



Muscovite (mica) crystals from the quarry on Beryl Mountain, South Acworth, Sullivan County, New Hampshire, opened by James Bowers in the early 1830s [pages 198 - 201].

US Mica Industry Pioneers
2nd Ed. **Davis**

U.S. Mica Industry Pioneers



The Ruggles and Bowers Families

Second Edition

Fred E. Davis

U.S. Mica Industry Pioneers
The Ruggles and Bowers Families

2nd Edition

U.S. Mica Industry Pioneers

The Ruggles and Bowers Families

A detailed look at the history, myths
and genealogy of the families who
launched the U.S. mica industry in
the 19th century.

2nd Edition

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Front cover image: Ruggles mine, Grafton, Grafton County, New Hampshire, (currently closed) viewed from the entrance tunnel looking into the large open cut. Photo by the author, 2004.

Rear cover image: Muscovite crystals (22×28 mm; 0.87×1.1 inch) from Beryl Mountain, South Acworth, Sullivan County, New Hampshire. Field collected 2004 by, photographed 2018 by, and in the collection of the author.

Original cover design by Daniel D. Williams.

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Preface

The true history of the origin of the mica industry in the United States has never been written. Most accounts on record are based on anecdotes that tell only of Sam Ruggles. Where and how did it all begin, who were the first mica industry entrepreneurs and what is known about their family histories? As it turns out, the Ruggles family represents only part of the story of mica mining and merchant pioneers.

This investigation began with the chance discovery of old business cards for members of the Bowers family (e.g., Figure P.1). These cards were hidden for decades in an old university collection, boxed up and stored in a barn. It wasn't until this collection was donated to the Yale Peabody Museum of Natural History (where the author

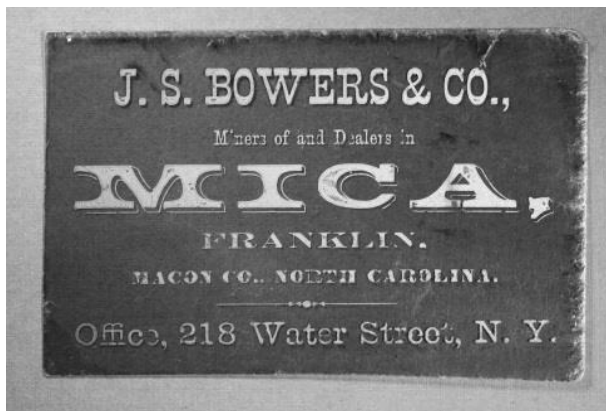


Figure P.1. J. S. Bowers & Co. business card printed on muscovite, ca. 1873~75. Division of Mineralogy and Meteoritics, YPM MIN045047, © 2009 Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA. All rights reserved. Used with permission.

Preface

volunteers in the Mineralogy and Meteoritics Division) that the cards were rediscovered and their history explored.

They are cut from mica, 9.0 by 5.8 cm (3.5 by 2.3 inches), and printed with a gold-toned ink in an old-style font. The font gives the impression of something very old, something interesting. This discovery inspired extensive research that revealed the forgotten history of the Bowers family which begins with a farmer who loved collecting minerals and led to three-generations of successful 19th century mica mining pioneers.

This naturally led to an investigation of Sam Ruggles. Stories about the Ruggles mine are reasonably abundant and easily found, but that is not necessarily good news. Much of what has been published about the early history of Ruggles mine is not supported by any documented evidence, and most accounts are more legend than fact. It is not difficult to find Sam Ruggles' family history back to the 1400s in England, but a detailed genealogical record for Sam Ruggles and his future generations was not available. At best, one could find a list of his children's names (purportedly in chronological order, but wrong), and the name of his wife, Elizabeth Haskell. Virtually nothing is mentioned about his first wife Mary Blake, her fate, the fact that Elizabeth was his second wife and nothing about the true birth order, birth dates, and details about the lives of his children and future generations, some deeply involved in the mica industry. The full history of the Ruggles' mica enterprise includes two of his children, multiple in-laws and grandchildren, a great-grandchild, a nephew and grandnephew¹, and the acquisition of additional mine properties well beyond the famous Ruggles mine in Grafton, New Hampshire. Obviously, there were other historical mysteries to be unraveled. In the end, the true history is far more engaging and interesting than the fairy tales; fact trumps fiction.

Preface

The search for the true history of the mica industry was not an easy one. In the early 1900s, George W. Colles began writing about mica, but immediately encountered not only a lack of information, but also few people in the industry who would divulge what they knew (apparently considered “industrial secrets”). For Colles, it was like hitting a proverbial brick wall. Colles (1905a:191, 1906c:1) writes:

In approaching the subject of mica the investigator is immediately confronted with an obstacle which is apt to discourage him at the start. I refer to the fog-bank of mystery which overhangs the whole subject, and which may prove well nigh impenetrable to one not himself engaged in the industry as either buyer, seller or miner. You ask why? and echo answers wherefore. Perhaps it is a relic of the North Carolina secretiveness spread over the country at large. As well ask a Carolina mountaineer about the moonlight stills of his neighborhood as about the mica mines which they intersperse.

George Colles was perhaps closer to reality than he realized concerning the proximity of mica mines and bootleg stills. During prohibition of alcoholic beverages in the United States between 1919 and 1933, at least one of those illegal stills was actually located *inside* an old Haywood County mica mine in the mountains of Western North Carolina (the author’s father Fred E. Davis, Jr., pers. comm. 2010, 2011). At the very least, one can expect many surprises along the way, and researching the families of mica mining pioneers is no exception.

Preface

Even today, attempting to discover historical facts about the mica mining pioneers is made challenging by many factors, such as incomplete and incorrect published histories, stories and genealogies. Some articles simply have the wrong information, while others use information passed from person to person, with names and dates distorted in the process (like the old party game “Telephone”² in which a message accumulates errors in each generation of being retold). Some dates remain uncertain, and thus are estimated based upon circumstantial evidence (such as births in census data reported only as a year) and are identified as such.

Much effort has been made to assure accuracy by relying on primary documents, and whenever possible, corroboration through independent sources. My goal is to portray the true history of the two primary families and their extended families who were the pioneers of the mica mining industry in the U.S. Also interesting is the contrast between these families with widely different backgrounds. One was a self-sufficient farmer and entrepreneur in rural New Hampshire whose father fought in the Revolutionary War. The other was a wealthy merchant whose roots in New England go back five generations into the Colonial days, living in and around Boston in the recently formed United States.

This history centers on Ruggles and Bowers mica mining in New Hampshire and North Carolina. Tracing this history involves people and events in New Hampshire, Vermont, Massachusetts, Maine, New York, Virginia, North Carolina, South Carolina, Georgia, Tennessee, Illinois, Ohio, Nebraska, Wisconsin, Utah, Washington, California, plus Canada and England.

New Hampshire is where the mica mine industry began in the United States. Douglas B. Sterrett (1914:69) writes that “... mines ... in New Hampshire ... for many years furnished practically all the mica used in the United

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States.” Mica was commercially mined in New Hampshire by both the Ruggle and Bowers families (including descendants and in-laws) for at least 90 years. Once mica began to be commercially mined in North Carolina after 1868, the number of mining companies greatly expanded, but these two families and their mines continued well into the 1890s. This is their documented history in depth and detail. Because much of the information has never been published, many references are given so that facts may be checked, and I chose to lean towards more information, not less, since minor facts might lead to new insights and connections in the future. If anyone has new information supported by documentation, please contact me so that additions and corrections could be made. For casual reading, feel free to skip past the numerous references.

For readers unfamiliar with mica (and the archaic term “isinglass”), what it is and how it is used, Appendices A and B provide an introduction. Even those familiar with the mineral and its uses might find something new there. Appendix C looks at a possible explanation why Charles Bowers would make an otherwise curious trip to Salt Lake City, Utah, in 1885 with a glimpse at life in the Wild West.

Notes on the Second Edition

In the five years since the release of the First Edition, my search to fill some remaining historical gaps continued. New information was found through recent updates to online databases, and George H. Randall’s burial place was found with old-fashioned detective work and ever-thinning shoe-leather. The Second Edition provides additional historical details about the Bowers family’s early history with a new reference (Brush 1904), some new dates, and details about George H. Randall’s death and grave with new references (NWSPR, FHCMA).

Ruggles Family History

Two observations form a common thread in the family histories for both the Ruggles and Bowers. First, the mica industry was very much a family business. This includes not only the immediate family, but also the extended family joined through marriage, and multiple generations of both. To fully understand the history of mica mining, it is important to know the relevant family histories and connections. Second, families, both immediate and joined by marriage, often remained very close and supportive across generations. When the patriarch of the family died, younger children, especially unmarried young women, moved in with relatives. In many cases, it was necessary to move several times. Family ties were important for many reasons.

Part I briefly reviews Sam Ruggles' ancestors including one very shocking life event. Next, the major focus is on Sam and his immediate family including wife, children and some grandchildren. It also introduces some of Sam's more interesting, famous, and in some cases notorious relatives in distant parts of the Ruggles clan. Part II discusses Sam's daughter Sarah Ann, her husband Henry Randall and their family, including some children and grandchildren involved in the mica business. Part III covers Joseph D. Gould, Sam Ruggles' nephew who joined the mica business late in life and was a thorn in the side of Sam's

1: Ruggles Family History

children and grandchildren. Also discussed is one of Joseph Gould's sons who was deeply involved in the mica business. Part IV will look briefly at Charles Ruggles Tainter, Sam Ruggles' great-grandson who worked Ruggles mine ca. 1900. More attention is given to the immediate family; the more distant connections focus primarily on those involved in the family mica business. Successive generations are indented in the text.

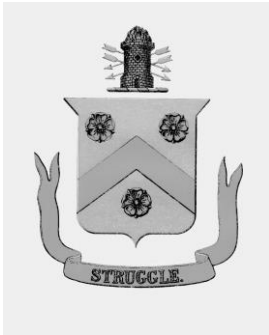


Figure 1.1.
Ruggles Coat of Arms. Adapted
from Ruggles (1909:cover leaf).

Part I. Sam Ruggles' Origins & Family

While Sam_D³ Ruggles' ancestors were not mica miners, there are interesting characters and events to be found. Sam_D Ruggles' family history can be traced back for at least nine generations, originating in the English counties of Suffolk and Essex (Cutter 1914). The name "Ruggles" most likely derives from the town of Rugeley (or Ruggeley) in Staffordshire County, about 30 km (19 miles) north of Birmingham in West Midlands County, England (Cutter 1914). Over time, the name has been spelled De Ruggele, De Ruggeley, Ruggeley, Ruggelay, Ruggleigh, Rogyll, Rogle, Rugle, Rugles and Ruggles (Cutter 1914). The Ruggles Coat of Arms is illustrated in Figure 1.1.

Sam_D Ruggles' great-great-great-great-great-great-great-grandfather was William Ruggles, born about 1469 (GENCR 2010). Sam_D's early ancestors lived near Sudbury, Suffolk, England, about 83 km (51 miles)

1: Ruggles Family History

northeast of London, and 30 km (19 miles) west of Ipswich. In 1637, his great-great-great-grandfather Thomas Ruggles (1584 – 1644) along with his wife, two of his three children (Sarah and Samuel_A, Sam_D's great-great-grandfather), moved west across the Atlantic Ocean to settle in the Colonies at Roxbury, Massachusetts, about 5 km (3 miles) southwest of Boston harbor. There, Thomas joined his younger brother John who preceded him in 1635 (Hazen 1883; Paige 1883; Morris 1901; Ruggles 1909; Cutter 1914). Thomas' third child John made the voyage two years earlier when he was 10 years old as a servant to Philip Eliot (Morris 1901; Mott 1912). Thomas was 53 when he emigrated, and his son Samuel_A was 8. Thomas died seven years later in 1644 in Roxbury, and was remembered by Philip Eliot as "... a godly brother; he dyed of a consumption" (Paige 1883:479; Morris 1901:65). Thomas bequeathed to his son Samuel_A about 2.8 ha (7 acres) of land in Roxbury near the property of Philip Eliot (Cutter 1914).

Sam_D's great-great-grandfather Samuel_A (1629/30 – 1692)⁴ not only kept a tavern in Roxbury, but also led an active public life as a selectman and assessor (Essex Institute 1925b). He was appointed Lieutenant of the Roxbury Militia in 1675, and later advanced to Captain (Morris 1901). He had eight children by his first wife (Sam_D's lineage), and six children by his second wife (Morris 1901; NEHS 1903; Ruggles 1909). On 5 May 1686, Samuel_A, his son Samuel_B and four others bought the land called "the Mashamoquet purchase" from Native Americans that would become the town of Pomfret in northeastern Connecticut (Paige 1883). But his most remarkable life event was surviving a lightning strike on 25 March 1667⁵ (Paige 1883). It was so remarkable, in fact, that Rev. Samuel Danforth recorded the event in the Church Record [shown as written in BRC (1884:205)]⁶:

1: Ruggles Family History

25. 3^m 67. There was a dreadful crack of thunder. Samuel Ruggles happened at that instant to be upon y^e meeting-house-Hill with oxen & horse & cart loaden with Corne. The horse & one ox were stricken dead wth y^e lightning, the other had a little life in it, but it dyed presently. The man was singed and scorched a little on his legs, one shooe torn a pieces & y^e heel carried away, the man was hurled of frō y^e cart & flung on y^e off side, but through mercy soon recovered himself & felt little harm. There was chest in y^e cart w^rin was Peuter & linen, the peuter had small holes melted in it & the linen some of it singed & burnt.

Samuel_A is buried in Eliot Burying Ground, West Roxbury, and his headstone reads (Morris 1901:66; Boston 1904:95):

HERE LYES Y^E BODY
OF CAP^T
SAMUEL RUGGLES
AGED 63 YEARS
DEC^D AUGUST Y^E 15
1692

Samuel_B Ruggles (1658 – 1715/16), Sam_D's great-grandfather, was third of fourteen children. He followed in his father's profession as an innkeeper, but also earned extra money as a set-work cooper⁷ (Ruggles 1909; Essex Institute 1925b). Like his father, he became a Captain in the militia (1702), assessor (1694), representative (1697), and selectman (1693 – 1713) (Paige 1883; Morris 1901). On 27 December 1686, he was one of eight persons who, for £20 New England currency, bought land from John

1: Ruggles Family History

Nagers and Lawrence Nassawano (two Native Americans). It was a tract of land 19 km (12 miles) long and 13 km (8 miles) wide that would become the town of Hardwick, Massachusetts (Morris 1901). Samuel_B married and had ten children. His death in 1716 was recorded by Judge Samuel Sewall, one of the original founders of Hardwick, as “Cap^t Sam^l Ruggles was buried with Arms the same Third day of the Week, at Roxbury.... He is much Lamented at Roxbury” (MSHS 1882:75). Sam_B is also buried in Eliot Burying Ground, West Roxbury, and his headstone reads (Morris 1901:68; Boston 1904:95):

HERE LYES BURIED
Y^E BODY OF CAPTAIN
SAMUEL RUGGLES
AGED ABOUT 57
YEARS DEC^D FEBRUARY
Y^E 25 1715/6

The Rev. Samuel_C Ruggles (1681 – 1749), Sam_D's grandfather, was the first of ten children (Hazen 1883; Paige 1883). He graduated from Harvard in 1702, and worked as a teacher in Hadley, Massachusetts for a short time. He became pastor in Billerica, Massachusetts in 1708 (Hazen 1883). He had eight children by his first wife (Sam_D's lineage), and four children by his second wife. He is buried in the Old South Burying Ground in Billerica, Massachusetts. At his death, his estate was valued at (Hazen 1883:127):

16 acres [6.5 ha] with large mansion house....	£2300
library	£16 6s
bonds and bills	£238
silver tanker and other plate	£110
wearing apparel.....	£86
beds and furniture	£88

1: Ruggles Family History

clock.....	£33
cows and swine.....	£91
negro woman.....	£200

Joseph Ruggles (1725 – 1785), Sam_D's father, was eighth of twelve children (Hazen 1883; NEHS 1908). Joseph and wife Sarah Robey were eager to have a son named Samuel. Their second child (the first son) was named Samuel, but he lived less than 15 months. Their third child was also a son named Samuel; he, too, died young, four days shy of one year. Their first four children all died very young, which must have been very hard on the couple. The sixth child was a boy named after his father, Joseph. He survived quite well, living 74 years. The seventh child was again a boy they named Samuel, but he died less than a month later. After four more daughters, Joseph and Sarah had another son on 3 August 1770 and named him Samuel. He was Samuel_D "Sam" Ruggles who would become a U.S. mica industry pioneer. Joseph and Sarah Ruggles' last and fourteenth child was Lucy Ruggles (1774 – 1852). At age 33, Lucy married Jacob Gould and they had a son Joseph Dudley Gould (Sam_D's nephew) who would become a mica merchant (USFC 1870f). Joseph D. Gould's son (Sam_D's grand nephew) William Parker Gould (1845 – 1909) would also be very involved in the mica mining industry (USFC 1880g; Hazen 1883; Whipple 1890; NEHS 1908).

Sam Ruggles ⚭ and Family

(Note: The ⚭ symbol is used in this book to identify names of persons involved in the mica industry.)

Sam_D Ruggles (3 August 1770 – 27 May 1843) was twelfth of fourteen children, born in Billerica, MA (NEHS 1908; Waters 1940). King George III ruled the Colonies when Sam_D was born, the First Continental Congress met

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when he was 4, and George Washington was sworn as the first President of the new United States when Sam_D was 19. At the age of 24, Sam_D Ruggles married Mary (Polly) Blake (~1764 – 8 October 1797) on 17 April 1794 in Boston, celebrated by the Rev. Dr. Peter Thacher in the Brattle Square Church (Figure 1.2) (White 1897; BFC 1902; Boston 1903; Bolton 1965). The marriage was



Figure 1.2.
Brattle Square Church,
Boston, where Sam
Ruggles was twice
married. Photo ca.
1859 by J. J. Hawes
(image in public
domain).

announced in at least two local newspapers, *Columbian Centinel* and *American Apollo* (GNBK 1794a, -b). They had been married only three years in 1797 when Mary Blake died at age 33 (GNBK 1797a, -b, -c; Waters 1986). The 1796 Boston Directory lists Samuel_D Ruggles as a grocer on Prince Street, and the 1798 tax record specifies the southeastern corner of the intersection with Margaret Street⁸ (Figure 1.3) (West 1796; BRC 1890, 1910). The building is described in 1798 as a two-story wooden structure with ten windows. Both the building and property were 988 square feet (no lawn to mow), valued at \$800 (approximately \$11,170 modern equivalent) (BRC 1890, 1910).

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Figure 1.3. 1883 map shows the location of Sam Ruggles' former home and grocery store on Prince Street, Boston. ① marks the location; "Hrs Geo Ruggles" indicates the property is owned by the heirs of George Ruggles. Modified from: Atlas of the City of Boston; City Proper, Volume 1. Philadelphia: George W. and Walter S. Bromley.

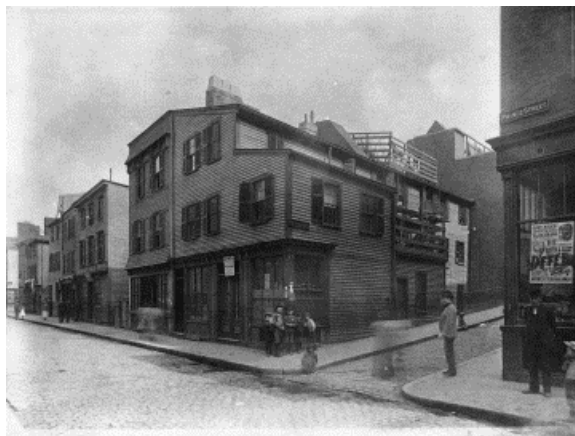


Figure 1.4. 1893 view of Prince Street and the intersection with Margaret Street, Boston. The building in the far right was Sam Ruggles' home and grocery / dry goods store between ca. 1796 – 1807. Photo from The Bostonian Society. Used with permission.

1: Ruggles Family History

The photograph in Figure 1.4 was taken in 1893 on Prince Street looking north towards the intersection with Margaret Street. Sam_D Ruggles' grocery store is the building to the far right of the image with the Prince Street sign above the display window⁹. In this photo, it is still a grocery store 100 years after Sam Ruggles.

About six months later on 29 March 1798, Sam_D married his second wife Elizabeth Haskell (~1774 – 24 December 1841). This also took place at the Brattle Square Church with the Rev. Dr. Peter Thacher officiating (Hazen 1883; BFC 1902; Boston 1903). Elizabeth Haskell's family, like the Ruggles, had lived in New England long prior to the Revolutionary War and was prominent in the development of the thriving Colony (Mowbray 1898). Sam_D was a well-known merchant in Boston (Mowbray 1898). It was around 1803 that Sam_D transitioned from selling groceries to West India goods, which he continued to sell until 1831 (Cotton 1803, 1805, 1807; Frost and Stimpson 1820, 1823; Stimpson and Clapp 1831).

On 5 July 1805, Sam Ruggles made his first purchase of property on Isinglass Mountain in Grafton, New Hampshire (GRCNH 1805). He purchased additional lots adjacent to the first purchase in 1806 and 1810 (GRCNH 1806, 1801a, -b, -c). This will be covered in detail in Chapter 2.

Sam_D and family lived at 28 Prince Street¹⁰ until ca. 1808~1809 (about the time that their 4th child John Haskell was born). An 1807 advertisement in the *Columbian Centinel* offered a house for sale or rent at 28 Prince Street (Sam_D Ruggles' home above his grocery store) (GNBK 1807, 1808a). The Ruggles family moved to a more upscale part of Boston on Blossom Street¹¹ in the West End just north of the Beacon Hill area (USFC 1810a, 1820a, 1830c; Seasholes 2003). The Ruggles family was at the Blossom Street address at least until 1842 (just prior to Sam_D's death). Between 1825 and 1842, their business address was

1: Ruggles Family History

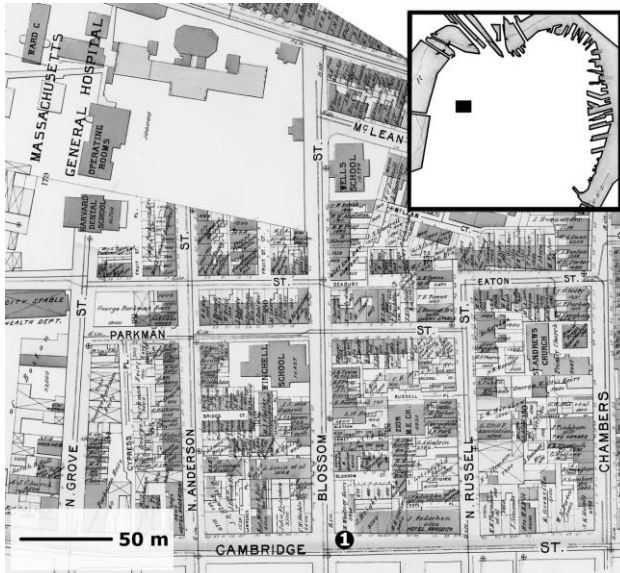


Figure 1.5. 1895 map showing Blossom Street (Ruggles residence) and location of business office at 89 Cambridge Street: ①. Inset shows approximate location in central Boston. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.

89 Cambridge Street at the intersection of Blossom and Cambridge (Figure 1.5). At that time, commuting to work for Sam_D would have been an easy walk. Descriptions in early Ruggles advertisements state that 89 Cambridge Street is at the corner of Cambridge and Blossom Streets directly opposite Crombie's Tavern (GNBK 1825; Stimpson 1836b). This is confirmed on an 1852 map of Boston published by Slatter and Callan (Seasholes 2003:118). Contemporaneous descriptions of the location of Crombie's Tavern give the address as 94 and 96 Cambridge Street at the corner of Garden Street (Frost and

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Stimpson 1823; Stimpson and Clapp 1832).

Note that by 1838, Crombie's Tavern at 96 Cambridge Street had been renamed Charles River House, but was still operated by William Crombie (Dickinson 1838). After 1848 it was known as the Western Hotel (Seasholes 2003:118).

For an unknown purpose in 1812, Samuel Ruggles used all of his mica mine property as collateral on an \$850 loan (about \$11,640 current value) from William McKean, a Boston tobacconist (Cotton 1803, 1805, 1807; GRCNH 1812; USFC 1850q). The loan was obviously repaid with interest within the stipulated 5 year period since the property remained in Ruggles' possession.



Figure 1.6. Ruggles family plot in Mt. Auburn Cemetery, Cambridge, Massachusetts. Samuel Ruggles: ①; wife Elizabeth: ②; George H.: ③; Mary: ④; John H.: ⑤; daughter Elizabeth: ⑥; granddaughter Abigail: ⑦; ashes of great-grandson Ernest W. Fogg: ⑧; Charles: ⑨; William H.: ⑩. Photo by the author, 2011.

1: Ruggles Family History

Elizabeth Haskell Ruggles, 66, died of influenza on Christmas Eve, 1841 (MSTVR 1841). On 15 May 1843, Sam_D Ruggles received full communion from West Church (less than 3 blocks east from Blossom Street) in private due to his illness; Sam_D died less than two weeks later on 27 May 1843 at age 72, only 68 days before his 73rd birthday (MSTVR 1843; Baldwin 1915; Waters 1940). His death was announced in the *Boston Evening Transcript* (GNBK 1843). Sam_D and Elizabeth are buried side-by-side in Mount Auburn Cemetery in Cambridge, Massachusetts (Figure 1.6: Sam ①, Elizabeth ②).

1. Elizabeth Ruggles

Sam_D and Elizabeth Ruggles' first child was named Elizabeth (~1800 – 17 April 1866) (MSDR 1866; Binney 1883; Hazen 1883). She married 3 May 1818 when she was 18 to Nathaniel Shepard Prentice¹² (19 May 1793 – 2 July 1819), son of Dr. Nathaniel Prentice (MSBC 1793; USFC 1810b; MSMR1 1818; MSDB 1819; Wright 1905). Their marriage appeared in two local newspapers, *Repertory* and *New England Galaxy* (GNBK 1818a, -b). They had a daughter, their only child, Abigail Prentice (20 February 1819 – 29 March 1896) (MSBC 1819; MSMR1 1842; Binney 1883; MSDR 1896a). Nathaniel and Elizabeth were married slightly more than a year when Nathaniel died (MSDB 1819).

Elizabeth's second marriage was to Samuel Soden Lawrence (24 March 1797 – 27 March 1861) on 26 June 1828 (MSMR1 1828; USFC 1830b, 1850e; Lawrence 1847; Bond 1855; MSDR 1861; Binney 1883).

They had no children, but enjoyed a long life together. When he was 63 and she was 60, they were living in a boarding house, purveyors of coffee and tea (USFC 1860l); Samuel S. Lawrence died 1861 in

1: Ruggles Family History

Springfield, Massachusetts (MSDR 1861). Elizabeth died in 1866 at her daughter's home on 23 Upton Street, Boston (Figure 1.7) (MSDR 1866). She is buried next to her daughter, near Sam_D Ruggles in Mount Auburn Cemetery in Cambridge, Massachusetts (Figure 1.6: ©).

i. Abigail Prentice

Sam_D Ruggles' first granddaughter Abigail Prentice (20 February 1819 – 29 March 1896) married Francis Adams Fogg (26 March 1820 – 26 August 1906) on 24 November 1842 (MSMR1 1842; MSSC 1855f, 1865g; USFC 1880k; Binney 1883). Francis and Abigail had five children; the last two children were twin boys (USFC 1850a, 1860h). Francis gave up his grocery business in Boston and they moved to New York City. At the age of 49, he retired; they moved back to Boston to 23 Upton Street (Figure 1.7) and lived in relative comfort with two domestic servants. Francis Fogg also kept an apartment in New York for business (USFC 1880f, 1880u; NYDT 1906).

Francis and Abigail's home at 23 Upton Street must have been a warm, comfortable and welcoming place given how many relatives stayed there at one time or another. Abigail's mother stayed with her before she died (MSDR 1866); first cousin Sarah Ann Randall and aunt Mary Ruggles were there in 1870 (USFC 1870h); second cousin George H. Gould boarded there in 1874 (Sampson and Davenport 1874b); aunt Mary Ruggles Howard died there in 1887 (MSDR 1887); son Frances Herbert Fogg died there in 1891 (MSDR 1891b).

1: Ruggles Family History

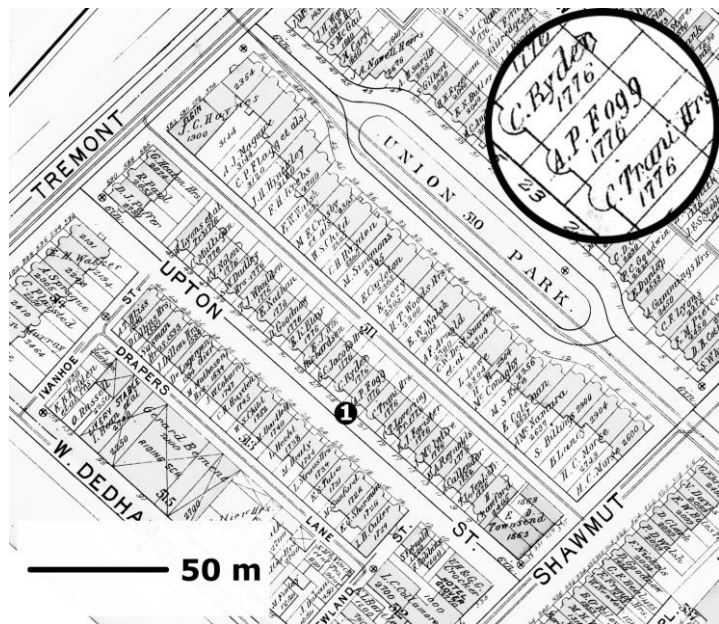


Figure 1.7. 1895 map showing Abigail Prentice Fogg's residence (inset: magnified view) at 23 Upton Street, Boston: ①. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.

Abigail Prentice Fogg was still at 23 Upton Street, Boston, when she died 29 March 1896 at age 77 (MSDR 1896a). She is buried beside her mother in Mount Auburn Cemetery in Cambridge, Massachusetts (Figure 1.6: ⑦). The ashes of one of her twins, Ernest Wilmott Fogg (14 April 1857 – 17 March 1921), are buried at her grave (Figure 1.6: ⑧) (ILDS 1921; MTAUB 1925).

In 1873, the *New York Times* quoted Francis A. Fogg with regards to a financial panic and run on banks (NYT 1873). Around 1886, Francis Fogg moved back to New York City. He was a money

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broker and the private secretary to Collis P. Huntington. Though no documentation was found, Francis and Abigail must have divorced. He remarried in 1894 at 73, and retired again in 1896 at the age of 75. Until his death at age 86 in 1906, Francis was living with his second wife Alwine, boarding at Hotel Beresford in New York City (USFC 1900u; NYDT 1906). After Francis' death, Alwine and son traveled Europe (USPA 1915a, -b), returning to New York in 1920 before travelling again (USFC 1920m; USPA 1915a, -b, 1921b, 1924a, -b).

2. George Haskell Ruggles ✕

Sam^d's second child was George Haskell Ruggles (1802 – 6 May 1863) (MSDR 1863; Hazen 1883; GENCR 2010). In 1832, George Ruggles shared an office at 89 Cambridge St, Boston, with his younger brother Charles (Stimpson and Clapp 1832). George became very active in his father's mica business in 1834, and is responsible for the majority of advertisements for Ruggles' mica (e.g., Figures 1.8, 1.9) (GRCNH 1834).

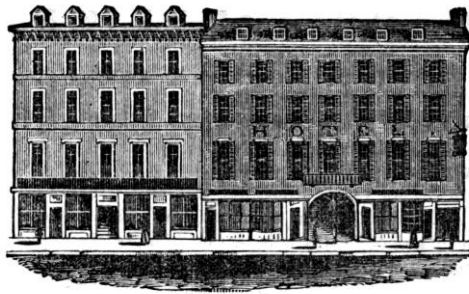
T A B L E O F	
<i>Glass Knobs.</i>	—E. Robinson, 32 Dock square.—Entrance Wilson's lane.
<i>Globe Manufacturer.</i>	—Gilman Joslin, 77 Cornhill
<i>Glue.</i>	—W. H. Davis, 5 Merchants row
<i>Hat Block Manufactory.</i>	—Oral Diamond, Harrison avenue
<i>House Sand.</i>	—L. Putnam, Piper's wf. J. M. Sawyer, Bartlett's wharf
<i>Importer and Dealer in Isinglass or Mica, for Lanterns, Stove Doors, &c.</i>	—G. H. Ruggles, 89 Cambridge
<i>Importer of French Leather.</i>	—George

Figure 1.8.
George Ruggles' mica ad from 1842. (Dickinson 1842:99).

ISEMENTS.

GEOERGE H. RUGGLES
Wholesale and Retail Dealer
in Sheet Isinglass, or Mica, for
Compass Cards, Signal, Battle,
Engine, common and other Lan-
terns, Stoves, Furnace Doors, &c.
&c. The above article is superior
to anything ever used for the above
purposes, on account of not break-
ing or burning, but standing the
most intense heat. Also, for Min-
eralogists and others. Elegant
specimens of Mica, Feldspar, Chris-
talline Quartz, &c. Also, Safety
Lanterns, of various sizes, a very
superior article, warranted not to
break by falling, and are decidedly
the safest, cheapest and best of the
kind in use. Constantly for sale
on the most reasonable terms, at
No. 81 Union street, Boston.

Figure 1.9.
George Ruggles' mica advertisement from 1847 (Dickinson 1847:180).



MARLBORO' HOTEL,
TEMPERANCE HOUSE,
No. 229 Washington Street, Boston.

Figure 1.10. Illustration of the Marlboro' Hotel on Washington Street (formerly Marlborough Street) in 1849 where George H. Ruggles was a boarder for over a decade (Jewett 1849:201).

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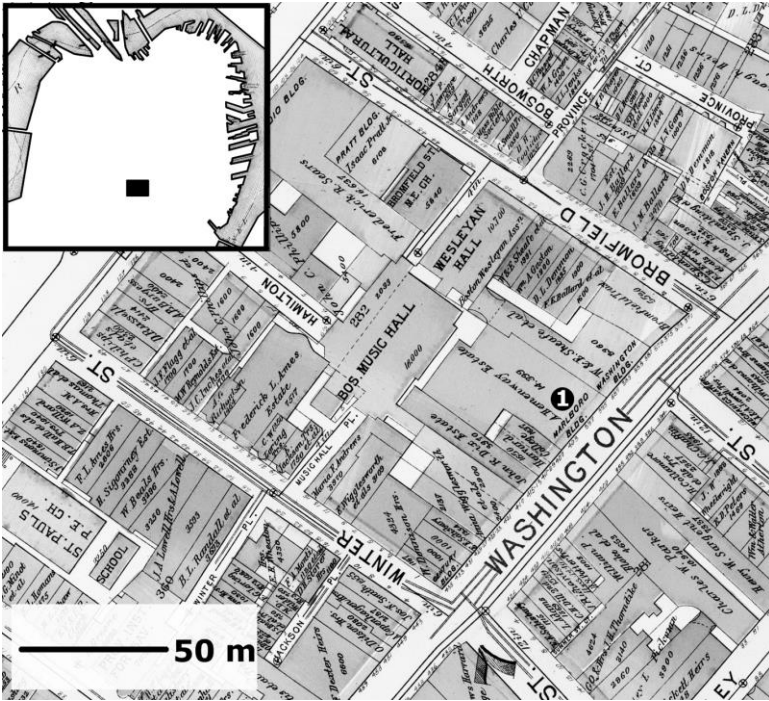


Figure 1.11. 1895 map showing location of Marlboro' Hotel on Washington Street, Boston: ①. Inset shows approximate location in central Boston. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.

George Ruggles boarded at the Marlboro' Hotel at 229 Washington Street, Boston, for at least 12 years (Figure 1.10) (Adams 1850, 1851, 1852, 1855b, 1856a, 1857a; Adams and Sampson 1858b, 1861; USFC 1860k). As shown on the map in Figure 1.11, the hotel was on Washington between Winter Street and Bromfield Street. This hotel was known for maintaining very strict temperance rules. The illustration from an 1841 Temperance Almanac (Figure 1.12) shows life at

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the Marlboro' contrasted with an imaginary hotel and pub across the street complete with drunkards being thrown out and falling in the street (Damrell 1841). Bowen (1829:206) provides the following description of the Marlboro' before adopting temperance policies:

Marlboro' Hotel, Is an extensive establishment, kept by Mr. James Barker, 229, Washington Street. The building is 4 stories, has a neat and convenient hall, with suitable withdrawing rooms for parties, and accommodations for about 100 persons. Some of the Providence and hourly stages depart from this hotel.

That sounds like a great place to party. Bowen

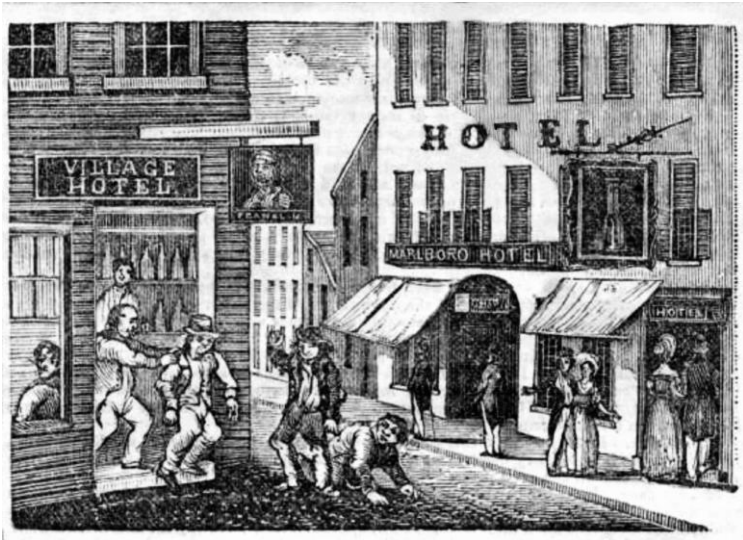


Figure 1.12. Fanciful illustration of Marlboro' Hotel to contrast the pleasant ways of temperance against the alternative; the tavern and hotel in the foreground did not exist. Adapted from (Damrell 1841:rear cover).

1: Ruggles Family History

(1838:207-208) gives this description after the temperance conversion (the party is over):

The Marlboro' Chapel Corporation, consisting of sixteen individuals, having obtained an act of incorporation in April, 1836, purchased the Marlboro' Hotel estate, for the double purpose of erecting a church in the rear, and converting the Hotel into a Temperance House on the "tee-total principle." The estate cost \$46,000, and \$11,000¹³ have been expended in alterations and repairs on the hotel, every part of which has been put into complete repair,—a new story added to the west wing, and most of the modern improvements introduced into the different parts of the house. The main entrance to the hotel is from Washington Street.

Maps of Boston between 1722 and 1814 show that before Washington Street received its current name on 6 July 1824, it was composed of several streets of different names. From south to north into Boston, they were Orange, Newbury, Marlborough and Cornhill Streets (Bacon 1913; BOSP 1919; Seasholes 2003). The Marlborough section was so named in 1708 in honor of John Churchill (26 May 1650 – 16 June 1722), the first Duke of Marlborough, ancestor of Winston Churchill¹⁴ (Drake 1873). The Marlboro' Hotel is located on the section once called Marlborough Street for which it is named (Drake 1873).

George visited the mine in Grafton, New Hampshire, in 1850, boarding with Martin Davis and wife Lydia (USFC 1850o). The Census for 1850 and 1860 give Martin's occupation as a farmer (USFC

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1850o, 1860p). However, in 1866 Martin Davis was working at Ruggles mine and died in a tragic accident less than three weeks before his 40th birthday; Martin and Lydia Davis' only child Charles was then 11 (USFC 1860p; GNBK 1866). In a history of Canaan, New Hampshire, Martin's death is described as "killed at Ruggles Mica Mine, Grafton" (Wallace 1910:598). In contrast, his New Hampshire death record is a bit more graphic: "Blown up at Isinglass Hill" (NHDR 1866). Mining was, and is, dangerous work.

In 1851, George Ruggles exhibited a 91 kg (200 pound) mica book approximately 0.9×1.2 m (3×4 feet) at the Great Exposition of the Works of Industry of All Nations (also known simply as The Great Exhibition) in London, England. He is listed in the Official Catalogue as United States exhibit number 416 (Royal Commission 1851). George was awarded an

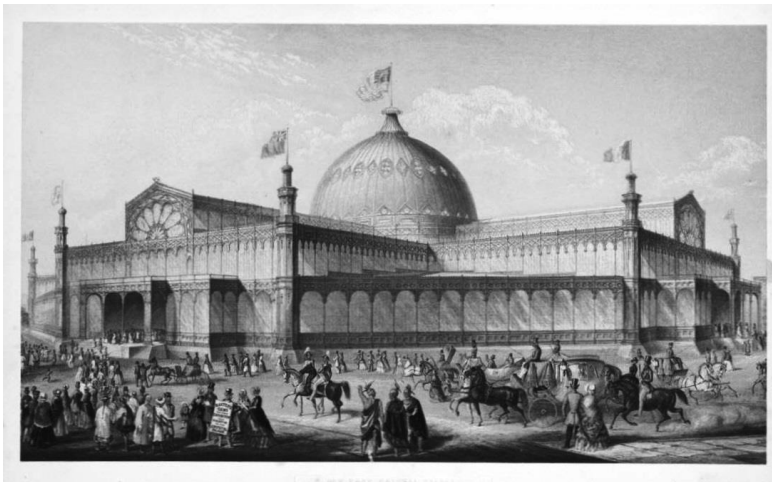


Figure 1.13. Crystal Palace at the New York Exhibition of the Industry of All Nations, as illustrated by the architects. New York: Riker, Thorne & Co., 1854, public domain.

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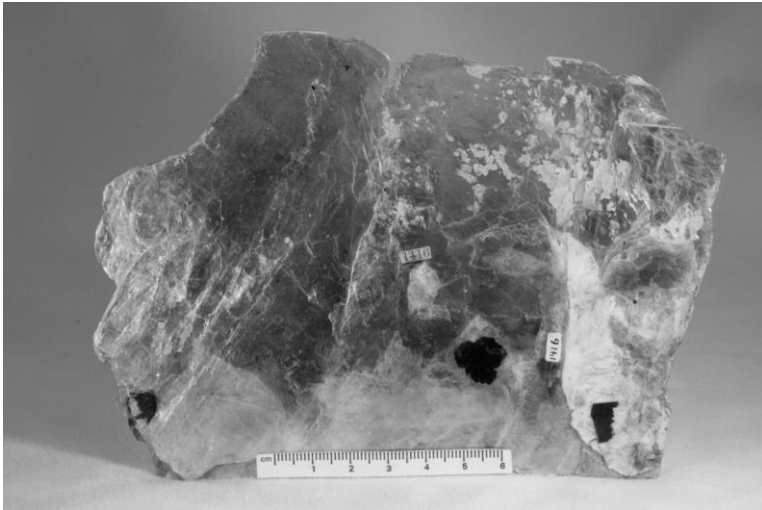


Figure 1.14. Muscovite with flattened tourmaline crystals from Grafton, New Hampshire, acquired in 1850. Division of Mineralogy and Meteoritics, YPM MIN021416. Copyright 2011, Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA. All rights reserved. Used with permission.

honorable mention (Royal Commission 1852; USSN 1890).

Tenney (1854) reports that George H. Ruggles had a display in the 1853 Exhibition of Industry (now called a World's Fair) in New York City (Figure 1.13).

Tenney (1854:599) also mentions that the mica from Grafton, New Hampshire, is "... well known now the world over ..." and that Benjamin Silliman Jr. was showing some of this mica in his own display cabinet (similar to and quite possibly the same specimen as YPM MIN021416 in the collection of the Yale Peabody Museum of Natural History; Figure 1.14).

George H. Ruggles never married. He died in Boston at age 61 on 6 May 1863, one year before President Abraham Lincoln was assassinated (MSDR

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1863). George is buried in Mount Auburn Cemetery next to his father and mother (Figure 1.6: ③).

3. William Henry Ruggles

William Henry Ruggles (1805 – 25 November 1878) was Sam_D and Elizabeth Ruggles' third child (MSDR 1878; Hazen 1883; GENCR 2010). Little is known about him, apart from the fact that he was a farm worker in Lincoln, MA, under the guardianship (specific reason unknown) of farmer William Francis Wheeler, boarding on the farms of John Forbush and Henry Rice up to 1860, then with George Weston until 1878 (USFC 1850d, 1860c, 1870c; MSSC 1855a, 1865a; Ruggles 1875).

Among all the costs itemized in a letter written in 1868 by Wheeler to Joseph D. Gould, then trustee of the Ruggles estate, we learn that William Ruggles did not spend all of his time on the farms in Lincoln, Massachusetts. He spent three weeks in mid-January 1867 visiting Grafton, New Hampshire. Round trip fare from Lincoln to Grafton was \$4.35, with room and board at \$3.50 per week at the Davis' residence (Wheeler 1868).

William H. Ruggles died of “heart disease” at age 73 on 25 November 1878 in Lincoln, Massachusetts (MSDB 1878; MSDR 1878; Hazen 1883). He is buried in Mount Auburn Cemetery next to his younger brother Charles (Figure 1.6: ⑩).

4. John Haskell Ruggles

Sam_D and Elizabeth Ruggles' fourth child is John Haskell Ruggles who died at age 19 (~1808 – 18 July 1827) (MSTVR 1827; Baldwin 1915; GENCR 2010). Hazen (1883:128) only reported that he “died young,” while his death record indicates “brain fever”

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suggesting encephalitis or meningitis (MSTVR 1827). He is buried in Mount Auburn Cemetery next to his younger sister Mary (Figure 1.6: ⑤).

5. Charles Ruggles ☘

In 1809, Sam_D and Elizabeth had their fifth child Charles Ruggles (1809 – 13 April 1869) (USFC 1860d; MSDR 1869; Hazen 1883; GENCR 2010). Curiously, George and Charles disappear from the 1836 Boston Directory, but reappear at different addresses in the 1839 Directory (Stimpson 1839). Charles is back at home on Blossom Street, but George has taken up new residence at the corner of Blossom and Cambridge¹⁵ not far from Sam_D Ruggles' home (Stimpson 1839).

Charles was also involved in the family mica business as a bookkeeper and clerk, and lists his occupation as “isinglass” on the 1855 and 1865 Massachusetts State Census (MSSC 1855h, 1865b). He married Mary Jane Cutter¹⁶ (~1824 – 9 November 1881) in Brunswick, Maine, on 12 October 1845; the announcement was in the *Boston Courier* and *Boston Evening Transcript* (GNBK 1845b, -c; MAINM 1845). They had three children (USFC 1860d, 1870d, 1880o, 1900f, 1900q, 1910b, 1910f, 1920e, 1920n, 1930e; Hazen 1883). Charles died at age 60 in Medford, Massachusetts, on 13 April 1869 (MSDR 1869). He is buried in Mount Auburn Cemetery with other members of his family (Figure 1.6: ⑨).

