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 \sim "Her soul shall be bound in the bundle of life"



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 whisper of magic. Celtic magic. Book collectors, after all, are irrepressible raconteurs. For every book in their collection, there is 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 (8½" x 12") with 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 complete copy, in good condition, but disbound; it is now being restored to its original glory by my collection's conservator, David H. Barry, a respected Welsh bookman, now at Griffin Bookbinding, St Petersburg, Florida. Adding this item to the Mulvihill Collection would be a handsome historical complement to the collection's Irish items by Eibhlín Dubh Ní Chonaill, Jonathan Swift, 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 Librarian, Delaware, now at Misericordia University, Pennsylvania.

My second purchase was a thrilling find, for a long time desired. Burmester's item 83 was a second edition (1835) of 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: **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, still collectable. (Rare Book Hub's extensive sales database yields 23 results for "Mary Somerville", see records 3, 4, 10, 18; it now has a 24th record.)

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

As these engagements tend to go, one writer led to another, and I soon discovered other early-modern 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 a heartening success story. While the facts of her considerable life span, some nine decades, have been collected and published since the 19thC (see Apparatus, below), we offer 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 a stable, educated family, the Fairfaxes had seen far better days by the early 19thC: "genteel poverty" is often mentioned in modern accounts of Mary's family setting.

As many gifted girls of her era, Mary Fairfax was not encouraged to be a student, 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'. Providentially, Greig died within a few years of their marriage. Though not university-trained, Mary attracted enlightened mentors (family relations, visitors, tutors) who advanced her interest in mathematics and the sciences. With their agency, the young widow Greig established herself on useful networks, both in Scotland and England, networks which included a second husband. William Somerville, M.D., appointed physician to Chelsea Hospital, London, appreciated his talented wife, and encouraged her reading, book-buying, research, and forty-four years of professional publication (1825-1869) with the John Murray family firm of publishers.

Mrs Mary Somerville distinguished herself in scientific circles by her integrative approach and interdisciplinary methodology. As a telescopic observer of the skies and accessible science writer, she was welcomed and praised by established specialists of her day, notably Humboldt and Darwin (see Martha Somerville, editor, *Recollections*, 1874, Chapter 9, *et passim*). Mary's principal contribution was her argument for "*connexion*": an interdependence within 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.

(see Prochaska listings, below, in Apparatus)

We imagine Mary Somerville was a strong personality, a 'bonnie fechter,' as the Scots would say; and her skill set included the sciences, as well as painting, piano, and opera. The genius 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 the cameo 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. Another visitor, and private student, was Ada Byron, Lady Lovelace, pioneer in computer science (the new 'calculating engine'). Mrs Somerville's long life included two marriages, several children, published papers and books, travel, suffrage and abolition advocacy, and honorary membership in the Royal Astronomical Society. Somerville College, Oxford, is named in her honor. Upon news of her death in a telegraphic dispatch from London, *The New York Times* printed a front-page obituary, December 2, 1872 (online, *NY Times* archives). The London *Morning Post* remembered her that day as "the Queen of Science." [Continue to Image Gallery]



Image Gallery
Curated by Maureen E. Mulvihill

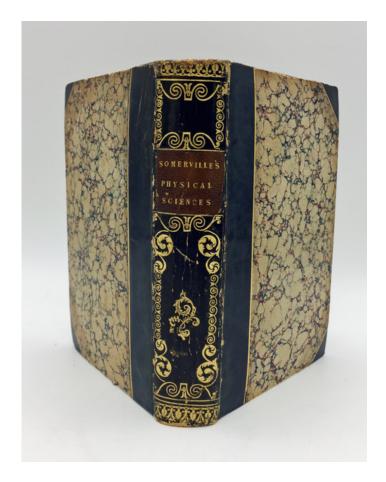


Image 1. Mary Somerville, On The Connexion Of The Physical Sciences London: John Murray, 1834; tenth edition, 1877. 12mo. 6 ½" x 4". xvi + 493 pages With five plates. Mulvihill Collection (copy, above), second edition, 1835

Dedicated to Queen Adelaide (see Image 3, below). 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, and diagrams. For her Preface to the Second Edition, see Image 5, below. Seller, James Burmester Rare Books, Bristol UK, *List 50*, Item 83, 2018.

