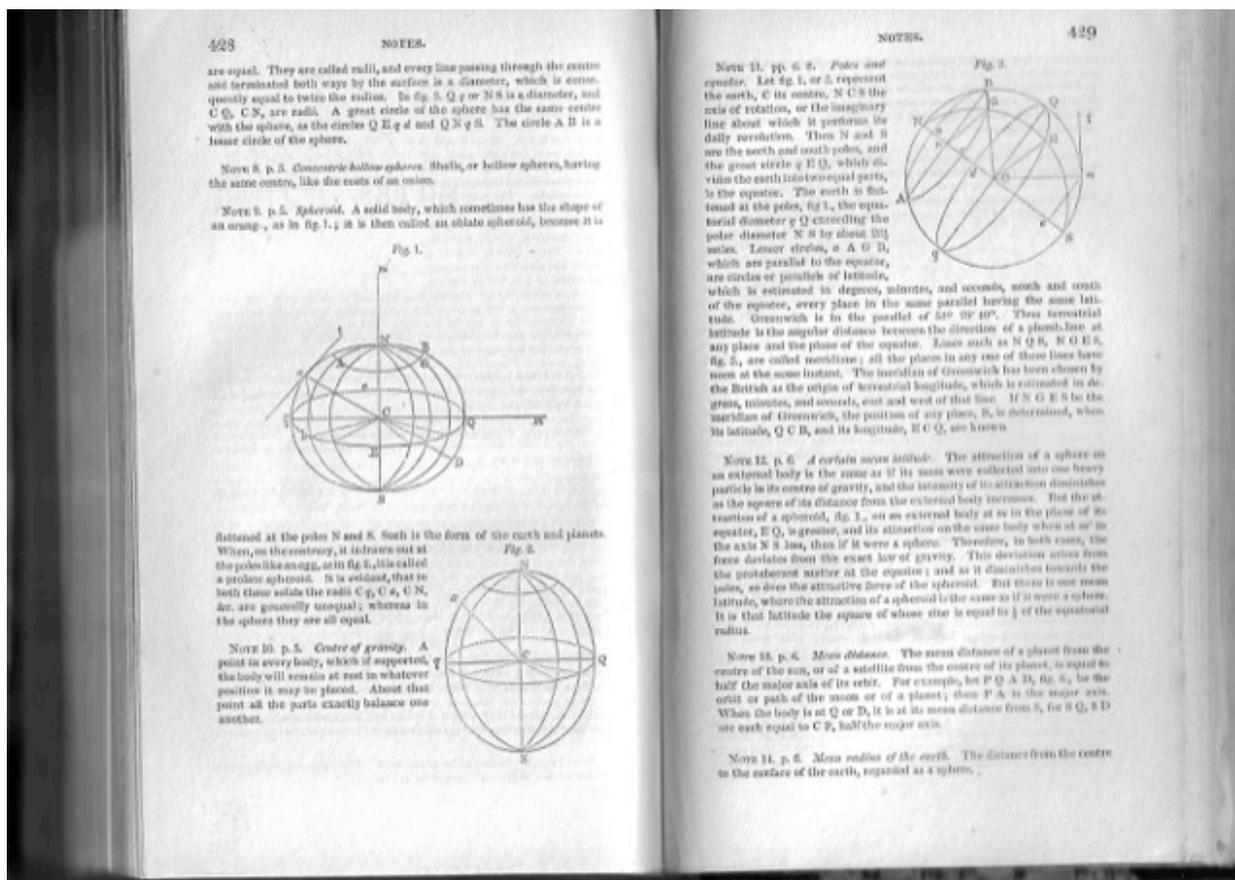


Image 6. Specimen Pages (pp. 428-429), from Notes, Somerville's *Physical Sciences* (1834; second edition, 1835). Evidently with Somerville's own scientific drawings.

As appearing in the book's illustrated Notes, pages [427]–475, followed by four plates and a detailed Index, pages [477]–493. Second edition, 1835, Mulvihill Collection of Rare & Special Books by Women Writers.



Image 7. Making it all Possible ... the telescope.

Left: Unattributed engraving of Galileo Galilei with his 'glass'. © Mary Evans Photo Researchers Inc.

Right: Replica, earliest surviving telescope attributed to Galileo, [Griffith Observatory](#), Los Angeles.