After Charles' death, wife Mary J. C. (46), daughter Emma (17) and son Charles Jr. (13) lived in Medford, Massachusetts, next door to daughter Julia E. (22) and her husband Elisha Tainter (25), and Elisha's father (55) and mother (52) (MSDR 1869; USFC 1870d). In 1880, Mary J. C. Ruggles (56) and son Charles Jr. (23) were living just north of Grafton in Canaan, New Hampshire, with daughter Emma, husband Byron

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Martin and their new family (USFC 1880o). Mary J. C. Ruggles died on 9 November 1881, and is buried in Homeland Cemetery located in Bristol, Grafton County, New Hampshire, about 18.5 km (11.5 miles) east of Ruggles Mine (Figure 1.15).

i. Julia E. Ruggles

The first child of Charles and Mary J. C. was Julia E. Ruggles (28 July 1848 – 19 November 1920) (MSSC 1855h, 1865b; USFC 1860d). She married Elisha Tainter (18 November 1845 – 30 November 1926) in 1867 (MSB 1845; MSMR2 1867b; USFC 1880d, 1900f, 1910f, 1920e). Julia and Elisha, in turn, had a son Charles Ruggles Tainter ♂ (September 1868 – June 1942) (Sam_p's great-grandson), who worked Ruggles' mine from ca. 1896 to the early 1900s, the last descendent of Sam Ruggles to work the mine (GRCNH 1897e;

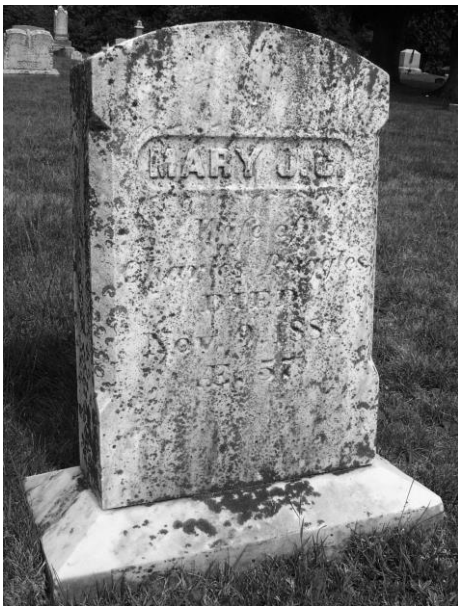


Figure 1.15.
Mary Jane Cutter
Ruggles' grave in
Bristol, Grafton
County, New
Hampshire. Photo by
the author, 2011.

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Carroll et al. 1900; USFC 1900r). Additional details are given in Chapter 1, Part IV.

ii. Emma Louise Ruggles

Daughter Emma was born 29 March 1853 in Medford, Massachusetts (MSBC 1853; MSSC 1855h, 1865b; USFC 1860d). Emma Ruggles (21) married farmer Byron Martin (26) on 12 October 1874 and moved to Canaan, Grafton County, New Hampshire, where all seven of their children were born (NHMR1 1874; USFC 1880o, 1900q). In 1910, Byron (61), wife Emma (57) and their youngest daughter Rena G. Martin (16) (the last of their children living at home) were living near Monterey Bay in Pajaro, Monterey County, California (USFC 1910b).

iii. Charles Ruggles Jr.

Charles Ruggles Jr. was born in 1857 in Medford, Massachusetts (MSSC 1865b; USFC 1860d). In 1920, Charles Jr (63) was boarding at and working as a porter for the Martha Washington Hotel in New York City, notable as the first hotel exclusively for women (USFC 1920n). Ten years later he was boarding with his brother-in-law, Elisha E. Tainter (85), a widower, in Medford, Massachusetts (USFC 1930e). Charles Ruggles Jr. never married.

6. Sarah Ann Ruggles

In 1812, Sam^D and Elizabeth Ruggles' sixth child Sarah Ann Ruggles (2 May 1812 – 25 March 1864) was born (MSDR 1864; MSDB 1864; Hazen 1883; GENCR 2010; Wallace 2010). Her marriage 29 May 1834 to Henry Randall (12 February 1807 – 12 August 1891)

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Figure 1.16. Headstone of Sarah Ann Ruggles Randall (right), wife of Henry Randall (left), in Forest Hills Cemetery, Jamaica Plain, Massachusetts. Photos courtesy Glenn Wallace.

would provide the third generation of mica merchants in the Ruggles' mica empire. She died in Boston on 25 March 1861 at age 49, and is buried in Forest Hills Cemetery, Jamaica Plain, Massachusetts, next to husband Henry Randall (Figure 1.16). Additional details are covered in Part II, the Randall family.

7. Mary Ruggles

Mary Ruggles (~27 August 1816 – 31 December 1887) was Sam^D and Elizabeth Ruggles' seventh and last child (Hazen 1883; MSDR 1887; MSDB 1887;

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GENCR 2010). After Sam_D's death in 1843, Mary, unmarried, began living with relatives. When she was 34, she moved to Tyngsborough, Massachusetts, to live with her sister Elizabeth (51) and brother-in-law Samuel S. Lawrence (53) (USFC 1850e). In 1860, Samuel Lawrence and Elizabeth had moved to a boarding house, so Mary (44) moved to Boston to live with her sister Sarah Ann (50) and brother-in-law Henry Randall (52) (USFC 1860j, -l). By 1870, her sister Sarah Ann had died and Henry Randall had remarried, so once again it was time to move on. Henry and Sarah Ann Randall's youngest child, daughter Sarah A. Randall (26), moved out in the company of Mary Ruggles (possibly because of the death of her mother, namesake Sarah Ann, and/or due to issues with her father's remarriage). Mary Ruggles (54) and Sarah A. Randall (26) moved to Boston to live with niece Abigail (51) and her husband Francis A. Fogg (49) (USFC 1870h). It could have been a comfortable life with two Irish domestic servants.

On 22 June 1876 in Brattleboro, Vermont, Rev. Horace Burchard (pastor of the Brattleboro Baptist church) joined in marriage Mary Ruggles (61) and Byron Sarel Howard (28), a farmer from Winchester, New Hampshire (Shattuck 1855; VTVR 1876; GRCNH 1879b; Hazen 1883; MSDR 1887; MTAUB 1891). Byron Howard was apparently an eccentric character. He is described in the 30 September 1900 *Springfield Republican* [GNBK 1900]:

Howard had some fanciful and original theories in regard to the origin of the human race which he was in the habit of illustrating with drawings which he would hang up in the Hinsdale [NH] and Winchester [NH] post-offices. His vagaries and illusions were of a

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harmless character, and he had a smattering of the natural sciences and a portfolio of jaw-breaking words at his tongue's end that would have baffled a Dr. Johnson.

Mary is referenced in a letter written by Mary J. C. Ruggles to William F. Wheeler, William H. Ruggles' guardian in Lincoln, Middlesex Co., Massachusetts (Ruggles 1875). Mary Ruggles was, in 1875, the last surviving person to sign the Deed of Trust that appointed Joseph D. Gould as Trustee of the George H. Ruggles estate (GRCNH 1863; Ruggles 1875).

She died 31 December 1887 at 23 Upton Street, Boston, home of her niece Abigail P. Fogg (Figure 1.7) (MSDR 1887; MSDB 1887). She is buried in Mount Auburn Cemetery in Cambridge, Massachusetts, with her family between two brothers (Figure 1.6: ④).

Circumstantial evidence suggests that Mary Ruggles may have been instrumental in establishing the family plot in Mt. Auburn Cemetery. The plot ownership is in her name on the lot diagram card (with a 26 October 1865 purchase date and her married name "Howard" added later) and in the 1891 catalog (MTAUB 1891, 1925). Sam_D and Elizabeth's marker shows "Father and Mother," suggesting one of the children ordered the markers. Curiously, all of the children's names are engraved on the Ruggles memorial monument except for two: Sarah Ann (who is buried in a different cemetery with husband Henry Randall), and Mary. There is a blank area on the monument below William H. where her name *could* have been engraved.

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Birth sequence

The first published list of Sam_D Ruggles' family is found in Hazen (1883). This same sequence is repeated on internet resources and genealogical websites (for example, GENCR 2010). However, no supporting evidence (such as a birth date with reference) is given to verify that sequence; it is factually incorrect. For example, William H. is the 3rd child, not 5th, etc.; refer to Table 1.1. Dates in the present work are based on multiple sources wherever possible, including Massachusetts vital records and memorial markers in Mount Auburn Cemetery. Census records can provide good data, but need to be confirmed because the dates given to a census enumerator are entirely voluntary with no requirement for supporting documentation, and subject to vanity.

One example of census birth-year variability is Mary Ruggles. According to census records in 1850, 1860 and 1870, she volunteered her age as 32 (when she was 34), 37 (44) and 50 (54) respectively (USFC 1850e, 1860j, 1870h).

Sam Ruggles' Children's Birth Sequence

	<u>This Study</u>	<u>Hazen (1883), etc.</u>
1	Elizabeth 17 April 1800	Elizabeth
2	George H. 6 May 1802	George H.
3	William H. 25 Nov 1805	Sarah Ann
4	John H. 1808	Charles
5	Charles 30 Mar 1809	William H.
6	Sarah Ann 2 May 1812	John H.
7	Mary 27 Aug 1816	Mary

Table 1.1. Birth sequence of Sam Ruggles' children.

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A Few of Sam Ruggles' Famous (and Infamous) Relatives

There are several very interesting characters in the Ruggles family; all are related to Sam_D Ruggles. The common ancestor for the relationship reference for persons A through E is Thomas Ruggles (1588 – 1647) of Sudbury, Suffolk, England (Sam_D's great-great-great-great-grandfather). For persons G and J through N, the common ancestor is Capt.. Samuel_B Ruggles (1658 – 1715/16) of Roxbury, Massachusetts (Sam_D's great-grandfather). Refer to the abbreviated genealogy chart, Figure 1.17, to find the following branches on the Ruggles' family tree.

- A. Samuel Ruggles (1795 – 1871; Sam_D's 5th cousin) became a minister and missionary to Hawaii. He brought cuttings of Brazilian coffee plants to Kona, Hawaii, the beginning of a very tasty business that answers the trivia question: “What is the connection between mica mining and a breakfast beverage?”
- B. Comfort Ruggles (1759 – 1833; Sam_D's 5th cousin) dressed up as an Indian in 1773 and took part in the Boston Tea Party.
- C. Charles Herman Ruggles (1789 – 1865; Sam_D's 5th cousin once removed) became a prominent New York judge, and was one of the first to be appointed to the New York State Court of Appeals.
- D. Samuel Bulkley Ruggles (1800 – 1881; Sam_D's 5th cousin once removed) was a Yale graduate in 1814, a successful New York lawyer, served in the New York State Assembly, was Canal Commissioner, established Gramercy Park and designed Union Square in New York City.

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- E. Brothers John Dexter Ruggles (1859 – 1892) and Charles L. Ruggles (1870 – 1892; Sam_D's 5th cousins three times removed) were bandits, lynched in 1892 in Redding, Shasta County, California.
- F. Captain/Lieutenant Samuel Ruggles (1629 – 1692; Sam_D's great-great-grandfather) was struck by lightning and survived.
- G. Brigadier General Timothy Ruggles (1711 – 1795; Sam_D is his 1st cousin once removed) graduated from Harvard, studied law, and sided with the British prior to the Revolutionary War. He fled the Colonies for Nova Scotia, abandoning his daughter Bathsheba behind enemy lines.
- H. Samuel_D “Sam” Ruggles (1770 – 1843) was a noted merchant in Boston and the first American mica industry entrepreneur.
- I. George Haskell Ruggles (1800 – 1863; son of Sam_D) followed in his father's footsteps, expanded the mica operations and advertised the business widely.
- J. Bathsheba [Ruggles] Spooner (1745 – 1778; Sam_D's 2nd cousin) was daughter of Brigadier General Timothy Ruggles, the notorious British sympathizer in the Revolutionary War. She was forced into an unhappy marriage with Joshua Spooner which led to an affair with a farm laborer, and she killed her husband. She was the first woman to be executed by hanging (while 5 months pregnant) by Americans rather than the British.

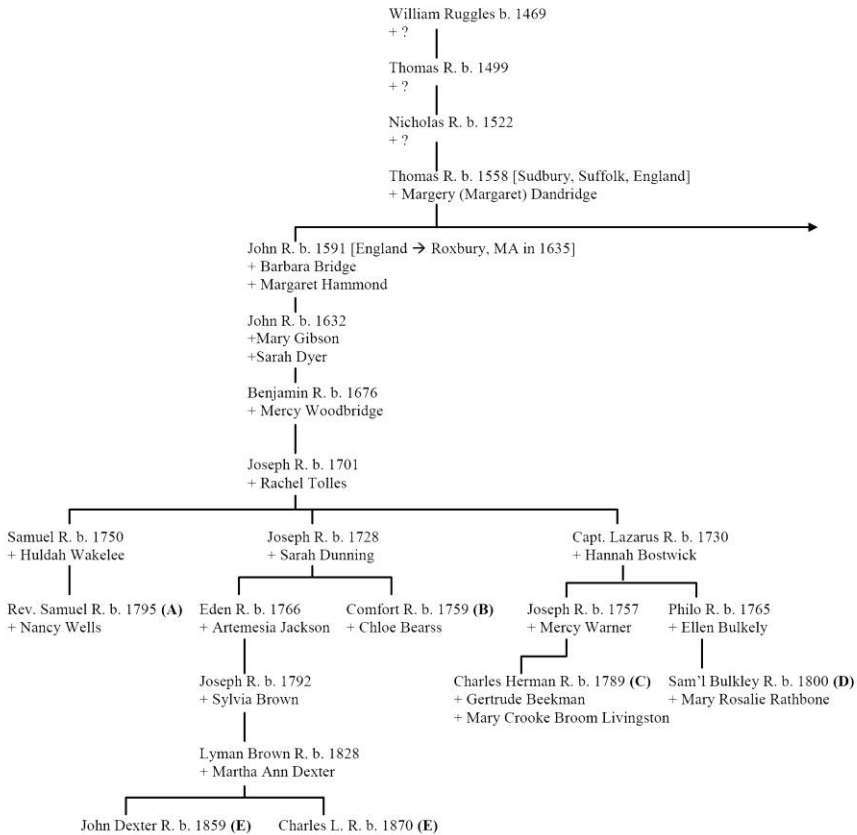
If you follow the path from Bathsheba's sister Elizabeth Ruggles (1748 – ?; not shown in Figure

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1.17), you can find your way to Sam_D's 2nd cousin seven times removed, Alexandra T. Emmett, wife of Arthur Meier Schlesinger Jr. (1917 – 2007), Pulitzer Prize winner and famous American historian of John F. and Robert Kennedy.

- K. Nathaniel Ruggles (1761 – 1819; Sam_D's 2nd cousin) was the US Representative from Massachusetts for three terms in the 13th, 14th and 15th Congress (4 March 1813 – 3 March 1819).
- L. Micah Haskell Ruggles (1791 – 1857; Sam_D's 2nd cousin once removed) fought in the War of 1812.
- M. Nathaniel Sprague Ruggles (1847 – 1924; Sam_D's 2nd cousin three times removed) loved booze, horse racing and gambling, and never graduated from any school (but you might enjoy having a beer with him). His son, Charles “Carl” Sprague Ruggles was nothing like him.
- N. Charles “Carl” Sprague Ruggles (1876 – 1971; Sam_D's 2nd cousin four times removed) was a prolific painter and American composer, music teacher, conductor of the Winona (Minnesota) Symphony Orchestra and a friend of American composer Charles Ives.

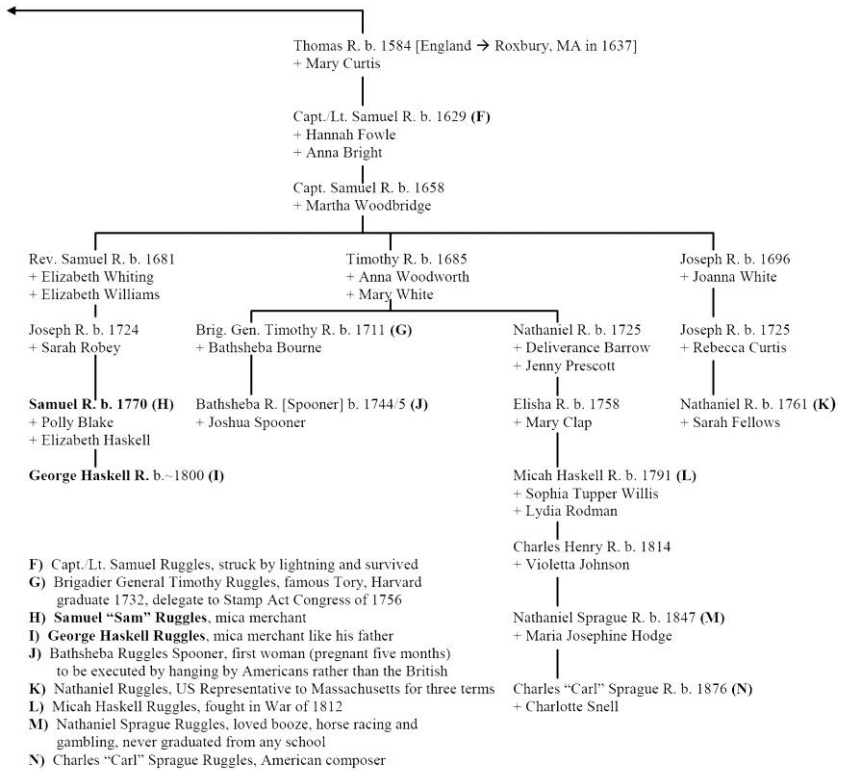
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- A) Rev. Samuel Ruggles, missionary, brought cuttings of Brazilian coffee plants to Kona, Hawaii
- B) Comfort Ruggles dressed up as an Indian and attended the Boston Tea Party in 1773
- C) Charles Herman Ruggles, prominent New York judge, one of the first elected to the New York State Court of Appeals
- D) Samuel Bulkley Ruggles, Yale graduate 1814, successful New York lawyer, New York State Assembly, Canal Commissioner, established Gramercy Park and designed Union Square in NYC
- E) John Dexter and Charles L. Ruggles, bandits, lynched in Redding, Shasta County, California

Figure 1.17. An abbreviated genealogy chart showing the relationship of Sam Ruggles to some famous and infamous relatives.

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Part II. Henry Randall ⚭ and Family

On 29 May 1834, Sam_D Ruggles' sixth child Sarah Ann Ruggles (22) married Henry Randall (26) (12 February 1807 – 12 August 1891) in Boston (MSDR 1864, 1891a; Wallace 2010). Henry was a multi-talented person who was a farmer, miner, mechanic, merchant and real estate broker (USFC 1850h, 1860j, 1870j, 1880j; MSSC 1855g, 1865d). He lived in Boston with his wife and growing family; all of their children were born in Massachusetts. In 1850 Henry (42) was working as a mechanic, supporting all five children (USFC 1850h).

Henry Randall and three of his children (Sam_D Ruggles' son-in-law and grandchildren) were actively involved in mica mining and the industry, and with the Ruggles mine specifically, documented in the Congressional Record (USHR 1891).

Sarah Ann [Ruggles] Randall died 25 March 1864 (MSDR 1864; MSDB 1864). Later that same year on 15 September 1864, Henry Randall married his second wife Amelia P. Fitch (~1819 – 19??), born in Massachusetts, who brought with her a daughter Ellen Eliza Fitch (1843 – 19??) born in Vermont (USFC 1880j, 1900i).

The usual household in 1870 included Henry (63), his new wife Amelia (51), her daughter Eliza (27), son Charles L. Randall (30), his wife Ellen (20) and their baby Mabel A. (2 months). Also present was the ever-needed domestic, and oddly enough, a young physician John Goodrich (25) (USFC 1870j). Not present in 1870 were son-in-law Charles G. Harris (37), Mary E. [Randall] Harris (34) and their daughter Sarah Ella (~6).

Henry Randall and Sarah Ann [Ruggles] Randall are buried in Forest Hills Cemetery, Jamaica Plain, Suffolk County, Massachusetts (Figure 1.16).

Their five children are:

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1. Mary E. Randall

Henry and Sarah A. Randall's first child was Mary E. Randall (~1835 – <27 April 1883) (USFC 1850h, 1860j, 1870y, 1880l; MSSC 1855g, 1865d). In 1860, Mary E. (24) married Charles G. Harris (~1829 – ?) (27) from Cleveland, Ohio. They were living with Henry Randall (52), three Randall children (24, 18, 15), Henry's wife Sarah Ann [Ruggles] Randall (48) and Sarah's youngest sister Mary Ruggles (42) (MSMR2 1860; USFC 1860j). Fortunately, they did have one domestic servant to bear some of the burden in the household.

The next chapter in Mary E. [Randall] Harris' life takes an odd turn. Mary and Charles G. Harris moved to Ohio, closer to his home and family. However in 1870, Mary E. (35) was an inmate at Longview Lunatic Asylum, Mill Creek, Hamilton County, Ohio (USFC 1870y). By 1879, Mary E. [Randall] Harris (44) had moved back to Massachusetts where her brother Charles L. Randall (38) was representing her as her guardian in a legal matter (GRCNH 1879b). She was a resident at the Temporary Asylum for the Chronic Insane in Worcester, Massachusetts (USFC 1880l). Nothing else is known about her life.

i. Sarah Ella Harris

Around 1864, Mary E. [Randall] Harris gave birth to a baby girl, Sarah Ella Harris in Chelsea, Massachusetts (1864 – 23 May 1898) (USFC 1880l; MSDR 1898). Her mother Mary E. [Randall] Harris died before Sarah E. was 19 years old, and grandfather Henry Randall made sure she was given a share of the Ruggles estate (GRCNH 1883d). In 1880, Sarah E. Harris (16) was living with trustee and uncle Charles L. Randall (39) and family, and

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attending school (USFC 1880i). She married Charles J. Leonard of Boston ca. 1891 (GRCNH 1892a, -b, -c). In January and February 1892, Sarah Ella and her new husband sold all of her shares in Ruggles mine (including those inherited from Mary Ruggles Howard) to George H. Randall who was struggling with the Ruggles and Randall Mica Company (GRCNH 1892a, -b, -c). Of Sarah E. and Charles Leonard's three children, only one survived, Mary Frances, born 28 January 1896. Also in 1896, Charles J. Leonard was arrested for passing a forged check (GNBK 1896a). Mary Frances Leonard married Paul Thomas MacAuliffe on 11 November 1914 (MSMR2 1914).

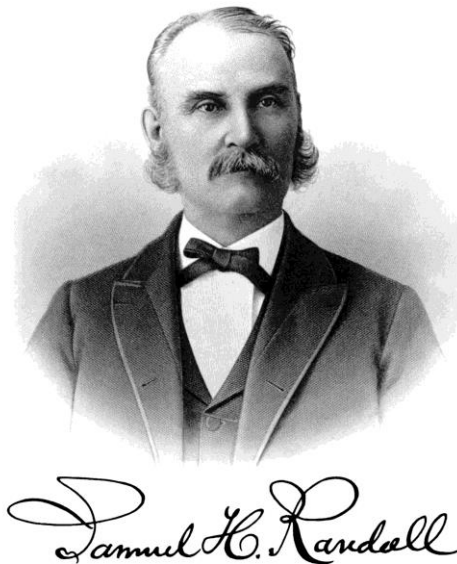


Figure 1.18. Portrait and signature of Samuel Haskell Randall, Sam Ruggles' grandson. From Mowbray (1898:148 over leaf).

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2. Samuel Haskell Randall ✕

Henry and Sarah Ann [Ruggles] Randall's son, Samuel H. Randall (22 Sep 1836 – 25 Apr 1910), is the most famous of this branch of the Randall family (Figure 1.18) (USFC 1850h, 1860j, 1880t, 1900v, 1910n; MSSC 1855g). As a teenager, Samuel H. Randall worked as entry clerk, bookkeeper and cashier. He graduated Harvard Law at age 23 in 1859, worked in a Boston law office and served on the Boston School Board (at that time their youngest member yet) (Harvard 1890, 1920; Mowbray 1898).

On 13 November 1865 in Boston, he married Amanda “Maggie” McLellan (1842 – 1936), from South Carolina by way of Philadelphia, Pennsylvania (MSMR2 1865; SOAR 1939). Sam Randall most likely met Amanda while she was living with Abigail Prentice Fogg (Sam Randall's first cousin) and Francis A. Fogg in 1860 (USFC 1860h). Amanda's connection to Boston extends to her mother, Harriet Brooks McLellan, who comes from a prominent Boston family (Mowbray 1898). In 1866 when Samuel H. was 30, he and his new bride moved to Brooklyn, New York. He moved rapidly up through the legal system, first to the New York Supreme Court in 1868, then US Circuit Court for Southern New York (Mowbray 1898).

Sam and Amanda Randall had four children:

i. Harry (Henry) Randall ✕

Their son Harry (born “Henry” on 27 December 1868) would follow his father as a lawyer and was a member of the bar in the New York Supreme Court (MSB 1868b; USFC 1880t, 1900v, 1910n; Mowbray 1898; White 1901). As discussed in the Ruggles mining history, Harry purchased shares of the Ruggles estate in 1900 (GRCNH 1897d).

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ii. Grace Madelon Randall

Daughter Grace was born ~1871 (USFC 1880t; Mowbray 1898). On 5 June 1895, she married John Franklin Frame (NYMR 1895).

iii. Gertrude Randall

Daughter Gertrude (1878 – 1920) was married 16 October 1901 to Frank Allen Witham (17 March 1879 – 24 December 1935) (USFC 1880b, 1880t, 1900v, 1910n; Mowbray 1898; NYT 1901c; SOAR 1939). In attendance at the wedding was the Countess de Festetics, at that time a person of much notoriety and fame¹⁷.

iv. Mary (May) Randall

Daughter Mary (May) was born in December 1879, and married Franklin De Castro Knowler (26 October 1876 – 19??) about 1903 (USFC 1880t, 1900v, 1910m, 1930n; Mowbray 1898). Amanda (87) lived with her daughter Mary and family in 1930 (USFC 1930n).

Although not a miner himself, Sam Randall owned numerous mica mine properties. He won a bronze medal (which was reported as gold in his obituary (NYT 1910)) and diploma for mineral specimens (mica, feldspar, quartz, beryl) from his mines that he exhibited at the 1867 Universal Exposition in Paris, France (NYT 1867; Usher 1868; Appleton 1869; Blake 1870; Mowbray 1898). At the close of the exposition, he donated all of the specimens to the School of Mines in Paris, and in return "... received by letter the thanks of the French Government for his donation, with the assurance that measures had been taken to provide a special inscription to perpetuate his gift to that

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institution” (Mowbray 1898:151). The current status of those specimens could not be determined.

Joseph D. Gould, trustee of the George Ruggles estate, was also at the Paris 1867 Universal Exposition displaying mica, but only received an honorable mention (Usher 1868; D. Appleton 1869; Blake 1870).

As a lawyer, Samuel H. Randall tried some interesting cases. One involved two sailors who charged their captain with cruelty and assault at sea by being beaten with a belaying pin (Figure 1.19) aboard the merchant sailing vessel Commodore T. H. Allen.

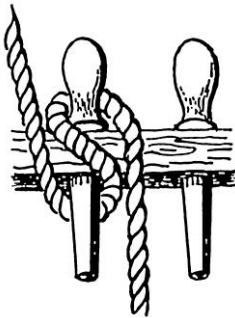


Figure 1.19.

Illustration of a belaying pin made of heavy wood, 2.5 to 3.8 cm diameter (1 to 1.5 inches), and 30 to 45 cm length (12 to 18 inches).

Courtesy Pearson Scott Foresman and the Wikimedia Foundation.

To avoid damaging testimony, the ship’s captain drugged the witness early one morning in a saloon and put him on a boat headed for Yokohama, Japan (not Shanghai, but close enough). After all, the captain lost the first two cases on the same charges from other crew members. Luckily, the Sheriff’s Deputies rescued the man from the ship (and two others who begged to be taken ashore). Sam won the case, but the captain failed to pay the judgment against him so he was arrested (NYT 1898a, -b, -c). The moral of the story: If a sailor asks you to go to a saloon for a drink around 6 in the morning, just say “No thanks!”

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Three years later, the same ship (under the same infamous captain) carrying 800,000 gallons of oil burst into flames leaving New York harbor and created quite a scene along the shore (NYT 1901b; NYTR 1901).

In addition to the accolades of Mowbray (1898), Sam Randall also had some rough times. In April 1901 he was charged with “fraud, deceit, and gross unprofessional conduct and malpractice as a counselor and attorney at law” (NYT 1901a). It arose from a law suit that began in 1885. The original agreement was that Randall would receive half of the award. When the case was settled in 1898 for \$3500, Randall performed some creative accounting: “... he claimed \$1500 for costs. Then, under the original agreement, he claimed one-half of the remaining \$2000, and, finally, he claimed the remaining \$1000 as being due him for legal services...” (NYT 1901a). The judge in the Appellate Division of the Supreme Court determined how much Randall had to pay back to his client, but Randall failed to comply. The case went to the State Court of Appeals in October 1901, which upheld the Appellate court’s ruling and suspended Randall from active practice in the State for one year (NYT 1901d). Five years later he got into trouble again after advising a client to raise objections to a will based on false assumptions that were known by Randall to be false (NYT 1906).

Samuel H. Randall died of pneumonia in New York City on 25 April 1910 at the age of 74 (NYT 1910).

3. George Henry Randall ✕

Henry and Sarah Randall’s third child George H. Randall (1838 – 11 November 1917) was named in honor of Sarah Ann’s older brother George H. Ruggles (USFC 1850h, 1860m, 1870i, 1880q, 1910o; MSSC 1855g; NWSR 1917).

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As a young man of 22 in 1860, George Randall worked as a clerk and was living in the Worcester home of his friend Lucius Clarke Edwards (also a clerk) (19 March 1842 – 3 January 1918) and family – father Rodolphus, mother Lucretia, brother Truman and sisters Mary Elizabeth, Lucretia and Jennie (MSBC 1842; MSB 1846; USFC 1860m; GNBK 1918). Two years later in 1862, Mary E. Edwards (16) married Henry M. Butterfield (20) (MSMR2 1862), and in 1867, Lucius (25) married Bertina Shirley (17) (MSMR2 1867a).

In 1870, George H. (32) was no longer a clerk but rather co-owner with Benjamin T. Church (29) of Church, Randall & Co., cigar merchants, at 105 State Street, Boston. Benjamin T. Church was born in Rhode Island and also worked as a “druggist” (pharmacist) in Boston (MSSC 1865f; USFC 1860g, 1870g, 1880e, 1910h, 1920g; Sampson Davenport 1868, 1869, 1871a, 1872a, 1873a, 1874b, 1875b). At age 90 in 1930, Church has the unusual honor to appear on *two* census forms in the same year: at home in Brookline, Massachusetts (USFC 1930f), and in Massachusetts General Hospital in Boston (USFC 1930g).

Also in 1870, Lucius Edwards with wife and 2-month old son were living in the same boarding house as his sister Mary E. Butterfield (but no husband), her 7-year old daughter, and George H. Randall (USFC 1870i). Both Edwards and Church would be George’s friends for many years.

George’s first marriage was on the 4th of July, 1873, to Mary Elizabeth [Edwards] Butterfield of Worcester, Massachusetts, sister of his good friend Lucius Edwards (MSMR2 1873). Just over a year later, Mary died of ‘consumption’ on 17 September 1874 (MSDR 1874).

In early February of 1880, George H. Randall was travelling by steam-boat from New London, Connecticut, to New York City (NYT 1880). Having

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been up late for several prior evenings, he slept soundly in his state room. That didn't last, though, because the steward woke him at 4 a.m. to ask if he had been robbed. George checked around his room and found that, indeed, he *had* been robbed. The steward, who had power of special policeman, observed Randall's stateroom being surveilled by two suspicious characters who then used a skeleton key to enter the room and commit the burglary. The steward arrested them, and later turned them over to the police in New York City where they were taken to police court. The steward searched the burglar's room and found a gimlet¹⁸, screwdriver, three keys and pincers (pliers) hidden below the carpet in the room (NYT 1880).

On 28 April 1880, George married his second wife, Rebecca De Lavana¹⁹ (2 July 1852 – 9 August 1902) in Manhattan (NYMR 1880). She was a school teacher from Brooklyn, New York (USFC 1870t). George H. Randall (42) with his new bride Rebecca (28) moved to Grafton, New Hampshire, to manage Ruggles mine (USFC 1880q). He is on record as having owned and operated several mines in New Hampshire (USHR 1891). George and Rebecca had three children - two girls and a boy - all born in Grafton. After 1896, he moved from Grafton back to Boston, and in 1900 was renting a room at 64 Bowdoin Street in Dorchester area of Boston (Sampson and Murdock 1900). They were living at 44 Quincy Street in the Roxbury area of Boston when, after several months of illness, Rebecca died in 1902 (MSDR 1902b).

When he was in Brooklyn, George (57) kept his connections to New England alive by attending the annual feast of the New England Society (NYT 1895). In 1910, George (72) was a widower boarding on 83rd Street in New York City, listed as a mine engineering consultant (USFC 1910o).

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George H. Randall died on 11 November 1917 in New York City from an automobile accident (NWSPR 1917). He is buried in Lot 1130, Forest Hill Cemetery, Fitchburg, MA with his two daughters, their husbands, and two grandchildren (FHCMA).

4. Charles Lawrence Randall ✕

The fourth child of Henry and Sarah Ann Randal was another son, Charles Lawrence Randall (21 August 1841 – 13 September 1896), named after another of Sarah Ann's brothers in the Ruggles family (USFC 1850h, 1860j, 1870j, 1880i; MSSC 1855g; MSDR 1896b). Charles (18) worked as a clerk in Boston in 1860 (USFC 1860j).

On 1 September 1869 in Bristol, New Hampshire, Charles (28) married Phoebe Ellen Gray (19), born in Vermont (July 1850 – 22 October 1937) (USFC 1850u; NHMR1 1869; NHMR2 1869; VTDB 1937). In 1870, they were listed on the census with their child Mabel A. (19 April 1870 – >1920), living at the home of Henry Randall (USFC 1870j). Benjamin T. Church, business partner with George H. Randall in the cigar trade, must have been a closely trusted friend of the Randall family as he was the intermediary in the transfer of ownership of Charles' share of the Ruggles estate to his wife Ellen P. Randall in 1870. In a quitclaim deed, the Ruggles estate was transferred to Church for \$1 (GRCNH 1870a). Church held the property for two months, and then transferred ownership to Ellen P. Randall through another quitclaim deed, again for \$1 (GRCNH 1870b).

Charles L. Randall (30) is listed as a student in the 1871 Boston Directory (Sampson and Davenport 1871). He was attending Harvard Medical School and graduated in 1872 (Harvard 1890, 1920). Charles appears in the Boston city directories as either physician or apothecary between 1872 and 1878

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(Sampson and Davenport 1872a, 1873a, 1874a, -b, -c, 1875a, -b, 1876a, -b, 1877a, -b, 1878; Harvard University 1890, 1920). These titles also appear on other documents, such as a deed (GRCNH 1878d), his children's birth records (MSB 1870, 1874, 1884) and Charles' own death record (MSDR 1896b). Curiously, Charles L. Randall's name does not appear in the 1876 Medical Register for New England (Brown 1876).

The 1880 census shows Charles and Ellen living on Foster Street in the Brighton area of Boston with daughter Mabel, two more sons, and also Sarah Ella Harris, Charles' niece, the daughter of his older sister Mary (USFC 1880i). On the 1900 census, Mabel A. is listed as being born in April 1872, a clear discrepancy to two prior censuses²⁰ (USFC 1870j, 1880i, 1900k) and the Boston birth records (MSB 1870). Charles represented Suffolk County in the Massachusetts State Legislature in 1883 (GNBK 1883a).

After a year of illness beginning in 1895, Charles L. Randall died of Bright's disease (chronic nephritis) in Boston on 13 September 1896 at age 55 (MSDR 1896b), and is buried in Evergreen Cemetery, Brighton, MA (FindAGrave.com, #160041199).

Charles L. and Ellen P. Randall's children are:

i. Mabel A. Randall

Mabel Anna Randall (19 Apr 1870 – 7 May 1914) was living with brother Frank and family in Burke, Vermont when she died in 1914 (MSB 1870; USFC 1870j, 1880i, 1900k, 1910p, VTDB 1914).

ii. Charles H. C. Randall

Charles Haskell Crockett Randall (16 May 1872 – 1963) married Lillian J. Urquhart from New Brunswick, Canada, on 3 April 1901. They settled

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in Boston and had three children (MSBC 1872; MSMR2 1901; USFC 1880i, 1900k, 1930h).

iii. Samuel H. R. Randall ✕

After Charles Randall's death, his son Samuel R.²¹ Randall (Sam_D's great-grandson; 23 Nov 1874 – 29 March 1909) continued selling mica between 1898 and 1900 from his home address of 66 Maple Street, Boston; thereafter he identified himself as a clerk or bookkeeper at his home address, and also worked as a florist in 1900 (MSB 1874; USFC 1880i, 1900k; Sampson and Murdock 1898, 1899, 1900, 1902, 1903, 1904, 1905, 1908, 1910; MSDR 1909).

iv. Frank Randall

Frank Randall (23 Feb 1881 – 30 May 1956), a miller and farmer, married Maud Mabel Camber (~1890 – ~1917) on 11 October 1905. They had 5 children, 2 sons and 3 daughters (MSBC 1881; VTVR 1905; USFC 1900k, 1910p, 1920p, 1930o).

v. Lillian Randall

Lillian Randall (28 May 1884 – >1930) was a stenographer, and married Waldo Leo Ledwidge (~1869 – >1940) on 23 November 1904 (MSBC 1884; MSB 1884; USFC 1900k; VTVR 1904).

In 1900, Charles' widow Ellen (52) was living at 66 Maple Avenue near Hyde Park south of Boston, with all five children aged 16 to 28 (USFC 1900k). By 1910, son Frank (28) had married Maud Mabel Camber (22, Canada), moved to Burke, Vermont, and had their first child Frank (USFC 1910p). Living with them were Frank's mother Ellen (62) and sister Mabel A. (42). The

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same was true in 1920, except that now Frank was a widower (USFC 1920p). In 1930, Frank was living in Lyndon, Vermont, with two sons and daughters (USFC 1930o). His mother Ellen was not living with them in 1930, but died 22 October 1937 (VTDB 1937). Frank died in 1956.

Charles L. Randall played an important role in the history of Ruggles mine as trustee of the estate and President of the Ruggles and Randall Mica Company (USSN 1890).

5. Sarah Ann Randall

The fifth and last child of Henry and Sarah Ann [Ruggles] Randall was named after her mother, Sarah Ann (1844 – ?) (USFC 1850h, 1860j, 1870h; MSSC 1855g). After her mother died and Henry remarried in 1864, Sarah Ann (26) moved away from home in the company of her aunt Mary Ruggles (52), staying at the Boston home of her first cousin Abigail (51) and husband Francis Adams Fogg (49) (USFC 1870h). According to a legal document (GRCNH 1879b), she was living in Hackensack, New Jersey, in 1879.

She traveled in Europe in the early 1880s, where she met a another traveler who had been in Berlin studying diseases of the eye and ear, Dr. Carlos Constantino “Constantine” Guzmán (20 September 1847 – 2 August 1886). He was from Nicaragua and trained in the U.S. with an M.D. degree from Harvard in 1870, two years prior to Charles L. Randall (Harvard 1890, 1920; Harrington 1905). After graduation, he spent some time in the hospitals in France during the Franco-Prussian War (GNBK 1886). He was the son of former Nicaraguan president General Don Fernando Guzmán (president: 1867 – 1871; 30 May 1812 – 19 October 1891). Dr. Guzmán’s brother, Dr. Horacio Guzmán (3 February 1850 – 23 April 1901), was also a

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doctor trained in the U.S. and France, a highly respected diplomat and represented Nicaragua at the World's Columbian Exposition in Chicago, 1893 (Stone et al. 1893; IUAR 1901).

After the European trip, Sarah Ann returned to Boston, and Constantine to Granada, Nicaragua. But he did not stay long, because he traveled to Boston where he married Sarah Ann Randall in 1882 (DAC 1886b; NYT 1886). They moved to Mexico, but Dr. Guzmán's health required a change of climate so they moved to 506 Van Ness Avenue, San Francisco, California in 1885 (Los Angeles Daily Herald 1886; NYT 1886). During the spring and summer of 1885, they were noted at various locations around California. On 20 February 1885, Dr. and Mrs. Guzmán arrived at the luxurious (and fairly new – built in 1880) Hotel Del Monte in Monterey, California (DAC 1885). They were reported in the *Sacramento Daily Record-Union* (by telegraph) as they passed through Newhall (just north of Los Angeles) on 26 June to arrive in San Francisco on 27 June 1885 (SDRU 1885).

Urgent business matters called Dr. Guzmán back to his native Granada, Nicaragua, in February 1886. Sarah may have accompanied her husband for part of the journey, since she was reported as “Mrs. C. Guzmán” in San Diego travelling alone (DAC 1886a). To celebrate Constantine's arrival in Granada, all the bells in town were rung, fireworks were set off, and a feast was set for the benefit of the sick and poor. His office filled day and night with patients needing his care; they were not turned away even if they could not pay. It is suspected that lack of sleep and use of narcotics took its toll. He became paranoid and delusional, and on 2 August 1886 committed suicide by gunshot to the head (GNBK 1886; NYT 1886).

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After her husband's death, Sarah Ann's life took a turn for the worse. Guzmán's relatives were withholding the estate from Sarah, his widow. That was possibly her only home and source of income. According to reports at the time, this apparently drove her over the edge. She became paranoid, delusional and violent with the belief that everyone was trying to poison her and everything around her was covered with venomous drugs. On Saturday, 4 December 1886, she was arrested when the train she was on stopped in Los Angeles. She was so violent that she had to be examined in a jail cell. On Monday, 6 December 1886, a judge declared her insane and sent her to Napa Valley, most likely the Napa State Hospital (DAC 1886b; Los Angeles Daily Herald 1886). She was transferred to the Danvers State Hospital (Insane Asylum) before 1900, and was still there in 1910 (USFC 1900d, 1910e). Beyond this time her fate is unknown, a sad end for Sam_D Ruggles' granddaughter.

In the late 1880s, it must have been frustrating for the remainder of her family with Sarah Ann living on the opposite side of the country. Among her relatives living in 1888 were her father, Henry Randall (81), and brothers Samuel H. (52), George H. (50) and Charles L. (47) Randall. In September 1888, *Daily Alta California* published a list of letters sitting in the San Francisco Post Office that were undeliverable, giving the recipients another chance to pick them up (DAC 1888). On that list is "Mrs. Dr. Guzman," suggesting that she had not returned to San Francisco.

Legal kerfuffle and family squabbles

George H. Ruggles died 6 May 1863 intestate, so his heirs (sisters Elizabeth R. P. Lawrence, Sarah Ann R. Randall, Mary Ruggles and brother Charles Ruggles)

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signed a Deed of Trust on 23 May 1863 that appointed Joseph D. Gould (Sam_D Ruggles' nephew) trustee of the George H. Ruggles estate (GRCNH 1863). Ruggles mica advertisements were updated in 1864 to announce that Joseph D. Gould was the trustee for the late George H. Ruggles (Figure 2.15) (Adams and Sampson 1864). This did not turn out well, since Gould began asking for payment for his services. On 10 December 1866, Joseph Gould filed suit demanding payment against Samuel H. and Charles L. Randall. Earlier in 1866, Elizabeth [Ruggles Prentice] Lawrence died, leaving only Mary and Charles Ruggles as functional heirs. Gould won those suits, and got an execution warrant for the Grafton County Sheriff to seize the Grafton property (GRCNH 1866b, 1866c).

The Randall family was obviously not amused. Perhaps in preparation for the counter suit, George H. Randall exchanged his one-fifth share of the Ruggles estate for a \$500 quitclaim deed to Benjamin T. Church of Boston on 1 January 1868 (GRCNH 1868a). Then in February, Samuel H. Randall represented the heirs and investors in the mine (such as Benjamin T. Church). This time, Gould did not fare quite so well. Samuel and Charles Randall agreed to pay Gould \$1 each. In return, Gould agreed to drop his demand for payment of \$896.34 and returned all property to the heirs (GRCNH 1868b, -c). Gould, however, remained as Trustee of the George H. Ruggles Estate.

In 1869, Charles Ruggles died, leaving Mary Ruggles as the last living person to sign the original trust putting Gould in charge. Charles' widow Mary J. C. Ruggles was concerned with her family's financial welfare being controlled by Gould and his assistant George Watson. In 1875 she wrote: "What has become of all our things?" in a letter to William Ruggles' guardian, William F. Wheeler (Ruggles 1875). Wheeler was also receiving payments from Gould to cover William Ruggles' living expenses, and she urged Wheeler to convince Mary Ruggles to draw up a new

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trust that would remove Gould as trustee (Wheeler 1868; Ruggles 1875).

About five months after William H. Ruggles died on 25 November 1878, another Deed of Trust was, in fact, registered 12 April 1879 that removed Gould as Trustee and replaced him with Charles L. Randall (GRCNH 1879b). This Deed was signed by Joseph D. Gould (who received \$1 as compensation) and virtually every living heir: from the Randall family - Henry Randall, his children Sarah Ann Randall, Samuel H. Randall, George H. Randall, Mary E. Randall Harris (with Charles L. Randall as her guardian), Ellen P. Randall (wife of Charles L. Randall); from the Ruggles family - Mary [Ruggles] Howard, Sam^d's grandchildren Abigail [Prentiss] Fogg, Julia E. [Ruggles] Tainter, Emma L. [Ruggles] Martin and Charles Ruggles Jr., and Mary Jane [Cutter] Ruggles (Charles Ruggles' widow and mother of Julia, Emma and Charles Jr.). Seven days after being removed as trustee, Joseph D. Gould died of heart failure on 19 April 1879 (MSDR 1879; Thwing 1908).

Charles L. Randall was selected by the family and heirs in February and March of 1880 to be responsible for the timber on the Ruggles estate (GRCNH 1880a, -b). Charles was then appointed manager and trustee of the estate on 21 April 1880 (GRCNH 1880k).

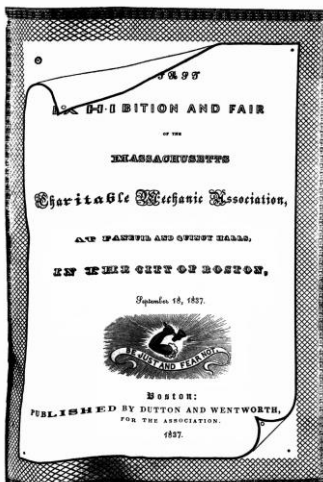


Figure 1.20.

Title page of the first Exhibition and Fair of the Massachusetts Charitable Mechanic Association, 1837; Sam Ruggles and family were active participants until ca. 1856. From Fairbanks (1837).

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The Massachusetts Charitable Mechanic Association

In the early 1800s, industrial fairs and expositions were becoming popular in New York and Philadelphia. Such fairs would expand to become Worlds' Fairs. They gave manufacturers, mechanics, artists and artisans a venue for displaying their craft. They attracted many people and the exposure was good for business so the fairs flourished. In 1836, the Massachusetts Charitable Mechanic Association in Boston felt that the time was right to host a similar fair to display Yankee ingenuity. The first fair was held almost a year later on 18 September 1837 in Faneuil and Quincy Halls in Boston (Figure 1.20). The Hall was only about 100 m (109 yards) from the Ruggles' 21 Union Street office (Figure 1.21). The photograph of Faneuil Hall in Figure 1.22 was taken ca. 1898.

Sam_D Ruggles was a strong supporter of the Association (Mowbray 1898). His wife and children were the first to display mica related crafts. Descriptions with entry numbers are shown for items of interest in each exposition. The exhibits and exhibitors give a snapshot of the history of the Ruggles mica empire. Curiously, Sam_D never personally entered an exhibit. (Note: Abbreviations used in the originals have been expanded within square braces [] for clarity, and historical notes added.)

First Exhibition and Fair: 18 September 1837 (Fairbanks 1837:77)

669. Mrs. E[lizabeth] Ruggles, Boston. One mica box; three chimney ornaments; two card-racks; one box mica feathers; one mica lantern; two mica baskets.

[Note: Mrs. Elizabeth Ruggles, Sam_D's wife, was 63.]

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Second Exhibition: 23 September 1839 (Darracott 1839:67, 131)

48. Ch[arles] L. and Geo[rge] H]. Ruggles. Fine specimens of mica.

[Note: There is a typographical error; Charles Ruggles does not have a middle initial.]

853. Misses E[lizabeth] and M[ary] Ruggles, Boston. A fancy mica box, two baskets, two chimney ornaments, two horns, and one lantern; also two needle-books, a basket and pincushion.

[Note: In 1839, Sam_D's daughters Elizabeth and Mary were 39 and 23, respectively, and Elizabeth was 11 years into her second marriage. The use of "Misses" seems erroneous and quaint.]

Third Exhibition: 20 September 1841 (Lewis 1841:91, 93)

412. G[eorge] H. Ruggles, Boston. Mica of commerce. This deserves our approbation for the excellent manner in which the packages are prepared. *Diploma.*

761. Mrs. E[lizabeth] Ruggles, Boston. Mica ornaments.

[Note: George was about 41 at the time, and well established in the mica trade. This was three months before Elizabeth Ruggles' death in December, and two years before Sam_D Ruggles' death.]