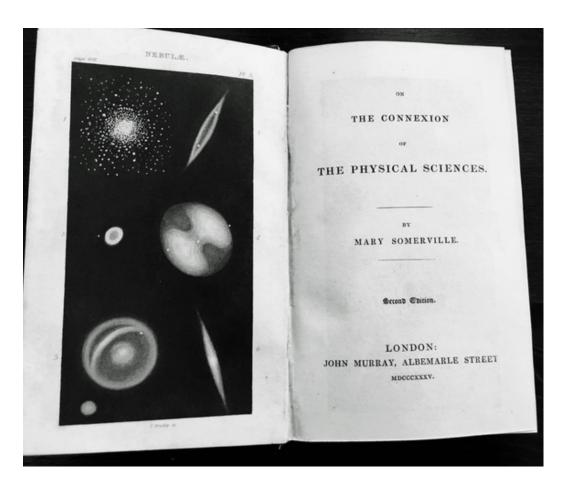


Image 2. Title-page, Mary Somerville's *Physical Sciences* London: John Murray, 1834; second ed., 1835. Mulvihill Collection

With "Nebulae" frontispiece (Plate 5 of five aquatint lunar plates; see p. 406 ff. and Index). Engraved by "T. Bradley SC [sculpsit]", very likely **Thomas Bradley** (1799-1869), draughtsman and engraver (Geometrical Drawings, Department of Engineering, 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), Royal Astronomical Society, London, sharing this distinction with German astronomer and comet discoverer, Caroline Lucretia Herschel (1750-1848). This is the book which established Somerville's reputation. For its clarity, utility, and illustrations, sections were adopted as classroom texts by British educators.

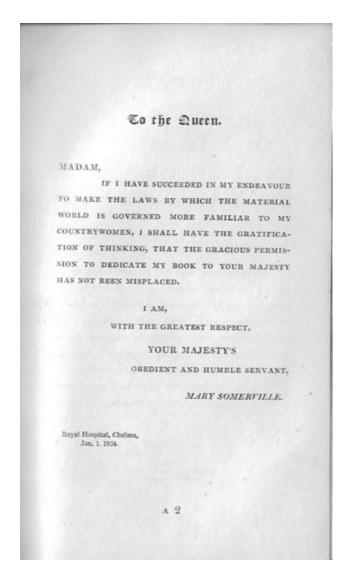


Image 3. Fit for a Queen
A Royal Dedicatee for Somerville's *Physical Sciences* (1834)

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

Mary's second husband, William Somerville, MD, 1771-1860, Royal College of Physicians of London, and Fellow, Royal Society of Edinburgh, was appointed physician, Chelsea Hospital, London. Prior to their relocation to Italy in the mid-1830s, 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.

PREFACE.

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, First Edition, *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).

PREFACE

TO

THE SECOND EDITION.

A SECOND edition of this book being called for, the Author has spared no pains to improve it: copious notes, and diagrams, illustrative of the text, have been subjoined. Many parts have been altered, and much new matter has been added, in order to keep pace with the rapid progress of the physical sciences. Even since the last pages have been printed, discoveries have been published, of sufficient importance to require an additional sheet.

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, above, is not an excerpt, but the complete printed text of the book's second Preface.)

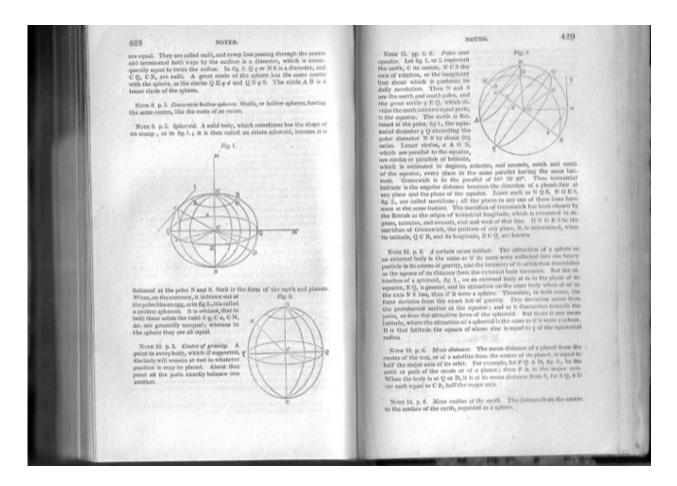


Image 6. Specimen Pages (pp. 428-429), from Notes, Somerville's *Physical Sciences* (1834; second edition, 1835) Evidently with Somerville's own scientific drawings

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.