Galileo Galilei

Seeing and Mapping the galaxy became possible with a new scientific instrument: the telescope. Scientists credit the earliest telescope to eyeglass-maker **Hans Lipper(s)hey**, Netherlands, *circa* 1608. **Galileo**, then at the University of Padua, was riveted by this development. Within a year, he had improved the simple, if lackluster, Dutch device with his own lenses and design. Sir Isaac Newton, owing to his revolutionary work in optics and light, would soon improve on these early models with better telescopic lenses. The telescope was an immediate success throughout the Low Countries and Europe; scientists, *virtuosi*, and enthusiasts could now purchase a “glass” at the shop of a local instrument-maker. The common citizen could now participate in the intellectual life of the city. The new instrument became essential to navigators, geographers, cartographers, astrologers, and especially astronomers. The “glass” soon became a popular, if fashionable, commodity: science was no longer the exclusive domain of the university-trained *élite*, it was on the public market. Access to a meta-universe was global. The telescope gave the world to the seventeenth century.

London’s celebrated diarist **Samuel Pepys**, an elected Fellow (1665) of the new Royal Society, and then its president (1685), paid a dear £9 for his ‘optical glass’, and he recorded fascinating hours atop his roof with local instrument-maker **Richard Reeves**: “We did at night see Jupiter and his girdle and satellites, seen very fine with my 12-foot glass, but could not see Saturn, he being very dark” (*Diary*, 19 August, 1666; **Claire Tomalin**, *Pepys*, 2003, pp 248-249). As the device became popularized, telescopes were sold in various sizes and lenses (magnifications), from pocket-size to 12’ designs for observatories and rooftop viewing. Pepys also used a small, portable telescope for ogling women in church: “I did entertain myself with my perspective glass up and down the Church, seeing & gazing at many fine women” (*Diary*, 26 May 1667). And with the new instrument came a *new genre of writing: the recording of telescopic observation*, with explanatory notes, calculations, and drawings. **Addendum**: For a fascinating reconstruction of a recent book forgery of Galileo’s work, see **Nick Wilding**’s deattribution methodology, in *Galileo’s Moon*, PBS, Summer, 2019, now online at <<https://www.pbs.org/wnet/secrets/galileos-moon-7vidcl/4438/>>. Thank you, Nick Wilding, for the dedication and the example.

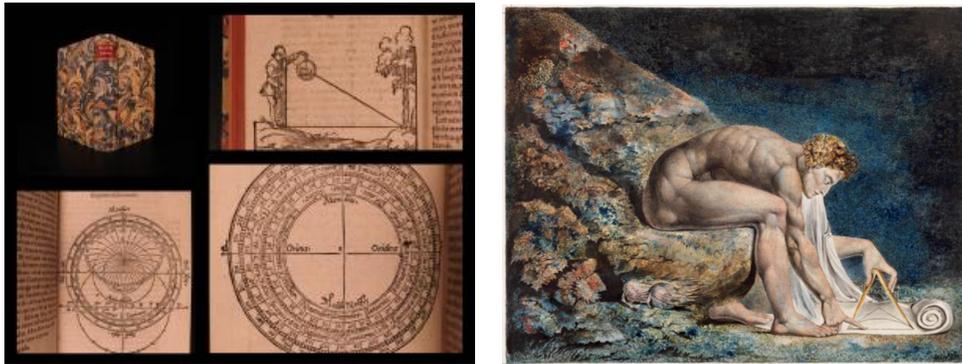


Image 8. Mary Somerville, Precedents & Influences.

When “Mrs Somerville” took her work public (1825-1869), she had the great advantage of earlier writings by many distinguished scientists ~ Copernicus, Galileo, Kepler ~ as well as her senior colleague in Germany, the respected **Caroline Lucretia Herschel** (1750-1848). Above, images associated with two other luminaries in Somerville’s long career, with their scientific instruments (astrolabe; compass):

Left. **Johann Stoeffler** (1452-1531), *Astrolabii* (Falckenburg, 1594), German mathematician and astronomer whose work on scientific instruments was a principal resource for early-modern surveyors. The image, above, presents a view of his book’s binding and three woodcut engravings (an astrolabe, and two detailed drawings). A model of high-quality German book arts. Image, Schilb Antiquarian Books (Columbia, MO.); a copy on offer, August, 2019, US\$1,950.