Fourth Exhibition: 16 September 1844 (Lunt 1844:80, 81)

666. George H. Ruggles, Boston. Large and small sheets of mica. Equal to the foreign.

[Note: "Equal to the foreign" is an interesting comparison; the full invasion of imported mica came 40 years later.]

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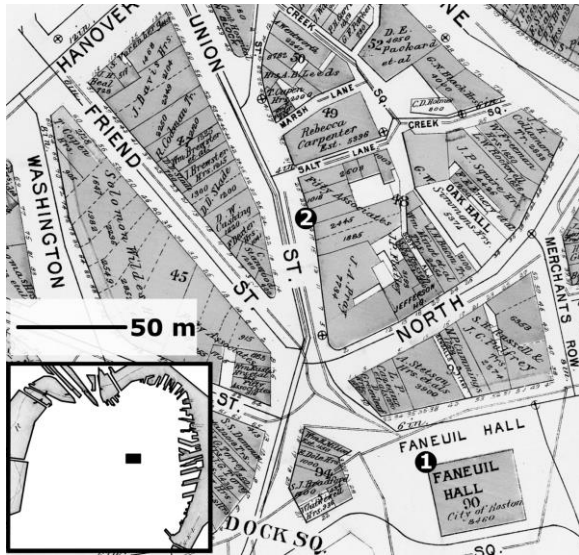


Figure 1.21. 1895 map showing location of Faneuil Hall: ① and the Ruggles' 21 Union Street office: ②, in Boston. Inset shows approximate location in central Boston. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.



Figure 1.22. Photograph of Faneuil Hall in Boston ca. 1898. Detroit Publishing Company collection number 018829, courtesy Library of Congress.

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1239. F. W. Pearson, Boston. One box of isinglass.
Very superior.

[Note: Francis W. Pearson had no connection with the mica industry, so this entry is something of a mystery. He worked for Gage, Hittinger & Co. (established 1842, which became Gage, Sawyer & Co. in 1850), who were part of the Massachusetts ice trade. Their most audacious project was to ship ice to England in 1842 (Smith 1962).]

Fifth Exhibition: September 1847 (Smith 1848:180)

322. George H. and C[hables] Ruggles, Boston. Three specimens of mica in rock. Good specimens.
Diploma.

[Note: George was about 47 and Charles 38.]

Sixth Exhibition: September 1850 (Hooper 1850:128)

234. George H. Ruggles, Boston. Two specimens of isinglass.

Seventh Exhibition: September 1853 (Chickering 1853:83)

206. George H. Ruggles, Boston. Specimens of mica cut to size. Fine specimens.

Eighth Exhibition: September 1856 (Lincoln 1856:108)

40. George H. Ruggles, Boston. Sheets of mica. Fine specimens of this useful material.

Ninth Exhibition: September 1860 (Bonney 1860)

[There were no Ruggles / Randall mica exhibits in 1860.]

[Note: George died in 1863, after which Joseph D. Gould was appointed trustee of the Ruggles Estate.]

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Tenth Exhibition: September 1865 (Bailey 1865:127)

1. Gould & Ruggles, Boston. Specimens of mica. Large sized sheets, remarkably perfect; smaller ones of the same, cut to different sizes. This mineral has been favorably noticed by former Committees, and it has not deteriorated.

Eleventh Exhibition: September and October 1869 (Fitch 1869)

[There were no Ruggles / Randall / Gould mica exhibits in 1869.]

[Note: The Randall's sued Gould in 1868; Charles Ruggles died in 1869.]

Twelfth Exhibition: September and October 1874 (Adams 1874)

[There were no Ruggles / Randall / Gould mica exhibits in 1874.]

Thirteenth Exhibition: September and October 1878 (Paul 1878)

[There were no Ruggles / Randall / Gould mica exhibits in 1878.]

[Note: Gould was in poor health and died in 1879.]

Fourteenth Exhibition: September and October 1881 (Slack 1881:30)

694. Ruggles Mica Estate, Boston, Mass. Mica. A very fine display of specimens of mica, and fancy ornaments made from the same. *Bronze Medal*.

[Note: The Randall's were now operating the Ruggles mine.]

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Fifteenth Exhibition: September and October 1884
(Whidden 1884)

[There were no Ruggles / Randall mica exhibits in 1884.]

Sixteenth Triennial Exhibition: September, October and November 1887 (Talbot 1888:48)

711. Ruggles & Randall Mica Co., Boston. Mica and mica ornaments. A fine exhibit. *Bronze Medal*.

Ruggles & Randall Mica Co. formed in 1887, then ceased doing business and became insolvent in 1888. They no longer exhibited at the next three exhibitions: 17th Triennial Exhibition in 1890 (Haynes 1891), 18th Triennial Exhibition in 1892 (Wentworth 1893) and 19th Triennial Exhibition in 1895 (Whitcomb 1896).

Part III. Joseph Dudley Gould ♂ and family

Jacob Gould (14 January 1765 – 25 September 1811) became part of the Ruggles family when he married Sam_D Ruggles' younger sister Lucy (26 October 1776 – 9 December 1852) on 26 May 1796 (USFC 1790a; Gray 1908; Thwing 1908; Essex Institute 1925b). Jacob and Lucy Gould's son Joseph Dudley Gould (17 May 1807 – 19 April 1879), Sam_D Ruggles' nephew, would get his start in business much like Sam_D Ruggles as a dry goods merchant (USFC 1850f, 1860f, 1870f; MSDR 1879; Hazen 1883; Thwing 1908; Essex Institute 1925a).

Joseph D. Gould's elder partner in the dry goods business was Ozias Field (17 November 1798 – 6 January 1866) (Haskins 1887; Thwing 1908). The firm was known as Field & Gould's Dry Goods, located at John Eliot Square (formerly Meeting House Square) on the corner of Highland Avenue (formerly Highland Street), Roxbury, Massachusetts. Remarkably, this location appears in a

1: Ruggles Family History

memoir of Ralph Waldo Emerson written by his cousin, David Greene Haskins (1887:87), who states:

During the summer of 1824, Mr. Edward B. Emerson, probably at my father's suggestion, certainly with the aid of his influence, established a private school for boys in Roxbury, which both my older brother and myself attended. It was kept in a hall over Field & Gould's dry goods store on Meeting-House Square, at what is now the westerly corner of Highland Street.

On 2 June 1833, Joseph D. Gould married Sarah Payson Seaverns (5 May 1811 – 15 April 1900) (Essex Institute 1925a, -b). They had four children, three boys and a girl (USFC 1850f, 1860f).

1. Joseph Dudley Gould, Jr.

Their first child, Joseph D. Gould Jr. (19 February 1835 – 27 Oct 1903), graduated *summa cum laude* from Harvard College (Lawrence Scientific School) in 1859 (USFC 1880c, 1900e; MSDR 1903; Harvard University 1920). He became a successful chemist and eventually was president of Talbot Dye-Wood²² and Chemical Company in Lowell, Massachusetts (Marden and Thompson 1886). The year after graduation, he was living at the home of Thomas Talbot, the owner of the company (USFC 1860b). Joseph Jr. married Elvira Rogers in 1866 (MSMR2 1866).

2. George Henry Gould

George Henry Gould (23 June 1841 – 6 February 1905) worked as a dry goods merchant at 19 and a clerk when he was 21, but soon took up making crockery

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ware for several decades before selling insurance in 1900 (USFC 1860f, 1870f, 1880g, 1900j; MS DR 1905). His death was caused by septicemia from a splinter in his finger.

3. William Parker Gould ♂

In the Gould family, it was William Parker Gould (25 April 1845 – 1909) who would become most seriously involved in the mica business (USFC 1850f, 1860f, 1870f, 1880g, 1900c; USPA 1887; Redmon 2008). Before that, though, he joined his older brother George Henry in his crockery business around 1870; both were living with their parents (USFC 1870f). At that time, his father was a “dealer in mica,” a trustee of G. H. Ruggles estate and very wealthy (USFC 1870f).

William P. Gould married Mary Elizabeth Faulkner²³ (3 July 1844 – 1932) in 1885 (USFC 1850b, 1860a, 1870b; Hazen 1883). Mary Elizabeth was the youngest of five daughters of James R. and Catherine R. Faulkner of Billerica, Massachusetts (USFC 1830a, 1840a, 1850b, 1860a, 1870b). Both William and Mary came from very wealthy families: in 1870 Joseph D. Gould’s estate was valued at \$35,000²⁴ (USFC 1870f), and James Robbins Faulkner’s estate at \$105,000²⁵ (USFC 1870b). William and Mary moved to Montecito (east of Santa Barbara), California, in 1889 and bought a lavish home with exotic gardens off Olive Mill Road. He built a stone olive oil mill that was later converted to a home (200 Olive Mill Road), and was occupied by singer Lena Horne from 1975 to her death in 2010 (Redmon 2008; Gavin 2009).

In 1900, William and Mary apparently were living apart²⁶; she was living in Los Angeles (USFC 1900b) while he was in Montecito with his sister, a cook and housekeeper (USFC 1900c). There is no indication of a divorce; they had no children.

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Mary's spinster sisters Abby Louisa (63) and Anne Robbins (70) Faulkner were also living in Los Angeles in 1900 (USFC 1900a). In 1910, a year after William's death, Mary was boarding with Eyrus Upham at 1414 de la Vina Street in Santa Barbara (USFC 1910c). She was at the Arlington Hotel in Santa Barbara in 1920 (USFC 1920a), and in 1930, two years prior to her death, she was living at 1428 de la Vina Street with a housekeeper (USFC 1930a).

William's unique hobby was raising macaque monkeys. These lucky primates had all of the gardens to dash about, sometimes the mansion, and occasionally even the guests (Redmon 2008). Mary E. F. Gould, on the other hand, supported the protection of wildlife (American Bison Society 1909), and was a life member of the Woman Suffrage movement which she joined in 1903 (NAWSA 1898, 1900, 1901, 1902, 1903, 1905, 1907, 1908, 1919). Mary's sisters Abby and Anne were already life members in 1894 (NAWSA 1894). Mary and her sisters were very active in the community including starting the first kindergarten in North Billerica, and Anna Blake's training school that became the foundation for University of California: Santa Barbara. As a memorial to her sisters Emily, Abby and Anne, Mary funded the Faulkner Gallery at the Santa Barbara Public Library (Eames 1912; Redmon 2008). She also contributed to the American Unitarian Church where the Faulkner Fund was established in 1886, and the Abby L. Faulkner Fund in 1902 after Abby Faulkner's death (Eames 1912; AMUA 1913, 1914).

Gould & Watson Company are listed in Branson's North Carolina Business Directory (Branson and Branson 1889; Branson 1896) as owning a mica mine in Mitchell County, North Carolina. Hodges (1887) writes that Gould & Watson took the responsibility for packing and shipping books, etc., to the Good-Will

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Free Library of Ledger, North Carolina. In 1887, Professor Charles Hallet Wing²⁷, formerly of the Institute of Technology in Boston, retired to the village of Ledger in Mitchell County, North Carolina, where he started the first, free public library in the state (Hodges 1887; Mitchell 1983). It seems reasonable to assume that, given her other philanthropic activities, Mary E. F. Gould was instrumental in convincing her husband to accept that charitable task.

4. Catherine S. Gould

Catherine S. was born 27 June 1851 (MSB 1851; USFC 1860f, 1870f, 1880g). In 1900, she (49, single) lived at her brother William's estate in Santa Barbara, California (USFC 1900c). She died in Boston on 7 October 1904 of liver cancer (MSDR 1904).

Part IV. Charles R. Tainter ∞

Charles Ruggles Tainter²⁸ (17 September 1868 – 22 June 1942) is the son of Elisha Edwin Tainter (18 November 1845 – 23 September 1936) and Julia E. Ruggles (28 July 1848 – 19 November 1920). He is named after his grandfather Charles Ruggles (MSB 1868a). His father Elisha was a native of Medford, Massachusetts, which is also where Charles Ruggles lived, having moved from Boston between 1855 and 1860 (USFC 1850c, 1860e; MSSC 1855b). His daughter Julia E. (18) and Elisha Tainter (19) were neighbors in 1865; two years later they were married (MSSC 1865b; (MSMR2 1867b).

When Elisha Tainter married Julia E. Ruggles on 2 October 1867, he was working as an expressman like his father Edwin (MSMR2 1867b; USFC 1870d). An expressman received and delivered packages and parcels, often between specific geographic points (Figure 1.23). Edwin Tainter was a pioneer in the industry, and operated

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an express service between Boston and Medford, Massachusetts [some examples of Tainter's business over several decades: general express listing in Adams (1849); Medford Express listed in Adams (1855b), Adams and Sampson (1862b), Sampson and Davenport (1873)]. It was a popular service, demonstrated by the number of express service entries in the 1873 Boston Directory where 10 pages list approximately 1800 destinations served from Boston (Sampson and Davenport 1873:937-947). There was even an expressman's trade journal: Express Gazette – The Official Journal of the Express Service of America (Schrage 1884, 1895). The means of transport varied with the times and cargo. What began with the horse-drawn wagon continued with steam locomotives, sometimes equipped with a special, secured express car. Key to an expressman's success was dependability, loyalty and reliability since they were often transporting very valuable cargo like gold, jewels and payrolls. It was generally considered unskilled labor, but there were often great risks involved given the value of their cargo. For example, Schrage (1884) reports that a ring of thieves who preyed on expressmen were apprehended, but not without a fight with one of the thieves jumping through a window. One victim of theft was Tainter's Medford Express with a \$50 loss (approximately \$1,300 equivalent) (Schrage 1884). With the advent of horseless carriages and trucks, specialized, rapid delivery services evolved; some even incorporate "express" in the company name which continues to this day.

When Elisha's father Edwin died in 1895, the following memorial was published in the Express Gazette (Schrage 1895:230):

Edwin Tainter, one of the oldest local expressmen in New England, died at Medford, Mass., September 9 [1895], aged 81 years. As

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long ago as 1834, he conceived the idea of transporting parcels and bundles between Boston and New Bedford, using a wheelbarrow for a vehicle. Finding the business a profitable one, he purchased a handcart, which for years served him in lieu of wagon. A horse and wagon came later, and he increased his equipment, until he did a very thriving business, and he was engaged in it at the time of his death. Of late years, however, he had taken but little active part in it.

Julia's father Charles Ruggles died in 1869, and in 1870 his wife, Mary Jane [Cutter] Ruggles (46), and two youngest children, Emma (17) and Charles Jr. (13), were living next door to daughter Julia E. (23) and her husband Elisha Tainter (25) with Charles R., their one-year old son. Elisha's father Edwin (53) and mother Charlotte B. [Ewell] Tainter (52) were living on the other side of Elisha and Julia (USFC 1870d). In 1880, Elisha and Julia were still living in Medford with son Charles (11) and their second son and namesake of Elisha's father, Edwin (9); Elisha's parents Edwin (62) and Charlotte (60) were living next door (USFC 1880d).

By 1900, Elisha (53) and two sons Charles R. (32) and Edwin (29) had moved to Grafton, New Hampshire (USFC 1900r). In Grafton, Elisha continued to work as an expressman, Edwin a policeman, and Charles R. Tainter was identified as an "electrical machinist" on the census. This is also the time period when the New Hampshire Bureau of Labor listed Charles R. Tainter (spelled "Taintor" in the report) as working the Ruggles mine (Carroll and Cooper 1900).

. BOSTON DIRECTORY .

THE ADAMS EXPRESS COMPANY



FORWARD PACKAGES AND PARCELS DAILY,
FROM THEIR BOSTON OFFICE, TO
Norwich and New London, New York, Philadelphia, Baltimore,
Washington, Richmond, Va.;
AND FROM THOSE CITIES CONNECT WITH THE DAILY LINES TO THE
NORTH, SOUTH, AND WEST,
PITTSBURGH, CINCINNATI, ST. LOUIS, &c., and also CHARLESTON, S. C., and
the interior, MOBILE and NEW ORLEANS. Also to
CALIFORNIA AND OREGON.

The experience of this Company in the details of the EXPRESS BUSINESS enables them to avail themselves of every faculty for the prompt execution of orders, and the accurate accomplishment of all business entrusted to their charge. They are now prepared to

FORWARD AND INSURE GOLD DUST AND VALUABLES TO ANY AMOUNT.

Shippers will bear in mind that Gold shipped to us DIRECT FOR THE MINT, will be returned in Coin at once; our Express on the MAIL TRAIN, between New York and Philadelphia, enabling us always to gain a week or ten days in the receipt of the returns.

We employ honest and faithful messengers to accompany the Goods taken in charge on all our routes, so that persons who may employ us to transport their packages to the point directed, may rely upon their delivery with safety and dispatch; and in all cases of loss by carelessness on our part, or on the part of any person employed by us, a prompt remuneration may be depended on.

By the Steamer for SAN FRANCISCO, we send an Express through to CALIFORNIA regularly, accompanied always by our own SPECIAL MESSENGER. Due notice of the departure of these Expresses will always be given in the Daily Papers.

PACKAGES WILL ALSO BE FORWARDED TO AUSTRALIA.

N.B.—All Goods destined for California, MUST BE PACKED IN WATER-PROOF CONDITION, and not to exceed 126 lbs. weight, or measure over five cubic feet to each package. For charges and further particulars, apply to

THE ADAMS EXPRESS COMPANY,
84 WASHINGTON STREET, BOSTON.

Figure 1.23. An example of an express service ad from the 1855 Boston Directory (Adams 1855b:8). Note that George H. Ruggles employed Adams Express sending packages to Nathan Trotter in Philadelphia (Ruggles 1852).

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Julia E. [Ruggles] Tainter did not follow her husband and children to Grafton, but stayed behind in Medford at the 384 Salem Street home with her brother Charles Ruggles Jr. as a boarder (USFC 1900f). Elisha (65) returned to wife Julia E. (61) in Medford, still at 384 Salem Street, by 1910. He was working as manager of a print works (USFC 1910f). Elisha (75) was a teamster in 1920, and Julia E. (71) was at home (USFC 1920e). Julia E. [Ruggles] Tainter died later that year on 19 November 1920. Thus, Elisha (85) was a widower in 1930 and head of household with brother-in-law Charles Ruggles Jr. (73, Sam_D Ruggles' grandson) as a boarder keeping him company; both listed no occupation (USFC 1930e). Elisha Edwin Tainter died 23 September 1936.

Charles Ruggles Tainter moved to Guilford, Connecticut (east of New Haven), and was manager of a bridge construction in 1920 and superintendent of steel erecting in Guilford in 1930 (USFC 1920b, 1930b). He was still single at age 62 in 1930, but married on 8 September 1938 to Pearl Landon Monroe (1882 - 1955) who had been widowed in 1937 during her first marriage (USFC 1940; Medford City Clerk, pers. comm. 2018). Her maiden name was Pearl Wilcox Landon, and she appears as Pearl L. Tainter on the 1940 Census. Charles R. Tainter died 22 June 1942 in Guilford, and Pearl died 10 March 1955, also in Guilford (Guilford Town Clerk, pers. comm., 2018).

Figure 1.24 shows an abbreviated family tree highlighting Ruggles family members involved in the mica trade.

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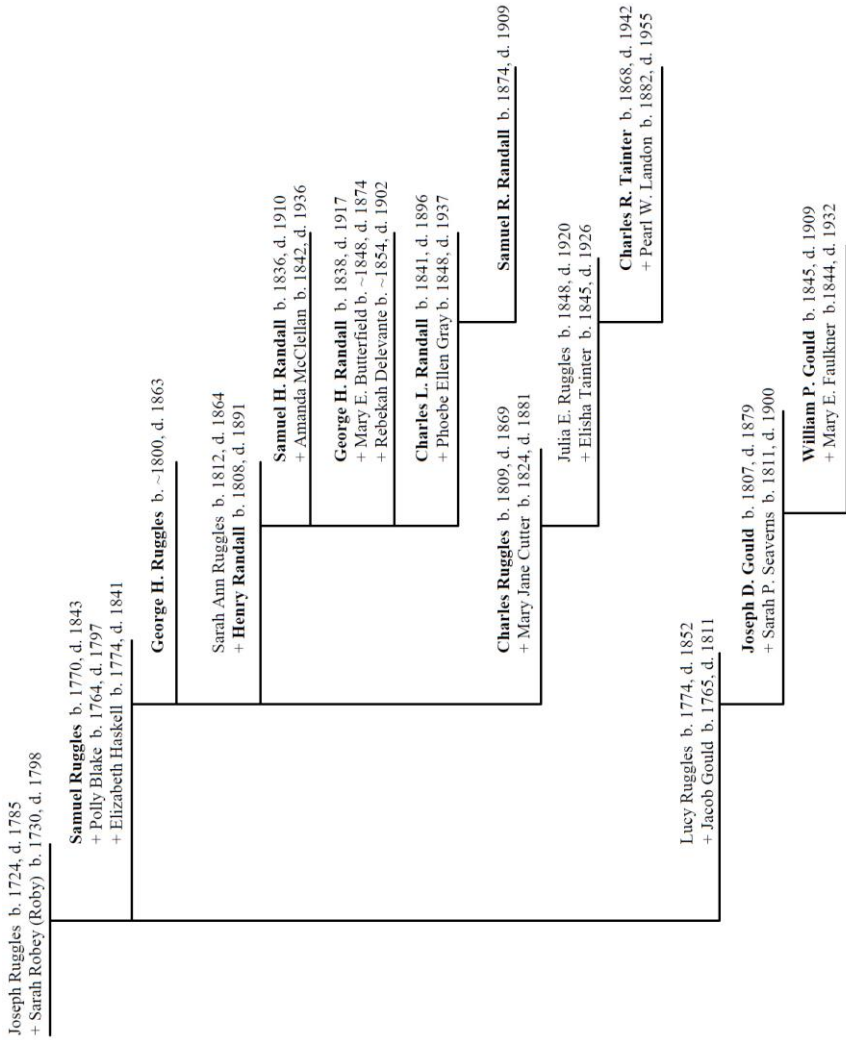


Figure 1.24. Ruggles mica industry abbreviated genealogy chart (not all family members are shown). Persons involved in the mica business are shown in **bold**.

Ruggles Mining History

Grafton, New Hampshire, before Sam Ruggles

Ruggles mine is on Isinglass Mountain (over time, also called several variations of Glass Hill mountain, Isinglass hill, etc.) in Grafton, Grafton County, New Hampshire (Figure 2.1). The mountain's name is a reference to isinglass, an archaic name for mica (Merrill and Merrill 1817; Hitchcock et al. 1878). Sam Ruggles was not the first to notice the occurrence of mica there, nor the first to mine it. He was, however, the first to do so consistently on a commercial scale as a business.

Dr. Jeremiah “Jeremy” Belknap (4 June 1744 – 20 June 1798) wrote a series of books entitled *The History of New Hampshire* (MSBC 1744; MSDB 1798; Eliot 1910). In 1784, Belknap undertook a tour of the White Mountains of New Hampshire which forms the foundation of Volume 3 in the series first published in 1792, six years before his death (Belknap 1792). He wrote that mica in Grafton, New Hampshire, was discovered during the Revolutionary War.

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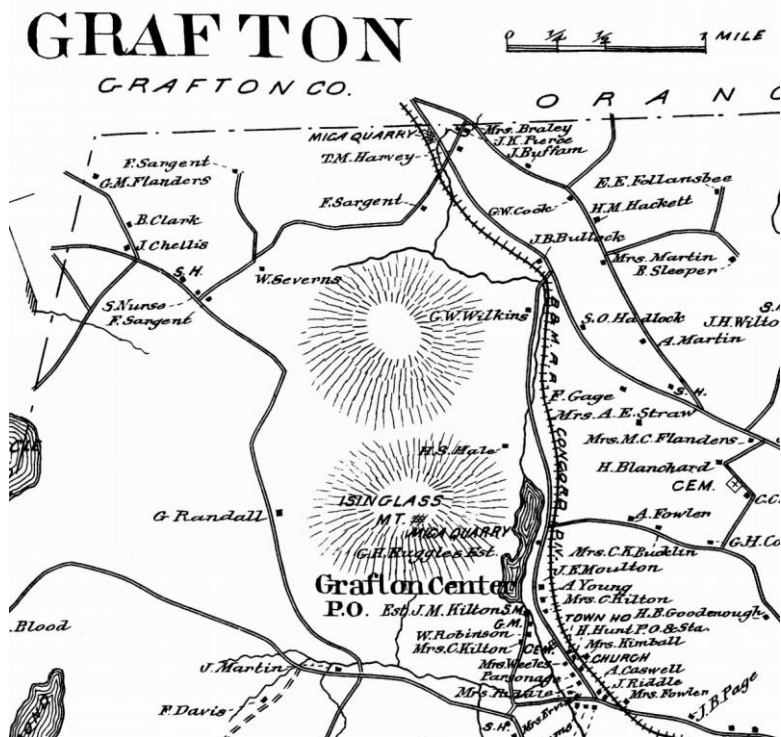


Figure 2.1. 1892 map of Grafton, New Hampshire. Clearly seen are Isinglass Mountain, mica quarry, G. H. Ruggles Estate, G. Randall, etc. Modified from: Grafton, and Grafton County. Boston: D. H. Hurd and Company. Courtesy Cartography Associates, David Rumsey Map Collection.

Several versions of *The History of New Hampshire* were published posthumously, such as the 1812 and 1813 editions, but the passage from Volume 3 quoted below was not revised in any of those later editions. Quoting²⁹ from Belknap (1792:193-194; 1812-13:141-142):

In various parts of the country is found that transparent substance, which is commonly called Ising-Glass, (*Lapis Specularis*). It is a

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species of Talc; and is found adhering to rocks of white or yellow *quartz*, and lying in *laminæ*, like sheets of paper. The most of it is white, some is yellow, and some has a purple hue. The largest leaves of this curious substance are found in a mountain, in the township of Grafton, about twenty miles eastward of Dartmouth college. It was first discovered in the following manner. A hunter took shelter for the night in a cavern of the mountain; and in the morning found himself surrounded with this transparent substance; a large leaf of which he fastened to the branch of a tree, near the cave, as a mark by which he might again find the place. This happened during the late war [of 1776], when window-glass could not be imported.

This account is supported by a letter to the American Philosophical Society in Philadelphia written on 16 February 1781 by Major-General John Sullivan (counties named in his honor are found in Missouri, New Hampshire, New York, Pennsylvania, and Tennessee) (Hammond 1939:287-288) [spelling, punctuation and capitalization are shown as published]:

Gentlemen I have the Honor to present your Learned Society with a Fossil³⁰ lately Discovered in a mountain about Seventy Miles from Portsmouth in New Hampshire.

The mountain is exceeding Large & seems to be fill^d with Quarries of this Natural Concrete. It has some Properties of Common Glass, and possesses others which render it in some Respects Superior. It is equally Transparent, does not waste or Consume in

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Fire, receives any Colour or Dye, and will not perceptably [*sic*] diminish in Weight or Size by Frequent Attrition. But is preferable on Account of its not [being] Frangible, Dissoluble, or Friable. Though This Fossil has not been before Discovered in America it was Long since known in other Parts of the World; it appears to have the same Qualities as the Lapis Specularis of the Ancients, and does not materially Differ Either from the Venetian or Muscovite Talc: It has not the Reddish Color of the former, and is perhaps Exceeded in whiteness by the Latter: but is in Transparency equal to either. It may be cut out in Large Stones and (Like those) be Easily Separated [*sic*] into Thin Laminae which appear Smooth, Glossy, & Transparent. It answers the same Purpose of covering Pictures making Lanthorns³¹ & window Lights, & though not Similar in all Respects is (in my Opinion) Substantially the same. I do not Therefore present it as a Concrete hitherto unknown, but to afford an opportunity for the Learned and Curious of your Society to Investigate the Causes of its Concretion: & Examine into its usefulness in the Mechanic Arts.

M^f Secretary Thomson will be so obliging as To Lay it before you and I persuade myself that through your Influence it will receive a Place among the natural and useful Productions of America.

This reference has also been noted by Tilden (1955), Cushing (1992) and Morong (2002). Clearly, not only was mica well known to be found on Isinglass Mountain, it was being quarried (and very likely sold) more than 20 years

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before Sam Ruggles' interest in and purchase of the property.

There is another mention of early, pre-1800 mining on Isinglass Mountain. Barney (1898:34-35), in describing two mountains in New Hampshire, writes:

Mica was quarried on Isinglass hill in Grafton more than one hundred years ago [i.e., before 1798]. The first method employed in mining was to build large fires on the rock, and, when the surface was heated, water was dashed upon it and the mica broken out.

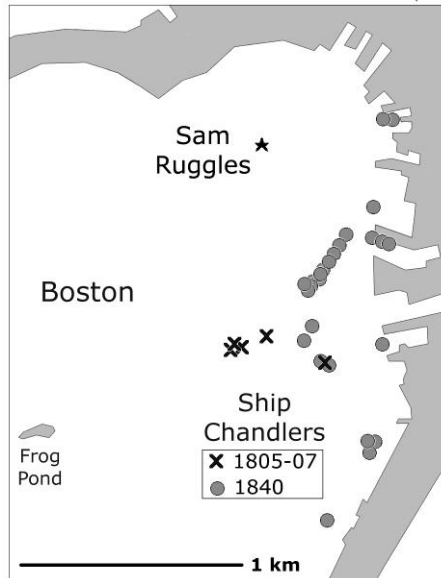


Figure 2.2. Relative locations of Sam Ruggles (ca. 1790 to 1809) and ship chandlers; X marks chandlers 1805 – 1807, and circles mark chandlers in 1849. After 1810, Sam lived on the west side of Boston about 1 km (0.6 miles) from Prince St. Data from West (1796), Cotton (1803, 1805, 1807), Adams (1849), BRC (1890, 1910).

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Sam Ruggles and mica

Why mica? Why did Sam Ruggles decide to pursue mica? He had no apparent connection to minerals and was a wealthy merchant, first selling groceries then West India goods. Nothing has been documented about his decision, but circumstantial clues suggest it may have been related to maritime applications such as compass cards (Figure B.19) and ship-board lanterns (Figure B.20). Given Boston's strong association with shipping and ship building, ship chandlers flourished near the harbor, providing supplies and equipment including navigational instruments and lanterns; Sam Ruggles' store was not far from the harbor (Figure 2.2). The term "ship chandler" is derived from the use of candles in ship's lanterns, extremely important for night-time sailing to avoid collisions and as a means of communication (Leslie 1890). Marine compass cards and a variety of lantern styles are among the type of supplies a ship chandler would provide. Figure 2.3 is a Ruggles advertisement from 1836.

ISINGLASS.

SHEET Isinglass for Compass Cards, Signal, Battle, Engine, Common and other Lanterns, Stove, Furnace Doors, &c.

The above article is superior to any thing ever used for the above purposes, on account of not breaking or burning, but standing the most intense heat.

Also, for Mineralogists and others, elegant specimens of Mica, or Talc, constantly for sale, on the most reasonable terms, at store No. 89 Cambridge street, directly opposite Crombie's Tavern, Boston, Mass.

Figure 2.3. One of the Ruggles' early advertisements from 1836 (Stimpson 1836b:7).

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Note that half of the applications listed in this ad are maritime related. Also, early-1800 references mention lanterns (both ship and otherwise) and glass replacement in ships as useful applications for mica (Belknap 1792, 1812, 1813; Willich 1803; Kidd 1809; Merrill 1817).

In addition to the fact that mica in Grafton was not a secret, Sam Ruggles had at least one very good connection where he could have learned of the Grafton mica occurrence. Dr. Jeremy Belknap, author of *The History of New Hampshire*, a recognized authority on New Hampshire, was a resident of Boston in the last 23 years of his life between 1775 and 1798 (Eliot 1910). Belknap had also been an instructor to Peter Thacher in divinity school (Eliot 1910). The Rev. Dr. Peter Thacher became pastor of the Brattle Square Church in 1785 (White 1897), and officiated both of Sam Ruggles' marriages in 1794 and 1798 (BFC 1902; Boston 1903; Bolton 1965). Clearly, the Rev. Dr. Thacher knew both Belknap and Sam Ruggles. Of course, Belknap died about 5 years before Sam Ruggles began searching for mica in Grafton, New Hampshire. But Belknap's 1792 edition of *The History of New Hampshire* was available 13 years prior to Ruggles' first purchase on Isinglass Mountain. Even if Sam Ruggles did not personally meet Belknap through church connections, Thacher knew Belknap well enough to mention Belknap's book to Sam Ruggles. After years of pecking at the mica on Isinglass hill by many, it was Sam Ruggles who recognized the business and financial opportunity and made his first purchase of the property in 1805.

Grafton and Sam Ruggles

There are two basic versions of Ruggles' mining history. One is close to the true history; the other is far from it. At a disadvantage to history, the majority of versions commonly available fall into the latter category. They are based on legend and fantasy with little correlation to history and

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have been repeated by newspapers (Jenks 1992), magazines (Gregory 1971; McMackin 1975), and (to some extent) even by the U.S. Geological Survey (Cameron et al. 1954). The legend goes something like this:

Once upon a time, there was a wily old Yankee farmer living in New Hampshire. In 1803, he found mica on his property and recognized its value. He put members of his large family to work, digging out the mica. Then he hid the mica under the farm produce on his ox carts, horse and buggy, or sleigh (season- and story-dependent). He drove the carts out of town under cover of night so that competitors wouldn't see what he was up to. He took the mica to Portsmouth, New Hampshire, where he loaded it onto ships sailing for England, where his relatives sold it.

In reality, Sam Ruggles was not a farmer; he was a wealthy Boston merchant from an old New England family (Hazen 1883; Mowbray 1898). Sam Ruggles never lived in New Hampshire; he was born in Billerica, Massachusetts, and lived in and around Boston his entire life (NEHS 1908; Baldwin 1915). Sam's family members were not put to work mining mica; he paid local workers to do the mining (Merrill and Merrill 1817; Hitchcock et al. 1878). In 1803, his "large" family consisted of his wife (29), daughter Elizabeth (3) and son George H. (1). There was little need for secrecy from competitors since he was the *only* mica merchant for several decades, and local folks in Grafton already knew about the mica (Metcalf 1913; Morong 2002). Cushing (1992) comes close to getting the story right.

Morong (2002) also critiques another version of the tale, attributed to Bob Jones who published it on his website, but likely paraphrased other sources (<http://www.rockhounds.com/rockgem/articles/pegmatites.html> [cited 19 September 2011]):

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In Colonial days, windows were hard to come by. The early settlers often greased paper and used it on window openings. The price of glass was outrageously high, as it had to be shipped to New England from England. In fact, the law required that all manufactured goods had to be imported. Consequently, when mica was found in large transparent sheets that could be split thin and used as strong clear window material, the discoverer was pleased, but fearful.

The earliest extraction of mica was from a pegmatite deposit, now called the Ruggles Mine, in Grafton, New Hampshire. Mica was mined there starting in 1803. The farmer who mined it was so secretive, that he smuggled it into Boston where it was sold as imported goods. The threat of arrest hung over his head, as his raw material was not being sent to England to be made into a finished product.

Morong (2002) finds several gaping holes in this version of the “farmer Sam Ruggles” legend, cites prior works discussing mining on Isinglass Hill long before Sam Ruggles (mentioned previously) and correctly points out that Sam Ruggles’ mica sales in the early 1800s were no longer subject to British limitations on local manufacturing as the result of a war begun in 1776.

Export to England

It is very likely that Sam Ruggles sold some of his mica in England, especially after 1815 with the end of the War of 1812. It is unlikely that the sales had any connection to Sam’s relatives. Sam Ruggles’ great-great-grandfather left England in 1637, 133 years before Sam was born (Paige 1883).

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A rare geological event could have had an effect on mining in 1816. As consequence of the 1815 eruption of Mount Tambora in Indonesia, 1816 was known as “the year without a summer” in New England, making quarrying activity, generally at a peak during the summer months, very unpleasant.³²

The author and his research assistant³³ visited the Northeastern Region office of the National Archives and Records Administration located in Waltham, Massachusetts, to search manifests and impound books for exports of isinglass (mica). Unfortunately, we learned *after* our arrival in Waltham (despite all previous email correspondence over several months) that export records before 1895 were destroyed in a fire. Likewise, Portland, Maine, had a similar fate to records kept there. Export records for Portsmouth, New Hampshire, were stored for a while in Washington DC; but when the time came to ship them to Waltham, they could not be found. In effect, there is very little chance of finding *any* early 1800s export record of mica (or anything else, for that matter). A search of Massachusetts newspapers listing shipping news found sparse listings of exported items, and nothing pertaining to isinglass or mica. Another search for import records in England came up empty, and contact with British firms still in business who imported and sold mica in the mid- to late-1800s revealed no records of U.S. mica imports.

A few documents do suggest the export of mica from the U.S. abroad. Early examples are Merrill and Merrill (1817), and Farmer and Moore (1823). Barnard and Guyot (1877:461) state: “At present mica is exported from this country [U.S.] to Europe.” Similarly, Morris (1898:2045), referring to mica, offers “It is largely found in New Hampshire, and is an important article of export to Europe.”

There are also British documents referring to mica importation into England. For example, Martin (1866), or

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Robins (1939:130) which states that mica "... came into England in the sixteenth century under the name of 'Muscovy glass'...." Waterston and Simmonds (1863) state that large sheets of mica, mostly from Siberia, were imported into Great Britain. England also had a vigorous trade with India which exported 5 tons of mica to Great Britain in 1861 (Balfour 1873). Hanks (1882:255) provides a quote from a letter by Henry Jacoby dated 30 Jan 1882, addressed to H. G. Hanks: "It [mica] comes mostly from East India, shipped via Calcutta to England." Late in the 19th century, "Almost the entire mica supply for Great Britain has heretofore come from the East Indies, but the product of Canadian mines is likely, for the near future, to take an important place in the home and Continental markets..." (Alabaster and Gatehouse 1897:627).

A definitive answer on the question of Ruggles mica exports to England and the volume of that trade is pending reliable documentation.

International Trade 1807 ~ 1815

The early 1800s was not a good time to start a business that expected trade with Europe and England. England had been at war with Napoleon Bonaparte in France for years (1803 – 1815). The relationship between the recently formed United States with England and France had rapidly deteriorated. In Europe, a blockade resulted in a counter blockade in a commercial war. Britain closed most European harbors to American trade unless they first did business with England. American ships that complied with England's regulations were seized by the French. The United States was at risk of being drawn into the war in Europe.

President Thomas Jefferson hoped to avoid entering the war by pressuring England and Europe through economic means. Congress implemented a non-importation act that refused entry of specific British products into the

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U.S. Congress then passed Jefferson's plan as The Embargo Act of 1807 that prohibited any American vessel from leaving for a foreign port. This was followed by additional acts that restricted U. S. trade with foreign countries. Avoiding a war seemed like a noble cause, but the toll on American businesses was enormous. The result was the War of 1812 between the U. S. and England (1812 – 1815).

Until its repeal in 1849, British Navigation Acts imposed stringent rules concerning the import and export of goods to Great Britain, British possessions, Asia, Africa and America. In a 1901 historical review, the Annual Report of the Commissioner of Navigation by the U.S. Bureau of Navigation (USBN 1901:53) states: "The British navigation acts gave various and considerable privileges to British ships in foreign trade, from which the commerce and industries of the Empire suffered." Lindsay (1876:107-108) summarizes the laws as follows in "... a condensed recapitulation of the principles of these extraordinary laws, as they stood in 1847 ..." (feel free to skim to get the gist):

- "1st. Certain enumerated articles of European produce could only be imported into the United Kingdom, for consumption, in British ships, or in ships of the country of which the goods were the produce, or in ships of the country from which they were usually imported.
- 2^{ndly}. No produce of Asia, Africa, or America could be imported for consumption into the United Kingdom from *Europe* in any ships; and such produce could only be imported from any other place in British ships, or in ships of the country of which the goods were the produce and from which they were usually imported.

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- 3^{rdly}. No goods could be carried coastwise from one part of the United Kingdom to another in any but British ships.
- 4^{thly}. No goods could be exported from the United Kingdom to any of the British possessions in Asia, Africa, or America (with some exceptions with regard to India), in any but British ships.
- 5^{thly}. No goods could be carried from any one British possession in Asia, Africa, or America to another, nor from one part of such possession to another part of the same in any but British ships.
- 6^{thly}. No goods could be imported into any British possession in Asia, Africa, or America, in any but British ships, or in ships of the country of which the goods were the produce, provided, also, in such case, that such ships brought the goods from that country.
- 7^{thly}. No foreign ships were allowed to trade with any of the British possessions unless they had been specially authorized to do so by Order in Council; and
- 8^{thly}. Powers were given to the Queen in Council which enabled her to impose differential duties on the ships of any foreign country which did the same with reference to British ships; and also to place restrictions on importations from any foreign countries which placed restrictions on British importations into such countries.”

One consequence of such strict laws on commerce is expressed by Walsh (1827:270): “But in what does it

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result? The Declaration of North American Independence, is the first great answer to this question.”

Whence 1803?

Documented evidence that Sam Ruggles actually began mining mica in 1803 has yet to be found. Until then, 1803 should be considered an unreliable date, and the occasional qualifier *about* 1803 should be taken seriously.

The early history of the Ruggles mine is poorly documented. One suggested start date for Ruggles mining is very general; D. L. Stran, quoted in Parker (1894:750), gives the Ruggles start date as “... the commencement of the present century.” Four years later, Ernest A. Barney (1898:34) also offers a nonspecific date of “... more than one hundred years ago.” To be clear, though, Barney was not referring specifically to Sam Ruggles, but local folks who were taking out mica before Sam purchased the property.

One of the mica industry pioneers, Sylvester A. Mitchell, business partner of Joseph S. Bowers and knowledgeable about mica mining in New Hampshire, commented to E. W. Parker of the U.S. Bureau of Mines in 1894 “... the first mica mining in that State was carried on by a Mr. Ruggles at Grafton, in Grafton County, but the date of his operations is uncertain” (Parker 1894:751). Even for residents of New Hampshire actively engaged in the mica business in the 1890s, the start date at Ruggles mine was apparently not common knowledge.

The first mention of a specific date was made by Albert J. Hoskins (1899:507) where he states: “The most important producer in Grafton is the old Ruggles mine, which has been in constant operation since 1803, and has produced over \$8,000,000 worth of mica” Hoskins, born in Colorado in 1870, was working in New Hampshire in the late 1890s buying scrap mica from mine dumps (Hoskins 1899; USFC 1900p). Charles Ruggles, the last of

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Sam Ruggles' children involved in the mica business, was born 4 years after Sam Ruggles bought the first property in Grafton, and died the year before Hoskins was born. Hoskins' information is at best 2nd- or 3rd-hand from a source that was never disclosed. The cumulative production value of \$8-million (current equivalent of over \$221-million) is also stated without reference.

In the early 1900s, Hoskins' "1803" statement and production value were paraphrased by Fritz Cirkel, George W. Colles and Walter R. Ingalls which began the repetition process necessary to manufacture a 'historical fact.' Colles (1901:741) repeats Hoskins' 'data' in a footnote, but without specifying the source of that information. Cirkel (1905:99) repeats Hoskins' 'data' and names Hoskins (1899) as the source. Colles (1905c:330, 1906c:59) repeats Hoskins 'data,' and once again does not disclose Hoskins as the source. Ingalls (1906:446) repeats statements by Colles and gives credit to Colles (1905c) as his source. Unfortunately, Ingalls probably was not aware that the statements actually originated with Hoskins (1899) since Colles, like Hoskins, does not mention the source of this information.

When the 1803 date was repeated in 1914 (with no supporting reference) by the well-respected U.S. Geological Survey geologist Douglas Bovard Sterrett, its acceptance as 'history' was all but assured. At first, Sterrett was cautious in U.S. Geological Survey Bulletin 580-F by stating: "Mica mining in the United States began with the opening of the Ruggles mine in Grafton County, N.H., *about* 1803" (Sterrett 1914:69; emphasis added). Two years later, Sterrett makes the absolute statement: "Mica mining in the United States commenced in 1803 with the opening of the Ruggles mine, in Grafton County, N.H." (Sterrett 1916:69). Once again, no reference is given to support that very specific statement.

And that is how the year 1803 became set in stone.

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Sam Ruggles' mica business: ~1805 - 1834

There is circumstantial evidence that 1803 is too early. On 2 September 1890, a statement before the U.S. Senate by Charles L. Randall, Sam Ruggles' grandson, president of Ruggles & Randall Mica Company and manager of the mine, had a statement entered into the Congressional Record relating to the mica tariff hearings. Charles Randall stated the "... mica industry has been an established industry of this country for a period of more than eighty years" (USSN 1890:1). By rounding off to the nearest decade, 'more than' suggests it began between 1805 and 1810; if the real inception date were 1803 he could have easily stated "more than 85 years" or "almost 90 years." Sam Ruggles kept very poor accounting of his mica trade (Cushing 1992). However, it is possible to follow his land purchases through reliable and well-documented records that are maintained by the Grafton County Registry of Deeds in North Haverhill, New Hampshire.

A stronger argument that 1803 is too early is that Sam's very first purchase on Isinglass Hill in Grafton, New Hampshire, was on 5 July 1805 (Figure 2.4) (GRCNH 1805). This is the earliest date on record to suggest a legal starting point for Sam Ruggles' mica business. Sam bought 50 acres (20 ha) for \$170 from Joseph Hoyt, Jr., son of a founding member of Grafton (GRCNH 1805; Hubbard 1874; Child 1886). A year later on 15 September 1806, Sam Ruggles bought 200 acres (81 ha) for \$500 from John Haskell³⁴; the property was adjacent to his first purchase (GRCNH 1806).

In 1810, Sam Ruggles made three more land purchases in Grafton. On 7 May 1810, he bought 50 acres (20 ha) from Russell K. Mason for \$90 and 22.5 acres (9.1 ha) from James Atwell for \$28 (GRCNH 1810a, 1810b). Two days later, he bought 23 acres (9.3 ha) from James Spooner for \$34.50 (GRCNH 1810c). This gave Sam Ruggles a total of 345.5 acres (140 ha) in Grafton in 1810.

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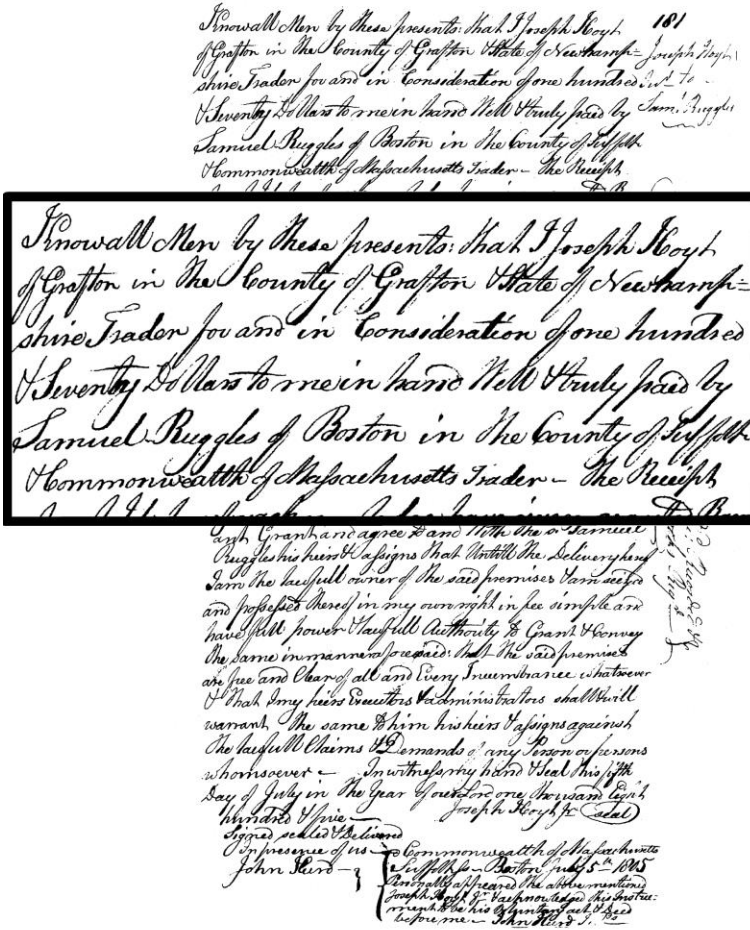


Figure 2.4. Deed for Sam Ruggles first purchase of land on Isinglass Hill in Grafton, New Hampshire, in 1805 (GRCNH 1805). The inset shows the opening sentence magnified which states: “Know all Men by these presents: that I Joseph Hoyt of Grafton in the County of Grafton & State of New Hampshire Trader for and in Consideration of one hundred & seventy Dollars to me in hand Well & truly paid by Samuel Ruggles of Boston in the County of Suffolk & Commonwealth of Massachusetts Trader – the Receipt ...”