This selection from the book's Notes is an example of book arts and page design in illustrated science books printed in London, early 19thC.





Image 7. Making it all Possible: The Telescope

Left: Engraving of Galileo Galilei with his 'glass' © Salman Khan <khanacademy.org> *Right*: Replica, earliest surviving telescope attributed to Galileo, Griffith Observatory, Los Angeles

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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 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. The telescope brought the universe and the sky to the seventeenth century. And with the new instrument came a new genre of writing: the recording of telescopic observation, with explanatory notes, calculations, and drawings.

London diarist, **Samuel Pepys**, elected Fellow (1665) and President (1685) of the new Royal Society, 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 merchandized, telescopes were sold in various sizes and lenses (magnifications), from pocketsize 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). **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. Our hearty thanks to this British historian at Georgia State University for the dedication and the example.

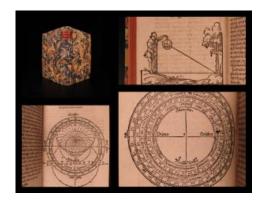




Image 8. Mary Somerville, Precedents & Influences

When Somerville put her writings on the London market (1825-1869; publisher, John Murray), she enjoyed the singular advantage of earlier work by many distinguished scientists ~ Copernicus, Galileo, Kepler, and 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 illustrations (an astrolabe and two detailed drawings). An example of book arts and page design in illustrated science books printed in 16thC Germany. Image, Schilb Antiquarian Books (Columbia, MO.); a copy on offer, August 2019, US\$1,950.

Right. Sir Isaac Newton (1642-1726), central to the Scientific Revolution. In this familiar print by genius artisan, William Blake, c1795, Newton is imaginatively, and critically, portrayed. He is crouched naked on an algae-covered rock, possibly at the bottom of the ocean, and focused on a scroll of diagrams which he is busily constructing with a compass. Though depicted in a setting of great beauty and elemental nature, Blake's Newton is not a natural man, but a 'geometer', a mechanical man, indifferent to his surroundings. For Blake, empiricist philosophers (Francis Bacon, John Locke, Newton) sought to 'clip the wings of Imagination' and 'unweave the rainbow.' Art was the tree of life, for Blake, science the tree of death. Image (above), Blake exhibition, Tate Britain, September, 2019-February 2020; for trailer and images visit:

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*, c1668 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; 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 the picture gracefully engages three mediums: painting, printed book, material artifact. In Vermeer's aesthetic, the picture's coordinates are interdependent.

Mary Somerville, in her successful 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 art connoisseur, Sir Thomas Howard (see Mulvihill, "Veronese," Images 17-20, *Seventeenth-Century News*, online).







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 the figurehead of an honorary ship he had just completed for sail in the China and India trade: *The Mary Somerville*.

Image 11 (center): Mary Somerville, age 68. Chalk drawing, 1848, by James Rannie **Swinton**. 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 sweet face of 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 *Mechanism of the Heavens* (translation [i.e., "rendition" and expansion], vols I & II of Laplace's *Mécanique céleste*, 5 vols)
- 1832 A Preliminary Dissertation on the Mechanism of the Heavens
- 1834 On the Connexion of the Physical Sciences. 10th ed., 1877. Trs., German and Italian
- 1848 Physical Geography. Praised by Humboldt
- 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. Kirsty McHugh, curator. https://digital.nls.uk/jma/who/somerville/index.html

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

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- < 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, Multimedia Research, and Digital Humanities. She studied at Wisconsin (PhD, 1982), with post-doctoral training at Columbia University Rare Book School, The Yale Center for British Art, and (as NEH Fellow) The Johns Hopkins University. The Mulvihill Collection is profiled, with photo, 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. Details on her book credits, essays, contributions to reference works, and work in progress, may be accessed at the following links:

- < http://www.floridabibliophilesociety.org/wp-content/uploads/2017/04/MEM-Selby.pdf >
- < https://www.rarebookhub.com/uploads/article_pdf/upload_file/23/Cavendish-Dec-13-2016-Final.pdf>
- http://blog.danielharrismusic.com/wp-content/uploads/2016/10/Fine-Books-2016-Autumn-2016-How-I-Got-Started.jpg