Right. **Sir Isaac Newton** (1642-1726), central figure in the Scientific Revolution. In the iconic image, above, c1795, Newton is imaginatively, *and critically*, portrayed by William Blake, as a ‘divine geometer’, crouched naked on an algae-covered rock, possibly at the bottom of the ocean, and focusing on a scroll of diagrams which Newton is constructing with a compass (“clipping the wings of Imagination,” “unweaving the rainbow”, according to Blake). Image, Blake exhibition, Tate Britain, September, 2019-February 2020 / For particulars, view the show’s webpage: < <https://www.tate.org.uk/whats-on/tate-britain/exhibition/william-blake-artist>>.



Image 9. Astronomy and the 17thC Visual Arts

Johannes Vermeer, *The Astronomer*, circa 1668
Oil on canvas. 51 cm x 45 cm (20" x 18"). Louvre, Paris.

Vermeer's articulate iconography includes the trope of a celestial globe, the traditional symbol of the astronomer's profession; and the book on the worktable, according to art historians, is **Adriaan Metius's** *Institutiones Astronomicae Geographicae*, 1621 edition. The picture's quiet, but dense, narrative depicts three actions: reading, looking, touching. And it engages three mediums: art, book, artifact. In Vermeer's aesthetic, the picture's coordinates are interdependent.

Mary Somerville, in her important monograph of 1834, also promotes this grounding principle of "**connexion**", calling it a "unity" and "bond" among "detached branches" of intellectual endeavor. Nature's elegant symmetry is an ancient principle; as **Cicero** explained: "All Art that do belong to humanity have a common band [bond?], and all are allied, one to another, as by a kind of parentage ... all Art is the mother of another Art, or at least of a nigh kindred." – Tully (Cicero), in **Franciscus Junius**, *The Painting of the Ancients*, 3 vols (London, 1638), dedicated to Lady Alethea Talbot, wife of distinguished collector / art connoisseur, Sir Thomas Howard, Earl of Arundel (see Mulvihill, "**Veronese**", Images 17-20, *Seventeenth-Century News*).



Contemporary Images of Mary Somerville

Image 10 (left): Bust, 1842, by sculptor, Sir Francis Legatt **Chantrey**. Royal Society Library. Commissioned by then President of the Royal Society, Prince Augustus Frederick. The original Chantrey “Somerville” was placed in the Society’s Great Hall, and several copies of the bust were circulated. The figure became so popular that Liverpool shipbuilder William H. Potter requested Somerville’s permission to copy it as a figurehead for an honorary ship he had just completed for sail in the China and India trade: the *Mary Somerville*.

Image 11 (center): Mary Somerville, age 66. Chalk drawing by James Rannie **Swinton**. 1848. Scottish National Portrait Gallery. (The copy, above, displays signature, “Mary Somerville”.)

Image 12 (right): Portrait, oil on canvas, 1834, by distinguished portrait painter, Thomas **Phillips**. Scottish National Portrait Gallery, PG 1115. Canvas, 76.20 cm x 63.50 cm. Photo, Antonia Reeve.

Additional Likenesses of Mary Somerville

< <http://www-history.mcs.st-andrews.ac.uk/PictDisplay/Somerville.html> >



Image 13. A 21st Century Mary Somerville

The £10 Somerville Banknote.

Royal Bank of Scotland, Issued 2017

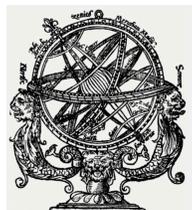
In 2016, the Royal Bank of Scotland held a public vote for a Scottish ‘face’ on its new polymer £10 banknote. **Three distinguished Scottish candidates** were shortlisted: physicist, James Maxwell (1831-1879); civil engineer, Thomas Telford (1757-1843); and science writer, Mary Somerville (1780-1872). In the image above, behold the winner!

As reported on the Royal Bank of Scotland website, “Primary school pupils in Perth, Scotland, celebrated the Bank’s new £10 note by participating in the Bank’s launch of the new Somerville note into space.”