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On 1 February 1812, Sam used all this land as collateral on a loan of \$850 from William McKean, another resident of Boston and tobacconist at 49 Fish Street (Cotton 1805, 1807; GRCNH 1812; USFC 1850q). The terms called for repayment within 5 years with interest.

Early production at the Grafton mine was not documented, and thus quantities are unknown. Merrill and Merrill (1817:138) using data collected in 1815 offer “[m]any people are employed every summer in collecting it” and “This glass when prepared is transported to Boston, and from thence large quantities are exported to England, probably for ship lanterns.” Portsmouth is mentioned in some accounts as the port of export, but Boston would seem a more likely, particularly since Sam Ruggles lived in Boston and maintained “a stock of mica in Boston” (GRCNH 1863:548). Farmer and Moore (1823:144) also state “It requires much labor to obtain this glass, which, when prepared, is transported to Boston, and from thence exported to England.” Any similarity between Merrill and other gazetteers was no accident. Plagiarism was once commonplace; that began to change in the 18th century, but not soon enough for Eliphalet and Phinehas Merrill.

In Boston directories between 1803 and 1823, Sam is listed as a merchant of West India goods and a grocer with no mention of mica or isinglass (Cotton 1803, 1805, 1807; Frost and Stimpson 1802, 1823). No Ruggles advertisements are seen in the newspapers during this time.

The earliest advertisement for Ruggles mica that could be found is 9 November 1825 in the *Boston Semi-Weekly Advertiser* (GNBK 1825):

Sheet Isinglass for Sale

Constantly for sale at store corner of Cambridge and Blossom streets, opposite Crombie’s Tavern, a complete assortment of the above articles of all qualities and sizes,

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suitable for Compass Cards, Stove Faces, Lanterns, &c. which will be sold on reasonable terms.

It does not mention the name Ruggles, however, but there is little doubt about the source. Compared to other early Ruggles advertisements (such as the one illustrated from 1836 in Figure 2.3), the wording matches very closely (“constantly for sale,” “on reasonable terms”), the location (“Cambridge and Blossom streets”) and usage of a local landmark as a location reference (“opposite Crombie’s Tavern”) clearly indicate a Ruggles advertisement. Also, George H. Ruggles’ home address is given as “Blossom corner Cambridge” in 1839 (Stimpson 1839:345).

Crombie’s Tavern was on the corner of Garden and Cambridge Streets. Garden Street is on the south side of Cambridge Street directly opposite Blossom Street to the north (Frost and Stimpson 1823; Stimpson and Clapp 1832).

Sam continues to list his occupation as a West India goods merchant through 1830. Unambiguous evidence of Sam Ruggles selling mica appears in the 1831 Boston Directory. The listing states that “Sam’l Ruggles” is in the sheet isinglass business at 89 Cambridge, with a home on Blossom Street (Stimpson and Clapp 1831:280). Charles and George Ruggles are also listed with the 89 Cambridge business address (type of business not specified) (Stimpson and Clapp 1831:280). This evidence suggests that before 1831, Sam Ruggles experiment in selling mica was not yet earning enough that he could drop his dry goods business completely. By 1831, he must have been selling enough mica to live on comfortably.

In 1836, Sam is listed again as selling isinglass from a store at 89 Cambridge Street, Boston, and an ad appears in the advertisement section for isinglass, mica and mineral specimens giving the same Cambridge Street address

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“directly opposite Crombie’s Tavern” (Figure 2.3) (Stimpson 1836b:7).

On 8 November 1827, George H. Ruggles, Sam’s eldest son, used 200 acres (81 ha) of his father’s land as collateral on a \$610 loan (to be repaid in 5 years with interest) from Otis Barney (22), a farmer in Grafton, New Hampshire (GRCNH 1827).

There are essentially no accounts of Ruggles mica mining production prior to 1840. According to a report by D. L. Stran of Grafton Center as published in Parker (1894:750):

At first and for many years the work was carried on in a desultory way. About the period of 1840 there was an increased demand for this mineral, and more extensive operations were carried on. About 1860 there was a greatly increased demand, and from that time down to 1885 this deposit was in the full tide of prosperity. This property being owned by private parties, with their headquarters in Boston, and they for many years having a monopoly of the mica business, but little could be ascertained of the output or its value.

H. B. Pulsifer (1914:141) states essentially the same:

The Ruggles mine near Grafton was the first mica mine worked in the United States. It was opened early in the nineteenth century, and operated in a desultory way until 1840. Operations were on a larger scale from that time until 1860, and then were pushed energetically until 1885.

Sterrett (1914:69) concurs with the above statements.

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There is an error in Jackson (1840, 1844) that mistakes the name “Ruggles” with “Ingalls.” For example, in the 1844 edition on page 115, Jackson writes:

About a mile and a half from the pot-holes of Orange, there is a very valuable quarry of mica, which is extensively wrought by Mr. Ingalls, a mica dealer of Boston.

Unless you’re looking for it, you might miss the Errata on page 376 of the 1844 final version which corrects “Mr. Ingalls” to read “Mr. Ruggles.” The original text on page 115 was never corrected, however. Cameron et al. (1954:233) apparently overlooked the Errata and repeats the “Mr. Ingalls” error.

George H. Ruggles’ mica business: 1834 - 1863

After Sam Ruggles sold the mica business to his son George in 1834 for \$2,500 (approximately \$58,140 in current value), George became much more active in the mica business (GRCNH 1834). Six years prior to George taking the reins, George purchased property and buildings in Grafton, New Hampshire, from Elias Haskell of Boston (GRCNH 1828). Sam Ruggles continued with mica sales at least until 1839 based upon business letters to and from Sam Ruggles held in a private collection. A close examination of the 1838 Sam Ruggles letters shows that they were written by George H. Ruggles, and then signed by Samuel Ruggles.

George is responsible for the majority of advertisements that appeared for Ruggles’ mica (e.g., Figures 1.8, 1.9, 2.9, 2.10). Curiously, the listing in Dickinson (1842:99) states “... Importer and Dealer in Isinglass or Mica” No mention is made of where the

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mica was imported *from* (New Hampshire?), and this is the only time that “imported” was ever used when describing the Ruggles’ mica business. That same year, an advertisement that appeared in the Boston newspaper *Daily Atlas* makes no mention of imported mica (GNBK 1842b).

1840s mine production

Another change that occurred with George Ruggles at the helm is that some production figures were becoming available. Hitchcock et al. (1878:90) state:

In Grafton, the oldest and best known establishment is that of the Ruggles company, upon Isinglass hill. About 1840 they obtained some 600 or 700 pounds annually, valued at \$1,500³⁵.

Jackson (1841:151) wrote about Ruggles in this same time period that “They quarry and sell about \$1000 worth per annum” In the final version released 3 years later, Jackson (1844:115) states:

Mr. [Ruggles] had obtained about sixteen tons of mica, which was packed up in boxes and stowed away in a neighboring barn. Each box contains about 600 weight of mica, hence the amount then quarried and on hand was 32,000 pounds. There is, however, much lost in trimming and preparing it for market, so that probably not more than half this quantity will be sold for stove or lantern [*sic*] windows. The small mica and trimmings sell for a low price, being used with gypsum for filling the interstices between the walls of the iron safes for banks and counting rooms.

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Jackson (1844:180) also states:

The Grafton quarry is wrought by persons resident in Boston [primarily Sam Ruggles and his sons George H. and Charles Ruggles], and their principal market is New York. They quarry and sell about \$1500 worth per ann[u]m, and obtain from \$2 to \$3 per pound for the trimmed plates, suitable for use. The rough irregular plates are sold at prices varying from \$1 to \$2 per pound.

Once mined, the mica was sorted into grades according to size and quality. Figure 2.5 illustrates an example of a “mica shack” where mica was sorted and stored. First quality mica was loaded into sacks and stored inside the building. Outside the building are a pile of a lower-grade mica in the foreground, and common mica in the background.



Figure 2.5. Mica grading shack near Cardigan Station, New Hampshire. Sacks of high grade mica are inside the building, lower grade pile of mica in the foreground, and common mica in the background. From Pulsifer (1914:143).

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Another factor in the increasing demand for mica was that the US was moving inexorably from handcrafted to industrial production methods. An example of this demand can be found in Tooker (1955:74) that relates the story of a merchant in Philadelphia, Nathan Trotter, searching for a source of sheet mica for local stove manufacturers [note: spelling and syntax are quoted as written]:

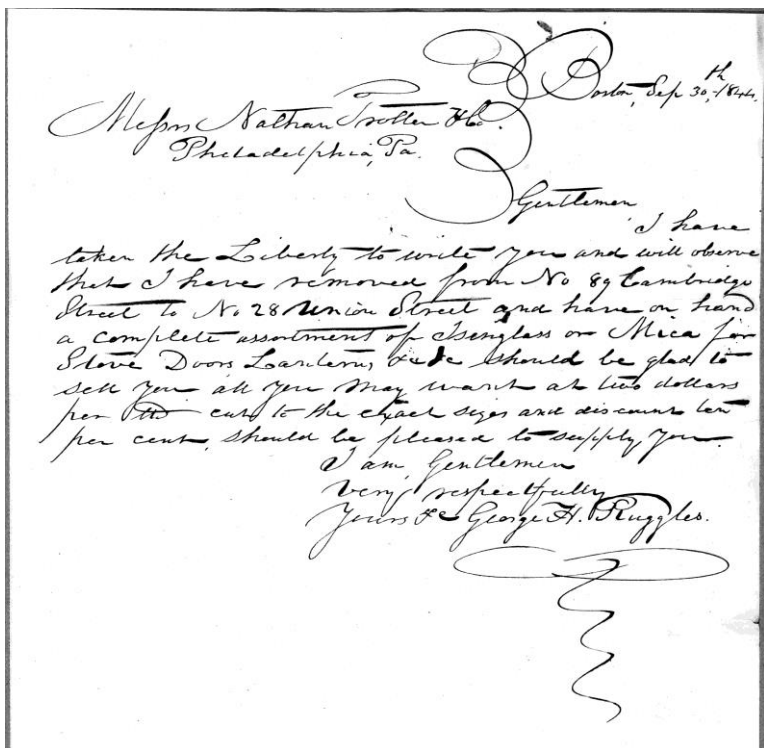
Occasionally there was correspondence about a new article. In 1843 Nathan Trotter asked Samuel May & Company, of Boston, for information about mica, saying it was used in doors of coal stoves and he understood it was procured of Ruggles in Boston. May & Company informed him that mica was a sheet talc and added: "by some call'd /improperly we believe/ sheet isinglass." Later Ruggles' clerk wrote: "Mr. Ruggles is now up to the mountin [*sic*] with men to work to blow it [mica] out. It comes out of hard flinty rocks, quarts [*sic*] & Feldspar such as dentist use to make teeth with." Mica was ordered to be clear and handsome, not broken at the corners and of 5, 5½, 6, and 7 inch squares.

Sam Ruggles died in the spring of 1843, and the initial reply from May and Company to Nathan Trotter was mailed in December 1843 (May and Company 1843). Letters to Nathan Trotter confirm that business was conducted with George H. Ruggles (Ruggles 1844, 1852). The "Ruggles' clerk" mentioned by Tooker (1955:74) is in fact George Ruggles' brother-in-law, Henry Randall, who wrote the letter on 20 August 1850 when George was in Grafton visiting the mine (Randall 1850; USFC 1850o). Nathan Trotter's ledger for 1840 to 1849 indicates purchases of mica from George H. Ruggles in 1847, 1848 and 1849 (Trotter 1849:346). In 1848 and 1849, Trotter

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was *also* purchasing mica from James and Joseph S. Bowers (Trotter 1849:102). In fact, competing purchases were made in the same month of December 1849.

On 30 September 1844, a year after Sam Ruggles' death, George H. Ruggles wrote to Nathan Trotter to inform him that he had moved his office from 89 Cambridge Street to 28 Union Street in Boston (Figure 2.6) (Ruggles 1844; GNBK 1844, 1845).



Boston, Sept 30, 1844.

Messrs Nathan Trotter & Co.
Philadelphia, Pa.

Gentlemen

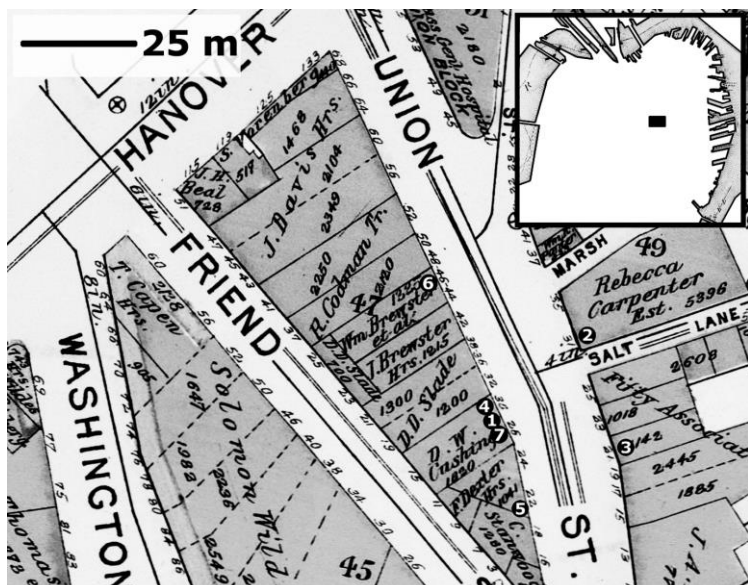
I have taken the Liberty to write you and will observe that I have removed from No 89 Cambridge Street to No 28 Union Street and have on hand a complete assortment of chrysolite or Mica for Stone Doors Lascars, &c &c I should be glad to sell you all you may want at two dollars per 1000 and to the exact size and discount ten per cent. should be pleased to supply you.

I am Gentlemen
Very respectfully
Yours &c George H. Ruggles.

Figure 2.6. Letter from George H. Ruggles to Nathan Trotter Company written 30 September 1844 (Ruggles 1844). Trotter Collection. Baker Library Historical Collections, Harvard Business School. Used with permission.

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George remained at 28 Union until 1847 when he moved to 31 Union St. (Figure 2.7: ①, ②) (Adams 1848; GNBK 1851). In 1852, he settled in at 21 Union Street where he maintained an office through 1862 and probably up to his death in 1863 (Figure 2.7: ③) (Adams 1852, 1853, 1854, 1855a, -b, 1856a, -b, -c, 1857a, -b; Damrell et al. 1853; GNBK 1854, 1856, 1859; Adams and Sampson 1858b, 1859, 1861, 1862b).



Key	Address	Years	Occupant(s)
①	28 Union	1845-47	George H. Ruggles
②	31 Union	1848-51	George H. Ruggles
③	21 Union	1852-62	George H. Ruggles
④	30 Union	1864-67	Joseph D. Gould, Charles Ruggles
⑤	20 Union	1868-72	Joseph D. Gould
⑥	46 Union	1882	Charles L. Randall
⑦	26 Union	1883-94	Charles L. Randall

Figure 2.7. 1895 map showing locations of mica business office addresses on Union Street, Boston. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.

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The 21 Union Street building can be seen in the right side of the ca. 1910 photograph in Figure 2.8. Even in 1910 that location was associated with cast-iron stoves, a major market for mica. After 1857, George's mica advertisements indicate the office was "up stairs" (Adams and Sampson 1858b, 1859, 1861, 1862a, -b).

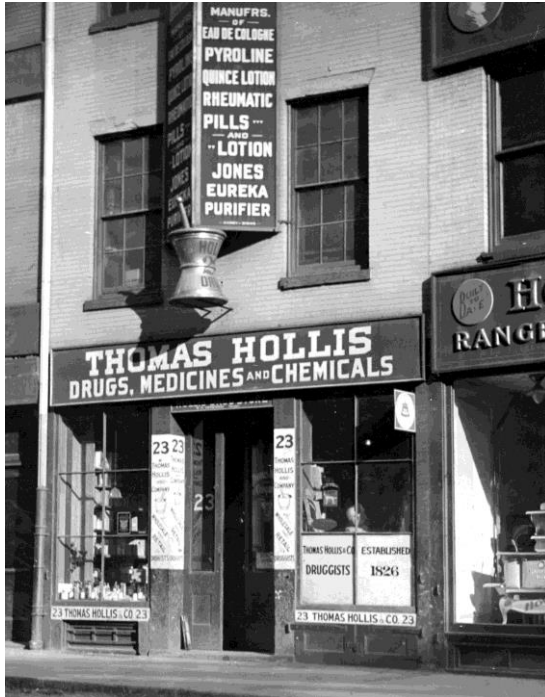


Figure 2.8. View of 23 Union Street, Boston ca. 1900 to 1920, adjacent to the former Ruggles' business at 21 Union Street at the far right of the image. Photo from The Bostonian Society. Used with permission.

In London, England, 1851, George Ruggles exhibited a 91 kg (200 pound) mica book at the Great Exposition of the Works of Industry of All Nations (also simply known as The Great Exhibition in what was to become a series of

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“World’s Fairs”). He is listed in the Official Catalogue as United States exhibit number 416 and received an honorable mention (Royal Commission 1851, 1852; USSN 1890).

George H. Ruggles not only began advertising, but also was making his mica product more visible by entering specimens in various contests. Other times George got public exposure he was interviewed by the press. For example, the article in the 1852 Farmers’ Monthly about the mountains of New Hampshire stated that “[i]n Grafton is a well known locality of mica, or *ising-glass*, also own [*sic*] and worked by a gentleman of Boston, George H. Ruggles Esq.³⁶” (Potter 1852:375). Among the lesser known and perhaps more unusual awards, he received a diploma in 1855 from the New Hampshire Agricultural Society for mica in the category “Dentistry, Chemicals, Minerals &c.” (J. O. Adams 1856:98). He received another award in 1857 at the Seventh Annual Fair of the South Carolina Institute where he was presented with a Diploma for “... specimens of Sheet and Cut Mica of uncommon purity” (GNBK 1857:1).

George’s brother Charles Ruggles’ involvement in the business is not suspected of being more than his profession as a bookkeeper (Adams 1851, 1855b) and clerk as when Charles wrote the letter to Nathan Trotter on 21 August 1852 (Ruggles 1852). On the 1855 Massachusetts State Census, he lists his occupation as “Ising Glass” (MSSC 1855h). Charles continued to have a business office at 30 Union Street at least for the years 1864 – 1865; Charles Ruggles’ last business address was 20 Union Street in 1868, one year before his death (Figure 2.7: ④, ⑤).

After George Ruggles purchased a tract of land in August 1858 (GRCNH 1858a), he changed his land acquisition strategy. Starting in December 1858, he began purchasing only the mineral rights to the property (GRCNH 1858b). This was no doubt an attempt at economy, since

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instead of paying \$2 to \$5 per acre (\$4.104 to \$12.35 per ha) for the land, he paid \$0.23 to \$1 per acre (\$0.57 to \$2.47 per ha) for the mineral rights (GRCNH 1827, 1834, 1846, 1850, 1851, 1853, 1858a, -b, 1859, 1860a, -b, -c, 1861a, -b, -c).

George was definitely working on expanding the Ruggles mica business by publishing advertisements around the country in, for example, Ohio (GNBK 1845a), Maine (GNBK 1849a), Washington DC (GNBK 1849b), Gloucester, Boston and elsewhere around Massachusetts (GNBK 1851, 1854, 1856, 1859), and Albany, New York (Adams and Sampson 1858a, 1859, 1862a) (Figures 2.9, 2.10).

To Stove and Lantern Manufacturers.

SHEET ISINGLASS OR MICA,

For Compass Cards, Signal, Battle, Engine, Common,
and other Lanterns; Stove, Furnace Doors, &c.

WHOLESALE AND RETAIL.

The above article is superior to anything ever used for the
above purposes, on account of not breaking or burn-
ing, but standing the most intense heat.

Also, for Mineralogists and others, *elegant specimens of*
MICA, FELDSPAR, CRYSTALLINE, QUARTZ, &c.

Also, **SAFETY LANTERNS**, of various sizes, a very su-
perior article, warranted not to break by falling, and are
decidedly the safest, cheapest, and best of the kind in use.
Constantly for sale on the most reasonable terms, at

No. 21 UNION STREET, BOSTON.

GEORGE H. RUGGLES.

N. B.—The Isinglass or Mica will be cut to any reasonable size,
if requested. All orders for the article promptly attended to, and
thankfully received.

Figure 2.9. Ruggles 1856 advertisement by George H. Ruggles (Adams 1856a:27).

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Figure 2.10. Ruggles 1857 advertisement by George H. Ruggles (Adams 1857a:4).

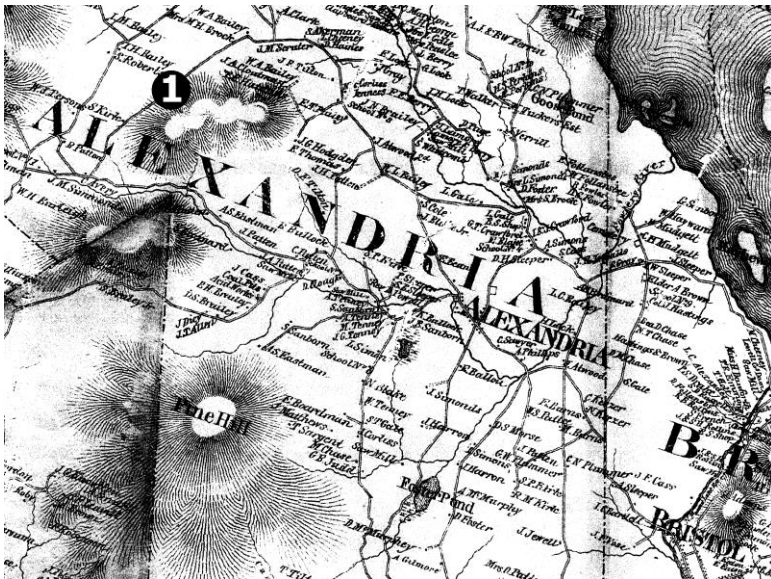


Figure 2.11. 1860 map of Alexandria, New Hampshire, about 15 km (9 miles) east of Grafton. Hutchins Hill indicated by ①. Modified from: Map of Grafton County, New Hampshire. New York: Smith, Mason and Co. Courtesy New Hampshire Historical Society.

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In 1861, George Ruggles began to extend the Ruggles mining operations beyond Grafton, New Hampshire, where he and his father had been working for 56 years. On 31 August 1861, George purchased 100% of the mineral rights to 35 acres (14 ha) on Hutchins Hill in Alexandria, New Hampshire, from Bradford Bullock (Figure 2.11) (GRCNH 1861a, 1861b). Again on 12 October 1861, he purchased mineral rights to another property on Hutchins Hill, bringing the total there to more than 164 acres (66 ha) on which he owned 100% of the mineral rights³⁷ (GRCNH 1861c). The land had already been prospected and was known to contain valuable mica occurrences. For example, Child (1886:117) writes “Mr. [John] Patten has a fine mica mine on his farm from which may be taken sheets of mica fifteen inches square.” Both John Patten and Bradford Bullock had farms just south of Hutchins Hill.



Figure 2.12. Pattuck quarry, Pit B, Alexandria, Grafton County, New Hampshire. The open pit quarry has a small tunnel into the back wall. Photo by the author, 2007.

2: Ruggles Mining History



Figure 2.13. Abandoned ore cart, E.E. Smith mine on Hutchins Hill, Alexandria, New Hampshire. Photo by the author, 2004.



Figure 2.14. Water filled pit, E.E. Smith mine on Hutchins Hill, Alexandria, New Hampshire. Photo by the author, 2004.

2: Ruggles Mining History

On 6 May 1863, George H. Ruggles died a little more than a year and a half after securing mineral rights in Alexandria, New Hampshire. Charles L. Randall included in his statement to the U.S. Senate Tariff hearings in 1890: "...Ruggles & Randall mica mines of Grafton and Alexandria..." (USSN 1890:2). The Alexandria properties were definitely worked after George's death and were known as the E. E. Smith mine (previously Bullock mine) and Pattuck quarries (Cameron et al. 1954; etc). The author visited some of these properties on several occasions ca. 2004-7 (Figures 2.12, 2.13, 2.14).

Gould & Ruggles, Joseph D. Gould: 1863 ~ 1878

Joseph D. Gould, Sam Ruggles' nephew and wealthy merchant in Roxbury, was appointed trustee of the estate on 23 May 1863 by the heirs Elizabeth [Ruggles Prentice] Lawrence, Sarah Ann [Ruggles] Randall, Charles and Mary Ruggles (Figure 2.15) (USFC 1860f; GRCNH 1863). The only living heir who did not sign the agreement was William H. Ruggles who was living on a farm in Lincoln, Massachusetts, under the guardianship of William F. Wheeler (USFC 1850d, 1860c; MSSC 1855a, 1865a; Ruggles 1875).

OPPOSITE THE ADAMS HOUSE.

JOSEPH D. GOULD,
Trustee for the heirs of the late
GEORGE H. RUGGLES,
Wholesale and Retail Dealer in
MICA OR ISINGLASS,
No. 20 UNION STREET,
BOSTON, MASS.

C. T. MATHIAS & CO.

Figure 2.15.
Ruggles 1864 advertisement under the trusteeship of Joseph D. Gould after the 1863 death of George H. Ruggles (Adams, Sampson and Company 1864:8).

2: Ruggles Mining History

Between 1864 and 1867, Joseph Gould kept an office at 30 Union Street, Boston (Figure 2.7: ④) (Coolidge 1863, 1864, 1865, 1867; Adams and Sampson 1864, 1865). Initially, Charles Ruggles shared the office. In the coming years, this would become a very uncomfortable place to work for both gentlemen.

Charles Ruggles was a bookkeeper who apparently helped with the mines financial records, but did not appear particularly involved in mining operations. On the other hand, the husband and children of Sara Ann [Ruggles] Randall, heirs by law, began taking a strong interest in the mica business. Samuel H. Randall, Sam Ruggles' grandson, began purchasing additional mineral rights around Grafton in 1864, the year his mother Sarah Ann [Ruggles] Randall died (GRCNH 1864a, 1864b; MS DR 1864).

In 1866, Joseph D. Gould sued the Randall's for payment as trustee of the Ruggles estate and won, confiscating property and buildings (GRCNH 1866b, -c). Two years later the Randall's then filed their own suit against Gould and won, but Joseph D. Gould was still the trustee (GRCNH 1868b, -c; see Chapter 1 Ruggles Family History for more details). It should come as no surprise that, after all the legal battles, Charles Ruggles no longer shared an office with Joseph Gould. To replace Charles, Joseph Gould turned to 24-year old George Byron Watson for help in 1871 (USFC 1850p, 1860r, 1870k, 1880v, 1900l, 1910j). In the previous year, the census indicates that George B. Watson (23) worked as a brick mason with his older brother Joel (35). However, he showed a keen interest in minerals at least as early as 1869 since he collected specimens of mica, tourmaline, garnet, quartz etc. from Grafton, New Hampshire, and donated specimens to museums (Essex Institute 1869). It's possible that he was working for Joseph D. Gould at that point, but no supporting documentation has been found.

2: Ruggles Mining History



Figure 2.16. 1872 photograph of downtown Boston after the great fire. Image in public domain.

After the great Boston Fire of 1872 (Figure 2.16), Joseph Gould temporarily moved his office to 51 Commercial Street, Boston (Figure 2.17: ①), for a year, then settled at 28 Oliver Street between 1874 and 1876 (Figure 2.18: ③). For the last two years of his business (and life), Joseph Gould was at 101 Milk Street, Boston (Figure 2.18: ①). George B. Watson worked with Joseph Gould at each address until Gould's health began to fail; in 1878, George Watson moved to New York with his wife and two children (USFC 1880v).

On 13 September 1872, Henry Randall (65) effectively retired from active involvement in the mica business when he transferred his mine property to his children through a quitclaim deed³⁸ for \$1 (GRCNH 1872). By 1889, Sam Ruggles' son-in-law, Henry Randall, and three grandsons (Samuel H., George H. and Charles L. Randall) were involved with mica mines (USHR 1891).

2: Ruggles Mining History

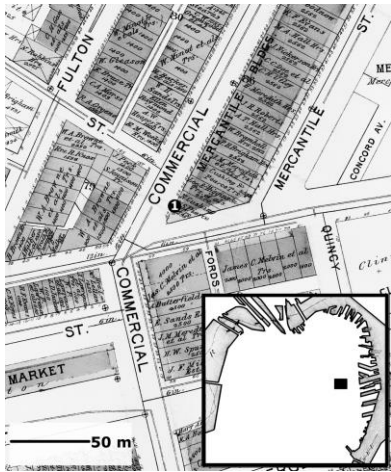


Figure 2.17.

1895 map showing location of Joseph D. Gould's 1873-74 business office address at 51 Commercial Street, Boston: ①. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.

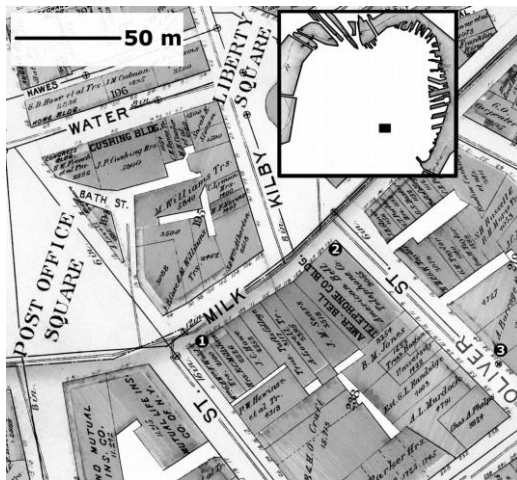


Figure 2.18. 1895 map showing location of Joseph D. Gould's 1879 – 1880 business office address at 101 Milk Street, Boston: ①; Gould, Hitchcock and Company Crockery at 131 Milk Street: ②; Joseph D. Gould 1874 – 1876 at 28 Oliver Street: ③. Inset shows approximate location in central Boston. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.

2: Ruggles Mining History

James Wheeler Kilton (19 September 1831 – 24 March 1877) managed the mining crew in 1874 (NHBR 1831; USFC 1840c, 1850m, 1860q; Fogg 1874; Dickey 1898). He also built two of the saw mills in Grafton (Child 1886).

The 1875 letter written by Mary J. C. Ruggles, Charles Ruggles' widow, gives a rare, first-hand glimpse into the mine activity and operation (Ruggles 1875). She saw plenty of mica (she used the term "glass"), but felt that the mine shop should be closer to the tunnel, apparently to improve production and efficiency. She wrote: "I think if Mr. Gould see[s] to business [and does] not let Watson have the whole controll [*sic*], then the heirs would git [*sic*] their money." This implies that in the mid-1870s, George B. Watson was spending more time in Grafton than Mary J. C. Ruggles cared to see, and apparently had too much influence on the finances of the mine. She then expresses her dissatisfaction with Joseph D. Gould: "Mr. Gould is taking pay for services not done" A last message was written at the top margin of the page (upside down to fit the space - a last thought?) that underscores her concern over outside control of their own finances (corrected for clarity): 'Mr. Gould sent me access this week to \$66.67, and to my son Charles Jr. \$44.45. What has become of all our things?'

After a nearly decade-long dispute, Joseph D. Gould had been fired as trustee in 1879, seven days prior to his death (GRCNH 1879b). On 26 February and 16 March 1880, Charles L. Randall was chosen to manage and sell timber from Ruggles Estate (GRCNH 1880f, 1880h). Then on 21 April 1880, Charles L. Randall was appointed trustee of the George H. Ruggles estate (GRCNH 1880k).

The address for Ruggles Mica Estate given in the 1880 Boston Almanac and Business Directory (Sampson and Davenport 1880a) is "401 Milk Street," but this is obviously a typographical error as Milk Street does not extend beyond address number 173 where it ends at India Street; the address was most likely intended to read "101

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Milk” (Figure 2.18: ①), the same address previously used by J. D. Gould (address reference: G. W. Bromley and Company. 1895. Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia.).

However, the Gould name would not disappear in the mica industry after Joseph D. Gould’s death in 1879; his son William Parker Gould would take up the challenge next.

Mine production in the 1870s

The mica business was booming in the mid-1870s. Barnard and Guyot (1877:461) state: “The demand for mica exceeds the supply, and hence it is a valuable article of commerce.” Referring to Ruggles mine production, Hitchcock (1878:90) states:

In 1869 they marketed 75 boxes of 350 pounds each, worth from \$2.15 to \$2.50 per pound. This makes a total of 26,250 pounds, worth perhaps \$60,000. ... They employed, in 1869, 12 men for seven months of the year.

Gregory (1971) apparently is referring to Hitchcock when he states mine production in 1869 as 26,250 pounds worth \$60,000. Fogg (1874:174) gives the overly-optimistic statement:

This quarry [Ruggles] is extensively worked in the warm season, and yields nearly 100,000 lbs. of mica annually. It is now worked by J. W. Kelton [*sic*] & Co., Grafton Centre.

Mary Jane Cutter Ruggles wrote in December of 1875 that 82 boxes were shipped since January of that year (Ruggles 1875). Estimating 350 pounds per box, that would be about 28,700 pounds shipped in 1875. The Canaan

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Reporter from 1 September 1876 states that the Ruggles estate employed 25 people at the mine.

Hitchcock (1878:90) states that “In January 1877, the Ruggles mine is said to have shipped 3,600 pounds of mica, selling for \$2 per pound.” Oddly, Jenks (1992) states (emphasis added): “In January, 1887, the mine reported it had shipped 3,600 pounds that one month.” Jenks’ sentence obviously contains a typographical error regarding the year, mixing up 1887 for 1877. The two sentences are very similar except for the date.

By the close of the 1870s, the Canaan Reporter (1880) states than in Grafton Center, “Mica mining is going on very briskly in many new places” It is also interesting to learn than raw mica from Ruggles mine was shipped to Boston where it was later trimmed (GNBK 1879f).

Ruggles Mica Estate: 1878 ~ 1886

End of the Ruggles era

In 1878, nine years after the death of her husband Charles Ruggles, Mary J. C. Ruggles sold all of her interests in the Ruggles estate and mine to her son (Sam Ruggles’ grandson) Charles Ruggles Jr. (GRCNH 1878b). Five years later on 19 May 1883, Charles Jr. (26) sold all his remaining interests in the Ruggles estate to Charles L. Randall for \$2,000³⁹ (GRCNH 1883a, -e, -f). Charles Randall then immediately established a trust for his children using the estate just acquired, possibly to avoid problems arising from a sudden, unexpected death, an issue he witnessed firsthand 20 years prior with his uncle George H. Ruggles (GRCNH 1883g). The next year on 20 May 1884, Charles Ruggles sold his mortgage to Charles L. Randall for \$1,000 (GRCNH 1884a).

This brought to a close the 79-year era of Sam Ruggles and his children’s ownership of the mines and buildings on Isinglass Mountain; now the Randall family was at the

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helm, but the 1880s was the beginning of a challenging series of decades for domestic mica providers. Colles (1901:742) writes:

Until about twenty years ago [ca. 1880] these two states [New Hampshire and North Carolina] were substantially the mistresses, not simply of the native market, but of the world's as well, for Europe has no mica of her own. But in the early [18]80's two new countries – Canada and India – almost simultaneously appeared as producers, and their output has grown annually with such rapidity as, in the case of one of them at least [India], to overshadow and even to threaten the existence of the industry in the United States.

Grafton, New Hampshire, remained a focus of mica mining interest, however. The *Canaan Reporter* (1883c) ran the following article in the “Local Department: Grafton” section:

Professor Huntington of Boston, State Surveyor, is stopping at the Grafton House. He was the first one who stopped on the top of the White mountains, in the winter of 1870-71. He went out one day when the wind was blowing 75 miles an hour, and froze his nose in three minutes. A geologist by the name of Willard is also stopping there, in company with Huntington, looking after mica.

The adventurous 1870-71 expedition to Mt. Washington that included Joshua Henry Huntington was described by Charles Henry Hitchcock et al. (1871)⁴⁰. From

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the illustration in the book (Figure 2.19), it appears that it was a *very* long winter.

Figure 2.19.
View of the observatory
interior, Mt. Washington
summit. From:
Hitchcock et al.
(1871:160 over leaf).



VIEW OF INTERIOR OF THE OBSERVATORY

What's in a name?

Before continuing with the Ruggles mining history, consider a brief but fascinating diversion. Curiously, Ruggles mine was not referred to in print as either a “quarry” or “mine” until 1841 when Charles T. Jackson (1841:151) called it “the Grafton quarry.” Even Henry Randall simply called it “the mountin [*sic*]” in 1850 (Randall 1850). Mary J. C. Ruggles did refer to “Ruggles Mines” in 1875 in a private letter (Ruggles 1875), but it was not called specifically “Ruggles mine” in print until 1878 by Charles Henry Hitchcock who mentions that name twice: once in reference to mine production (quoted previously), and again giving its location as a position reference for another quarry “... to the north of Ruggles mine” (Hitchcock 1878:90). This occurred 73 years after Sam Ruggles purchased the property and 35 years after he died; 44 years after George H. Ruggles acquired the property and 15 years after he died. Newspaper reports continued to call it anything *but* Ruggles mine, such as “Ruggles mica estate,” “Ruggles mica ledge” and “Ruggles mica company” in the *New Hampshire Patriot* in 1881 (GNBK 1881b, -c, -d).

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Randall era begins

Cushing (1992:242) states:

When George [H. Ruggles] passed away, the mine's ownership was transferred to his estate. Then George S. [*sic*] Randall bought into the estate and became superintendent of the mine.

This seems very unlikely (particularly in the 1863 time frame) for several reasons (not including the mistake with George H. Randall's middle initial). When George's mother, Sarah Ann Ruggles Randall, died in 1864, he received one-fifth of her share of the Ruggles estate. It wasn't until 1880, 17 years after George Ruggles' death, that George Randall purchased additional shares from relatives to increase his degree of ownership (GRCNH 1880a, -c). Also when George Ruggles died in 1863, George H. Randall, 25 years old, was not involved with either mica or the mine; otherwise, he would quite likely have been included with the 1866 law suit brought by Joseph D. Gould against Samuel H. and Charles L. Randall. During this period, George H. Randall was a clerk (USFC 1860m), entered the cigar business in 1869 (Sampson & Davenport 1869, 1870, 1871a, 1872a, 1873a, 1874b, -c, 1875b; Brown 1870; Dudley 1871; USFC 1870i), and would not become involved with mica mining until 1880 when he became "overseer" of the mine as stated on the census (USFC 1880q).

Between 1872 and 1878, Samuel H. Randall was buying shares in the Ruggles' estate from both family and friends (GRCNH 1872, 1875, 1878c, -d). In the 1870s, Charles L. Randall's interests were centered on medicine; he graduated from Harvard Medical School in 1872 and worked as apothecary and physician (Sampson and Davenport 1872a, 1873a, 1874a, -b, -c, 1875a, -b, 1876a, -b, 1877a, -b, 1878; Harvard 1890, 1920). By 1880, though, Charles L. Randall was involved in the mica trade as

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Ruggles Mica Estate working in the same 101 Milk Street office previously used by Joseph D. Gould (Figure 2.18: ①) (Sampson and Davenport 1880a, -b). Two years later, Charles moved to 46 Union Street (Figure 2.7: ⑥) (Sampson and Davenport 1882a). As shown on the 1880 census, George H. Randall moved to Grafton, New Hampshire, to oversee the mine operation (USFC 1880q; GRCNH 1880a, 1887c, -d, 1892a, -b, -c, 1896b, 1900). On the other hand, he also used New York City as his home address for legal documents over the years (GRCNH 1868a, 1878c, 1880c, -g) when not specifying Boston (GRCNH 1880b, 1883b, -d, 1902). George Randall, like his brother Sam, bought shares from other family members (GRCNH 1880a, -c).

According to their own Congressional testimony, the Randall's made major investments in the infrastructure of the mine to improve efficiency and output, and house their mine workers. This short note appeared in the 14 April 1882 Canaan Reporter: "George Randall is to put a steam power at work on Glass Hill, at a cost of about \$6000⁴¹, which will drill, move stone, and pump water." When appearing before the U.S. Senate in 1890, George H. Randall said (USSN 1890:2):

At the Ruggles & Randall mines at Grafton, N. H., Messrs. Randall have expended over \$120,000⁴² in driving two tunnels several hundred feet under a mountain, built engine houses, placed two 50 horse-power boilers, hoisting drum, steam-drills, large workshops, dwelling houses, car-tracks, also built roads through the woods to the mines.

New workers at the mine, such as drill operators, were being actively sought through newspaper advertisements (GNBK 1881b). In August 1881, there were 8 employees who extracted 500 pounds (227 kg) of mica per week,

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valued at that time at around \$4.50 per pound (GNBK 1881c). In September 1881, they removed a single block of mica weighing over 400 pounds (181 kg) (GNBK 1881d).

According to the 22 April 1881 Canaan Reporter (1881c), the Ruggles Estate paid the second highest taxes in Grafton at \$83.94, and was one of only five who paid more than \$50 in taxes. This remained true in 1883 as well, when the Estate paid \$118.98 in taxes (Canaan Reporter 1883a). 1883 was also the year everyone was excited to have a telephone line run from Grafton to Grafton Center (Canaan Reporter 1883b).

Maggie M. and Samuel H. Randall sold a parcel of land adjacent to the Ruggles estate to Henry Randall as a security on a promissory note for \$845 on 8 August 1884 (GRCNH 1884b).

On the morning of 18 July 1884, burglars broke into Charles Randall's mica store at 26 Union Street and ransacked the place (Figure 2.7: ⑦). They also entered the hardware store next door and stole about \$75 worth of hardware (GNBK 1884). Cushing (1992) reports that mica imports began arriving from India in 1884 and duty-free imports of mica from Canada in 1886.

Child's Gazetteer (1886) lists George H. Randall as a resident of Grafton, part owner of the mica mine on Glass Hill, and owner of mineral rights on several properties amounting to 750 acres (304 ha).

Ruggles & Randall Mica Company: 1887 - 1925

Mary Ruggles Howard died in 1887; she was the last of Sam Ruggles' children in both birth and death (MSDR 1887; MSDB 1887). This was also the year that the Ruggles & Randall Mica Company was officially established as a New Hampshire company with an office at 26 Union Street in Boston, Massachusetts (Figure 2.7: ⑦), and another office in Grafton Center, New Hampshire

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(Johnston 1887; Home Publishing Company 1893; New Hampshire 1925; NHCD 2011). Charles L. Randall was the president of Ruggles and Randall Mica Company, and George H. Randall was the clerk (GRCNH 1887b, -c). Family members who owned shares in the estate established leases with the newly formed company with lease periods ranging from 5 to 31 years (GRCNH 1887a, -b, -c, -d, -e, -f).

One introduction of the new company came as a news brief in Johnston (1887:48):

Mica. – The Ruggles & Randall Mica Company, 26 Union Street, Boston, Mass., have become the successors to the business of C. L. Randall, miner and dealer in mica, and are now prepared to furnish the article in all sizes. They have equipped their mines with all the latest appliances for quick supply, and will fill any order without delay. This mica, which has awards from 17 States of the Union, is particularly useful for electrical purposes, having but slight traces of iron in its composition.

Charles Randall managed the company from the same office used previously, but it now had a new corporate wrapper. This would be important for Charles Randall since it would isolate him from personal liability for the coming losses. W. J. Johnston (1887:46) states that:

I visited the Boston office of the Ruggles & Randall Mica Company recently, and my attention was invited to some very large and magnificent blocks of natural mica, just as they were taken from the mines. Mr. Randall informed me that his company had equipped its mines with the best machinery that could be obtained for getting out the mica. This

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company is desirous of doing business direct with manufacturers of electric light dynamos and users of mica. Mr. Randall says: "My company's mica is especially adapted for electrical purposes, it having but slight traces or indications of iron as an ingredient."

In the fall of 1887, Ruggles & Randall Mica Company had exhibit number 711 in the 16th Massachusetts Charitable Mechanic Association, and won a bronze medal for mica and mica ornaments (Talbot 1888).

In just over a year from its incorporation in May 1887, Ruggles & Randall Mica Company became insolvent (West Publishing Company 1900). George H. Randall testified in his own defense in a trial that took place in Canaan, New Hampshire in March 1888 (GNBK 1888a). The Judge visited the mine to examine cattle that the New Hampshire Society for the Prevention of Cruelty to Animals claimed were worked when unfit for labor. George Randall was found guilty and ordered to pay a fine and all legal expenses. He appealed to the New Hampshire Supreme Court (GNBK 1888a).

The 1888 Boston Almanac still had three entries for mica purveyors: Gould & Watson, Charles L. Randall, and Ruggles & Randall Mica Company (the latter two at the same address) (Sampson and Murdock 1888). Familiar names for mica vendors found in the 1888 Railroad, Telegraph and Steamship Builders' Directory include Gould & Watson, Eugene Munsell & Company, Samuel H. Randall, Ruggles Company, and Ruggles & Randall Mica Company (Railway Directory Publishing Company 1888).

After 1889, however, Ruggles & Randall Mica Company was no longer listed in the Boston Directory; the listing for Mica simply read Charles L. Randall, 26 Union Street, until his death in 1896 (Sampson and Murdock 1889, 1890, 1892, 1893, 1894a, -b, 1895, 1896). According to Drew (1901), Ruggles & Randall Mica Company was

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still ‘functional’ in Grafton. It was officially dissolved in 1925 by administrative dissolution due to an inactive status (New Hampshire 1925; NHCD 2011).

Congressional appearance

Charles L. Randall entered a statement before the Senate hearing on the mica tariff (USSN 1890). His presentation was covered by the *New York Times*, along with many other speakers for and against the tariff (NYT 1890a). One of the sharpest critics of the tariff was J. S. Moore, who not only spoke to the Congress, but also wrote two scathing letters to the Editor of the *New York Times* entitled “The division of the world” and “The mica tariff swindle” (NYT 1890c, -d). Some newspaper articles were undoubtedly vehicles for exaggeration, such as one that appeared in *The New Orleans Item*, 15 September 1904, that stated (GNBK 1904:4):

[...] in one case at least our home consumers are taxed four thousand per cent to sustain a mining interest that is confined to New Hampshire and North Carolina. This interest is the mining of mica, or ising-glass, as it is more familiarly known. ... The famous Ruggles mine is said to have paid its owners \$8,000,000 in dividends ... There is no difficulty about mining mica, and no skilled labor is employed. ... It is said that no money has to be spent in blasting, picks and shovels in the hands of unskilled laborers do the whole work, and that for every dollar spent in taking out the mica, \$10 in return is obtained, so that the cost of producing it is comparatively small, and the demand far exceeds the supply, as there is an immediate market for every ounce that can be produced, and it is asserted by the persons

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interested in the mica mines, that every pound that is produced in America has the advantage of 150 per cent protective tariff as an added profit.

Warning flags appear every time the vague phrase “it is said” appears without referencing a source. It is also clear from the reporter’s description (“no money has to be spent in blasting” and “unskilled laborers do the whole work”) that this reporter has never actually visited a mica mine, in particular the one referenced specifically, the Ruggles mine. The figure “\$8,000,000 in dividends” sounds suspiciously like Albert J. Hoskins’ statement “\$8,000,000 worth of mica” *production*, not *dividends*, and neither is supported by evidence (Hoskins 1899:507). Although North Carolina and New Hampshire were primary sources of mica at that time, they were by no means the only states producing mica; other states included California, Idaho, South Dakota and Virginia (Fisher 1903).

A battle was waged between domestic mica miners (like Ruggles & Randall) and mica consumers, manufacturers who used mica in their products like stove and electrical instrument manufacturers (GNBK 1890a). The consumers wanted to pay as little as possible for the material to keep their costs low and profits high, even if it meant that American miners would be put out of work. “The mica market of the United States was controlled by half starved miners of India ...” was one complaint (GNBK 1890a:5). One of the manufacturer’s claims was that the American mica did not cleave as well as the foreign mica, and was thus unsuitable for their needs (GNBK 1890a). This came as a shock to Charles Randall who said he never received a single complaint about cleavage in all his years in the business. In his statement, Charles Randall recalls the event that his brother George experienced before the House Ways and Means Committee on 16 January 1890 (reported on 17 January by, for example, *The Augusta Chronicle* (GNBK

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1890a)). Representatives of electrical manufacturers had been testifying before the Ways and Means Committee, complaining of domestic mica quality and arguing to keep foreign mica duty-free. Charles Randall wrote (USSN 1890:2):

[...] it was suggested by Mr. [George H.] Randall that they [the mica consumers] be recalled before they left the committee room so that Mr. Randall might have some questions put to them as to whether they had ever found fault with the mica which had been furnished by the Messrs. Randall to their company, but the parties immediately left the room.

George Randall must have been livid, verbally assaulted in testimony by the manufacturers with assertions of poor quality after which they left quickly before he could have them questioned under oath. George's appearance was covered in the 17 January 1890 New York Times (NYT 1890b).

The 24 January 1890 issue of the *Canaan Reporter* (1890) covered George Randall's appearance in Washington, and included the statement:

We congratulate our friend Randall on having discovered that protection does protect, and that he needs a little of it himself. It is a most happy outcome to some of the friendly discussions we had with him upon the subject, and we trust he may get the relief he asks for and that the boom of dynamite may once more wake the echoes on Glass Hill.

Gould & sons, mica and crockery: 1868 - 1878

William Parker Gould (25 April 1845 – 1909), son of Joseph D. Gould, was second cousin to George, Charles

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and Samuel Randall, and was Sam Ruggles' grandnephew (USPA 1887; Redmon 2008). As William's father struggled as trustee of the Ruggles estate and lawsuits in 1868, William, his older brother George Henry Gould and Edward F. Hitchcock (son of a wealthy Boston merchant) started a crockery business together called "Gould, Hitchcock & Company" (USFC 1870f, 1880g; Sampson and Davenport 1868, 1869, 1870, 1871a, -b, 1872a, -b, 1873a, -b, 1874b, -c, 1875a, -b, 1876a, -b, 1877a, -b, 1878, 1880a, -b; Coolidge 1868; Dudley 1871). The crockery business was first located at 131 Milk Street in Boston (Figure 2.18: ②). 1868 was the year the Randall's won their counter suit against Joseph D. Gould and he moved his office down the street from 30 Union to 20 Union (Figure 2.7: ④, ⑤). In 1869, Gould lost his clerk Charles Ruggles whom he replaced in 1871 with a 24-year old clerk named George Byron Watson (28 April 1847 – 3 January 1916) (Sampson Davenport 1871; GNBK 1916). Previously, Watson worked as a brick mason with his older brother Joel with whom he also lived (USFC 1870k).

The great Boston fire of 1872 (Figure 2.16) caused Joseph Gould to move his office temporarily to 51 Commercial Street (Figure 2.17) in late 1872 and 1873 (Sampson and Davenport 1872b, 1873a-b, 1874b). Then in 1874 when Joseph moved his office to 101 Milk Street (Figure 2.18: ①), his sons William and George relocated to the same address.

A year later in 1878, George Watson left Boston and moved to New York City (Sampson and Davenport 1878; USFC 1880v). The actual reason for the move is not known, but could easily have been influenced by Gould's declining health or the growing dissatisfaction of the Ruggles heirs with J. D. Gould (Ruggles 1875).

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William P. Gould: 1880 - 1881

Gould & Watson Company: 1882 - 1892

When Joseph Gould died in 1879, William P. Gould's life changed dramatically. William's brother George continued in the crockery business, but in 1880 (the same year that George Randall moved to Grafton to manage the Ruggles mine) William P. Gould took up his father's last line of work – mica. He kept his father's office at 101 Milk Street (Figure 2.18: ①) for the first year, and saw an opportunity to lure his late father's previous assistant George Watson back to Boston. So George B. Watson gave up feather sales in New York City and joined William P. Gould in the mica business as the Gould & Watson Company with Gould as president and Watson as treasurer (Sampson and Davenport 1880b, 1882a). By 1882 they had moved to their new address at 110 Water Street, right around the corner (in 1895) from an office of Tufts College at 50 & 52 Liberty Square (Figure 2.20) (Sampson and Davenport 1882a).

Gould & Watson continued at 110 Water Street until 1889 when many things changed (Sampson and Davenport 1883, 1884a, -b, 1885; Sampson and Murdock 1885, 1886, 1888, 1889). The business was booming, particularly with their new molded-mica products that served the rapidly expanding electric trolley business (Figure 2.21).

They moved to larger quarters at 35 Hartford Street in Boston (about 4 blocks south and one block west of 110 Water Street), and soon had a telephone listing (NETT 1890). Numerous patents were filed and a variety of new products introduced. Some were designed by George B. Watson himself; the example in Figure B.10 bears his signature. Gould & Watson are listed in Branson (1890) as owning a mica mine at Snow Creek, Mitchell County, North Carolina.

2: Ruggles Mining History

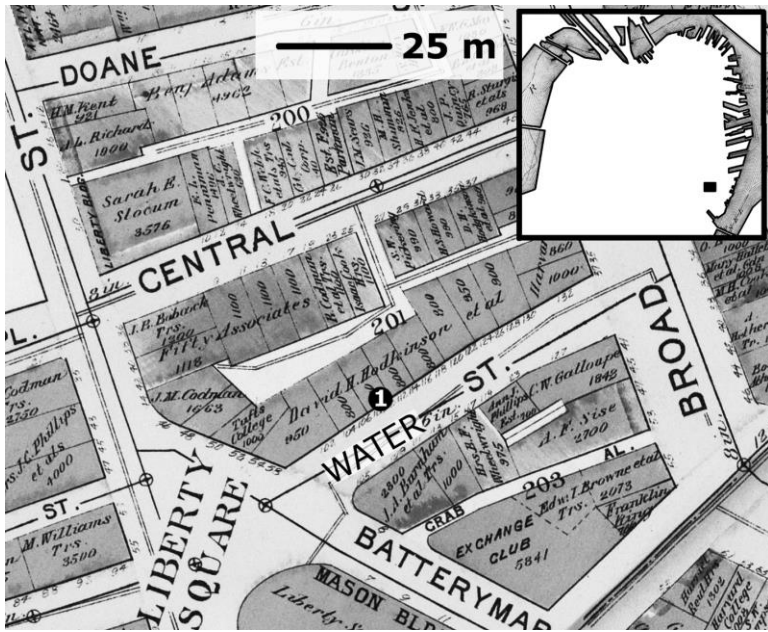


Figure 2.20. 1895 map showing location of Gould & Watson's 1873-92 business office address at 110 Water Street, Boston. Inset shows approximate location in central Boston. Modified from: Atlas of the City of Boston, Boston Proper and Roxbury. Philadelphia: G. W. Bromley and Company. Courtesy Cartography Associates, David Rumsey Map Collection.



GOULD AND WATSON MICA SPAN WIRE INSULATOR.

Figure 2.21. 1891 electric trolley span wire insulator introduced by Gould & Watson Company, some installed in Brooklyn, New York. From *Electrical Engineer* (1891c:596).

2: Ruggles Mining History

William P. and his wife Mary Elizabeth Faulkner Gould moved to Montecito, California, near Santa Barbara in 1889 (Redmon 2008). William kept the title of president of Gould & Watson, and the company continued until 1892 (Figure 2.22). The long distance business relationship must have been too difficult, so Watson and Gould parted ways and the company was dissolved (Sampson and Murdock 1889, 1890, 1892; Martin and Wetzler 1892). The year 1893 was a difficult one for mica mining in New Hampshire. Parker (1894) reports that, except for Alexandria and Groton, no mica was produced elsewhere in New Hampshire, including Grafton.

Moulded Mica Insulators
HAVE BEEN
CONTINUOUSLY IN USE
ON THE
West End Street Railway
Since the adoption of "Electrics,"
More than three years ago. . . .
MANUFACTURED BY
The Gould & Watson Co.,
35 HARTFORD STREET, BOSTON, MASS.

Figure 2.22. 1892 Gould & Watson Company advertisement. From: Hager (1892:269).

2: Ruggles Mining History

American Mica Company: 1892 – 1908, G. B. Watson

But George B. Watson was not through with the mica business yet. On 28 July 1892, he started a new firm, American Mica Company, at 620 Atlantic Avenue in Boston (Martin and Wetzler 1892; Sampson and Davenport 1893; MSC 1908). American Mica inherited the entire mica stock and customer base of Gould & Watson (Martin and Wetzler 1892). Watson was looking toward a future for his sons who would soon become involved in the business: Charles Edward (21), Frederick Leopold (18), Arthur Augusta (12) and Elbridge (6) (USFC 1900l, 1910i, 1910j, 1920c, 1920h, 1920i, 1930d, 1930i). In 1893, American Mica Company operated an old Alexandria Mica Company property, but while there was abundant mica, much of it was poor quality (Parker 1894). All Watson needed now was a mica mine with a quality product.

Starting in 1894, George B. Watson bought additional mica properties in Groton and Bristol, Grafton County, New Hampshire (GRCNH 1894, 1895). But he certainly had his sights set on the Ruggles mine ever since his first visit 25 years earlier (Essex Institute 1869).

Randall v. Watson et al.

Two versions of the same story: Version 1

The first version is told in the summary of the Supreme Court hearing of *Randall v. Watson et al.*, 70 N.H. 236 (West Publishing Company 1900; Riedell 1901). It offers the Randall point of view.

George H. Randall began living in Grafton, New Hampshire, in 1880. Thirteen years later in December 1893, he moved some of his personal items to Boston and spent the winter there. As planned, he returned to Grafton in April 1894. However, he was met with a very rude surprise. All of the mine property, buildings, etc. had been sold at auction for failure to pay taxes. To make matters

2: Ruggles Mining History

even worse, it was sold to his competitor George B. Watson of the recently formed American Mica Company.

The Grafton town selectmen knew George Randall well, that he was part owner of the property and lived there (just west of Isinglass Mountain; see map in Figure 2.1). They also knew that his absence in early April 1894 was only temporary, and that he would be returning from Boston soon. The Ruggles & Randall Mica Company had begun paying taxes on the property with its formation in 1887. In spite of all this, the town sold the property at auction.

George Randall's wife Rebecca brought legal action against George B. Watson and others that was finally resolved in New Hampshire Supreme Court on 16 March 1900, stating that the property was improperly taxed and the collector's sale invalid.

Once more: Version 2

Consider next the statement from Watson et al.'s attorneys discussing the sequence of events leading up to the sale of Ruggles estate at auction as reported in the execution judgment of 23 October 1897 (GRCNH 1897e).

Around 1881 ("15 years prior to 1896"), the Randall family took over the Ruggles mine property; they managed and operated it for their personal profit (GRCNH 1897e:248). Naturally, this did not sit well with other share owners (referred to as Cotenants) of the property who received no payment for their shares. During this time, in spite of requests by the Cotenants, the Randall's withheld both accounting data and payment from the Cotenants (such as plaintiff Julia E. Tainter, Sam Ruggles' granddaughter).

The Ruggles and Randall Mica Company was formed in 1887 claiming to have leases for part or whole of the property. The company was managed by George H. Randall and the property was worked by its "agents or

2: Ruggles Mining History

servants” (GRCNH 1897e:248). In 1896, the Randall family and Ruggles and Randall Mica Company entirely abandoned the property, buildings and equipment. Thus, the Selectmen of Grafton took charge of the property and closed it. This is when Charles Ruggles Tainter (who had a legal right to a share through his mother, Sam Ruggles’ granddaughter) started operating the mine as reported by the New Hampshire Bureau of Labor in 1900 (Carroll and Cooper 1900). George Watson also presented himself as owning significant shares in the estate.

They argued against the auction of mining tools and equipment, since those items were put there during legal mining of the property by the Ruggles and were the property of neither the Randall family nor Ruggles and Randall Mica Company.

Events in 1897 as documented

Having just read the two competing attorneys’ spin on reality, consider next the events as recorded in the Grafton County Register of Deeds.

On 26 May 1897, Nelson L. Gifford, Collector of Taxes for the Town of Grafton for the year 1892, closed the abandoned property and sold a 36/60 share (60%) of the ca. 600 acre (243 ha) estate to the town of Grafton for \$56.05 to cover back taxes (GRCNH 1897a). Three days later on 29 May 1897, Horace Barney (10 September 1828 – 18 February 1904), merchant and former postmaster in Grafton Center, purchased that share of the Ruggles estate from Fred Gage, Collector of Taxes for the Town of Grafton for the year 1894, for \$108.06 (this deed makes no declaration of shares or percentages) (CLAR 1873 through 1880; GRCNH 1897b; Drew 1901). On the same day, Barney then sold an undivided 2/3 share (66.67%) of the property to George B. Watson for \$89.34, apparently retaining 1/3 for himself (GRCNH 1897c).

2: Ruggles Mining History

The next month on 9 June 1897, George B. Watson then purchased another 29/60 (48.33%) share of the 600 acre (243 ha) estate from Daniel B. Smith, Collector of Taxes for the Town of Grafton in 1888 for \$44.15 (GRCNH 1897d). Depending on whose figures you believe, George Watson at this point owns either 108% or 115% of the Estate (obviously a problematic figure, but in reality a percentage of other fractional shares). Either way, it's a moot point since a New Hampshire Supreme Court ruling in 1900 declared all prior Tax Collector's sales of this property invalid, but that's skipping ahead in the story.

Five months later on 23 October 1897, the State Supreme Court (Lebanon, New Hampshire) demoted George H. Randall's status from esquire to yeoman⁴³, and recovered judgment against the Ruggles and Randall Mica Company for \$3959.41 plus costs taxed at \$68.54 and \$0.17 for the writ (GRCNH 1897e). On 25 October 1897, George H. Randall consented to the execution through a quitclaim deed and payment of \$1 (GRCNH 1897e).

On 20 November 1897, the sheriff seized property and publicly posted notice of the intended sale of the property at auction on 27 November 1897 at 2 p.m.; he also delivered the same notice to George H. Randall's dwelling on the property. The sale was delayed until 4 December 1897 which was likewise posted publicly. As a result of the suit *Randall v. Watson et al.*, an injunction was handed down by the Chief Justice of the New Hampshire Supreme Court on 3 December 1897 temporarily halting the collector's sale of the property.

All proceedings were suspended at least until 21 April 1900 waiting for the Supreme Court to pass judgment on *Randall v. Watson et al.* The decision came on 16 March 1900 and dissolved the injunction (GRCNH 1897e; West Publishing Company 1900; Riedell 1901). Riedell (1901) summarizes the court's ruling, and states that because the property was improperly taxed, the previous tax collector's

2: Ruggles Mining History

sale was invalid. That suggests the sale by tax collector Nelson L. Gifford to the Town of Grafton on 26 May 1897 (GRCNH 1897a) was void, which means the purchase by Horace Barney from Fred Gage and the Town of Grafton should also be void (GRCNH 1897b), the sale by Barney to Watson on 29 May 1897 was void as well (GRCNH 1897c), and finally the June 9 1897 sale by Grafton tax collector Daniel B. Smith to George B. Watson was void, too (GRCNH 1897d). Watson, however, had no intentions of giving up easily.

On 18 November 1898, Francis A. Fogg (two years the widower of the late Abigail Prentice Fogg, Sam Ruggles' granddaughter by Elizabeth) rented a 25% share of the estate to George B. Watson and Frederic W. Webster of American Mica Company (GRCNH 1898a). Once again, George Watson acquired part of the Ruggles mine, and this time it was legal.

With all the previous collector's sales void, the sheriff began the process over again on 12 May 1900, posting public notice of the impending sale of the Ruggles mine to occur one month later on 12 June 1900 at 2 p.m.; this notice was also hand delivered to George H. Randall. At the specified time in June, the sheriff sold the lease rights ("term of years for sale") to Harry Randall (Samuel H. Randall's son, a law student at the time) for \$1000 and \$500. The tools and items removed by the sheriff (boilers, iron, iron rails, drills, air compressor, flat dumping cars, pump and hose, tubs, sleds, etc) were auctioned for a total of \$14.03 (GRCNH 1897e). Samuel H. Randall purchased all items except the steam pump which was purchased by Olive Kimball for \$0.07 (GRCNH 1897e). It is not known what Harry Randall did with the leases he purchased at auction.

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Deeds aplenty

Determining exactly who owned what and when is not simple. Deeds for sales, quitclaim, mortgages, leases etc. were piling up rapidly. For example, the following deeds dealing specifically with the Ruggles estate have not been previously mentioned.

- 1 January 1892: Mortgage from Sarah Ella Harris Leonard (Sam Ruggles' great-granddaughter) and husband Charles J. Leonard to George H. Randall (GRCNH 1892a).
- 1 February 1892: Mortgage from Sarah Ella Harris Leonard and husband Charles J. Leonard to George H. Randall (GRCNH 1892b).
- 2 March 1892: Quitclaim from Sarah Ella Harris Leonard and husband Charles J. Leonard to George H. Randall (GRCNH 1892c).
- 17 May 1892: Quitclaim from Emma L. Ruggles Martin (daughter of Charles Ruggles) and husband Byron Martin to Albert L. Burgess of Cambridge, Massachusetts (unknown person in this history) (GRCNH 1892d).
- 18 January 1896: Quitclaim from George H. Randall to George C. Burt of Boston (unknown person) (GRCNH 1896a).

That same day, 18 January 1896: Quitclaim from George C. Burt, who then immediately sold the same shares to Rebecca Randall, George H. Randall's wife (GRCNH 1896b).

2: Ruggles Mining History

- 27 June 1902: In June 1902, Rebecca Randall's health was declining (she died 9 August 1902 after several months of illness) (MSDR 1902b). A quick transfer was arranged with Lucius C. Edwards, a long-time Randall family friend, to move all of the property into just George H. Randall's name. The first step was to transfer the property from the joint ownership by Rebecca and George H. Randall to Lucius C. Edwards through a quitclaim (GRCNH 1902a).
- 27 June 1902: The next step was for Lucius C. Edwards to transfer the property back to just George H. Randall (GRCNH 1902b).

Tying loose ends up to 1900

According to some sources, George H. Randall continued to live in Grafton until 1896 (West Publishing Company 1900; Riedell 1901). That was the year his brother Charles L. Randall died in Boston (MSDR 1896b). With Charles' death, only George H. and Samuel H. Randall were the remaining survivors of Henry and Sarah Ann [Ruggles] Randall's five children.

The Boston Directory indicates that for the next four years, Charles Randall's son Samuel R. Randall took over for his late father in the business. He knew something about it since he worked with him as a clerk prior to Charles' death (Sampson and Murdock 1896). He was initially using the same office at 26 Union Street (Figure 2.7: ⑦), but moved to his home address, 66 Maple Avenue, in 1899 (Sampson and Murdock 1897, 1898, 1899, 1900).

Not surprisingly, the output of Ruggles mine was not at its best in the 1890s. In 1898, it shipped "... several tons of sheet, and 1000 tons of scrap mica ..." (Hoskins 1899:507). One reason given for the less than optimal production was

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litigation extending over 20 years (Gould v. Randall, Randall v. Gould, Randall v. Watson et al., Grafton collector's sales, etc) (Hoskins 1899).

Summary of post-1900 personal histories

Sam Ruggles' lineage rested with his son Charles. Sam's other three sons, George, William and John, never married. Charles Ruggles had three children, but only one son, Charles Jr. In 1900, Charles Jr. was the only living male Ruggles descended from Sam Ruggles. He was 43, still single, and boarding in Medford, Massachusetts, with his sister Julia E. [Ruggles] Tainter (at that time, husband Elisha E. Tainter was living in Grafton, New Hampshire, with their two sons) (USFC 1900f, 1900r). In 1920, 63 and still single, Charles Jr. was boarding at and working as a porter for the Martha Washington Hotel⁴⁴ (30 East 30th Street between Madison and Park) in New York City (USFC 1920n). Ten years later, 73 and never married, he was boarding with his brother-in-law, Elisha E. Tainter (85), widower, in Medford, Massachusetts (USFC 1930e). Elisha died 23 September 1936 (NWSPR 1936). The date of Charles Ruggles Jr.'s death has not yet been found.

Samuel H. Randall, a prominent attorney and Sam Ruggles' grandson, was living with his wife, son and two daughters at West 81st Street in Manhattan (USFC 1900v). In 1910 living at West 88th Street in Manhattan were Sam (73), his wife of 45 years Maggie (67), son Harry (41 and still single, now a lawyer like his father), daughter Gertrude (31) with her husband Frank Witham (31) and son (5) (USFC 1910n). Sam died on 25 April 1910 (NYT 1910), one day before the 1910 Census enumerator counted him living at home (USFC 1910n).

By 1901, George H. and Rebecca Randall were living in Boston; his involvement with mining at that time is unknown. George's wife Rebecca died 9 August 1902 while living at 44 Quincy Street, Boston (MSDR 1902b).

2: Ruggles Mining History

Widowed and 72 in 1910, George was a lodger at 83rd Street in Manhattan, his occupation listed as mining engineering consultant (USFC 1910o). The date of his death has not yet been found.

A New Hampshire Labor Report from 1900 indicates that Charles Ruggles Taintor, great-grandson of Sam Ruggles, operated the Ruggles mine in 1900 (Carroll and Cooper 1900). That means that he and George H. Randall (his first-cousin-once-removed and the previous Ruggles mine manager) were the only living descendents of Sam Ruggles in 1900 directly involved in the mica business.

George B. Watson traveled to England almost every year (sometimes twice a year, once 3 times) between 1905 and 1913, even after he had retired to Dorchester, Massachusetts in 1908 (BPCL 1905, 1908a, -b, 1913; NYPL 1905, 1906a, -b, 1909, 1910, 1911, 1913; CAPL 1909, 1910, 1911, 1912a, -b, 1913; BCCUS 1912, 1913, GNBK 1916). George B. Watson died 3 January 1916, 3 days after his beloved wife (NYPL 1913; GNBK 1916; USPA 1916a, -b). His sons Charles E., Frederick F., Arthur A., Elbridge, and grandson Duvall Watson formed Watson Brothers Mica in Boston ca. 1908, and sold imported mica (USHR 1908; USFC 1910i, -j, 1920c, -h, -i, 1930d, -i). They traveled the world extensively (USPA 1916a, -b, 1919a, -b, 1920, 1921a, 1923a, -b).

Ruggles mine summary from 1912 to 2018

The following is a brief summary of Ruggles mine ownership, operation and mineral related items:

- Mineral rights owned by Joseph Rogers, Rumney Depot, New Hampshire in 1912 (Cameron et al. 1954).

2: Ruggles Mining History

Ruggles mine summary. (continued, 1912 – 1935)

- American Minerals Company began to work for feldspar in 1912 (Cameron et al. 1954).
- English Mica Company worked dumps for scrap mica in 1912 (Cameron et al. 1954). English Mica Company was formed in 1908 by Thomas English in Spruce Pine NC (Sheppard 1935; Cushing 1992).
- Worked by Frederic W. Webster of Massachusetts 1912 – 1926 (USFC 1900g, 1910g, 1920f, 1930c; Cushing 1992). Webster was George B. Watson's business partner who continued to manage American Mica Company after Watson's death.
- Worked by American Mica Minerals Company 1926 – 1931 (Cushing 1992).
- Worked by Standard Company, New Hampshire, 1931 – 1939 (Cushing 1992).
- Whitehall Company worked a short time in 1932 (feldspar for Bon Ami); operated steadily since 1936 (Cameron et al. 1954).
- Whitehall opened a new pit in 1935. (Shaub 1938).
- Uranium minerals discovered by Benjamin Martin Shaub in 1935 (Shaub 1938).

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Ruggles mine summary. (continued, 1938 – 1955)

- Letter dated 2 May 1938 from P. B. Verplanck, The Whitehall Company, Inc., Gilsum, New Hampshire, re: agreement to hire Benjamin M. Shaub for study of Ruggles mine (Shaub Papers 1922-1993).
- Letter from B. Shaub to “Mr. Vance” at Ward’s Natural Science Establishment, dated 26 August 1938, concerning shipment of Ruggles mine uranium minerals to Ward’s. The specimens were not personally collected by Shaub, but had to be purchased from the miners. Shaub spent one month working at Ruggles, and while there, bought all of the mineral specimen material collected from the previous 12 to 18 months. (Shaub Papers 1922 – 1993).
- Letter from Walter C. Shortle to Ben Shaub, dated ~1939, concerning collecting at Ruggles mine: “ ... most of the specimens I have were collected in 1935 + 1936 when the mine was not posted...” and “ ... Mr. Brown, the foreman at Grafton ...” (Shaub Papers 1922 – 1993).
- Worked by Whitehall 1939 – 1959 as a feldspar supplier for Bon Ami (Cushing 1992; Presnell 2005; Schabillion 2009).
- Worked by United Mining Company, Andover, New Hampshire, at pit number 32 under lease during August and September 1944 (Cameron et al. 1954).
- Ruggles mine closed to mineral collecting: implies it was open to collecting during some period of Whitehall operation (Zodac 1955).

2: Ruggles Mining History

Ruggles mine summary. (continued, 1959 – 2018)

- Bon Ami directly operated Ruggles mine from 1959 – 1960 (Cushing 1992).
- Worked by Arvid Wastrom 1960 – 1962 (Cushing 1992).
- Ruggles Mine turned into fee collection site in 1962 (Gregory 1971) or 1963 (Cushing 1992). (Figure 2.23)
- Worked by Bell Minerals (West Paris, Maine) in 1971; owned by Arvid (Gregory states “Abid”) Walstom of Grafton (Gregory 1971; Cushing 1992). The collecting fee in 1971 was \$1.10 for adults (Gregory 1971)
- In 2004 the collecting fee was \$17; from 2011 to 2013 it was \$25.
- Ruggles mine closed to the public with the property for sale in 2016 (not yet sold in 2018).



Figure 2.23. 1960s-era Ruggles Mine automobile bumper advertisement (when cars had real bumpers and the ads were tied on, not stickers). Size 44.1 × 11.4 cm (17.5 × 4.5 inches). In the collection of and photo by the author, 2009; gift from Richard and Callie Morgan.

Early Mining in North Carolina

James Bowers began mining mica in New Hampshire in the early 1830s. After mica mines opened up in North Carolina after 1868 (Genth and Kerr 1881; Genth 1885, 1891), Joseph S. Bowers began mining there. A brief review of early mining in North Carolina will help in understanding the extraordinary effort in the second phase of the Bowers' mining adventures discussed in detail in Chapter 5. The Bowers were certainly not the first modern mica miners in Western North Carolina. This is generally attributed jointly to Lewis Edgar Persons (usually as L. E. Persons) and the partnership of John G. Heap and Elisha B. Clapp. But they were all preceded 2,000 years before by Native Americans who not only mined, but traded their goods over long distances, and in the 18th century even across the Atlantic.

Early Native American mining

The first mica miners in North Carolina were Native Americans, primarily Cherokee (Marshall 1918). This was discovered in the late 1860s when quarrying in Mitchell County (Harper et al. 1873; Kerr 1875; Clingman 1877). When miners cleared debris, they found signs that the pegmatite had been worked hundreds of years before and found some of the stone tools that were used. As stated by

3: Early Mining in North Carolina

Phillips (1888:74): “These ‘old men’ were possessed of considerable skill, not only in the location of good deposits, but also in the extraction of the mica.” In fact, many of the best 19th century mica deposits quarried in the North Carolina mountains had already been worked by aboriginals (Kerr 1875, 1880, 1881).

Mica was used by Native Americans for rituals and ornamentation. North Carolina mica was traded with other tribes in eastern North America from the Gulf States up through the Mississippi Valley, and has been found in Ohio (Holmes 1919). This was first described by Caleb Atwater (1820) who explored several Hopewell⁴⁵ mounds in Ohio. The Hopewell culture (200 BC to 500 AD)⁴⁶ built large burial mounds in which artifacts were found traceable to distant tribes, including mica from North Carolina (Figure 3.1) (Margolin 2000).

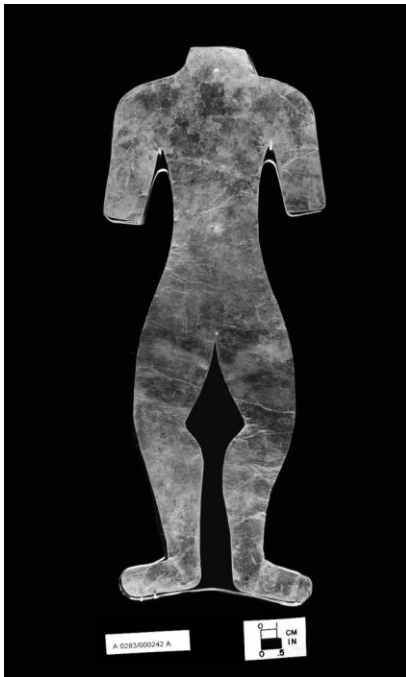


Figure 3.1.
Cut mica effigy from
Hopewell culture
burial mound. Height
32 cm (12.6 inches).
Image AL07215, Ohio
Historical Society.
Used with permission.

3: Early Mining in North Carolina

Atwater (1820:178) describes one mica object as a “large mirror, about three feet in length, one foot and a half in breadth, and one inch and a half in thickness.” That is a significantly large specimen of mica, its importance underscored by the effort to have carried it over 500 km (310 miles). Apparently the mica mirrors were quite striking, causing Atwater (1820:246) to comment:

We wish not to repeat what we have said already, but cannot help referring to the fact of the numerous mirrors of *mica membranacea*, (isinglass) which have been found in the mounds situated with round and square circumvallations⁴⁷. The one at Circleville was quite entire, and pieces of others have been found in nearly all other tumuli⁴⁸ similarly situated, wherever they have been opened.

Johnston (2002:24) states: “The terms ‘elaborate’ and ‘exotic’ are often used to describe the portion of Hopewell material culture associated with mortuary or other ritual and ceremonialism. This is perhaps due to the fact that many non-local materials are used to create aesthetically pleasing artifacts of complex design and superior workmanship (for example copper, mica, Indiana hornstone, and obsidian).” Margolin (2000:56) provides additional information: “These consist of artifacts crafted from a wide variety of materials, including not only mica but also copper, gold, silver, galena, flint, obsidian, pipestone, and saltwater shells. Such a variety is remarkable considering that only flint is native to the valley region.”

The source of the Hopewell mica was a mystery for almost 50 years. Thomas Lanier Clingman (Figure 3.2) was first to notice the ancient mica workings in Mitchell County, North Carolina, around 1867. The largest ancient

3: Early Mining in North Carolina

mine is the Sink Hole (or Silvers) mine (Figures 3.3, 3.4), which he reported in a letter dated 8 April 1873 and published four years later in a collection of his writings (Clingman 1877). Common among them was a soft matrix, usually kaolin from weathered feldspar, so that it could be mined with nothing more than stone tools (Figure 3.5). In 1873, Clingman was first to speculate that there may be a connection between the ancient mines in North Carolina and the Mound Builders (Clingman 1877). Washington Caruthers Kerr (Figure 3.6) (North Carolina State Geologist 1864 – 1882) agreed with Clingman (Kerr 1875, 1880, 1881). John Preston Arthur (1914) repeats Clingman's account, and adds additional mines to the history.

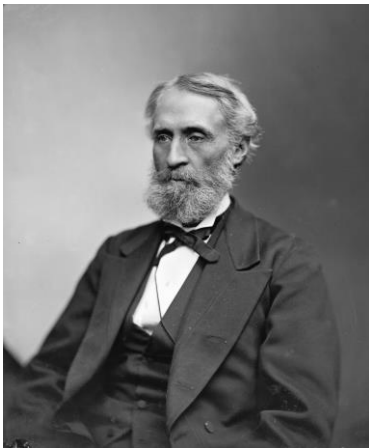


Figure 3.2.

Portrait of Thomas Lanier Clingman, North Carolina politician and mining entrepreneur. Photo ca. 1865 – 1880 courtesy Library of Congress Prints and Photographs Division; Brady-Handy Photograph Collection.

Most of the North Carolina prehistoric mines are located in Mitchell County (for example, Sink Hole mine in Bandana⁴⁹), while others are found in Macon County (such as Baird No. 1, Franklin), Yancey County (for example, Hensley mine on Pigpen Creek) and Buncombe County (for example, W. H. Burnett mine near Black Mountain) (Arthur 1914; Marshall 1918; Sterrett 1923; Stuckey 1965).

3: Early Mining in North Carolina

Dr. Canaro Drayton Smith⁵⁰ (1813 – 1894) of Franklin reported his findings of ancient mines, some on his property, in Macon County, North Carolina, to the Smithsonian Institution in 1876; his report was published in the Smithsonian annual report of 1877 (Smith 1877). He, too, observed a soft, weathered feldspar matrix.



Figure 3.3. Photograph of the Sink Hole mine ca. 1936 by Joffre L. Coe.

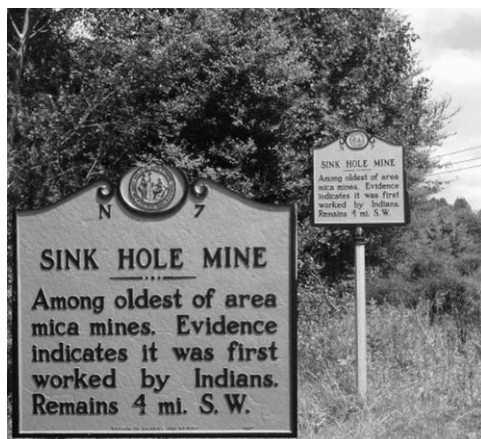


Figure 3.4. Photograph of the Sink Hole Mine roadside historic sign installed ca. 1939. Inset is magnified view of sign. Photo courtesy North Carolina Department of Cultural Resources; adapted by the author.

3: Early Mining in North Carolina

In 1913, William Henry Holmes connected the Hopewell mica in Ohio with North Carolina mines. His article was published by the Smithsonian Institution in 1919 (Holmes 1919; Margolin 2000). A collection of the stone tools found in the old North Carolina mines is kept by the Smithsonian Institution⁵¹ (Figure 3.5). Artifacts from the Hopewell mound are kept by the Museum of the Ohio Historical Society. Mound artifacts were displayed at the Columbian Exposition of 1893 in Chicago (White et al. 1893). Those items were moved to the Field Museum collection in Chicago. The Peabody Museum of Natural History at Yale University in New Haven, Connecticut, has some Hopewell copper beads collected in 1865 (YPM MIN010254), and a specimen of mica from the Sink Hole mine in Bandana, Mitchell County, North Carolina (YPM MIN026591).

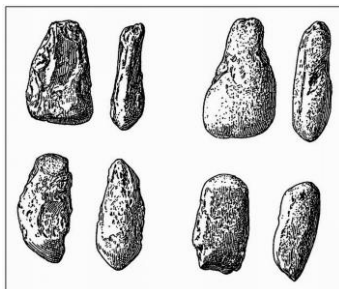


Figure 3.5. Sketch of native American stone mica mining tools from the Sink Hole mine in the Smithsonian Collection. From Holmes (1919:244).

18th century kaolin exports to England

Mica was not the only mineral commodity mined by Native Americans. The following summary is adapted from an excellent, well-documented historical account (Anderson 1986). It's an exciting tale of hardship and adventure, and highly recommended reading.

A Quaker named Andrew Duché (~1709 – 1778) was the son of a pottery maker in Philadelphia. In the 1730s, Andrew moved to Charles Town [Charleston], South Carolina, to set up a pottery business there. In 1735, he moved to New Windsor, South Carolina (today, a few

3: Early Mining in North Carolina

miles east of Augusta, Georgia). There he met Roger Lacey, an agent to the Cherokee Indians, who supplied Duché with Cherokee clay. Duché then moved to Savannah, Georgia, in 1737 where he began experimenting with making porcelain. By October 1739, James Oglethorpe, founder of the Georgia colony, announced that porcelain was being made in Savannah. Andrew Duché was the first person in the English-speaking world to produce porcelain which previously had been only available from China.

In 1744, Duché was in London where he met two other Quakers, Thomas Frye and Edward Heylyn, who had a pottery business in England. These Englishmen applied for a patent in 1744 for making porcelain from Cherokee clay. The clay was then called “unaker” (also “uneka,” meaning “white” in Cherokee). Duché, in discussions with other potters in England like William Cookworthy (a chemist and also a Quaker), apparently claimed to have purchased all of the Cherokee land being mined for unaker, and could supply it for £13 per ton. Unfortunately, this was easier said than done. Some Cherokee clay made it to England, but not large quantities. Potters in England who attempted making porcelain from this clay were not very successful.

Josiah Wedgwood, a fourth-generation descendant of potters in England, established his own business in 1759. By 1765 he was quite successful, and intensely interested in porcelain made from Cherokee clay. His plan was to obtain a large quantity ahead of his competitors, but first wanted a sample to try it out. In 1767 he still had not acquired any samples. Wedgwood went to London in May 1767 to purchase John Mitchell’s map of North America to locate the mysterious source of the clay. Based on information from a ship’s captain, he found a Cherokee town with a similar name, Hyoree (Ayoree). Then Wedgwood sent Thomas Griffiths on a quest in the New World.

3: Early Mining in North Carolina

W. C. Kerr (1880:462, 1881:212) (Figure 3.6), North Carolina State Geologist, wrote his version of the tale:

The feldspar, which constitutes the larger part of the mass of these [pegmatite] veins, is often found converted into beds of the finest kaolin; and, curiously enough, this was one of the first and most valuable exports to England in the early part of the seventeenth century⁵²; “packed” by the Indians out of the Unaka⁵³ (Smoky) Mountains, and sold under the name “unakeh” (white). This kaolin, like the mica, will doubtless soon come again into demand, after lying forgotten for generations.

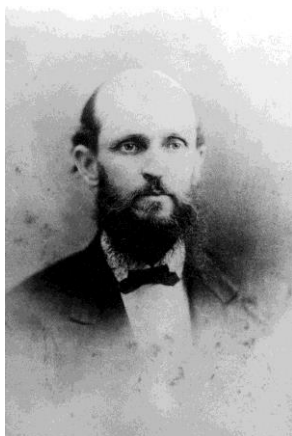


Figure 3.6.

Photograph of Washington Caruthers Kerr, State Geologist of North Carolina 1864 – 1882. People, Item 0227551, Special Collections Research Center, NC State University Libraries. Used with permission.

Burton (1906:233) states that American kaolin was used for English porcelain as early as 1731. An application for a British patent on 6 December 1744 (by persons identified in Anderson (1986), as well as the Quakers referred to by Burton) for the production of porcelain called for “... an earthy mixture produced by the Cherokee nation in America, called by the natives ‘unaker’” Burton (1906) also tells of a Quaker who brought the white clay

3: Early Mining in North Carolina

back to England, and that another American Quaker identified a stone in the Church at St. Columb as similar in appearance to one Cookworthy had read about as being associated with china manufacture. Burton (1906:249) visited the Church of St. Columb Major to confirm the story "... to assure myself that this tradition may be based on actual fact."

Arthur Simeon Watts (1913) also recounts the 18th century mining and sale of kaolin in U.S. Bureau of Mines Bulletin 53.

Olson et al. (1946) mentions how the Cherokee mined kaolin from pegmatites for export to England, and that Thomas Griffiths came from England to the Cowee section of Macon County in 1767 to obtain kaolin. Lesure (1968) expands that by stating Griffiths was sent by Josiah Wedgwood in 1767 to obtain kaolin from Cowee Town on the Little Tennessee River in Macon County. Here are two descriptions of the mining:

He cleaned out an old pit from which kaolin had been extracted previously, and transported at least 5 tons of the kaolin to Charleston for shipment to England.

Olson et al. (1946:16)

Griffiths cleaned out an old clay pit, mined 12-15 tons of clay, and transported about 5 tons to Charleston, S.C., for shipment to England (Griffiths, 1929). Discovery of good quality clay in Cornwall in 1768 stopped further mining in North Carolina.

Lesure (1968:20)

Of all the accounts of the Cherokee clay, Anderson (1986) is by far the best documented and most complete version.

3: Early Mining in North Carolina

Transportation in 19th Century WNC

Transportation in the 1800s could not have been easy, particularly in remote areas not served by railroads, and barely served by roads. In New England, mines were not far from towns and villages supported by a reasonable grid of roads connecting the towns, so transport of product there was not nearly as challenging as the remote wilderness areas of Western North Carolina. The following description is enlightening, particularly since it describes conditions about 25 years *after* the beginning of mica mining in Western North Carolina (allowing a quarter-century of road improvement). It was written by Edgar W. Parker (1894:749) in the U. S. Geological Survey report “Mineral Resources of the United States”:

During the latter part of November, 1893, the writer visited the mica regions of North Carolina for the purpose of studying the methods employed in mining the mica that the locality and the facilities afforded for placing it upon the market. The time selected for the trip was unfortunate, for the region had just been visited by heavy rains, and the mountain roads, bad at the best seasons, were in many places almost impassable. With a good pair of horses, capable of making 10 miles an hour on a good road, and in a light buckboard, with no other burden than the writer and driver, two full days were occupied in traveling from Asheville to Bakersville, a distance barely exceeding 50 miles. A number of places which it was desirable to visit could not be reached on account of the condition of the road, it being necessary to keep to the county roads. ... [T]here is the lack of transportation facilities. The region is very mountainous and without

3: Early Mining in North Carolina

railroads, while the wagon roads for many months of the year are all but impassable. The streams are without bridges and the larger ones much of the time past fording. The beds of the smaller streams frequently form a part of the county road, especially in ascending and descending the heavy mountain grades. These portions of the “road” are naturally rough and very hard both on the horses and vehicles. The nearest railroad point from Bakersville is at Marion [south of Spruce Pine], distant about 40 miles. For a heavy team the time necessary for this journey is nearly four days, in fairly good seasons.

While reflecting on the difficulties described, consider that Bakersville in that example is in Mitchell County, not the even more remote Macon or Jackson Counties worked by the Bowers. The route from Franklin, Macon County, to Asheville, Buncombe County, is about 60 miles. In 1875, the rail route only extended near Asheville (Figure 3.7).

In 1839, the Western Turnpike, the first state-funded road, was chartered to connect Franklin to Murphy. But it would be far from adequate for heavy commerce, like mining. In 1854, the Western Turnpike was still under construction (Baldwin and Thomas 1854). The Western North Carolina Railroad Company was chartered in 1855 to connect Salisbury (in the Piedmont south of Winston-Salem) to Murphy in the far western end of North Carolina, but halted 70 miles from Asheville during the Civil War. At the end of the war, they restarted and reached Morganton near the western edge of the Piedmont. But by the time they reached Old Fort at the foothills of the Blue Ridge Mountains in 1869 they were bankrupt. In 1877, they started up again and got as far as Asheville. In 1882, control of the railroad was taken over by the Richmond and

3: Early Mining in North Carolina

Danville Railroad. (In 1873, J. S. Bowers and J. W. Brooks purchased their first tracts of North Carolina land from Clement Carrington (C. C.) McPhail, a geologist and employee of the Richmond and Danville Railroad.) By 1891, the railroad covered the final 111 miles from Asheville to Murphy in Cherokee County, the western-most county of North Carolina before Tennessee (George and Strack 2000).



Figure 3.7. 1875 map of Western North Carolina with railroads and towns. Proposed rail routes not yet built are dashed lines. Inset indicates area covered. Modified from: New Commercial Atlas of United States and Territories. New York: Cram Atlas Company. Courtesy Cartography Associates, David Rumsey Map Collection.

3: Early Mining in North Carolina

Concerning transportation of mica in Western North Carolina, Parker (1894:752) states:

[...] the mica mines are remote from railroad transportation, and the work has been crudely done [mostly manual labor with few power tools], but the transparency of the mica and the sizes in which it can be cut promises to bring it into demand in the future

19th century mica mining in WNC

The mica industry in Western North Carolina was strongly influenced by two men: Thomas Lanier Clingman and Daniel David Davies. Although they were not especially involved commercially in the mica business, it was through their efforts that the first commercial mines were located and worked by others.

Thomas Lanier Clingman ✕

Thomas Lanier Clingman (27 June 1812 – 3 November 1897) was a native of North Carolina, born in Huntsville, Yadkin County. He graduated from the University of North Carolina in 1832, studied law and was admitted to the bar in 1834. He served in both North Carolina State House and Senate, and moved to the North Carolina mountains in Asheville, Buncombe County, in 1836. He next represented North Carolina in the U.S. Congress and Senate, but was expelled from the Senate on 11 July 1861 for supporting the Southern rebellion. Clingman became a Brigadier General in the Confederate Army (Figure 3.8). He measured the height of mountain peaks as he explored the mountains and mineral resources of Western North Carolina with an eye toward precious metals and gems (Anglin 2002). Clingman's Dome, named in his honor, straddles the Tennessee – North Carolina border. Two early

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deeds for land purchases by Clingman in Macon County are dated 1855 and 1871 (MACNC 1855, 1871).

Clingman wrote a recollection of his role in North Carolina mica mining on 18 August 1880; the following summary is drawn from this account (Simonds and Clingman 1896:360-361).

During the summer of 1867, mica supplies from New England had become “very scarce in the market.” At that time the Ruggles mine was embroiled in legal battles between J. D. Gould (trustee of the estate) and the Randall brothers (Sam Ruggles’ grandsons). Clingman examined sites in several counties, and “... caused work to be done in Cleveland, Burke, Yancey and Mitchell [Counties].” As a result of this effort, Clingman concluded that Mitchell County held the best prospects.



Figure 3.8.

Portrait of T. L. Clingman from the Civil War ca. 1861 – 1865. William Emerson Strong Photograph Album, David M. Rubenstein Rare Book and Manuscript Library, Duke University, Durham, NC. Used with permission.

He sought investment from New York capitalists, but that deal fell through. Not wanting to abandon the project entirely, he bought a lease from the property owner William J. Silvers⁵⁴ and began work on the Silvers⁵⁵ mine, later called the Sink Hole mine, in Mitchell County in the summer of 1868. The tunnels and shafts showed an abundance of mica. Clingman had to leave for other

3: Early Mining in North Carolina

business, but left his foreman in charge to extract and save large blocks of mica. After Clingman left, his foreman was drawn away by sickness in his family, thus the work was abandoned and the mica left lying on the ground. Clingman was not in good health and could not continue the work himself, so he abandoned the project.

In the autumn of 1868, mica from the Sink Hole mine made its way to Knoxville, Tennessee. There are several versions of how that came about. The more common story tells of a stock drover⁵⁶ with a wagon passing by the Sink Hole mine; he saw the mica lying about and brought back a sample (Phillips 1888a, -b; Sterrett 1923; Colles 1905c, 1906; Schabillion 2009). A variation on that tells how Clingman hired the drover to haul a load of the best mica along with his livestock to sell in Knoxville (Anglin 2002). Another version is that a “tinner” (tinsmith) named John G. Heap took the mica back to Knoxville (Arthur 1914; Sheppard 1935; Presnell 2005). Then there is the noncommittal version where ‘the mica appeared in Knoxville’ (Sterrett 1907).

John G. Heap (~1825 – 1891), a tinsmith by trade, was co-owner of the Knoxville Stove Works with Elisha⁵⁷ Bogue Clapp (~1835 – 1874)(USFC 1870w, -x; GNBK 1891a; Presnell 2005). Prior to founding Knoxville Stove Works, Heap and Clapp already had a close relationship (Presnell 2005). For example, the 1860 Federal Census for Huntsville, Madison County, Alabama, shows that John Heap (a tinner from New York, with wife and child) lived in the same boarding house as Elisha B. Clapp (an auctioneer from Massachusetts, with wife and son) (Figure 3.9).

John Heap saw the mica, recognized its value and sent his partner E. B. Clapp to purchase a lease on the mine. Heap joined him shortly afterward and formed the Pioneer Mining Company; together they successfully worked the mine⁵⁸ (Presnell 2005). According to the 1870 census, both

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Heap (“mining for isinglass”) and Clapp (“miner”) had moved their families to Snow Creek, Mitchell County, North Carolina (USFC 1870w, -x). Clapp and wife with four children lived right next door to William J. Silvers (owner of the Sink Hole mine property), his wife and four children (USFC 1870w).