Sources, Somerville Banknote

< <https://www.rbs.com/rbs/news/2016/02/royal-bank-of-scotland-announces-shortlist-to-appear-on-new-p10-.html> >

< <https://www.rbs.com/rbs/news/2017/10/royal-bank-of-scotlands-new-p10-note-enters-circulation-and-anot.html> >



APPARATUS

Principal Scientific Writings by Mary Somerville

- 1825 *Magnetic Properties of the Violet Rays of the Solar Spectrum*
 1831 *Mechanisms of the Heavens* (translation [i.e., “rendition” and expansion],
 vols I & II of Laplace’s important *Mécanique céleste*, 5 vols.)
 1832 *A Preliminary Dissertation on the Mechanisms of the Heavens*
 1834 *On the Connexion of the Physical Sciences*
 1848 *Physical Geography*
 1869 *Molecular and Microscopic Science*

Selected Sources for Mary Somerville

Archives & Primary Sources

Mary Somerville. Catalogue of the Mary Somerville Collection, [c.1700]-1972. University of Oxford, Bodleian Library. Prepared by Elizabeth Chambers Patterson. Expanded by Chrissie Webb in 2013.
 < <http://www.bodley.ox.ac.uk/dept/scwmss/wmss/online/1500-1900/somerville/somerville.html> >

Mary Somerville Collection. Girton College, University of Cambridge. History, with short list of items.
 < <https://www.girton.cam.ac.uk/library/archive-and-special-collections/special-collections-guide/> >

Mary Somerville Collection (publisher correspondence). John Murray Archive, National Library of Scotland <<https://digital.nls.uk/jma/who/somerville/index.html>>

Martha Somerville, editor, daughter of Mary Somerville (1874). *Personal Recollections, from Early Life to Old Age, of Mary Somerville: With Selections from Her Correspondence*. Publisher, John Murray, London. Digitised and online, courtesy Roberts Brothers, Boston.

Commentary

Arianrhod, Robyn (2012). *Seduced by Logic: Émilie Du Châtelet, Mary Somerville and the Newtonian Revolution*. Oxford University Press.
 < <https://global.oup.com/academic/product/seduced-by-logic-9780199931613?cc=us&lang=en&>>

Creese, Mary R.S. (2004). “Mary Somerville.” *Oxford DNB*, 2004
 < <https://www-history.mcs.st-and.ac.uk/history/DNB/Somerville.html> >

Fara, Patricia (2008). “Mary Somerville: A Scientist and Her Ship.” *Endeavour*, Vol. 32, issue 3, pp 83-85. With self-portrait (see display page of this article).
 < <https://www.sciencedirect.com/science/article/pii/S0160932708000392> >

Neeley, Kathryn A. (2001). *Mary Somerville: Science, Illumination, and the Female Mind*. Cambridge University Press.
 < <https://www.cambridge.org/core/books/mary-somerville/E8A13FDDE52F41F3870BA24893CB667A>>

Prochaska, Alice. (2015). FRHistS., Principal, Somerville College. BBC Radio 4. Transcript:

< <https://www.some.ox.ac.uk/news/principal-alice-prochaska-speaks-on-womans-hour/> >

----- (2016). Somerville Oral Histories: Mary Somerville. Transcript:

< <https://somervilleoralhistories.wordpress.com/tag/alice-prochaska/> >

----- (2017). “Happy Birthday, Mary Fairfax Somerville!”

< <https://ordinaryphilosophy.com/tag/alice-prochaska/> >



Acknowledgments

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Author Note

Maureen E. Mulvihill (Princeton Research Forum, Princeton, NJ; formerly, Associate Fellow, Institute for Research in History, NYC) is a rare book collector and established specialist on early-modern Irish and English literatures, with strengths in Women Writers, Book History, Textual Studies, and Digital Humanities (‘multimedia research methodology’). She studied at Wisconsin (PhD, 1982), with post-doctoral work at Columbia University Rare Book School, The Yale Center for British Art, and (as NEH Fellow) The Johns Hopkins University. The Mulvihill Collection of Rare Books by Early Women Writers is <[profiled](#)> in *Fine Books & Collections* magazine (autumn, 2016). She will be a guest speaker on the formation and utility of the Mulvihill Collection, FABS Tour / Florida Bibliophile Society, Spring 2020. For details on her book credits, essays, and contribution to reference works, see “Galactic Duchess”, Note on the Writer <https://www.rarebookhub.com/uploads/article_pdf/upload_file/23/Cavendish-Dec-13-2016-Final.pdf>.