Page No. 1

SCHEDULE I.—Free Inhabitants in the City of *Huntsville* in the County of *Madison* State of *Alabama*, enumerated by me, on the *1st* day of *June*, 1860. *W. H. B. Lewis*, Asst. Marshal.

Post Office *Huntsville*.

Sex	Color	Name	Sex	Age	Description	Value or Estate Owes		Place of Birth, Naming the State, Territory, or Country.	Whether deaf and dumb, blind, lame, idiot, pauper, or insane.
						Wages of Real Estate	Value of Personal Estate		
16	f	Agnes Ventonaw	f	52	Land lady	1000	5000	Geo	
17	f	Elisha G. Clapp	f	52	Housewife			Geo	
18	M	John Heap	M	38	Chimney	7500	1500	And South	
19	f	Lizzie	f	30				Alabama	
20	f	Mary	f	25				Alabama	
21	M	Elisha B. Clapp	M	25	Merchant		500	Massachusetts	
22	f	Melie	f	22				Alabama	
23	M	William	M	5				Alabama	

Figure 3.9. Excerpt from the 1860 U.S. Federal Census for Huntsville, Madison County, Alabama, showing John G. Heap and Elisha B. Clapp with families rooming at the same boarding house.

Heap and Clapp operated several active mines in the area (Kerr 1875). The North Carolina business directory published by the Reverend Levi Branson (1872) lists two mines for Heap and Clapp: Point Pisgah Mica in Bakersville, and Silver Mica in Ledger (most likely the Sink Hole mine on William Silver’s property; Bandana, Snow Creek and Ledger are all very close, just south of Bakersville between Burnsville and Spruce Pine).

Daniel David Davies

Daniel David Davies (31 January 1826 – 30 March 1920) was born in Llanllawddog, Carmarthenshire, Wales.

3: Early Mining in North Carolina

He left home at 12 years old to work in the mines of Wales and studied in night school. Davies was about 22 when he immigrated to the U.S. and began working in the Georgia mountains building tunnels for a railroad. Davies purchased a great deal of property in Western North Carolina, primarily in Jackson County but also in Macon County. The first purchase on record was 12 March 1857 for \$4,000 (the Putnam Copper Mine tract; JCNC 1857), followed by 13 additional purchases⁵⁹ between 1859 and 1866, and three State Land Grants in Macon County in 1863⁶⁰.

D. D. Davies' involvement in early mica mining is recounted by Douglas Bovard Sterrett (1907, 1923), Jasper Leonidas Stuckey (1965) and Lynn Hotaling (2007). Sterrett (1923:167) mentions in a footnote that his information was provided by Judge D. D. Davies and Mrs. John L. Richardson, daughter of L. E. Persons, in a certified statement dated 22 March 1907. In 1880, Persons' daughter Jennie, ~31 (~1849 – 15 May 1921), was a schoolteacher in Waynesville, Haywood County, North Carolina, and a single mother with a one-year old child, Edgar Norton Persons (USFC 1880w; NCDR 1921). On 19 October 1897, Jennie married John L. Richardson, a farmer in Waynesville (NCMR 1897). They had just one child in 1906 that lived only a year. Jennie's son Edgar married Nannie Tate McCracken in 1902; Edgar N. Persons died in 1908. In 1920, Jennie was a widow who boarded lodgers to make ends meet (USFC 1920o). She died at the Smathers' residence⁶¹ in Waynesville in 1921; her body was discovered and reported by her widowed daughter-in-law Nannie Persons.

Davies is reported to have taken some mica he found to a State Fair in Columbia, South Carolina⁶², where it was exhibited. It was seen by someone from Philadelphia who then told L. E. Persons (listed on the 1860 U.S. Census as a peddler in Middlebury, Vermont; Figure 3.10) (USFC 1860w), and in 1870 as a stove merchant in Richmond,

3: Early Mining in North Carolina

Virginia (USFC 1870za). In the autumn of 1867, Persons visited Davies in Jackson County where he learned of several favorable prospects for mica in Jackson and Haywood Counties which Persons then opened. The Jackson County Register of Deeds shows two purchases of 400 acres (162 ha) total by L. E. Persons in 1871 (JCNC 1871a, -b). Branson's Business Directory (Branson 1872; Branson and Branson 1890) lists the Savannah Mica mine (named for the nearby river) in Webster, Jackson County, operated by L. E. Persons & Company as late as 1890. Six years later, it was no longer listed in Branson (1896).

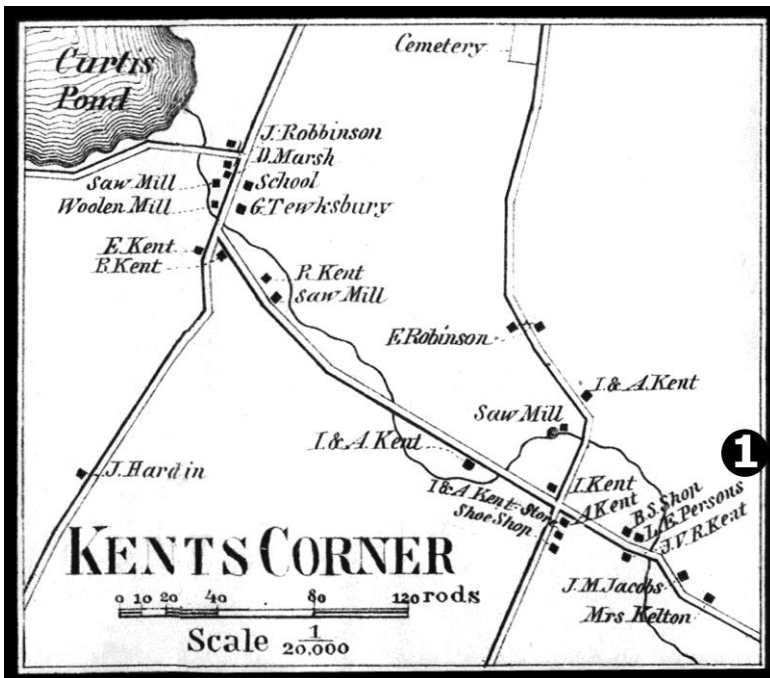


Figure 3.10. L. E. Persons home on 1858 land ownership map of Kents Corner section of Calais, Vermont: ①. Adapted from map by H. F. Walling, published by Baker and Tilden, New York.

3: Early Mining in North Carolina

Mining methods: A study in contrast

Mica mining in New England was primarily an open-pit style. The open pit took more effort than simply removing only the mica, but was inherently safer from collapse and cave-in. The open pit method also exposed most all of the mica deposits. Another benefit was the extraction of feldspar associated with mica found in pegmatites, which could also be marketed. Feldspar was in demand for ceramics and porcelain. One lesser known application was porcelain dentures which first appeared between 1774 and 1776 in France (Dodd et al. 1914). Some New Hampshire feldspar was used in the manufacture of ‘mineral teeth’ (Randall 1850; Coolidge and Mansfield 1860; Fogg 1874).

Mica mining in North Carolina tended to be an underground operation. The mica was “hogged out” by removing just the mica with as little surrounding matrix as possible. Other colorful terms like “gopher” and “groundhog” were used by Watts (1913:10) to describe the tunneling method. The miners would burrow tunnels, following the path of the mica deposit. A major disadvantage of the method was the likelihood of prematurely stopping when a gap in the mica vein was encountered, overlooking a hidden continuation of the mica. It was inherently more dangerous than an open pit mine because of potential tunnel collapse. Most of the early mica mining in North Carolina was done by hand, long after the adoption of power hammers and drills in the New England mines (J. A. Holmes 1899; Colles 1905c, 1906). This was due, in part, to the generally small volume of mica produced in some of the southern mines. Also, many small mines were operated intermittently by farmers looking to earn additional income when their crops did not require their attention. A part-time job could not justify the expense of power tools and their power source. Electric drills were tried once at the Poll Miller mine in Burningtown⁶³, North Carolina, powered by a water-driven

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generator, but were abandoned for hand labor (Sterrett 1910:606). Feldspar from the North Carolina pegmatites was not used commercially until after 1909 (Watts 1915).

In a personal anecdote, the author's great-grandfather Leander Davis, an avid mineral collector, located pegmatite outcrops on Balsam Mountain near Waynesville, Haywood County, North Carolina, for other persons who then quarried the prospects (Fred E Davis Jr, pers. comm. 2010, 2011).

Table 3.1 lists mica mines in both Jackson and Macon Counties, North Carolina, worked before 1900. The earliest starting date given is taken from Lesure (1968). Some of these dates do not take into account information from other references. For example, the Poll Miller mine is well documented as being worked by the Bowers. However, the year 1900 is an unrealistic beginning point. The first purchase of property in that area by the Bowers was in 1876 (MACNC 1876). Ziegler and Grosscup (1883), written contemporaneously with the Bowers mining operation, suggests an 1878 start date. Two deeds dated 1882 specifically mention the Poll Miller mine (MACNC 1882b, 1882c). It is probable that the 1900 date given by Lesure (1968) references a later working of the mine. The Bowers are known to have worked several of the mines listed in the table, and very likely were involved with many more. The lack of good documentation of these mines limits the ability to identify them all.

3: Early Mining in North Carolina

19th Century Mica Mines in Macon and Jackson Counties, NC				
Lesure (1968) Date	Name	Lesure (1968) Reference	County Location	Notes
1868	Cox-Davies	120	Jackson	
1868	A mine	233	Macon	
1868	Iolia-Bowers mine	327	Macon	
1870	Allman Cove	306	Macon	
1870	Baird#1-Smith-Snow	314	Macon	
1870	Baird#2 Cove	313	Macon	
1870	Buoy#1-Rock Cut	257	Macon	
1870	Lyle Cut mine	363	Macon	
1870	Rocky Face mine	234	Macon	
1875	Stillwell mines	89	Jackson	
1875	Shepherd Knob mine	197	Macon	
1900*	Poll Miller mine	355	Macon	*references to 1878 in Ziegler and Grosscup (1883) and 1880s in land deeds; both Bowers brothers were dead by 1896 so 1900 is not likely
1880	Beasley #1 mine	193	Macon	
1880	Cunningham mine	337	Macon	
1880	Hall mine	209	Macon	
1880	Lyle Knob mine	224	Macon	
1880	Mill Knob mine	259	Macon	
1880	Welch mine	210	Macon	
1880s	Raby-Sweet mine	330	Macon	
1885	Faye #1	140	Jackson	
1885	Frady mine	92	Jackson	
1885	Ledford Cove	289	Macon	
1890	Angel mine	265	Macon	
1890	Beasley #2 mine	196	Macon	
1894	Long Branch	122	Jackson	
1895	Coward mine	111	Jackson	
1895	Buzzard Roost	63	Jackson	
1895	Watson mine	80	Jackson	
1899	Bowers mine	161	Jackson	
<1906*	Judge Ferguson mine	146	Jackson	*reopened in 1906, first worked earlier than that (Sterrett 1923)
<1940*	Burr Knob - J. Bryson mine	202	Macon	*probably 1880 to 1900 based on the birth year of James P. Bryson

Table 3.1. 19th century mica mines in Macon and Jackson Counties, North Carolina.

Bowers Family History

The same observations from the Ruggles' family apply equally to James Bowers' family. Mica mining was a family business, and families remained very close and supportive across generations.

Part I briefly reviews James Bowers' ancestors, and then looks at his immediate family including wife, children and some grandchildren. The discussion around Charles D. Bowers, James' grandson, extends its scope when examining Charles' adventures (and marriage, never before published) in North Carolina, and the tragic death of his brother Elbran in Evanston, Illinois. Part II will discuss the Mitchell family, in particular Sylvester A. Mitchell, Joseph S. Bowers' mining partner and brother-in-law, and Mary L. Mitchell, Sylvester's sister and Joseph's wife. More attention is given to the immediate family; the more distant connections focus primarily on those involved in the family mica business. Successive generations are indented in the text.

Part I. James Bowers ⚭ and family

(Note: The ⚭ symbol identifies names of persons involved in the mica industry.)

John Bowers (2 September 1757 – 10 August 1808), father of James Bowers and 5th generation immigrant in

4: Bowers Family History

Massachusetts, fought in the Revolutionary War at the age of 19, and afterwards moved to New Hampshire (Brush 1904). He bought a tract of land, cleared an area in the forest and built a cabin to settle down with his wife Elizabeth Boutelle (12 March 1759 – 12 February 1846) (Merrill 1869; Hayward 1889). This is where James Bowers (18 October 1787 – 18 November 1858) was born in Hancock, New Hampshire, the fourth of seven children (Figure 4.1: ⑦) (NHBR 1787; USFC 1810c; Hayward 1889).

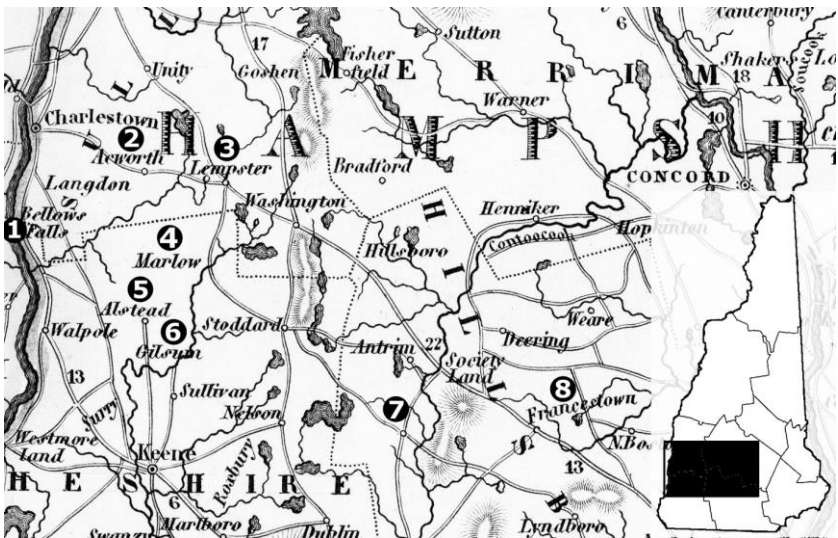


Figure 4.1. 1846 map of southwestern New Hampshire between Concord and the Vermont border. Towns mentioned in the text: Bellows Falls: ①; Acworth: ②; Lempster: ③; Marlow: ④; Alstead: ⑤; Gilsun: ⑥; Hancock (not labeled): ⑦; Francestown: ⑧. Inset shows area covered. Modified from: Grosser Hand-Atlas uber alle Thiele der Erde in 170 Karten. Amsterdam: Espenhorst, J. Andree, Stieler, Meyer & Co. Courtesy Cartography Associates, David Rumsey Map Collection.

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On 6 February 1816, James Bowers (29) married Nancy Dodge Symonds (22) (12 November 1794 – 12 May 1872), daughter of Capt. Joseph and Hannah [Dodge] Symonds. Both James and Nancy were residents of Hancock, New Hampshire (NHBR 1794; NHMR1 1816; Merrill 1869). After the marriage, they lived first in Marlow, New Hampshire (Figure 4.1: ④), and then moved to finally settle in South Acworth, New Hampshire (Figure 4.1: south of ② near Cold River) in 1821 (Figures 4.2, 4.3) (Hayward 1889). James was a farmer and miner (USFC 1830d, 1840d, 1850r; Hayward 1889). He began mining mica between 1830 to 1834, and continued until near his death 24 years later (Child 1885; Metcalf 1913). James was also a mineral collector and dealer (GNBK 1839a, -b; Jackson 1841; Hayward 1889).

An extremely rare interview with James Bowers during a visit to his home was written 6 August 1838⁶⁴ by Frederick Hall, professor at Columbia College, District of Columbia. Hall's collection of letters was published as a series in the *National Intelligencer* newspaper in the District of Columbia; the letter in question was number 10 in the series (GNBK 1839a). Some of the letters were also published by the *New Hampshire Sentinel* (GNBK 1839b). Previously, Hall was professor of mathematics and natural philosophy at Middlebury College, Middlebury, Vermont, 1806 to 1824, and professor of chemistry and mineralogy at Trinity College in Hartford, Connecticut (Hall 1838; Gilman 1897). In 1840, Hall published a collection of his letters in a book⁶⁵, "Letters from the East, and from the West." For some curious reason, Hall confuses James Bowers' surname as "Powers." Spelling, punctuation and emphasis are as published (GNBK 1839a):

4: Bowers Family History



Figure 4.2. [top] James Bowers' home in South Acworth, New Hampshire, as it appeared in 1894 (Wood 1895:171). [bottom] James Bowers' home in 2011; photo by the author.

Without much difficulty we found the house of a Mr. James Powers, to whom we had been recommended; the man who procures the mica for Nott's stoves⁶⁶. The habitation was small, one story high, had two or three rooms, and was surrounded by a pretty little yard, carpeted with grass green as the emerald. The owner, with his two sons, sprightly, fine looking boys, stood at the door as we rode up. They had just finished their mid-day repast. I told him our errand. He received us kindly, and invited us

4: Bowers Family History



Figure 4.3. South Acworth general store and Baptist church [top] ca. 1913 looking east (Metcalf 1913:273), and [bottom] 2011 (photo by the author). James Bowers' home (Figure 4.2) is just out of view further down the road where it disappears from sight.

in. One of the lads ran to the barn to bring hay for the horse. The good woman was tall, slender, comely, had seen about forty winters, was comfortably clad, and so were the three or four little children, who now made their appearance – these hills are fruitful in children as well as rocks – in handsome home-spun garments. Our apartment was diminutive, and the furniture plain, but the floor was clean and white as that of the Presidential parlor, or as soap and water and hard rubbing could make it.

4: Bowers Family History

“Wife these gentlemen have had no dinner.” She said nothing, but set herself to work, and in fifteen minutes our table was spread with all that nature demands or hungry men need.

Dinner over, we betook ourselves to the mineral shop, where were plates of mica of all sizes and shapes. The substance is brought, rough and shapeless, in a wagon, from the hills in Acworth, and the neighboring townships, and here assorted, split, and cut, by shears, in any desired form and size. It is then packed in boxes and sent to New York, or some other market, for sale. It is employed, instead of glass, in stoves, lanterns, &c. It might advantageously be used, as it was in ancient times, under the name of *lapis specularis*, for covering green-houses, and for the construction of bee-hives. For these purposes it would answer better than glass, for it is not so easily broken, and, when pure, is equally transparent. In this vicinity the article is very abundant. Mr. P. informs us that he has, in the course of two or three years, got out and sold mica to the amount of \$2,800. In searching for mica, he finds many other interesting minerals, which he disposes of to mineralogists on very reasonable terms. After engaging him to prepare and forward for me to Bellows-Falls a box of specimens, we proceeded to a hill a half a mile distant, under the guidance of Mr. P.’s sons.

Ascending three or four hundred feet from the level of the road, we came to a singular mass of rock. The lower part of it was chiefly rose quartz, of different intensities; that nearest to the surface, and consequently most exposed

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to the bleaching influences of the sun, being of a pale red, approaching white. In some places, however, on the very surface, it exhibited a bright carmine red. In general, the interior of the rock is most deeply colored. This beautiful substance was extremely hard, but I did not spare the hammer till I had procured as many samples as we could conveniently bring away. A few yards further up the rock we met with a dingy, greasy kind of quartz, interspersed with beryl, remarkable both for its quantity and the magnitude of its crystals. It is, in part, massive, and in some places appears to constitute veins, a foot or more in thickness, running through the quartz. Most of it, however, is in large, overgrown, imperfect hexagonal crystals, of a light green color. We saw several which were little less than two feet in length, and from eight to twelve inches in diameter. One, of giant size, still firm in its bed, presenting to the eye only one of its extremities, I had the curiosity to measure. Its diameter is exactly two feet and three inches; more than twice as large as the largest mentioned by CLEVELAND⁶⁷. Its length is unknown. I procured one seventeen inches long, and ten and a half in diameter, which Mr. P. promised to send to me.*

Here and there, in the rock, you meet with blotches of mica, of very extraordinary size, and perfectly free from the quartz in which it is embedded. I obtained in one of them the amplest sample of mica which I ever had in my possession. It is eighteen inches long, and fifteen in width. But this is only a pigmy in comparison with what Dr. THOMSON⁶⁸ tells us

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is found in Russia, where it sometimes “occurs in plates two and a half yards square.” Twenty or thirty feet higher up, forming the summit of the rock, is an immense quantity of pure white feldspar, which has been employed in the manufacture of artificial teeth, and might be used for the glazing of porcelain ware.

The whole, taken together, is indeed a very remarkable deposit. Nature intended it for a large batch of granite, and furnished all the materials; but when the pudding was made, its parts were not sufficiently agitated, comminuted, and mixed; or, to use more technical language, the pudding was not faithfully *stirred*.

*Any person who wishes to furnish himself with the beryl, rose quartz, mica, tourmaline, &c. &c. of Acworth, can be gratified by writing for them to Mr. James Powers. The letter must contain the exact *inscription to be placed on the box, the route by which it is to be forwarded, and a Northern ten-dollar bank note*. Such a letter will bring the writer, I have not the slightest doubt, the full value of his money.

James’ son Joseph S. joined him in the mica business for about ten years between 1844 and 1854. As J. and J. S. Bowers Co., they had an exhibit in the 1853 Exhibition of Industry (currently known as a World’s Fair) in New York City (Figure 1.13). Tenney (1854:599) reported that “mica plates” from Grafton and Acworth “... exhibited by George H. Ruggles of Boston, and J. and J. S. Bowers of Ackworth⁶⁹ are well known now the world over” Lyell and Wilson also noted that at that time the major sources of

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Figure 4.4. James Bowers memorial in Acworth Cemetery, Acworth, New Hampshire. Photo by the author, 2011.

mica were Grafton and Acworth, New Hampshire (Lyll 1854; Wilson 1854).

James Bowers died 18 November 1858 (NHDR 1858); James' wife Nancy D. (Symonds) Bowers died 12 May 1872 (Acworth Cemetery, Acworth, New Hampshire). They are buried in Acworth Cemetery, Acworth, New Hampshire (Figure 4.4). They had 10 children:

1. Nancy Symonds Bowers

James and Nancy Bowers' first child was Nancy Symonds Bowers (18 December 1816 – 16 February 1892), born in Marlow, New Hampshire (NHBR 1816; NHDR 1892; Merrill 1869; Pine Grove Cemetery,

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Marlborough, New Hampshire). She (32) married on 27 January 1848 to Jacob Proctor⁷⁰ (32) (20 February 1816 – 7 June 1887), a farmer from Lunenburg, Massachusetts (NHMR1 1848; USFC 1850i, 1860n; Hayward 1889). They settled in Marlow, then Nelson, and finally Marlborough, New Hampshire (Hayward 1889). Jacob Proctor, Nancy S. [Bowers] Proctor, and their children Edmund and Anna are buried in Pine Grove Cemetery, Marlborough, New Hampshire, about 6.5 km (4 miles) east of Keene. Their children are:

i. Edmund⁷¹ J. Proctor

Born 4 August 1849, died 17 September 1910 (USFC 1860n, 1870o, 1880p; Merrill 1869; Hayward 1889). Just prior to his death, Edmund (60) was living with his sister Anna E. (54), her husband George A. Robinson (51) and family (USFC 1910l).

ii. Unnamed

Born October 1853, died 22 March 1854 age 6 months (NHDR 1854).

iii. Anna E. Proctor

Born 9 February 1856, died 12 June 1936. Married 6 February 1883 to George Alfred Robinson; four children (USFC 1860n, 1870o, 1880p, 1910l; Merrill 1869; NHMR1 1883; Hayward 1889; NHDR 1936).

2. Pamela Bowers

James and Nancy Bowers' second child was Pamela⁷² (4 September 1818 – 2 September 1869), born in Marlow (NHBR 1818). She never married, but

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stayed close to her mother. In 1869, she (51) was badly injured in a carriage accident and succumbed to her injuries (USFC 1850r, 1860t; NHDR 1869; Wheeler 1879; Hayward 1889). Wheeler (1879:234) writes: “While the horse was under full headway, one rein gave way, the team turned suddenly around, and upset the carriage.” Pamelia is buried in the Bowers family plot in Acworth Cemetery, Acworth, New Hampshire (Figure 4.4).

3. Maria Bowers

Maria (31 May 1820 – 2 April 1879) was the third child, also born in Marlow (NHBR 1820; MSDR 1879). She (30) married John Merrill (30) (21 May 1820 – 10 March 1901) of West Newbury, Massachusetts, on 8 October 1850 in Acworth (NHMR2 1850; MSSC 1855e, 1865c; Merrill 1869; Hayward 1889; MSDR 1901). John Merrill was a piano forté and cabinet maker in West Roxbury, Massachusetts (MSSC 1855e, 1865c). Children (note: for some unknown reason, the names change from one census to the next, but other factors correlate well):

i. Abbie L. (Alice A.) Merrill

Born ~1848, died unknown (MSSC 1855e, 1865c).

ii. Nellie (Ellen, Helen) M. Merrill

Born 1 June 1852, died young at 18 years on 30 September 1870 (MSSC 1855e, 1865c; Hayward 1889 reports 20 September 1870).

Maria’s youngest sister Sarah Jane Bowers (26) lived with Maria and John (45) in 1865 (MSSC 1865c).

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Maria (59) died in 1879; John Merrill (80) died 22 years later in 1901 and was a resident in the Odd Fellows' Home (a charity organization for the indigent) on North Avenue in Worcester, Massachusetts (MSDR 1879; Hayward 1889; USFC 1900m; MSDR 1901). Maria Bowers Merrill is buried in Acworth Cemetery, Acworth, New Hampshire (Figure 4.4).

4. Lucinda Bowers

Lucinda Bowers (16 January 1822 – 11 March 1902) was the last of their children to be born in Marlow (NHBR 1822; Acworth Cemetery, Acworth, New Hampshire). On 4 June 1850 in Acworth, she (28) married Henry Jackson Oliver (35) (December 1815 – 19 December 1900) of Boston, merchant and capitalist (Merrill 1869; Hayward 1889). In 1880, her youngest sister Sarah Jane Bowers (44) was boarding with Lucinda (58) and Henry (65) in Roxbury, Massachusetts, after the death of their father, James Bowers, in 1858 (USFC 1850g, 1850r, 1860i, 1870e, 1880h, 1900h; MSSC 1855c; Hayward 1889). Lucinda died 11 March 1902 in Pepperell, Massachusetts (MSDR 1902a). Nothing further is known about her.

5. James L. Bowers

James and Nancy Bowers named their first male child James L. (9 February 1824 – 2 June 1849). James penned a letter for his brother Joseph and father on 9 January 1849, 6 months prior to his death (Bowers 1849; Figure 5.4). He died young at age 25 (NHBR 1824; NHDB 1849; NHDR 1849; Merrill 1869; Hayward 1889; Acworth Cemetery, Acworth, New Hampshire). Very little else is known about him (Hayward 1889). James L. Bowers is buried in Acworth Cemetery, Acworth, New Hampshire.

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Frink (1989:223) attributes the discovery of using powdered feldspar as scouring powder to Joseph Bowers, but gives no reference. The only related document that could be found is a brief note in the 27 April 1842 *New Hampshire Sentinel* (GNBK 1842a:3):

Mr. James L. Bowers, of Acworth, has left us some papers of superfine Pulverized Quartz, for scouring metal of all kinds. The “folks” speak of it as a very valuable addition to the kitchen cabinet.

The article credits Joseph’s brother James L., and mentions the use of quartz rather than feldspar. Since the article suggests its use on “metal of all kinds,” it seems reasonable to assume the article is correct in the type of mineral described, quartz, which is much too hard for use with glass or enamel. John L. Robertson (1855 – 1922) of Glastonbury, Connecticut, was the first to commercialize a feldspar-based scouring powder. It was marketed locally as Robertson’s Mineral Soap in the 1880s, then nationally as Bon Ami®⁷³ available continuously since the 1890s (Rhineland 1999).

6. Joseph Symonds Bowers ☞

The sixth child was also a boy, Joseph Symonds Bowers (3 November 1825 – 25 December 1879) (Figure 4.5) (USFC 1850r; Hayward 1889; NHBR 1825; Metcalf 1913; Acworth Cemetery, Acworth, New Hampshire). It was around 1838 to 1840 that Joseph S. became interested in his father’s mica mining business, and a few years later he began working with his father. Like his father, Joseph Bowers sold mineral specimens to collectors (GNBK 1839a, -b; CLAR 1878 – 1880).

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Figure 4.5.
Joseph Symonds Bowers,
ca. 1855. From Metcalf
(1913:272).

On 6 April 1852 in Acworth, J. S. Bowers (27) married Mary Louise Mitchell (21) (26 March 1831 – 5 May 1917) of Lempster, New Hampshire, (9th of 10 children) (USFC 1860s; Merrill 1869; Hayward 1889; Metcalf 1913; Anonymous 1917).

When his father died in 1858, Joseph S. carried on the mica business with his brother-in-law Sylvester A. Mitchell as a partner. On the 1860 US Census, he lists his occupation as “quarrist” when he was still working in New Hampshire (USFC 1860s, 1870p). He expanded the Bowers’ mica quarries in the early 1870s when he went to North Carolina (Figure 3.7) to buy and work mica quarries; he purchased his last North Carolina property in 1878.

In 1879, he was returning from North Carolina to spend the Christmas holidays with his family in South Acworth, New Hampshire. Several newspaper accounts tell the gripping tale (GNBK 1879b, 1880a, -b). On Tuesday 23 December 1879 while travelling through New York State, he was seized by a violent fit of vomiting and severe cramps. He continued, with

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difficulty, until he reached Troy, New York, but could continue no further. He was taken to the home of a friend where a doctor determined that he was suffering from bilious cholera. Mary L. Bowers was summoned and made it to Troy by Thursday morning, Christmas day, a few hours before his death (GNBK 1880b). Joseph S. Bowers died on 25 December 1879 in Troy, New York (VTVR 1879; Metcalf 1913).

After Joseph's death, Mary (48), executrix of the estate, put the family farm and homestead in Acworth up for sale (GNBK 1880c). She moved to Bellows Falls, Vermont, with her youngest child Elbran (17) (Figure 4.1: ①). He continued in school there before heading off to Chicago to expand the family mica business (USFC 1880zd). After living in Evanston, Illinois, with her son Elbran between 1890 and 1896, Mary L. Bowers returned to Bellows Falls, Vermont, and was very active in the community, charities, church (including editor of the pies section of the church cookbook), woman suffrage, temperance and Daughters of the American Revolution (GNBK 1885b, 1887a, -b, 1912; FCC 1899; Bachelder 1901; New Hampshire 1904; Beard 1909; DAR 1910; ABCFM 1911). She lived alone in Bellows Falls until her death on 5 May 1917 (USFC 1900za, 1910q; VTVR 1917). As attested to in her obituary, she was much loved, admired and respected in the community (Anonymous 1917). This was the first funeral in Acworth with an "automobile hearse" and where the mourners also rode in automobiles. In addition to local mourners, sixteen persons from out of town, from New Hampshire and Massachusetts, attended the funeral (Anonymous 1917).

Attesting to her remarkable inner strength, she was present at the death of her husband and all three children, living another 21 years after burying the last

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in the family to die, her youngest child Elbran. Mary L. and Joseph S. Bowers and all three children are buried in Acworth Cemetery, Acworth, New Hampshire (Figure 4.6).

Their three children, all born at their South Acworth home (Merrill 1869; Metcalf 1913), are:

i. Flora Etta Bowers

The first child of Joseph and Mary Bowers was Flora Etta (26 October 1853 – 14 May 1876) (USFC 1860s, 1870p; Metcalf 1913; Anonymous 1917). She died young at only 22½; little was found about her short life (Figure 4.6: ③).



Figure 4.6. J. S. Bowers and family memorial in Acworth Cemetery, Acworth, New Hampshire. J. S. Bowers: ①; Mary L. (wife): ②; children: Flora E.: ③; Charles D.: ④; Elbran S.: ⑤. The James A. Wood memorial is in the background: ⑥. Photo by the author, 2011.

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ii. Charles Dana Bowers ✕

Charles Dana (24 February 1856 – 20 October 1889) began the third generation of Bowers mica miners (USFC 1860s, 1870p, 1880x; Metcalf 1913; Anonymous 1917). In 1871 to 1872, he studied at the New London Literary and Scientific Institute in New London, New Hampshire, and from 1874 to 1875 at Kimball Union Academy in Meriden, New Hampshire (Gerould 1880; Metcalf 1913; T. Galligan, K. Bogan and C. Parsons, Colby-Sawyer College, pers. comm. 2011).

He was planning to attend college, but his failing health moved him instead to join his father's mica business in 1875 as J. S. Bowers & Son (Metcalf 1913). Charles D. continued to work his father's mines in Western North Carolina, and expanded the number of mine properties. Charles lived in Burningtown, about 10 km (6 miles) northwest of Franklin, NC (USFC 1880x).

Charles was known to take a break during the cold, winter months to travel back to Bellows Falls, Vermont, to be with his mother (GNBK 1881a, -e, 1883). In 1885, Charles brought some friends with him for the winter break: E. W. Mitchell (a granite quarryman) from Maine and R. L. Porter (merchant, close friend and witness at his wedding 4 years later) from Franklin, North Carolina (GNBK 1885a).

Known only to very few people, Charles D. Bowers married Ivy Symonds in 1889.

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Ivy Symonds, Uncle Ebenezer and Aunt Harriet P. Selleck

Ebenezer “Eben” Selleck⁷⁴ (9 June 1834 – 24 May 1908) was born in Westchester County, New York, very close to Connecticut, and fought in the Civil War for the Union; his grandfather Samuel and uncle David fought and died in the Revolutionary War (Figure 4.7) (USFC 1840e, 1850t, 1870u, 1880zb, 1900zb; USCW 1890; Selleck 1896; Shaffner 2001, 2008; ANWT 2006). The following story is told of his grandfather and uncle during the War (Selleck 1896:200):

[Samuel’s] patriotic soul was stirred and he joined the army only to be captured in the vicinity of the present Prospect Park, Brooklyn, and taken on one of the last days of the summer of 1776, to the prison ship, in New York waters, where he died, leaving a boy who, baptized the day after his birth, had been named David; which son, being only fifteen at the date of his father’s decease, yet resolved to avenge that parent’s fate, and consequently joined the Continentals who, the next spring, April 27, 1777, repulsed [Major-General William] Tryon at Ridgefield [Connecticut] upon his retreat from Danbury [Connecticut] to Compo [Point at the mouth of the Saugatuck River at what is now Westport, Connecticut]. The brave lad there fell, and his comrades, cutting the buttons from his coat, bore them to his widowed parent, than whom “never was the memory of a mother kept more sacred.”

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Ebenezer's elder sister Rebecca Jane Selleck (22 October 1831 – 1909) was the “other woman” in President James A. Garfield's life between 1855 – 1858 (USFC 1850t, 1870v, 1900w; NYSC 1892, 1905; Selleck 1896; Peskin 1978; Boller 1988; Hagood 1995; Shaw 2001). Such close family ties to Garfield got Ebenezer appointed to Customs Collector for the Port of Philadelphia. His appointment was cut short, however, with Garfield's assassination in 1881 (Shaffner 2008).



Figure 4.7.

Ebenezer Selleck from a Civil War portrait. Photo courtesy of Taylor's Battery. Cited 2013: http://www.taylorsbattery.org/Fellow_artilleryman%20gallery%2811%29.htm

Harriet “Hally” Paley (January 1834 – 23 July 1912), Ebenezer's future wife, was born in England as were her younger brother William, and her sister Ann (USFC 1880m, 1880zb, 1900n, 1900zb, 1910a; NBSC 1885a, 1885b; Shaffner 2008; S. Campbell, pers. comm. 2011). John Symonds married Ann Paley, and daughter Ivy (23 March 1861 – 1912) was born in St. John, New Brunswick, Canada (NCML 1889; FreeBMD 2006). Circumstantial evidence suggests that Ivy's parents died tragically in the great Saxby gale⁷⁵ of 1869; the Symonds

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family owned the St. Helena wharf in St. John that was washed away in the storm (Morse 1904). Ivy ended up in England to live with her aunt Harriet Paley (BALTI 1870; Morse 1904).

Ivy (9) and Harriet (30) left England together from Southampton aboard the SS Leipzig, and arrived in Baltimore on 4 August 1870 (BALTI 1870; NCML 1889). Harriet married Ebenezer Selleck in his hometown of Lewisboro, New York, on 9 October 1876 (ANWT 2006). Three years later they moved to Highlands, NC, with Ivy (18) as one of their family (USFC 1880zb). Highlands is about 23 km (14 miles) southeast of Franklin, NC, and had a total population of about 436 in 1880 (Smith 1891).

Ebenezer Selleck was mayor of Highlands in 1886 and 1891 (Shaffner 2001). Figure 4.8 is a hand-drawn map ca. 1881 of Highlands by Samuel T. Kelsey (one of the founders of Highlands in 1875) identifying the properties of Samuel T. Kelsey, Ebenezer Selleck and Dr. Charles Leonard Frost (16 June 1861 – 9 June 1893), the town doctor (Frost 1912; Shaffner 2001, 2008).

William Paley

William Paley (Harriet's brother) found his wife Sarah Jane in New Brunswick, Canada, where four of their six children were born (NBSC 1855a, -b). In 1874 they immigrated to Nebraska where their last two children were born (USFC 1880m, 1900n). He rejoined his sister Harriet P. Selleck in Los Angeles, ca. 1910 (USFC 1910a).

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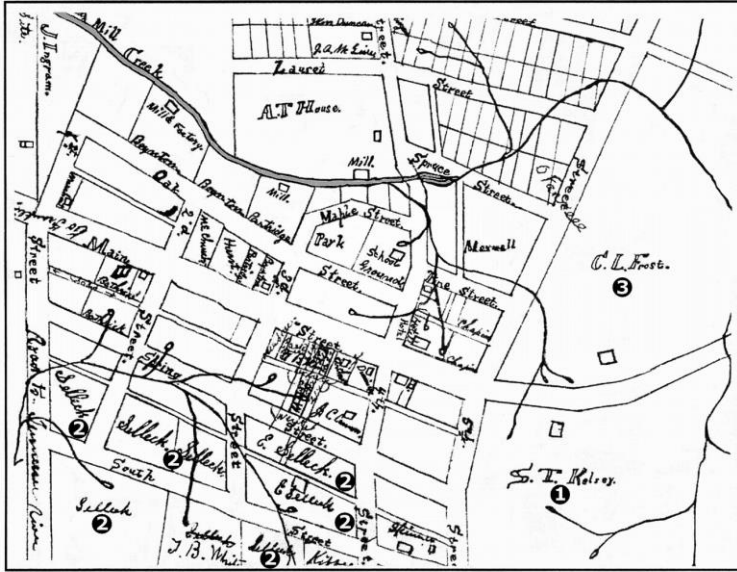


Figure 4.8. Map of Highlands, North Carolina, drawn by Samuel T. Kelsey ca. 1881. Kelsey's property: ①; Ebenezer Selleck: ②; and Dr. Charles L. Frost: ③. Image courtesy Highlands Historical Society. Used with permission.

The Marriage

Charles D. Bowers married Ivy Symonds on 15 October 1889 in Highlands, North Carolina (Figure 4.9) (NCML 1889). The celebrant was William Reagan Barnett from Tennessee, a minister of the Methodist Episcopal Church South (USFC 1870z, 1880zc, 1900z). He was helping the local church in Highlands that was temporarily without a minister (R. P. Shaffner, pers. comm. 2010). The three witnesses to the wedding are Ebenezer Selleck, R. L. Porter, (a merchant in Franklin, NC, brother of J.

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State of North Carolina, }
Mason COUNTY. } Office of Register of Deeds,
Oct. 15th 1889

To any Ordained Minister of any Religious Denomination or any Justice of the Peace of said County:

I, J. A. Porter having applied to me for a LICENSE for the Marriage of Charles D. Bowers of Mason County, aged 33 years, color white the son of J. B. Bowers and M. G. Bowers the father now dead, the mother living resident of Bellows Falls W. Va. and Ivy Symonds of Highlands N.C. aged 28 years, color white, daughter of John Symonds and Ann Symonds the father dead, the mother dead, resident of "

* And the written consent of _____ the _____ of the said _____ to the proposed marriage having been filed with me.

And there being no legal impediment to such marriage known to me, you are hereby authorized, at any time within one year from the date hereof, to celebrate the proposed marriage at any place within the said county.

You are required, within two months after you shall have celebrated such marriage, to return this License to me, at my office, with your signature subscribed to the certificate under this License, and with the Manks therein filled according to the facts, under penalty of forfeiting two hundred dollars to the use of any person who shall sue for the same.

J. S. Sloan
Register of Deeds.

1. Name of person applying for license.	8. Living or dead.	16. Father's name.
2. Name of man to be married in full.	9. Living or dead.	17. Mother's name.
3. Residence.	10. Residence if known, if not, state unknown.	18. Living or dead.
4. Age.	11. Name of woman to be married in full.	19. Living or dead.
5. White or colored.	12. Residence.	20. Residence if known, if not, state unknown.
6. Father of man to be married.	13. Color.	21. Each party is over 18 years of age, male out.
7. Mother of man to be married.	14. White or colored.	

Edwards, Broughton & Co., Steam Printers and Binders, Raleigh, N. C.

_____ being duly sworn, says: That the parties applying for License are of lawful age, and that so far as he is informed and believes, there is no lawful cause or impediment forbidding said marriage.

Witness: _____

STATE OF NORTH CAROLINA, }
Mason COUNTY. } Minister M. C. Church, South

I, W. R. Barnett united in Matrimony Charles D. Bowers and Ivy Symonds the parties licensed above, on the 15 day of October, 1889, at Highlands of Highlands in Highlands Township, in said County, according to law.

* Witnesses present at Marriage: W. R. Barnett

Charles L. Post pres of Highlands
Osney Duffek of "
J. A. Porter of Highlands

1 Name of person officiating. 2 Name of woman married. 3 If minister, of what denomination, if Justice of the Peace, so state. 4 Township. 5 Name of man married. 6 Place of marriage. 7 Dwelling. *At least three persons present at marriage must sign as witnesses.

000160

Figure 4.9. North Carolina marriage license for Charles D. Bowers and Ivy Symonds, 15 October 1889. From NCML (1889).

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A. Porter; USFC 1880y, -z, 1900x), and Charles L. Frost, M.D., from Highlands (USFC 1880zb).

Charles' death

Charles Dana Bowers died on 20 October 1889, only five days after his marriage. According to his Franklin Press obituary, Charles was essentially on his deathbed at the wedding. Neither death records (town, county or state) nor a journal for Charles L. Frost, M.D., could be located. This leaves the cause of death unknown, although Metcalf (1913) did mention a poor state of health when Charles was young. Charles D. Bowers is buried in Acworth Cemetery, Acworth, New Hampshire, with his family (Figure 4.6: ④).

In the Northeast, his death was announced in the Boston Journal and New York Herald-Tribune; neither mentioned his marriage (GNBK 1889a, -b). But Charles' obituary in the Franklin Press, written by W. R. Barnett who married Charles and Ivy, is by far the most personal and moving. It answers some, but not all of the questions about Charles' life and death (Franklin Press 1889):

Obituary

Charles D. Bowers was born in Acworth, New Hampshire, Feb. 24, 1856, and died at Highlands, N.C., Oct. 20, 1889. I[n] some respects he was a remarkable man. His life deserves more than a passing notice.

Mr. Bowers attended school during his boyhood both at New London and Meriden in his native State, and was prepared to enter college when his health failed. He then came South, where his health

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improved. Desiring to complete his education he returned to the North for that purpose. But his health again failed, and in 1876 he came South to stay. After this, however, he went to New York State, and graduated from Poughkeepsie [Eastman] Business College. But by far the greater part of the remainder of his life was spent in Western North Carolina. This was his home.

He engaged extensively in mining in Macon and adjoining counties. He engaged also in the mercantile business, being a member of the firm of R. L. Porter & Co., Franklin, N.C., at the time of his death.

During his last illness, and just a few days before his death, he was married to Miss Ivy Simonds [*sic*], an intelligent and accomplished young lady to whom he had been engaged for some time, and whom he would have married sooner but for his illness. The bride of a few days was left in the weeds of widowhood.

Mr. Bowers was a young man of good mind, liberal education and of fine moral character. He was a useful citizen, a perfect gentleman, and a true friend.

He was a member of the Masonic fraternity, and Worshipful Master of his lodge when called from labor to refreshment. He was one of the brightest and truest masons in Western North Carolina. There was nothing within his power that he would not do for the good of the order.

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Mr. Bowers was not a member of the church, but he was a friend to the church, and gave liberally of his means to support its institutions. In one community he organized, furnished and conducted a Sunday School at his own expense. Indeed, he was a liberal contributor to every good cause. His heart and hand were ever open to suffering and distressed humanity.

The remains of Mr. Bowers were interred at Franklin, N. C. The funeral service was conducted by the writer, assisted by Rev. C. D. Smith, D. D., and Rev. W. H. Leith, D. D. Then the remains were laid away in the Methodist church yard with masonic honors.

Mr. Bowers left some evidence of his preparation for the future. The writer told him a short time before his death that he was praying for him. He did not respond in words, being very weak, but there was that in the expression of his face which indicated that he was at least thinking of his relation to God. The day before he died his mother said to him: "You will have to give up, my son." His reply was: "I think I shall pull through, but if I do not it is all right." She said to him: "Have you any doubt about its being all right?" "Not a doubt," said he. Let us sorrow not then as those who have hope. Let us take comfort in the thought that his sufferings are ended, and that he rests in the home of the good.

W. R. Barnett

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Charles' illness had been recurring problem since his youth. Just prior to his death, his illness was severe enough to call his mother down from Bellows Falls, Vermont. But the disease progressed slowly enough that she could make the trip to be at his bedside when he died. Charles' education at the Eastman Business College in Poughkeepsie, New York, is only mentioned in the obituary. His engagement to Ivy Symonds occurred long before his final bout of illness, but the decision to follow through with the marriage was certainly motivated by his sudden decline in health. Perhaps he took a less strenuous job with friend and merchant of dry goods R. L. Porter due to his poor health and increasing weakness (Hamrick and Hall 1899). The obituary confirms his association with the Masons that was suggested by Klepper (1943) with his gift of the Beasley No. 2 mine in Caler Fork Valley, Macon County, to the Franklin Masonic Lodge. There is little doubt that Charles Dana Bowers was well liked by many, loved by some, and a person of admirable integrity.

Settling the estate

According to property deeds, Charles' brother Elbran S. Bowers traveled to Franklin in December 1889 to settle his brother's affairs (MACNC 1889, 1890). In December 1889, Elbran S. Bowers sold 132 acres (53 ha) of land he owned near Highlands, N.C., to Ivy for \$10 (MACNC 1889). Two weeks later, Ivy sold her inherited mining properties to Elbran for \$10 (MACNC 1890). A notice in the *Franklin Press* in January 1891 indicates that Elbran Bowers was in town once again for several weeks from mid- to late-January (Franklin Press 1891). On 9 April 1891, Ivy Bowers and R. L.

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Porter (a witness to her wedding and clearly a friend) jointly bought property in Franklin, NC, for \$350 from J. S. and Ittie Robinson (MACNC 1891).

Samuel Truman Kelsey, Jr.

The *Franklin Press* reported Mrs. C. D. Bowers visiting friends in Franklin, North Carolina, in October 1892 and May 1893. Ivy married Samuel Truman Kelsey Jr. (25 May 1869 – 6 March 1940), born in Centropolis, Kansas; his father is a founding member of Highlands, North Carolina (USFC 1870a, 1880za; Franklin Press 1892, 1893; CADI 1940; HNBMD 1940; Claypool et al. 1947; Shaffner 2001, 2008). Truman and Ivy moved to Seattle, Washington, in 1893 and had three children while living there (USFC 1900zb).

Around 1905, Ebenezer (70) and Harriet (71) Selleck moved to Seattle to join Ivy (44) and her family; Ivy referred to Ebenezer and Harriet as her parents (USFC 1900zb; Shaffner 2001, 2008). Before 1910 (probably 1905-06), Ivy, Sam, their children and Harriet had moved to Hollywood, CA, where they lived with two servants (USFC 1910a). The move may have been inspired by Ebenezer's failing health, as he had been injured in the Civil War and a home for disabled soldiers was in Sawtelle, California, not far from their home in Los Angeles (USCW 1890; CIWP 1908; USNH 1908). Ebenezer entered the Pacific Branch of the National Home for Disabled Volunteer Soldiers in Sawtelle on 21 February 1906, and died 24 May 1908 (USNH 1908).

In early 1912, Ivy S. Kelsey died while on a return trip to England to visit family (FreeBMD 2006; S. Campbell, pers. comm. 2011). Samuel

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Truman Kelsey died 6 March 1940 (CADI 1940; HNBMD 1940).

iii. Elbran Symonds Bowers ✕

Elbran⁷⁶ Symonds Bowers (7 September 1862 – 25 October 1896), the youngest of Joseph S. and Mary L. Bowers' children, attended school at Vermont Academy, in Saxton's River, Vermont, and Kimball Union Academy in Meriden, New Hampshire (USFC 1870p, 1880zd; Gerould 1880; Metcalf 1913; Anonymous 1917). He, too, was considering college, but instead joined his brother Charles D. in the mica business using the company name "Bowers Brothers" (Figure 5.11). Elbran was in charge of marketing and sales.

He moved to Evanston, Illinois, at 730 Judson Avenue, and opened an office at 121 Lake Street, Chicago, Illinois (Figure 5.15) (Winship 1894). The Bowers Brothers had an exhibit at the 1893 World's Columbian Exposition in Chicago that attracted international attention for both large, clear crystals and ground mica (Handy 1893; Dietrichson 1894).

On 19 February 1890, soon after Charles Bowers' death, his mother sold all of her household goods at auction in Bellows Falls, Vermont, and moved to Evanston to be with Elbran, about whom she was clearly concerned (GNBK 1890b). In August 1891, she did return briefly to Bellows Falls for a visit (GNBK 1891c).

On Sunday evening 25 October 1896 around 10:30 p.m., Charles told his mother that he was going into Chicago to his office. When Charles wasn't home on Monday, Mary Bowers was seriously concerned and notified the Evanston and Chicago police of his disappearance. They checked his Lake Street, Chicago, office and found no

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indication that he had been there. They issued a bulletin with his description which appeared in the Tuesday 27 October 1896 Chicago newspaper *Daily Inter Ocean* (GNBK 1896b:10):

He is 35 years old, weighs 185 pounds, and is 5 feet 11 inches in height. When he left home he wore a dark blue suit and a brown or drab overcoat. ... at Evanston, footprints were found on the lakeshore which seemed to tally with the shoes he wore.

The news spread to Vermont and appeared in the *St. Johnsbury Caledonian*: “There is deep interest in Bellows Falls and adjoining New Hampshire towns over the mysterious disappearance in Chicago of Elbran S. Bowers, which occurred Sunday evening, Oct. 25th. No trace has been found of him since” (GNBK 1896e:5).

The tragic news broke one week later on Tuesday 6 November 1896 (GNBK 1896c:12):

Around and About Evanston

The remains of Elbran S. Bowers, who disappeared a week ago Sunday night, were found yesterday in Lake Michigan at the foot of Main Street. He was a member of the firm of Bowers Bros., Chicago, mica dealers. He was afflicted with mental trouble several years ago, and the day he disappeared his mother, with whom he lived, noticed that he was not himself. He was 36 [*sic*] years of age.

The location his body was found is only about 860 m (approximately 0.5 mile) from his home. One

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can only speculate about the motive for suicide, but certainly the loss of his brother and the decline in the mica industry could be factors. It may only be coincidence, but Elbran's suicide occurred less than a week after the seventh anniversary of Charles' death. The simple death announcement in the *Daily Inter Ocean* reads (GNBK 1896d:8):

BOWERS – Oct. 25, Elbran S. Bowers, aged 34 years. Services at the residence, No. 730 Judson Avenue, South Evanston, Tuesday Nov. 3, at 8 o'clock p.m. Burial at Acworth, N.H.

Elbran Symonds Bowers is buried with the rest of his family in Acworth Cemetery, Acworth, New Hampshire (Figure 4.6: ☺).

7. Shepherd Luke Bowers

Shepherd⁷⁷ Luke Bowers (13 December 1827 – 15 October 1894) is probably the most famous of the Bowers (Figure 4.10) (NHBR 1827; NHDR 1894; Wait 1896). He became a prominent lawyer in Newport, New Hampshire (admitted to the bar in 1856), and was active in education and politics (Wheeler 1879; Hayward 1889).

He (32) married first Thankful M. Newell (32) (~1827 – 16 April 1862) on 6 October 1859; they had one child who died young (NHMR1 1859; NHMR2 1859; Wheeler 1866, 1879; Merrill 1869). Hayward (1889) erroneously reports Newell's death as 1861. Thankful was apparently in poor health because her mother (59) and sister (18) had moved in with the young couple in Newport in 1860. They had two years with Thankful before she died in 1862 (USFC 1860u; Wheeler 1879). In 1870, Shepherd's mother Nancy D.

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S. Bowers (77) and her youngest child (Shepherd's sister) Sarah Jane (34) had moved to Newport to help keep house (USFC 1870r). The location of the house is now a Rite Aid Pharmacy.

His second marriage was to Susan Emily Cofran⁷⁸ (15 December 1844 – 21 June 1890) on 28 September 1870 in Newport, New Hampshire (NHMR1 1870; NHMR2 1870; NHDR 1890). Of five children, Shepherd and Susan had three surviving children (USFC 1880s, 1900y, 1910d, 1930j; Hayward 1889; Wait 1896).



S. L. Bowers

Figure 4.10. Portrait and signature of Shepherd L. Bowers (Wait 1896:50).

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8. Elizabeth Hannah Bowers

The eighth child of James and Nancy was Elizabeth Hannah (28 October 1829 – 14 July 1830) who survived only about six months (NHBR 1829; NHDR 1830; Merrill 1869; Acworth Cemetery, Acworth, New Hampshire). Hayward (1889) erroneously reports her name as Elizabeth A.

9. Mary Elizabeth Bowers

The ninth child is Mary Elizabeth (16 November 1835 – 20 August 1888), born in Acworth, New Hampshire (NHBR 1835; NHDR 1888; Hayward 1889). On 29 November 1854 in Acworth, she (19) married James Amasa Wood (22) (24 May 1832 – 19 May 1905) of Alstead, who worked over the years as a merchant, farmer, travelling agent, and in 1900, Internal Revenue Collector (NHBR 1832; USFC 1850j, 1860t, 1870q, 1880r, 1900s; NHMR2 1854; Merrill 1869; NHDR 1905). Hayward (1889) erroneously reports the marriage as 30 November. In 1875, Governor Person Colby Cheney appointed James Wood as aide-de-camp with the title Colonel, which remained for the rest of his life out of respect for the gentleman (Metcalf 1913).

It is James A. Wood's book "New Hampshire Homes" which provides the 1894 photograph of James Bowers' home (Figure 4.2) (Wood 1895). Wood and his children inherited the James Bowers home where they lived for generations.

They had three children (MSSC 1855i; Merrill 1869; VTVR 1884; Hayward 1889; USFC 1920l, 1930m):

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i. Helen E. Wood

Helen E. Wood (11 May 1857 - 23 October 1926) married Edward W. Perkins (~1854 – 13 February 1920), a grocer, on 12 June 1894 (USFC 1860t, 1870q, 1880r; NHMR1 1894; NHDR 1926; Acworth Cemetery, Acworth, New Hampshire).

ii. Charles Bowers Wood

Charles Bowers Wood died young (20 January 1859 – 20 March 1862) (USFC 1860t; NHDB 1862; Acworth Cemetery, Acworth, New Hampshire).

iii. George Albert Wood

George Albert Wood (24 Aug 1862 - 18 Dec 1930) was president of the National Association of Railway Postal Clerks for whom he organized an insurance department. On 14 October 1884, he married Mary J. Stevens in Rockingham, Vermont (USFC 1870q, 1880r; NHDR 1930; Acworth Cemetery, Acworth, New Hampshire).

Mary Elizabeth [Bowers] Wood died 20 August 1888. James Wood remarried in 1891 to Helen Elizabeth Davis (Metcalf 1913). James A. Wood died 19 May 1905 (Figure 4.6). James and Mary Elizabeth are buried with their sons Charles and George in Acworth Cemetery, Acworth, New Hampshire.

10. Sarah Jane Bowers

The last child of James and Nancy was Sarah Jane “Jennie” Bowers (17 September 1837 – 22 June 1895) (NHBR 1837; USFC 1850r; Hayward 1889; Acworth Cemetery, Acworth, New Hampshire). After the death of her father James in 1858, Sarah Jane (22) moved in

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with her sister Mary Elizabeth (24) and husband James A. (27) Wood and was working as a teacher in Acworth, New Hampshire (USFC 1860t). In 1865, Sarah Jane (28) was staying with her sister Maria (45) and husband John Merrill (45) in West Roxbury, Massachusetts (MSSC 1865c). From Roxbury, she moved to Newport, New Hampshire, with their mother Nancy (76) in 1870 to stay with her brother Shepherd L. (43) after the death of Shepherd's first wife Thankful (USFC 1870r). In 1880, Sarah Jane (42) was living in Boston (West Roxbury), Massachusetts, with another sister, Lucinda (58), and husband Henry J. Oliver (64) (USFC 1880h). She is buried in Acworth Cemetery, Acworth, New Hampshire (Figure 4.4).

Part II. The Mitchell Family, Sylvester and Mary Louise

The Mitchell family tree in the US began with Thomas and Mary Mitchell, the first generation of Mitchells to settle in the Colonies. They emigrated around 1750 from Scottish settlements in the north of Ireland. One of their five children was born during the voyage (Merrill 1869; Cochrane and Wood 1895). Two generations later, Thomas Mitchell, born in 1783 in Francestown, New Hampshire, married Mercy Slader and became the parents of ten children in the fourth generation which includes Sylvester Almond Mitchell (20 September 1828 – 27 September 1915) and Mary Louise Mitchell (26 March 1831 – 5 May 1917) (USFC 1820b; NHDR 1915; VTVR 1917). Sylvester A. became a farmer and mica miner, and Mary L. was the wife of Joseph Symonds Bowers, a woman of immense strength, resilience and character.

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Sylvester A. Mitchell ♂

In 1850 when Sylvester was 22, he was boarding with five other young men in Gilsum, New Hampshire, working in a factory. Since Mary E. Carpenter (23, older sister to Frances A. Carpenter, Sylvester's future wife) was also working in the same place, it seems reasonable to infer a circumstance that would introduce Sylvester to Frances (USFC 1850k, 1850l). The work *may* have been associated with mining (such as sorting and grading mica) since Gilsum was very near many mines. Two years later, Sylvester Mitchell (24) married Frances Amanda Carpenter (22) (26 December 1830 – 27 September 1908) of Lempster on 8 September 1852 in Walpole, New Hampshire (NHMR1 1852; USFC 1860x; Merrill 1869; NHDR 1908, 1915; Frizzell 1963).

Shortly after Sylvester and Frances were married, they moved to Wyocena, Wisconsin, where Sylvester was a farmer (USFC 1860x). All three of their children were born in Wyocena, Wisconsin:

i. Mary Frances Mitchell

Mary Frances (9 September 1854 – 27 October 1928), married on 20 September 1876 to James Alexander Linsley (22 June 1853 – 26 September 1936) (USFC 1860x, 1870n, 1920j, 1930k; NHMR1 1876; NHDR 1928; Alstead 1929; VTVR 1936).

ii. Hattie Jane Mitchell

Aside from birth and death, little is known about Hattie Jane Mitchell (15 July 1861 – 23 September 1877) (USFC 1870n; Ancestry.com).

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iii. Edward Almond Mitchell

Edward Almond (5 March 1863 – 29 March 1935), married on 22 May 1900 to Elizabeth (Lizzie) A. Thompson (1876 – 16 August 1942) (USFC 1870n, 1910k, 1920k). Edward was an optometrist, and repaired clocks for local towns (USFC 1930l; Alstead 1936).

While they were in Wisconsin, Frances' mother Sophronia (Porter) Carpenter (60) moved to Boston to be near other members of the Porter family (USFC 1860o; MSSC 1865e).

Sylvester (42), Frances (40) and their three children moved back to Alstead, New Hampshire, before 1867. On 16 April 1867, Sylvester Mitchell (giving his Alstead address) received US Patent 63925 for an automatically adjusting mechanism to feed water to several boilers simultaneously (Mitchell 1867). This was most likely inspired by the use of steam power in mining. Frances' mother Sophronia (68) moved back to Alstead to stay with them, along with Frances' sisters Emily (40) and Mary E. (43) Porter (USFC 1870n). In 1880, Sylvester (51), Frances (50), and their youngest child Eddie (17) were still living in Alstead. Sophronia (76) and her daughter (Frances' oldest sister) Mary E. Porter (53) were also living with them, but Sophronia died three months later in November (USFC 1880n).

In 1900, Sylvester (71) and Frances (69) were living alone in Alstead (USFC 1900o). Frances died in 1908 at the age of 77 (NHDR 1908). In 1910, Sylvester (81) was living with his son Edward (47) and his wife Elizabeth A. (34) Mitchell, while daughter Mary F. (56) and her husband James A. (57) Linsley lived right next door (USFC 1910k). Sylvester died at the age of 87 in 1915; his death record lists his occupation as farmer and mica miner (NHDR 1915). Ten years later, Mary F.

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and James Linsley continued to live as neighbors (two doors down) with her brother Edward A. and his wife Elizabeth on River Street in Alstead, New Hampshire (USFC 1920j). In 1930, James Linsley (77), widower, was living in Alstead only a few blocks from brother-in-law Edward Mitchell (67) and his wife Elizabeth (54) (USFC 1930k, 1930l). Though younger, Edward would die first in 1935, and James a year later in 1936 (NHDR 1935; VTVR 1936).

Mary L. Mitchell

Mary Louise Mitchell (26 March 1831 – 5 May 1917) was ninth of ten children (Merrill 1869; VTVR 1917). Sylvester A. Mitchell was her older brother of about 2.5 years. On 6 April 1852 she married Joseph Symonds Bowers (Merrill 1869; Hayward 1889; Metcalf 1913). They had three children, two of whom were seriously involved in the mining and marketing of mica, as was her husband. Mary's brother Sylvester became a mica mining business partner with her husband.

Bowers Mining History

Bowers mica mining began with James Bowers ca. 1834 in New Hampshire, continued with his son Joseph S. Bowers in New Hampshire then North Carolina, and concluded with his grandsons Charles D. and Elbran S. Bowers until 1896. It is a remarkable story of a farmer, interested in minerals, who started a business that endured three generations working in three states from New Hampshire and North Carolina to Illinois.

Prior to the 1870s, sales and marketing for the Bowers mica business was apparently managed by the Bowers family directly. No advertisements could be found, but a newspaper article in 1839 provides information about their market and a New York client (GNBK 1839a, -b). After the 1870s when operations began in North Carolina, they were associated with Eugene Munsell and Company of New York which will be discussed in detail. Several of the deeds concern properties about which very little is known; they are included for completeness of the record.

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Bowers' mines: New Hampshire

James Bowers Co.: ~1830 – 1844

Big mine, Alstead, New Hampshire

James Bowers (18 October 1787 – 18 November 1858) began mining between 1830 (Metcalf 1913) and 1834 (Child 1885; Parker 1894). The first quarry to be opened is now called “Big Mine” consisting of two quarries and is located along both sides of Gilsum Mine Road north of Gilsum, New Hampshire (Figure 5.1) (Child 1885). In the 1800s, Gilsum Mine Road was known as “road 47” (Child 1885:84). It was worked by Sylvester Mitchell many years later (Child 1885). Jackson (1844:59) writes “The mica has been extensively quarried by Mr. James Bowers of Acworth, who devotes himself almost exclusively to the business, and sends large quantities of mica to market.” He continues that “...two quarries ... are situated near each other, and are both wrought by Mr. Bowers.” The various workings have been known over the years as the Bowers, Davis⁷⁹, Gilsum, Victory, Golding-Keene, Rhoda, Tripp No. 1 and 2, and Big mine (Sterrett 1923; Cameron et al. 1954). Figure 20 in Sterrett (1923:110) provides a good map of the mines.

Sterrett (1923) provides a history of the early workings of this mine which he refers to as the Davis mine, but portions of the text contain numerous errors which were repeated by Cameron et al. (1954) who called it the Big mine (Gilsum and Victory mines). The errors are most likely due to Sterrett not receiving the information directly, but reciting a tale 2nd or 3rd hand. Sterrett (1923:109) states “... the mine was opened about 1810 by Simon Bowers.” There was no Simon Bowers; perhaps he meant Joseph Symonds Bowers. But it could not have been opened in 1810 by Joseph S. Bowers, 15 years prior to his birth. James Bowers

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began mining between 1830 and 1834 at this very locality, and his son Joseph S. Bowers joined him ca. 1845, then Joseph's son Charles as early as 1872, followed by Sylvester Mitchell when Charles moved to Western North Carolina ca. 1875. Sterrett (1923:109) states that the mine was worked by three generations of the Bowers family, and then by "Silvester [*sic*] Mitchell," which is true. This same name and date error is repeated by Cameron et al. (1954).



Figure 5.1. Northwestward across the main open cut of the Rhoda Mica mine (also Big mine, Bowers mine, etc.), Alstead, Cheshire County, New Hampshire. Photo before 1923, first worked by James Bowers ca. 1834. Plate 14-A in U.S.G.S. Bulletin 740. 1923. Courtesy U.S. Geological Survey.

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James Davis began operations there around 1894. Cirkel (1905:99) writes “The Davis mine is a large producer and is considered one of the best paying mines.” Note that in 1905, the mine had been worked for at least 70 years and was still commercially viable. In 1914, the southwestern part of the mine was owned by George Watson’s American Mica Company (Sterrett 1923) (see Chapter 2). Keene Mica Products worked the northeastern mine from 1914 to 1922. The Golding-Keene Company worked the mine for feldspar from 1921 to 1940. After that, the New Hampshire Mica and Mining Company had their go between 1942 and 1945. Another person, Arthur Whitcomb, worked it for mica from November 1944 to January 1945 (Cameron et al. 1954). Mining consisted of open pit, tunnels and stopes. Cameron et al. (1954) provides details of the mid-1940s operations and descriptions of the quarries.

Beryl Mountain, South Acworth, New Hampshire

Charles Upham Shepard (1830) describes exploring Beryl Mountain (then called Williams Hill, named for the landowner, John Williams) in the company of Edward Hitchcock of Amherst College and others. They even set off some charges to expose some of the large beryl crystals visible on the surface. Shepard (1830) also describes quartz, feldspar and mica. Binney (1844:191) describes, in a note he received from James Englebert Teschemacher, the discovery of “green and yellow cubic crystals” and “a yellow oxide” of uranium minerals on Beryl Mountain⁸⁰. In that note, Teschemacher speculated about the association of the deep yellow color of the beryl with the uranium.

James Bowers opened the mine on Beryl Mountain (named ‘Beryl Mountain’ in 1867; other names over time include Beryl Hill, Williams Ledge, and Williams Hill) in South Acworth, New Hampshire, not long after

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the visit by Shepard and Hitchcock, and prior to the visit by Frederick Hall in August 1838 (Figures 5.2, 5.3) (GNBK 1839a-b; Jackson 1841; Merrill 1869; Hayward 1889; Allen 1899; Metcalf 1913; Cameron 1954; Page and Larrabee 1962). This is the most well known of Bowers' mines, but currently his name is not commonly associated with it. Plate 2 in the map pocket of Page and Larrabee (1962) is an excellent, detailed geological map of the pegmatite and quarry.

Figure 5.2.

View looking south across Beryl Mountain quarry open cut, South Acworth, New Hampshire. Trees growing from the quarry floor suggest how long it has been idle. Photo by the author, 2004.



Figure 5.3.

Clusters of mica on the northern wall of Beryl Mountain mine. Field of view about 1.5 meters (5 feet). Photo by the author, 2007.

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Beryl Mountain has been worked commercially over a period exceeding 125 years for mica, beryl, feldspar and quartz (Roy 1965). It all began with James Bowers ca. 1837. Metcalf (1913:273) notes "... James and Joseph S. Bowers spent much time and money in the development of the quarry on what has since been known as 'Beryl Mountain'" Hayward (1889:376) also states that "He [Bowers] was interested in mineralogy, expending much time and capital in developing the mineral resources of Acworth, especially of Beryl mountain. He was successful in quarrying mica and other valuable minerals." Professor Frederick Hall was essentially a pitchman for Bowers' mineral sales in one of his letters published in newspapers, giving James free advertising (GNBK 1839a-b). Jackson (1841:66, 1844:59) comments that "... immense crystals of beryl ... have been sold for cabinet specimens in various parts of the world." Many of the crystals were quite large. Jackson (1844:59) writes "Some of the crystals are more than a foot in diameter and eighteen inches in length ..." and "... the huge dimensions of the crystals has produced great surprise among mineralogists and geologists of Europe." Jackson (1844) mentions seeing one of the Beryl Mountain crystals, about 8 inches in diameter, in the Imperial Cabinet of Vienna⁸¹. Miners had not yet reached some of the larger beryl crystals exceeding 30 cm (1 foot) in diameter, 1.8 m (6 feet) long and weighing over 454 kg (1000 pounds) (Roy 1965).

Beryl Mountain also produced large quantities of quartz (Roy 1965). Jackson (1841) discusses contacting the New Hampshire Glass Manufacturing Company in Keene, about 32 km (20 miles) away, to test some of the quartz for glass manufacture. It "... produced some fine tubes for chemical use, almost equal to the celebrated Bohemian glass" (Jackson 1841:67). In

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1965, quartz was quarried there and crushed, then cleaned, sized and bonded to one side of white Portland cement to produce facing panels for the John F. Kennedy Federal Building in Boston (Roy 1965). While quarrying the quartz, about 8165 kg (9 tons) of beryl was uncovered and set aside.

Globe mica mine, Springfield, New Hampshire

James Bowers opened a quarry in Springfield, New Hampshire, now called the Globe Mica mine, around 1840 (McDaniel 1886; Sterrett 1923; Cameron et al. 1954). It was about 1838 to 1840 that Joseph S. Bowers became interested in his father's mica mining business, and a few years later at his "coming of age" he began working with his father (Metcalf 1913:272). It is quite likely, given the timing, that J. S. Bowers worked this quarry as one of his first. In Cameron et al. (1954:281), Figure 113 provides a good map of the mine.

Some of the mica mined in this period was sold to Eliphalet Nott in Schenectady, New York, for his patented coal stoves, and also to New York and other markets. In an interview with Frederick Hall, James Bowers mentions earning \$2,800 in two or three years of mica sales (about \$61,050 current equivalent) (GNBK 1839a, -b). An apparent lack of print advertising suggests James Bowers used direct sales and word-of-mouth advertising.

J. & J. S. Bowers Co.: 1844 – 1854

Joseph S. Bowers worked with his father James as "J. & J. S. Bowers Co." for about ten years between 1844 and 1854. In the 1840s, James Bowers (54) sold \$800 – \$1000 mica per season (about \$19,940 to \$24,920 current equivalent) (Jackson 1841, 1844).

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Nathan Trotter, a Philadelphia merchant, purchased mica from J. and J. S. Bowers in December of 1848 and 1849 (Trotter 1849:102). A note to Nathan Trotter from J. & J. S. Bowers Company was written 9 January 1849 by James L. Bowers barely 6 months before his early death at age 25 (Figure 5.4) (Bowers 1849). In 1848 and 1849, Nathan Trotter was also buying mica from the Bowers' competitor, George H. Ruggles (Trotter 1849:346). In December 1849, Nathan Trotter made purchases from both Ruggles and Bowers within the same month.

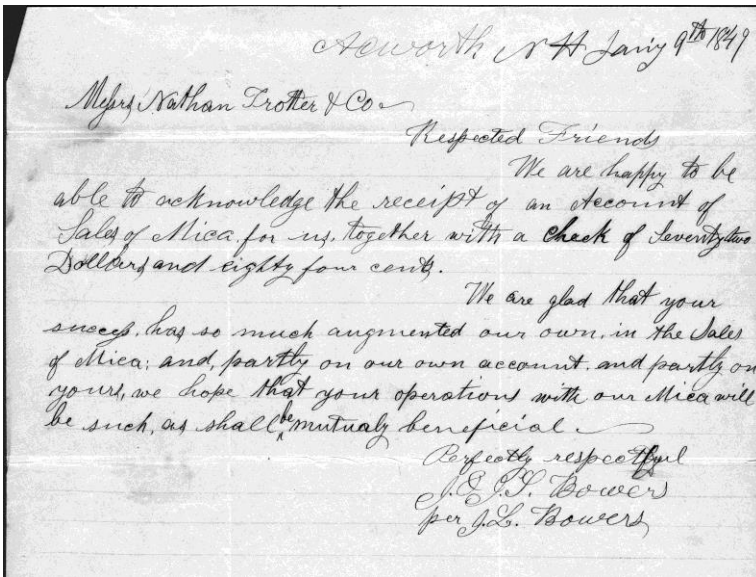


Figure 5.4. Letter from J. and J. S. Bowers Company to Nathan Trotter Company written 9 January 1849 by James L. Bowers (Bowers 1849). Trotter Collection. Baker Library Historical Collections, Harvard Business School. Used with permission.

J. & J. S. Bowers Company had an exhibit at the 1853 Exhibition of Industry (the equivalent of a World's Fair) in New York City (see Figure 1.13). The

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“Mining and Mineral Products” exhibit was directed by Benjamin Silliman Jr., professor of chemistry and mineralogy at Yale College, assisted by George J. Brush (Wilson 1854). A report was written about the mineral exhibits by Charles Lyell (Lyell 1854). Also exhibiting was George H. Ruggles with mica from Grafton, New Hampshire. Tenney (1854:599) reported that “mica plates” from Grafton and Acworth “... exhibited by George H. Ruggles of Boston, and J. and J. S. Bowers of Ackworth [*sic*] are well known now the world over” Lyell and Wilson also noted that the major sources of mica at that time were Grafton and Acworth, New Hampshire (Lyell 1854; Wilson 1854).

J. S. Bowers & Co.: 1854 – 1875

Shortly after the New York Exhibition of Industry, James Bowers retired (~67), and the company was run by J.S. Bowers alone as “J. S. Bowers & Co.” as shown on the mica business card (Figure 5.5) (Metcalf 1913).

The author analyzed the “golden” ink on the card using Energy Dispersive X-Ray Fluorescence Spectroscopy and found it to contain brass with an alloy of approximately 82% copper and 18% zinc with a trace of lead. This alloy is very close to “Prince’s metal” or “Prince Rupert’s metal” with a color similar to gold. Brass-tinted inks are still available (Huber Group 2005).

When his father died in 1858, Joseph S. Bowers carried on the mica business. On the 1860 US Census, he identifies his occupation using the quaint term “quarrist.” At that time, he was still working only in New Hampshire (USFC 1860s).

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Figure 5.5. J. S. Bowers & Co. business card printed on muscovite, ca. 1873. Division of Mineralogy and Meteoritics, YPM MIN045047, © 2009 Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA. All rights reserved. Used with permission.

French mine, Alstead, New Hampshire

The French mine in Alstead was originally opened by Sylvester A. Mitchell after his return from Wisconsin in around 1867, then worked by J. S. Bowers (Figure 5.6) (Cameron et al. 1954). This was also when Sylvester received his US Patent for feeding water to two boilers (Mitchell 1867). Pipes, some possibly for steam, can be seen in Figure 5.6. Cirkel (1905:99-100) writes that the Warren French mine was still in operation at the time of his writing. It consists of a large open cut 183 m (600 ft) long by 8 to 53 m (25 to 175 ft) wide and 40 m (130 ft) deep at the center. This is connected underground to a smaller pit to the north 41 m (135 ft) long by 11 to 15 m (35 to 50 ft) wide. Sterrett (1923:114) writes: “Mica crystals of various

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Figure 5.6. Southwestward across open cut of the French Mica mine (first worked by Sylvester A. Mitchell as early as 1860), Cheshire County, New Hampshire. Before 1923. Plate 15-A in U.S.G.S. Bulletin 740. 1923. Courtesy U.S. Geological Survey.

sizes, some 46 cm [18 in] or more in diameter, were abundant in the working face at the south end of the open cut”

Bowers’ mines: North Carolina

As discussed in Chapter 3, mica mines in Western North Carolina began commercial operation around 1868. The mica from these mines was of a higher quality and larger size compared to New Hampshire mica. Many of the North Carolina properties purchased by the Bowers were known to have mica occurrences

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prior to purchase and had already been prospected or mined to some extent.

The Bowers' properties in Macon and Jackson Counties, North Carolina, can be found at the Register of Deeds in each county (Table 5.1). This information is not yet available over the internet, but is available to the public by personally examining those records within the archives of the County Register of Deeds. Several sources, such as Klepper (1943), Heinrich (1944), Pray (1944), Olson et al. (1946) and Lesure et al. (1968), indicate specifically that the Bowers were involved in the ownership and operation of specific mines (Table 5.2). However, there are 19 deeds with the Bowers as grantee, but only 5 mines are documented that are specifically associated with the Bowers, and two additional mines that *might* be associated with the Bowers. The task of correlating deeds with specific mines is neither simple nor straightforward. While many of the grantor's names are associated with known mines, they cannot be associated with the Bowers' properties with any certainty.

One problem is that the name of a mine generally changes with each new owner and records of past names are not kept. Another contributing factor is the general lack of detailed records of mine ownership and operation. Sheppard (1935:107) provides one description of the problem: "Land holders wanted to know the exact location of boundary lines and discovered that ever since the huge colonial grants, men had been buying and selling with bland indifference to exactitude." Undoubtedly, the use of the "Metes and Bounds" method of recording property boundaries instead of a map contributes to the problem.

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North Carolina Properties Purchased by J.S., C.D. and E.S. Bowers						
Date	Book:Page	Grantor	Grantee	County	Property Description	Mine(s)
1873 Apr 14	M:593	C.C. McPhail	J.S. Bowers, J.W. Brooks	Macon / Jackson	8 tracts in Macon >480 A; 2 tracts in Jackson >640 A	
1873 Apr 24	N:141	J.R. & N.A. Franks	J.S. Bowers & Co.	Macon	10 A.	
1875 May 4	N:533	J.A. Abernathy	C.D. Bowers	Macon	50 A with existing mines	
1875 Jul 8	6:168	S. Frady	J.S. Bowers	Jackson	Cold Spring Ridge	mica mining already in progress
1875 Sep 25	6:210	S. Frady	J.S. Bowers	Jackson	hollow NW of Cold Spring Ridge	
1876 Oct 16	O:295	J.T. Stallcup	J.S. Bowers	Macon	Burningtown Creek	near Poll Miller mine
1876	6:576	E.P. Stillwell	J.S. Bowers	Jackson		
1882 Jun 7	R:17	T.P. & J. Slier, J. Reid	C.D. Bowers	Macon		existing mica mine and buildings
1882 Dec 4	R:186	H.E. Stallcup	C.D. Bowers	Macon	Burningtown Creek	Poll Miller mine
1882	R:184	State Grant #3597	C.D. Bowers	Macon	Wolf Branch of Burningtown Creek	
1883 May 12	R:348	J.H. & S. Alley	C.D. Bowers	Macon / Jackson	acquired from State Grant #2179	existing mine
1884 Feb 1	9:123	E.P. Stillwell, J.W. Buchanan	C.D. Bowers	Jackson		Wilbur Buchanan mine
1884 Nov 18	9:333	J.W. Buchanan	E.S. Bowers, C.M. Stillwell	Jackson		
1884 Nov	11:336	G.C. Norton	C.D. Bowers	Jackson	Chattooga River (agreement)	
1886 Jul 1	12:20	A.S. Bryson	E.S. Bowers	Jackson		
1886 Jul 1	12:20	W.H. Hasket	E.S. & C.D. Bowers	Jackson	Cullowhee Creek	Thomas Davis back tunnel; already being mined
1886 Oct 16	11:496	J.T. Painter	E.S. Bowers	Jackson		
1886	V:18	State Grant #7736	C.D. Bowers, J. Reid	Macon		
1887 Nov 17	X:200	J.M. Tate	C.D. Bowers, D.C. Cunningham	Macon	Chattooga River, Horse Cove	

Table 5.1. North Carolina properties purchased by the Bowers.

Bowers' Mines				
Documented Date	Estimated Bowers Date	Name	Location	References
1875	1875	Poll Miller (Burningtown) mine	Poll Miller Hollow, Macon Co.	Ziegler and Grosscup 1883; Olson et al. 1946; Lesure 1968
~1875	1876	Stillwell mine	Little Savannah Creek, Jackson Co.	Olson 1944b
1880	1880	Hall mine	Hall Mountain, Macon Co.	Pray 1944; Lesure 1968
1883	1883	Beasley No. 2 mine	Caler Fork Valley, Macon Co.	Klepper 1943; Olson et al. 1946; Lesure 1968
1880	1880	Lyle Knob mine	Wayah Bald Mountain, Macon Co.	Heinrich 1944; Olson et al. 1946; Lesure 1968
High Probability Bowers' Mines				
1899	1878 / 1884	Bowers mine	Savannah Ridge, Jackson Co.	Deed 1884a (worked by J.S. then C.D. Bowers)
1868	1873	Iotla-Bowers mine	Poindexter Branch, Macon Co.	Lesure 1968

Table 5.2. North Carolina mines with documented mine history links to the Bowers.

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Here is an example of a Metes and Bounds description from Book Y, page 532, Macon County Register of Deeds dated 30 December 1889 (MACNC 1889):

Beginning at a stake, B. P. Norton's corner, runs North 76° East forty (40) poles to a Spanish Oak, then North 52° East seventy four (74) poles to a black gum, then North 40° West seventy two (72) poles to a chestnut; then North thirty-six (36) poles to a chestnut; then North 20° East twenty six (26) poles to a white oak; then North 65° West seventy four (74) poles to a chestnut; then South 63° West one hundred and fourteen (114) poles to a chestnut, B. P. Norton's corner; then South 60° East one hundred and sixty two (162) poles to a stake; then South 15° West with another square of said Norton's land one hundred (100) poles to the beginning containing 120 acres more or less.

Both units of measure, "rod" and "pole," are 5 m (16.5 ft) in length. No further details, map or clues are given concerning where B. P. Norton lived or the location of that stake. Ephemeral landmarks such a particular tree, a fence post with a notch in it, or a stone in a stream with a chip knocked off are of little use a century or more later.

218 Water Street, NY

J. S. Bowers' business card not only announces his mining activity in Franklin, Macon County, North Carolina, it also gives a business address of 218 Water Street, New York. This is the only known evidence that

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associates the Bowers name with that address, so an investigation and explanation are in order. Who was the mica dealer at this address representing J. S. Bowers? Is there any other evidence linking J. S. Bowers to persons associated with this address?

The building at 218 Water Street was occupied by several merchants over the years. In 1864-65 it was home to Blackwell & Burr Nails and Hollow-ware (Joseph G. R. Blackwell, William R. Blackwell, Charles H. Burr), but more importantly the location of Munsell & Thompson Stoves (James A. Munsell, Robert B. Thompson) (NYT 1864; Wilson 1865).

The cast-iron stove company was cofounded by Ransom Munsell (14 May 1821 – 15 September 1859) and Robert B. Thompson in approximately 1843 in New York City (Munsell 1884). Ransom Munsell established his first foundry in Crescent, New York, near Albany (Munsell 1884; Elizabeth Daily Journal 1889). In 1860, the foundry was moved to Elizabeth, New Jersey (Figure 5.7) (Elizabeth Daily Journal 1889).



Figure 5.7. 1890 view of the Munsell foundry on Fulton Street in Elizabeth, New Jersey. From Elizabeth Daily Journal (1889:125).

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Like the mica business, the cast-iron stove business also benefitted from close family connections. Ransom was joined by his brother James Andrew Munsell (1 October 1810 – 6 June 1876) in 1848 and was very active in the business up to his death in 1876 (Wilson 1856, 1858, 1859, 1861, 1864, 1871, 1874, 1875; Munsell 1884). Hiram Munsell (2 March 1819 – 25 May 1883) joined in 1856 (about three years before Ransom died), and stayed with the company at least through 1877 (Goulding 1877; Munsell 1884). Eugene Munsell (18 April 1851 – 25 April 1908) is the son of Ransom Munsell and joined the family business around 1876 (Wilson 1875).

The address listed for Thompson & Munsell in 1856 was 220 Water Street, New York (Wilson 1856). Two years later a second business address was added at 115 Beekman (Wilson 1858). In 1859, Thompson & Munsell moved from 220 to 218 Water Street, and kept the 115 Beekman address (Wilson 1859). (Water Street is parallel to the East River and Beekman is perpendicular, intersecting Water Street. The Water Street address is very near the Beekman address. This area is now part of the historic South Street Seaport attraction.) The company name changed in 1861 to Munsell & Thompson, still at 218 Water Street and 115 Beekman (Wilson 1861). In 1865, the Beekman address was dropped, and 218 Water Street was the home of Munsell & Thompson.

The Munsell brothers' only sister Sarah (14 October 1823 – >1885), the youngest member of the family, married a stove salesman, John W. Brooks (3 February 1820 – 14 October 1889), who worked with her brothers (USFC 1850s; SDRU 1889). Soon afterward, though, John Brooks and family moved to San Francisco where their son Franklin Brooks (~1855 – 5 March 1906) was born (USFC 1860v). J. W. Brooks

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was active in the San Francisco Mechanics Institute (very similar to the Massachusetts chapter discussed in the Ruggles' history) and was elected as its very first Treasurer on 29 March 1855 (DAC 1860; Mechanics Institute 1908). John W. Brooks and family moved back east from California (USFC 1860v, 1870s) rejoining the Munsell brothers at Munsell & Thompson.

They averted near disaster in 1869 when two floors of the Elizabeth, New Jersey, foundry (and part of the roof) collapsed and ended up in the cellar. Luckily, it happened early on a Wednesday morning a couple of hours before the building was scheduled to be occupied (NYT 1869).

In 1872, the Blackwell & Burr hardware business had moved out of 218 Water Street address (Wilson 1871). Munsell & Thompson continued at 218 Water Street in 1874 (Wilson 1874; USCP 1875; Goulding 1877). By 1876, Munsell & Thompson stove merchants employed Eugene, Hiram and James A. Munsell, John W. Brooks and Robert B. Thompson (Wilson 1875).

J. W. Brooks, who was very much interested in mining, took his son Franklin to Western North Carolina (most likely between 1873 and 1877) where Franklin learned mica mining (McGraw Publishing Company 1906). John Brooks and son are mentioned as "Messrs. Brooks" by C. D. Smith (1877:443) in his report to the Smithsonian Institution about mica mining in Western North Carolina⁸². J. W. Brooks co-signed with J. S. Bowers for North Carolina mine property in 1873 (MACNC 1873a). J. W. Brooks sold a portion of his share in that property to his son Franklin in 1883 (MACNC 1883e). Franklin Brooks acquired property and shares of other mines himself in 1883 (MACNC 1883a, -b, -c) which he transferred to Munsell, Rollo & Company (MACNC 1883f).

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Armed with his knowledge of mica, Franklin Brooks joined his cousin Eugene Munsell in business dealing mica as Munsell & Brooks Company. Munsell & Thompson also used the trade name “Manhattan Stove Works” (Polk 1901).

Around 1883, Munsell, Rollo & Company (composed of Eugene Munsell, William H. Rollo, L. W. Kingsley and Franklin Brooks; see Figure 5.8) was briefly formed for a couple of years (Wilson 1864, 1871, 1874, 1875; MACNC 1883f; Munsell 1884). An 1885 advertisement for Munsell and Rollo declares 218 Water Street as “mica headquarters” (Betts and Rader 1885).

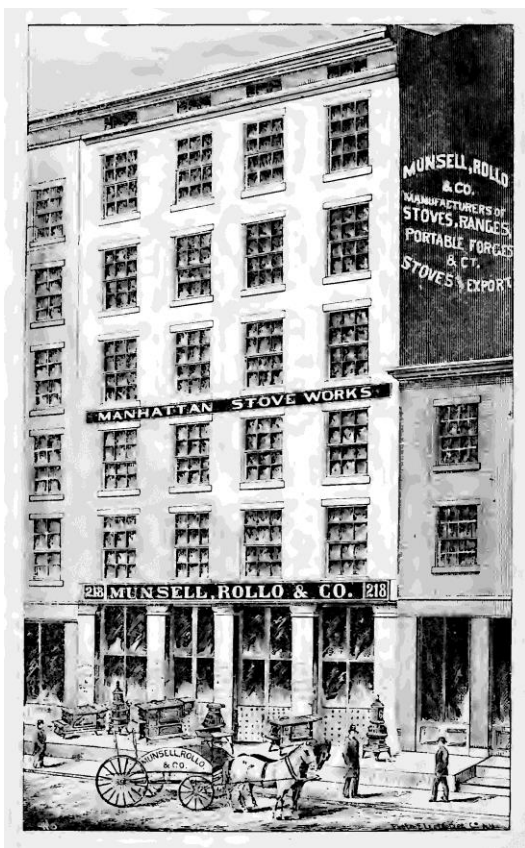


Figure 5.8.
1884 view of 218
Water Street,
New York. From
Munsell
(1884:816).

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Munsell, Rollo & Company was later dissolved when Eugene Munsell & Company was formed (Electrical Publishing Company 1887; Electrical Engineer 1888; RDPC 1888; Biggs 1893; Johnston 1894; MQNB 1897; D. Williams and Company 1902; McGraw Publishing 1906). Franklin Brooks was Vice President of Eugene Munsell & Company, and Vice President and Director of Mica Insulator Company, newly formed to market a molded mica product called Micanite (Figures 5.9, 5.10) (Polk 1901; McGraw Publishing 1906).

MICA 	MICANITE	
CUT AND UNCUT, INDIA AND AMBER, STAMPED SOLID SHEET SEGMENTS AND RHEOSTAT.	TAPER AND BAND RINGS, TUBES, SEGMENTS, TROUGHES, PLATES, CLOTH, ETC.,	
EUGENE MUNSELL & CO., 218 Water St. New York.	MICA INSULATOR COMPANY, 218 Water St. New York.	
SEND FOR Catalogue and Prices.		
AGENTS WITH FULL STOCK ON HAND:		
W. H. SILLS, 151 East Lake St., Chicago.	A. S. PARTRIDGE, Bank of Commerce Building, St. Louis	SINCLAIR RANDALL, 41 East Fourth St., Cincinnati.
CUYAHOGA SUPPLY COMPANY, 10 South Water Street, Cleveland.		J. W. BROOKS & Co., 120 Sutter St., San Francisco.

Figure 5.9. 1895 mica and Micanite advertisement by Eugene Munsell and Company at 218 Water Street, and San Francisco office run by John W. Brooks at 120 Sutter Street (both “Brooks” and “Sutter” are misspelled in the ad). From American Street Railway Association (1895:cover leaf).



THE MICA INSULATOR Co.'s EXHIBIT.

Figure 5.10. Mica Insulator Company exhibit at the 19th Convention of the National Electric Light Association in 1896 at the Grand Central Palace in New York City. From Martin and Wetzler (1896h:538).

Charles E. Coleman was employed as a travelling salesman for Eugene Munsell & Company selling both stoves and mica from 1888 – 1896, and then served as western representative for both E. Munsell & Company and Mica Insulator Company (Marquis 1911). Business was good for stove makers in 1896 (NYT 1896a). The company was growing rapidly, with representatives from the east coast to the west. Eugene Munsell & Co. advertised as not only selling stoves, but also dealing mica from North Carolina and Wyoming⁸³ (Commercial Travelers Club 1893).

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Franklin Brooks remained on the east coast, settling in Elizabeth, New Jersey, while his father John W. Brooks moved west, back to California with his wife and two sons (who were miners) (USFC 1880a; 1900t). J. W. Brooks would become the west coast representative of the companies managed by Eugene Munsell and Franklin Brooks. In San Francisco, he formed J. W. Brooks & Company in 1893 (JEPC 1903). This company expanded in 1896 to larger quarters with room for maintaining stock, and grew again in 1897 under the new name Brooks-Follis Electric Corporation (JEPC 1903). Growth was again rapid, requiring the construction of a new building at 527 Mission Street, San Francisco. Although no specific record could be found, this location was well within the area destroyed by fire after the 1906 earthquake in San Francisco.

In an interesting side note, James Franklin Collins, a bryologist, refers specifically to Eugene Munsell and Company at 218 Water Street as a source for a good grade of mica, then at \$0.51 per pound (Collins 1899). Collins describes making microscope slides and cover slips for examining moss specimens.

Eugene Munsell & Company received several patents for formed mica insulators, primarily for electric trolley car applications (Figure B.10) (Dyer 1892; Heald 1924). In 1907, the Munsell Company moved from Water Street to 68 Church Street (Spencer 1907). After a long illness and struggling with depression after the loss of several friends including Franklin Brooks, Eugene Munsell committed suicide on 25 April 1908 by jumping from his 7th floor hotel window in Manhattan (NYT 1908). The *Philadelphia Inquirer* was not quite so delicate with the headline in their version of the story: “Business-Ridden Millionaire Dives 7 Floors to Death; Leaps from Hotel Window, Body Reduced to Pulp” (GNBK 1908:1).

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Munsell's company continued long after his death at the Church Street address as inferred from, for example, U.S. Patent 1,503,829 (Heald 1924) assigned to Eugene Munsell & Co., and a 1966 Federal Court ruling in which Eugene Munsell & Company is one of the plaintiffs (vLex 2011). Management of Eugene Munsell & Co. in 1914 consisted of Lewis W. Kingsley, president; George S. Leary, treasurer & director (DDC 1914). Eugene Munsell & Co. discontinued manufacturing of mica products in January 1947 and stopped purchasing domestic mica; it then became a wholesaler and importer of foreign mica (Gwinn and Tucker 1949).

Bowers, Munsell and Brooks

Dr. Frederick Hall's published letter written in 1838 draws a connection between James Bowers' mica business and New York stove manufacturers (GNBK 1839a, -b). The Munsell family's stove business was located in New York, and their business address appeared on J. S. Bowers' business card. Thus, there is a definite link connecting the Bowers and Munsell families. The Munsell's brother-in-law and business partner, John W. Brooks, would therefore have knowledge of the Munsell's source of mica – the Bowers family. Because both J. S. Bowers and J. W. Brooks co-signed the deed that represented the first purchase of mine properties in Western North Carolina for either gentleman, it seems reasonable to assume that the decision to move mica mining operations to North Carolina was made jointly (MACNC 1873a). Who thought of the idea first, however, will remain a mystery.

The very close ties between Joseph S. Bowers, John W. Brooks, Franklin Brooks and Franklin's cousin and

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business partner Eugene Munsell leaves little doubt that Eugene Munsell was J. S. Bowers' sales representative.

McPhail properties, Macon Co. and Jackson Co., N.C.

Joseph S. Bowers (with co-signer John W. Brooks) expanded the Bowers' mica quarries in the early 1870s when he went to Western North Carolina to buy and work mica quarries (Figure 3.7). The first purchase was on 14 April 1873 in Macon County, North Carolina, for 75% share of mine properties consisting of 8 tracts of land in Macon County and 2 tracts in Jackson County, together totaling in excess of 1621 acres (656 ha) (MACNC 1873a). The properties were purchased for \$5,000 from Clement C. (C. C.) McPhail, a geologist and railroad agent in Richmond, Virginia (USFC 1880ze; Hanks 1883). Records from 1883 indicate that \$3,600 of the original \$5,000 had gone unpaid for 10 years, but were resolved in an agreement between C. C. McPhail and Franklin Brooks, son of John W. Brooks (MACNC 1883b). McPhail was interested in the mineralogy of Western North Carolina, and organized an exhibit of minerals for the Richmond and Danville railroad (Hanks 1883).

The property deed (MACNC 1873a) includes three tracts of land totaling 500 acres (202 ha) along Cowee Creek, Macon County. Nineteenth century mica mines in this area include Shepherd Knob, Burr Knob/Bryson, Beasley No. 1 and Beasley No. 2. Klepper (1943) and Olson et al. (1946) clearly link Bowers to Beasley No. 2. Both Olson (1946) and Lesure (1968) mention mining commenced around 1890, which is consistent with the Bowers Brothers period, albeit without Charles D. Bowers who died in 1889. Olson et al. (1946) have a very good map of the Beasley No. 2 mine on Plate 5. Beasley No. 1 is reported to have been worked ca. 1880. Since the Bowers owned 500 acres (202 ha) in

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that area and Beasley No. 2 is not far away, it seems reasonable to infer that Charles Bowers could have been involved in its operation; Joseph S. Bowers may have known about it, but died in 1879. The Shepherd Knob mine was opened in 1875 and is another possibility for the Bowers, but nothing has been documented about the early operation. The Burr Knob/Bryson mine seems a poor fit to being worked by the Bowers.

The property deed (MACNC 1873a) also gives the Bowers at least another 481 acres (195 ha) in Macon County, but the actual localities are not certain. One tract specifies 195 acres (79 ha) at Long Branch, but there is no such location in Macon County where any mica mining activity is documented. The two properties in Jackson County included in MACNC (1873a) are 640 acres (259 ha) (indeterminate location), and an unspecified number of acres near Savannah River. Two possibilities for the Savannah River property include Judge Ferguson mine and Henry Buchanan prospects. The opening dates of these mines are known to be very old (before 1900), but neither dates nor persons responsible were documented. The 640 acre (259 ha) tract may have been the area in Jackson County with Faye No. 1 mine, and just across the border in Macon County, the Rocky Face mines.

On 24 April 1873, J. S. Bowers purchased another 10 acres (4 ha) in Macon County from J. R. and N. A. Franks (MACNC 1873b). This could have been the Allman Cove mine or the Iotla-Bowers mine. Both were worked very early, around 1868 to 1870.

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J. S. Bowers & Son: 1875 – 1882

Bowers' mill, Macon Co., N.C.

Cold Spring Ridge and Stillwell mine, Jackson Co., N.C.

Two years after Joseph Bowers' first purchase, Charles Dana Bowers (24 February 1856 – 20 October 1889) would become the third generation of Bowers mica miners (USFC 1860s, 1870p, 1880x). He joined his father's mica business as "J. S. Bowers & Son" in 1875 (Metcalf 1913). Charles D. continued to work his father's mines in Western North Carolina, and expanded the number of mine properties. On 4 May 1875, Charles' first acquisition was a lien on 50 acres (20.2 ha) of land at \$0.02 per acre (\$0.05 per ha) in Macon County that had existing mica mines (MACNC 1875). Later that same year on 8 July and 25 September, Charles' father Joseph purchased two tracts of land in Jackson County from Solomon Frady, one of which had already been prospected for mica (JCNC 1875a, -b).

Charles lived in Burningtown, about 10 km (6 miles) northwest of Franklin, N.C. (USFC 1880x).

Burningtown Creek, Macon Co., N.C.

Wilbur Buchanan mine, Jackson Co., N.C.

In 1876 Joseph Bowers purchased two more tracts of land. The first was on Burningtown Creek near the Poll Miller mine in Macon County. A comment was written into the deed that J. S. Bowers was "now mining mica in Macon and Jackson Counties" (MACNC 1876). The second purchase was to be J. S. Bowers last. In 1876 he purchased a tract of land in Jackson County from E. P. Stilwell (JCNC 1876; Olson 1944b).

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The newspaper article “Along the line of the northern railroad: Talks with the Canaanites” in the 20 November 1879 New Hampshire Patriot states: “The [mine] in North Carolina, I understand, is not being fully worked for some reason at the present time” (GNBK 1879a). Joseph S. Bowers died on 25 December 1879 in Troy, NY, on a return trip from Western North Carolina (VTVR 1879; Metcalf 1913).

Siler property, Macon Co., N.C.

On 7 June 1882, Charles Bowers purchased property in Macon County from T. P. and Jane Siler for \$1000 that had existing mica mines and building (MACNC 1882a).

Polly Miller mine, Macon Co., N.C.

In 1882, Charles Bowers purchased 30 acres (12.1 ha) for \$3.75 from State Grant 3597 on the Wolf Branch of Burningtown Creek with the Polly Miller tract (MACNC 1882b). This was part of property that the State of North Carolina received through a treaty with the Cherokee Indians. On 4 December 1882, Charles purchased additional property nearby from H. E. Stallcup for \$5 in Polly Miller Cove, near Tom Bryan Cove (MACNC 1882c). These properties became known as the Burningtown mine, or Polly Miller mine.

Bowers Brothers: 1882 – 1896

In 1882, three years after the death of Joseph S. Bowers, Elbran Symonds Bowers joined his brother Charles D. in the mica business with Elbran in charge of marketing and sales; the company was known as “Bowers Brothers” (Figure 5.11) (Metcalf 1913).

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Bowers Brothers was in direct competition with Eugene Munsell, but nothing was written to suggest any animus between them. Elbran moved to Evanston, Illinois, and opened an office in Chicago. C. D. Bowers is listed in Branson (1890) as operating mica mines in Franklin and Burningtown, Macon County, North Carolina.

Elbran S. Bowers has a telephone listing in the 1894 *Evanston and Wilmette, Illinois Directory*, giving his home address as 730 Judson Avenue, a business address at 121 Lake Street (as shown on the business card in Figure 5.11), and the very short telephone number 5068 (Winship 1894). His mother, Mary L. Bowers, is also listed at his home address. He had a short walk to the nearest train stop at the South Boulevard Station in Evanston, about 670 m (about 0.4 mile).



Figure 5.11. Bowers Brothers business card printed on muscovite, 1882 – 1896. Division of Mineralogy and Meteoritics, YPM MIN045047, © 2009 Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA. All rights reserved. Used with permission.

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The train ride from Evanston to the LaSalle and Wacker/Lake Station in Chicago is around 16 km (10 miles). The walk from the train stop in Chicago to 121 Lake Street is only about 240 m (about 780 feet). The office location is shown as point 1 on the map in Figure 5.12. Elbran's home in Evanston is easy to find on current maps, but his office is a different matter. That area of Lake Street has changed dramatically; Lake Street is divided into East- and West-sections with new block numbers. A map ca. 1898 was used to find the location (available at <http://www.lib.uchicago.edu/e/su/maps/chi1890/> [cited 13 May 2013]).

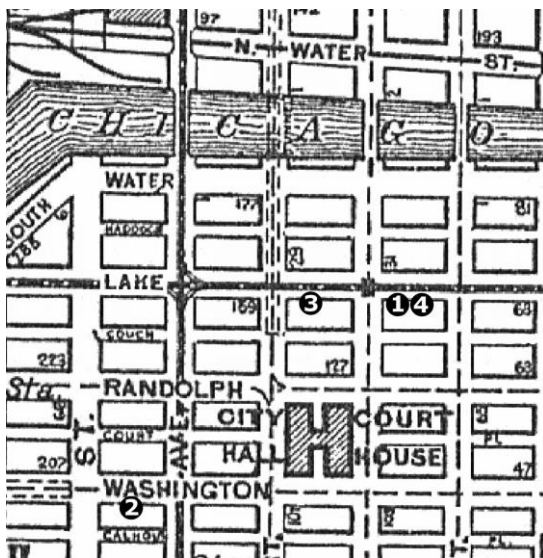


Figure 5.12. Map of Chicago along the Chicago River near Lake Michigan, ca. 1898. Bowers Brothers at 121 Lake St. ca. 1890: ①; Gould & Watson at 170 Washington St. ca. 1891: ②; Eugene Munsell & Co. / Mica Insulator Co. at 153 Lake St ca. 1896: ③; Eugene Munsell & Company at 117 & 119 Lake St. ca. 1902: ④. Adapted from Rand, McNally & Co. Street Guide Map of Chicago.

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State Grant 2179 property, Macon and Jackson Co., N.C.

On 12 May 1883, Charles Bowers purchased property from John H. and Sarah Alley for \$100 (MACNC 1883). The property straddled the county line between Macon and Jackson Counties, and was originally acquired through State Grant 2179.

Buchanan mine, Jackson Co., N.C.

On 1 February 1884, Charles Bowers purchased land in Jackson County from E. P. Stillwell and J. W. Buchanan for \$100 (JCNC 1884a). The deed states that the property of 50 acres (20.2 ha) was originally worked by J. S. Bowers, and included the Wilbur Buchanan mica mine. A mine of this name has not been found in references (Olson et al. 1946; Lesure 1968), and was very likely renamed.

Chattooga River property, Jackson Co., N.C.

In November 1884, Charles Bowers purchased property near the Chattooga River from G. C. Norton for \$250 (JCNC 1884b).

Buchanan property, Jackson Co., N.C.

On 18 November 1884, Elbran S. Bowers and C. M. Stillwell purchased property from J. W. Buchanan for \$100 (JCNC 1884c).

C. D.'s Journey West in 1885?

The 1880s *Salt Lake Herald* has a section called “Hotel Arrivals” where the curious can see who is newly arrived in town, making clear the notion that what happens in Salt Lake City won’t stay there. On 3 September 1885, the *Salt Lake Herald* shows Charles D. Bowers from North Carolina checked into the

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Continental Hotel the day before (Salt Lake Herald 1885). As yet, there is no corroborating evidence to suggest that this is *the* Charles D. Bowers, mica miner, but neither is there any evidence to the contrary. He purchased no North Carolina property in 1885, and is only known to have travelled to Bellows Falls, Vermont, in January of 1885 (GNBK 1885a), which leaves open the opportunity for travel elsewhere in the latter half of 1885. His investments in Arkansas mines (that appeared when settling his estate in 1889) seem to coincide with the “gold rush” around Bear City, Garland County, Arkansas, that began in 1884 (H. de Linde, Garland County Historical Society, pers. comm., 2012). A trip to Utah may have included a visit to Arkansas as well.

There are several possible explanations for Charles D. Bowers to appear in Utah. Among them are:

1. This was not the mica-miner Charles D. Bowers of North Carolina, but a different one. However, no other person by that name in that time period from North Carolina has yet been found.
2. Perhaps Charles was visiting Salt Lake City to investigate an investment opportunity. Mining was one of the biggest legal employers in Utah, so such investment opportunities surely existed. Examining the local newspapers did not disclose any such meetings or investment opportunities at that time.
3. Perhaps Charles was visiting Salt Lake City to consult a medical specialist. A widely publicized Medical and Surgical

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Institute for chronic diseases was established in Salt Lake City in March of 1885, the same year Charles went west. However, the Institute did not survive long because its founder was discovered to be a fraud impersonating a real doctor of the same (or similar) name (see Appendix C). Other legitimate medical specialists in that time period around Salt Lake City have not been found.

4. Perhaps Charles was just travelling as a tourist. A newspaper article from January 1885 indicates that Charles was interested in travelling to new places such as New Orleans (GNBK 1885a).

Other motives could include Masonic related events, or a love interest. Aside from a librarian retiring from a Masonic library in Salt Lake City, no Masonic events were found in Utah in 1885. Charles Bowers was engaged to and married Ivy Symonds from Highlands, North Carolina, in 1889. Charles had no family in Utah.

Meanwhile, back in N.C.

“Thomas Daves back tunnel,” Jackson Co., N.C.

In 1886, Elbran S. Bowers purchased property from J. T. Painter in Jackson County (JCNC 1886a). Land purchases in 1884 (JCNC 1884c) and 1886 (JCNC 1886a-c) and one newspaper article (GNBK 1883b) are the only indications that Elbran may have travelled to North Carolina prior to Charles’ death in 1889.

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Bryson property, Jackson Co., N.C.

On 1 July 1886, Elbran S. Bowers reached an agreement with A. S. Bryson for \$10 for his Jackson County property (JCNC 1886b).

Rock Cut mine, Jackson Co., N.C.

In 1886, Elbran S. and Charles D. Bowers purchased the Rock Cut mine on Cullowhee Creek in Jackson County for \$500 from W. H. Hasket (JCNC 1886c).

State Grant 7736, Macon Co., N.C.

In 1886, Charles D. Bowers received State Grant 7736 for property in Macon County (MACNC 1886).

Horse Cove property, Macon Co., N.C.

On 17 November 1887, Charles D. Bowers and D. C. Cunningham purchased at auction property in Horse Cove on the Chattooga River from J. M. Tate for \$65.50 (MACNC 1887). This was the last property that Charles Bowers purchased before his death.

In 1888, a list of mica dealers included Gould & Watson, Eugene Munsell & Co. (sales representatives for James and Joseph Bowers), Palermo Mica Co., Samuel H. Randall, Ruggles Co., Ruggles & Randall Mica Co., and 18 additional companies (RDPC 1888).

Events following Charles Bowers' marriage and death

Charles D. Bowers married Ivy Symonds on 15 October 1889 while on his deathbed, and died 20 October 1889. His mother traveled from Bellows Falls, Vermont, and was present at his death (Franklin Press 1889). His brother, Elbran S. Bowers, travelled from Chicago, Illinois, to Franklin, North Carolina, to help

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settle his brother's estate with Ivy Bowers. The *Franklin Press* noted Elbran's visit on 21 January 1890 in the "Misc. Local Affairs" section (Franklin Press 1891).

The first document settling Charles' estate is a deed from 30 December 1889 giving Ivy 132 acres (53 ha) of land just east of Highlands, N.C., for \$10 (MACNC 1889). Two weeks later on 14 January 1890, Ivy sold to Elbran all of the mica mine properties in Jackson and Macon County, plus four additional properties and mineral rights in Montgomery and Garland Counties, Arkansas (MACNC 1890). Some of those Arkansas mines, particularly the gold and silver mines around Bear City, were fraudulent enterprises. The original deeds can no longer be examined since they were destroyed in early 20th century fires (H. de Linde, Garland County Historical Society, pers. comm., 2012).

The Beasley No. 2 mine was given as a gift to the Masonic Lodge of Franklin where Charles Bowers was Worshipful Master (Franklin Press 1889; Klepper 1943; Olson et al. 1946).

After helping settle his brother's estate, Elbran returned to Chicago and continued managing the Bowers Brothers business. In 1891 he was selling both domestic and imported mica (Martin and Wetzler 1891). The loss of his brother Charles clearly had a serious impact on the Bowers' source of domestic mica. Foreign mica was being imported 5 cases at a time in the early 1890s (GNBK 1891b, 1892).

1893 World's Columbian Exposition in Chicago

Some North Carolina production may have continued, since the 1893 World's Columbian Exposition in Chicago listed Bowers Brothers "mica and crystals" from Franklin, North Carolina (Figures 5.13, 5.14) (USFC 1870p, 1880zd; Handy 1893).

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Bowers Brothers received a medal and diploma for their mica exhibit (Martin and Wetzler 1896i). The following notice appeared in the 22 November 1893 *Franklin Press*: “Macon county mica won a medal at the World's Fair” referring to the Chicago Exposition of 1893, and the mining efforts of their late, premier mica miner, Charles Bowers (Ziegler and Grosscup 1883; Franklin Press 1893b). Johnson (1897b:174) writes that “New Hampshire made a profuse display, including a massive table and pillars of mica; and North Carolina gave an interesting exhibit from its valuable mines of Muscovite mica within a pavilion built of mica.” The quality and size of the Bowers’ mica on display even caught the eye of Scandinavian engineers (Dietrichson 1894).

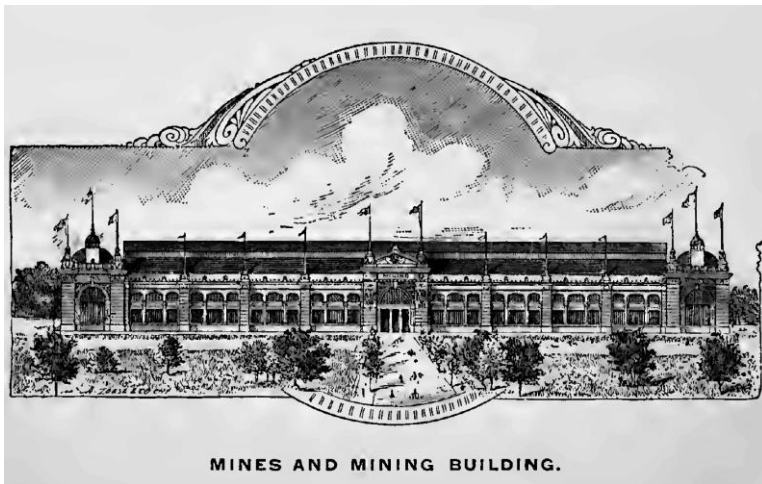


Figure 5.13. Mines and Mining building at the 1893 Chicago Exposition. From World’s Columbian Exposition Pocket Record Book. From Dibble Publishing Company (1893:38).

5: Bowers Mining History

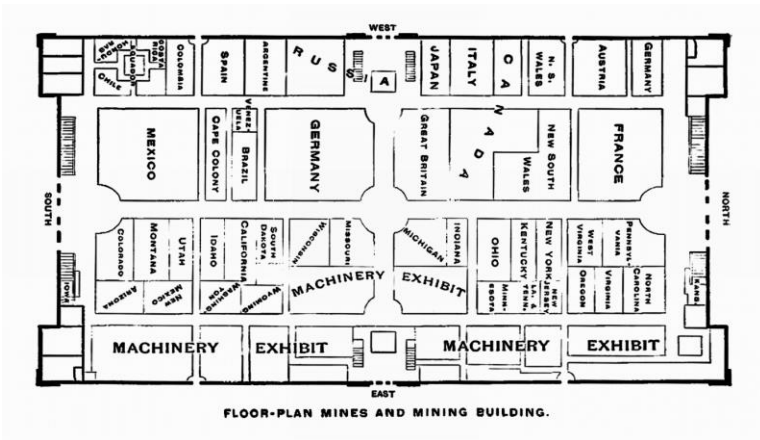


Figure 5.14. Floor plan of Mines and Mining building at the 1893 Chicago Exposition. From Dibble Publishing Company (1893:39).

Richard Alexander Fullerton Penrose, Jr., had a more critical take on all of the exhibits (Penrose 1893). He felt the North Carolina exhibit was among the best of the U.S. offerings, and “the New Hampshire and Vermont exhibits are small but appropriate, consisting largely of building stones, with mica and other minerals from New Hampshire” (Penrose 1893:460).

At the 1893 World’s Columbian Exposition, Peter M. Wilson, the North Carolina Executive Commissioner, had business cards made that bear a remarkable resemblance to the Bowers Brothers cards (Figure 5.15) (Higinbotham 1898). Given the strong similarity, it seems reasonable to suggest that Wilson approached Bowers Brothers for recommendations on a printer and materials for making the cards. Only one example of the Wilson card is known to exist and can be found the collection of the Peabody Museum at Yale University, New Haven, Connecticut.

5: Bowers Mining History

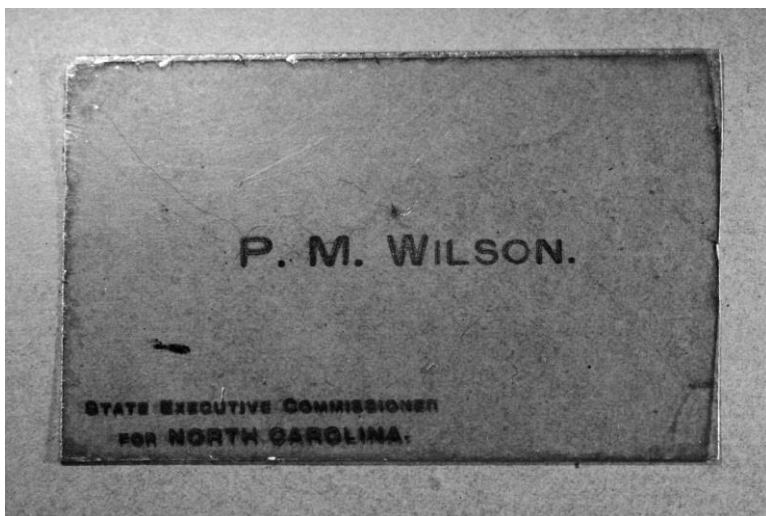


Figure 5.15. Peter M. Wilson business card, on muscovite for the World’s Columbian Exposition in Chicago, 1893. Division of Mineralogy and Meteoritics, YPM MIN045047, © 2009 Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA. All rights reserved. Used with permission.

After Bowers Brothers

Branson (1896) lists “E. Bowers & Co.” operating a mica mine in Webster, Jackson County, North Carolina, and C. D. Bowers operating mica mines in Franklin and Burningtown, Macon County. That may have been true for Charles before 1889 and Elbran prior to 1896, but certainly not afterward.

After Elbran died, Mary L. Bowers, wife of Joseph S. and mother to Charles and Elbran, sold the business, to whom is not known with certainty (Metcalf 1913). However, circumstantial evidence points to Eugene Munsell & Company. The Bowers and Eugene Munsell

5: Bowers Mining History

had a close working relationship demonstrated by the fact that they shared the same business address. Six years after Elbran's death, *The Metal Worker* (Williams 1902) shows Eugene Munsell using not only the same 218 Water Street address in New York that Joseph Bowers indicated on his business card, but Munsell also had an office at 119 Lake Street, Chicago, Illinois, immediately adjacent to the Bowers Brothers Lake Street address (Figure 5.12).

Mary L. Bowers traveled to Franklin, North Carolina, and sold the Burningtown mine property (identified as "Macon Mica Company") to the Franklin town sheriff Charles T. Roane (20 May 1858 – 21 October 1934) for payment of overdue back taxes (MACNC 1896).

In 1897, Mary L. Bowers presented a *very* large mica crystal to the North Carolina State Museum as a memorial to the Bowers brothers. The dedication reads (Brimley et al. 1897:168):

To Bowers Bros.,
Owners of "Bowers' Mica Mine," Macon Co.,
By their mother, Mrs. Mary L. Bowers, Evanston, Ill.
The finest Crystal of Mica (Hexagon weighing 104
pounds),
ever taken from the N.C. mines.

This 47 kg (104 pounds) crystal was valued at \$600 in 1897 (equivalent to about \$16,750 currently). Today this memorial specimen can no longer be found in the museum's collection, lost, its ultimate fate unknown⁸⁴.

In 1897 and 1898, the Annual Report of the Bureau of Labor Statistics of North Carolina continues to list mines in Franklin and Burningtown owned by Charles Bowers, deceased for 8 to 9 years (Hamrick and Hall 1898, 1899). The mines may have continued to be

5: Bowers Mining History

worked by the Bowers Brothers Company, but only up to 1896 with the death of Elbran Bowers.

Sylvester A. Mitchell was still mining mica in Alstead, New Hampshire, in 1897 in an open pit quarry, and was employing steam power (MQNB 1897). He died at the age of 87 in 1915; his death record lists his occupation as “farmer & mica miner” (NHDR 1915).

Afterword

What became of the U.S. mica industry? Figure 6.1, adapted from Colles (1906:96), tells the economic story for sheet mica. U.S. production was relatively flat from 1880 to 1900, and while the profits peaked in 1884, they never returned. Foreign mica, first from India (Figures 6.2, 6.3, 6.4) then the Dominion of Canada (Figure 6.5), began entering the U.S. market duty-free around 1885 (Parker 1894). The value peaked at \$2.64 per pound. U.S. production did increase after 1897, but while volume was up, the value for U.S. mica dropped to around \$0.32 per pound. Later, Brazilian mica was imported as well (Figure 6.6).

Indian mica imports enter this chart in 1889 at more than twice the U.S. production in tons, and increase to ten times the U.S. production in 1901. At the same time, the value of the Indian mica plummets to around \$0.135 per pound when U.S. mica was selling for \$0.277 per pound. Parker (1894:750-751) writes:

The large importation of 1892, before the McKinley tariff took effect (which placed an ad valorem duty of 35 per cent on mica), probably furnished this country with that

Afterword

article for quite a period in advance of the consumption. During the early part of 1893 quite extensive plans were under consideration for mining mica in this State [New Hampshire], but the widespread business demoralization that followed paralyzed the industry, and the present outlook is not very encouraging for mining mica in this vicinity.

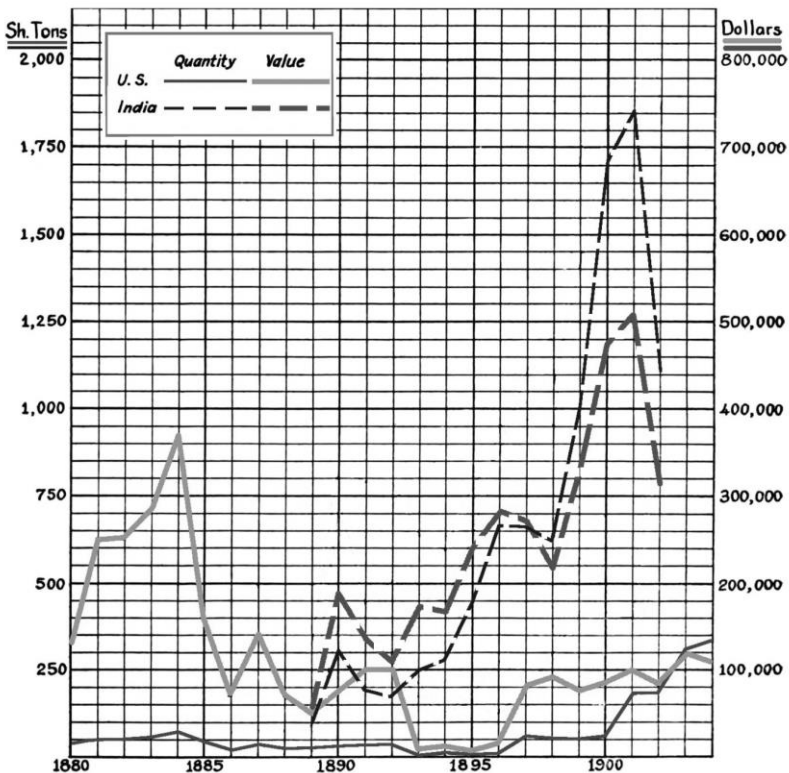


Figure 6.1. Mica production quantity and value for US and India from 1880 – 1905. Adapted from Colles (1906:96).

Afterword

In an effort to present a unified response to the import threat, several U.S. mica companies united to form a trust. The meeting took place in New York on 28 July 1899 (GNBK 1899b). The news report reads (GNBK 1899a:1):

The American Mica Co, with a capital stock of \$3,500,000, which will control the output of mica in the United States, has been incorporated under the laws of New Jersey. The Silla Mica Co, Chicago; the Eugene Munsell Co, New York; and the American Mica Co, Boston, the three largest companies in the United States, form the combination. Options have been secured on all the smaller companies and prices will be advanced 5 per cent, on September 1.

Neither trusts nor tariffs were sufficient to restore full-scale domestic production. The market turned around in the early 1940s, however. Domestic mica production was of great importance during World War II, one of several strategic materials critical to the war effort. Cameron et al. (1954) is one of many studies conducted as a result. After the war, though, conditions changed substantially. Gwinn and Tucker (1949) write:

Eugene Munsell & Co. of New York, N.Y., formerly one of the large mica fabricators in the United States, discontinued the manufacture of mica products in January 1947 and is now only a wholesaler and importer of raw mica. It has also stopped purchasing domestic mica.



Figure 6.2.
Abandoned mine,
Hazaribagh District,
Kodarma, India, ca.
1914. From Dixon
(1914:101).



Figure 6.3.
Shaft sunk through
caved workings, Panya
mine, Hazaribagh
District, Kodarma,
India, ca. 1914. From
Dixon (1914:101).

The *coup de grâce* was lurking in the background, ready to make its appearance. It was first noticed in England in 1804 when the Society for Arts, Manufactures, and Commerce awarded a silver medal to the author of a report concerning India (Urban 1804:572):

In Chemistry: To J. Machlachlan, Esq.
Calcutta, for accounts of the Eastern red dyes,
and mineral products, the silver medal.

Afterword

Next, again in London, the article was published in December 1805 in *The Philosophical Magazine* with the title: “Information on the mines and manufactures of the East Indies, and other subjects” (Machlachlan 1805).



Figure 6.4. Cutting sheets of mica, India, ca. 1918. From Marshall (1918:2).

It would take another 3 years for this article to cross the Atlantic. Buried on the front page of an 1808 newspaper called *The Monitor* (District of Columbia) under the unassuming title of “Arts, Manufactures, and Agriculture” is the award-winning article by J. Machlachlan that describes how a particularly vivid red dye is produced on the Coromandel Coast in southeastern India (GNBK 1808b:1-2). The emphasis in the U.S. version was now on red dye instead of mining. The second paragraph of this article is both extremely interesting and has absolutely nothing to do with red dye but a great deal about mica mining. It reads (GNBK 1808b:1-2):

Afterword

I am not certain whether it is known at home that many of the hills in Bahar, and other parts of India, contain immense quantities of mica, talc, or Muscovy glass. The natives of this country and China make very splendid lanterns, shades, and ornaments of it, tinged of various fanciful colours; and it is also used by them in medicine. When burned or calcined⁸⁵, it is, I am told, considered as a specific in obstinate coughs or consumptions. When powdered, it serves to silver the Indian paper, &c. used in letter-writing; and, in fact, it is applied to numberless purposes. The bazaar price of that of the best quality, split into sheets of about two lines thick, is six rupees⁸⁶ the maund of 84 lb. avoirdupois. If it could be applied to any useful purpose at home, it might go in part ballast of ships, and at a trifling expense.

This same article was carried by another newspaper in Philadelphia a month later (GNBK 1808c). Luckily for the U.S. mica industry, it went unnoticed, and the subject did not come up again in the U.S. for 80 years. When it did, it rang the death knell for the domestic U.S. mica industry. If someone had read and responded to this newspaper article in 1808 (not to mention the British publication three to four years prior), the U.S. mica industry may never have happened.



Figure 6.5. Little Rapids mine, Ottawa County, Quebec, Canada, ca. 1905. From Colles (1905c:358).



Figure 6.6. Brazilian mica mine, ca. 1918. From Marshall (1918:2).

Appendix A

What is Isinglass?

Q: What is isinglass?

A: What is mica?

“Isinglass” is an 18th to 19th century word for mica group minerals and is commonly found in books and literature of the period. Isinglass should not be confused, of course, with the 16th to 19th century “isinglass,” a gelatin made from the air bladders of certain fish like sturgeon.

If you have ever noticed shiny flakes in the soil, sand or a rock outcrop, then chances are excellent that you have seen mica in its natural habitat. If you have seen glittering sparkles in makeup (lip gloss) and cosmetics, once again chances are excellent that you have seen mica. So, what *is* mica?

Mica is the name of a specific group of minerals that vary by composition and structure (Henderson 1892; Rieder et al. 1998). If you find a piece of mica and are not sure of its composition, you can formally call it a mica group mineral, or informally, mica. Much of the mica you see is the most common type: muscovite. A muscovite crystal is illustrated in Figure A.1. Dark-black mica is commonly called biotite, although biotite is not a species of mica but a group of mica minerals that form a series between iron-rich annite (typically black) and magnesium-

Appendix A: What is Isinglass / Mica?

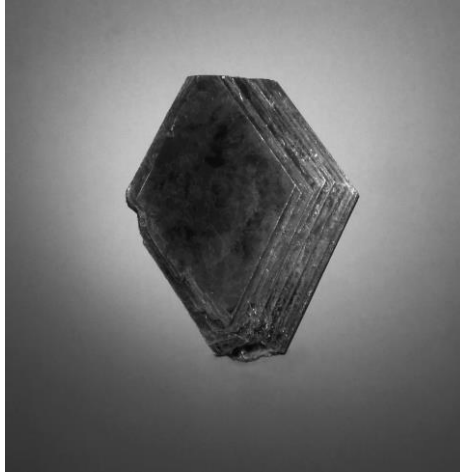


Figure A.1. Mica crystals (22×28 mm; 0.87×1.1 inch) from Beryl Mountain, South Acworth, New Hampshire. Field collected 2004 and photographed by the author.



Figure A.2. One mica specimen composed of two species. Central core of muscovite (with two good crystal faces) surrounded by annite. Overall dimensions 4×5.5 cm (1.6×2.2 inch). Field collected from an unnamed pegmatite in Durham, Connecticut, in 2009 and photographed by the author.

Appendix A: What is Isinglass / Mica?

rich phlogopite (typically reddish-brown). Sometimes it's possible to find two types of mica in the same specimen. In Figure A.2, annite surrounds a muscovite crystal. Some species are very colorful such as the rosy-lavender lepidolite, a lithium-bearing mica.

The photograph in Figure A.1 shows a small cluster of muscovite mica crystals from Beryl Mountain in South Acworth, New Hampshire (the quarry was opened before 1838 by James Bowers, one of the mica mining pioneers). Mica forms as many layers of very thin, flat, hexagonal crystals. It is easy to separate these layers into transparent, flexible sheets. The crystals in Figure A.1 have formed many layers that are offset laterally at intervals. This makes it appear like a deck of playing cards that have been spread slightly sideways. The ability to easily separate mica into sheets of a specific thickness (by controlling the number of individual, extraordinarily thin mica sheets) is one of the characteristics that make mica a useful mineral. Another is that it is relatively soft (Mohs hardness of 2.0 – 3.2; it can be scratched by a copper coin or easily by a knife) making it easy to cut. In prehistoric days, this meant that it could be easily cut into many shapes with only stone tools. In modern applications, this makes mica easy to die-cut into intricate shapes (see Figures B.13 and B.14).

Looking at mica, it should be no surprise that mineralogists have classified mica as a “sheet silicate” (phyllosilicate). In sheet silicates, the crystals form thin layers stacked in parallel like pages in a book (hence the phrase “a book of mica”). Silicates all contain silicon dioxide SiO_2 as a major component of composition and structure. Muscovite, for example, is a potassium aluminum silicate: $\text{KAl}_2(\text{AlSi}_3\text{O}_{10})(\text{OH})_2$.

Mica has so many unique qualities that it can be used in an extraordinary number of different applications. One of the earliest known uses is in cave paintings from 40,000 B.C.E. In fact, there are probably many items in your home

Appendix A: What is Isinglass / Mica?

today using mica that you may not have recognized. Appendix B gives many examples of applications found primarily in the 19th, 20th and 21st centuries. Some of those applications are briefly mentioned here to illustrate specific characteristics of mica. Open the door to a microwave oven and see if you can find a mica product that may have gone unnoticed (hint: Figure B.1).

Another characteristic is mica's heat resistance, withstanding temperatures to 400 – 500°C (750 – 930°F) without significant change in appearance, shape or dimension. This is necessary for one of the early applications – as a window on the door of a stove, oven or furnace and is where the term isinglass was frequently used. An early 20th century application was to support a heating element in a bread toaster. A late 20th century use is supporting the heating element in a portable hair dryer.

Mica has a tensile strength of 255 – 296 MPa (37,000 – 43,000 PSI). This allows it to be stretched very tightly and maintain a large pressure difference. It is also transparent to many forms of electromagnetic radiation. These two characteristics open many opportunities. One is the a window on a Geiger-Müller tube where it has to pass radiation and seal in a low-pressure gas mixture inside the tube. The transparency to electromagnetic radiation and strength make it a perfect cover over the end of the waveguide in a microwave oven. You see it as a non-metallic panel on one wall of the oven interior (typically the right hand side).

There are many more characteristics (like dielectric constant) that make it perfect for many other applications. More examples are revealed in the Appendix B. In summary, mica has many properties that have kept it useful for 40,000 years and counting.

Terminology

Mica was not always called “mica.” Many names have been used, including “isinglass.” Other archaic terms (16th – 18th century) that derive from mica’s shiny, reflective appearance include “cat-silver” and the German “glimmer.” Examining dictionaries from 1675 to 1799 gives some insight to the usage of the words isinglass and mica. The Oxford English Dictionary (OED 2010) offers 1681 as the

ISINGLASS STONE [S.] is a fossil which is one of the purest and simplest of the natural bodies. It is found in broad masses, composed of a multitude of extremely thin plates or flakes. The masses are of a brownish or reddish colour; but when the plates are separated they are perfectly colourless, and pellucid. It is found in Muscovy, Persia, Cyprus, the Alps, and Appenines, and the mountains of Germany. The antients made their windows of it, instead of glafs. Hill.

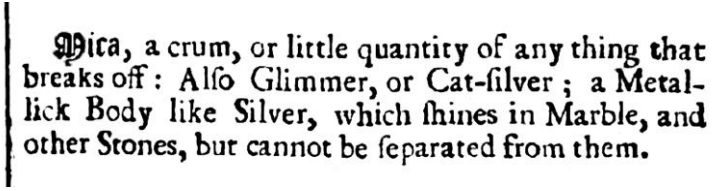
Figure A.3. An example of an 18th century definition of Isinglass from Marchant and Bellamy (1764). It reads (using the original spelling): “ISINGLASS STONE [S.] is a fossil which is one of the purest and simplest of the natural bodies. It is found in broad masses, composed of a multitude of extremely thin plates or flakes. The masses are of a brownish or reddish colour; but when the plates are separated they are perfectly colourless, and pellucid. It is found in Muscovy, Persia, Cyprus, the Alps, and Appenines, and the mountains of Germany. The antients made their windows of it, instead of glass.” [The “S.” indicates the ‘Substantive’ part of speech, or noun; “antient” was an alternative spelling of ancient.]

Appendix A: What is Isinglass / Mica?

earliest use of isinglass referring to things that sparkle, including minerals like talc (mica is frequently called “talc” in old documents).

The OED gives the year 1747 for when the term **isinglass** was used specifically to refer to the mineral mica; four dictionaries published between 1760 and 1799 use that definition (Marchant, Bellamy and Gordon 1760; Marchant and Bellamy 1764; Fenning 1763; Barclay 1799). An example from Marchant and Bellamy (1764) is shown in Figure A.3.

Curiously, four other dictionaries between 1706 and 1720 use the word **mica** to refer specifically to the mineral also known at that time as cat-silver and glimmer (Phillips and Kersey 1706, 1720; Kersey 1708, 1715). An example of this is shown in Figure A.4. Judging usage by these dictionaries, “mica” was in use for the first half of the 1700s, and “isinglass” was used in the latter half of the 1700s (a time when isinglass also referred to the fish-derived gelatin).



Mica, a crum, or little quantity of any thing that breaks off: Also Glimmer, or Cat-silver; a Metallick Body like Silver, which shines in Marble, and other Stones, but cannot be separated from them.

Figure A.4. An example of an 18th century definition of Mica from Phillips and Kersey (1720). It reads (using the original spelling): “Mica, a crum, or little quantity of anything that breaks off: Also Glimmer, or Cat-silver; a Metallick Body like Silver, which shines in Marble, and other Stones, but cannot be separated from them.”

Appendix A: What is Isinglass / Mica?

Derivation

Isinglass: also ising-glass, icinglass, icing-glass, isonglas, isonglass, ison-glass, ison glass. First mineral-related use: 1747. Possible etymology: alteration (by association with "glass") of obsolete Dutch huysenblas 'sturgeon's bladder', from huysen "sturgeon" + blas "bladder" (OED 2011)

Mica: Possible etymology 1: from Latin meaning crumb or grain, for example: *mica salis* means 'grain of salt' (Hanks 1882).

Possible etymology 2: from Latin *micare* or *mico* meaning to shine, glitter, flash or gleam. The German *glimmer* for mica is derived for the same meaning (Hanks 1882). The mineral was named *mica* by the French mineralogist René Just Haüy, and *glimmer* by the German mineralogist Abraham Gottlob Werner (Hanks 1882).

Examples of early usage, alternate forms and definitions:

1706: Mica, "a crum, or little quantity of any thing that breaks off : Also Glimmer, or Cat-silver ; a Metallick Body like Silver, which shines in Marble, and other Stones, but cannot be separated from them." (Phillips 1706).

Virtually identical definitions appear in Kersey (1708, 1715) and Phillips (1720; Figure A.4) which is not surprising since all four versions were edited and published by John Kersey who picked up where Edward Phillips left off)

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- 1781: *Lapis specularis*, Venetian or Muscovite talc (Hammond 1939)
- 1792: Mica, Vitrum Muscoviticum, Ising-glass, *glaces mariæ*, *Lapis specularis* (Belknap 1792)
- 1803: Mica, Muscovy-glass, glimmer, glist, *Alba* (Willich 1803)
- 1809: “Mica is so called from its glittering appearance”
“*Vitrum Moscoviticum* ; because used in Russia instead of glass”
“*Glacies Mariæ* ; because employed, when broken into small pieces or scales, a frosting images of the Virgin Mary” (Kidd 1809)
- 1810: Muscovy talc, *lapis specularis*, mica, daze, talc, muscovy-glass, glimmer, glist (Encyclopædia Britannica 1810)
- 1812 – 1813: Mica, Vitrum Muscoviticum, Ising-glass, *glaces mariæ*, *Lapis specularis* (Belknap 1812, 1813)
- 1816: Mica (Rochon, in Tilloch 1816)
- 1817: *lassis specularis*, isinglass (Merrill and Merrill 1817)
- 1820: isinglass, *mica membranacea* (Atwater 1820)
- 1823: isinglass (Farmer and Moore 1823)
- 1829: mica (Brande 1829)
- 1832: mica (Shaw 1832)
- 1834 - 1836: isinglass (Stimpson 1834, 1835, 1836a)
- 1837: mica (Fairbanks 1837)
- 1839: mica (Darracott 1839)
- 1841: mica (Jackson 1841; Lewis 1841)
- 1844: mica (Jackson 1844; Lunt 1844)
- 1847: mica, isinglass (Dickinson 1847)
- 1848: mica (Smith 1848)
- 1849: mica, isinglass (Adams 1849; Pratt & Co. 1849)

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1850: mica, isinglass (Adams 1850)

1850: isinglass (Hooper 1850)

1851: mica, isinglass (Adams 1851)

1882: *Glaces mariæ*, Muscovy glass: named for Muscovy, former name Russian principality (now Moscow) where it was found in quantity and used as glass substitute (Hanks 1882)

1882: Muscovite: named for Muscovy, former name of part of Russia where it was found in quantity (Hanks 1882)

1882: Cat silver, cat gold: name in Middle Ages for silvery and golden colored mica (Hanks 1882)

Appendix B

How is Mica Used?

Mica has been employed for many purposes over many millennia. Some of the earliest examples are found in cave paintings dating from 40,000 to 10,000 B.C.E. during the Upper Paleolithic period. It was used by the ancient Aztecs, Chinese, Egyptians, Greeks and Romans (Bell 1856; Rapp 2009; NWECC 2011). It has such remarkable and varied properties that as technologies have advanced new applications were found for mica's unique characteristics. Synthetic materials have been developed, but they have not displaced mica in many applications. Contrary to implications of the name, Formica[®] does not contain mica, but was originally formulated for use in insulators as a replacement "for mica."⁸⁷ Some of the qualities that make mica unique and valuable were summed up by Schaller (1921:651-652):

Mica is unique among minerals in its combination of properties useful to the industries. No other mineral has such a combination of perfect cleavage,

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flexibility, elasticity, toughness, transparency, lack of color in thin sheets, nonconductivity of heat and electricity, and resistance to high temperature, to sudden change in temperature, and to decomposition. These properties make mica indispensable

Add to that list of properties an extremely low dielectric constant which makes it ideal in low-loss, high-frequency electronic applications like capacitors, and also because mica is very “transparent” to electromagnetic radiation. An application that utilizes that transparency is the waveguide cover in a microwave oven to pass the high-power 2.45 GHz radio waves from the magnetron to the interior of the oven (see Figure B.1).



Figure B.1. Microwave oven waveguide cover where the microwave energy enters the oven interior. Photo by the author, 2011.

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One of the more remarkable uses (especially given the technology at the time) was demonstrated in 1880 by Alexander Graham Bell and Charles Sumner Taintor⁸⁸ with the invention of the “photophone” with which sounds (speech) were transmitted over a distance of 800 feet using modulated light (Rothwell and Raymond 1880). The “microphone” was made of a thin sheet of mica that was silvered on one side to reflect a beam of light. The person speaking stood on the opposite side of the silvered mica microphone from which a beam of light was reflected. The light was collected by a parabolic mirror and focused on a selenium detector (which acted as a photoresistor) that modulated the electrical current from a battery to a telephone receiver (which functioned as a loudspeaker). This was, in 1880, the first demonstration of a wireless telephone.

Below is a list of many varied uses of mica that have been published in books, articles, patents, magazines, newspapers, advertisements, websites, etc. They are listed alphabetically by topic, then alphabetically again as specific examples. For each application, references are arranged in chronological order as an indication of when they were topical and of interest to various cultures and technologies.

Appliances:

electric iron (Marshall 1918)

microwave oven (waveguide cover 2011, see
Figure B.1)

phonograph (Lewis 1915, 1916; Schaller 1921)

tea & coffee pot (Patent 57,372: Plumb 1866)

telephone - diaphragm, carbon button

microphone (Marshall 1918; Schaller 1921)

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toasters (Patent 1,364,811: Rutenber 1921; see Figures B.2, B.3)

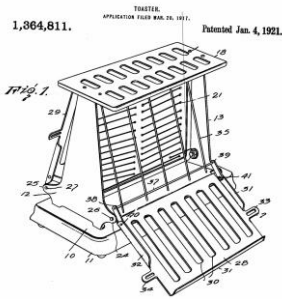


Figure B.2.

Toaster with mica support for heating element, excerpt from Rutenber (1921) Patent 1,365,811.



Figure B.3.

Toaster with mica heating element support, ca. 1920s.

Art (see also Decorative applications):

- ambrotypes, photographs, engraving,
 - lithographing (Adams and Sampson 1858b, 1861, 1862a, -b)
- calico (textile) printing (Schaller 1921)
- frosting artwork / images (Kidd 1809; Shaw 1832; Mangin and Adams 1875; Hanks 1882; Cook 1891; Colles 1905c; see Figure B.4)
- paint pigment (Ingalls 1906; Emmons 1918; Schaller 1921)

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Figure B.4.

Mica-frosted Victorian-era image. Courtesy <http://pennyplainscraps.blogspot.com> in 2011.



paintings on mica (especially 19th century India)
(Thorpe 1912; Marshall 1918; Schaller 1921; see Figure B.5)
special visual effects in daguerreotyping (Patent 7,865: Anthony 1851)

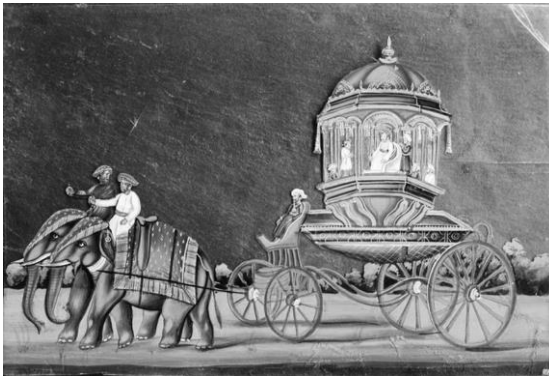


Figure B.5. Gouache painting on mica, early 19th century (corner of mica is delaminating). Size 10.8 × 15.7 cm. Frequently available in auctions.

Buildings, construction and fire-proofing:

“building paper” (Emmons 1918)
concrete ingredient (Schaller 1921)
fireman’s shield / helmet window (Patent 158,217: Low 1874; Schaller 1921)
fire-proof paint & coverings (Schaller 1921)
fire-proof safes (Potter 1852)

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fire-proof shutter for buildings (Patent 157,479: Perkins 1874)

roofing (Jones 1869; Atkinson 1908a:107,-b:183,-c:216; Patent 55,805: Beach 1866; Patent 156,537: Churchill 1874; Colles 1905c; Ingalls 1906; Sterrett 1910, 1914; Schaller 1921; Sheppard 1935; see Figures B.6, B.7)

rust-preventive paint (with powdered aluminum) (Schaller 1921)

tar paper (Schaller 1921)



Figure B.6.
Mica roofing advertisement (excerpt),
Branson (1869:36).

An advertisement for Mica-Noid Ready Roofing. At the top, there is an illustration of a worker in a hat and work clothes using a hammer on a roof. To the right of the illustration, the text reads "All you need is a HAMMER and that's FREE". Below the illustration, there is a block of text: "Mica-Noid is the easiest Ready Roofing to put on—you don't require extra help or expensive tools—all you need is a hammer and we give you that FREE. Mica-Noid lasts 100 years, costs less and is much stronger, and more durable than any other roofing in America. It affords absolute protection to your buildings against rain, frost and heat. It is fire resisting, does not taste rain water, shrivel up or crack." Below this text, the words "Mica-Noid" are written in a stylized, cursive font, with "READY ROOFING" in bold, serif letters underneath. At the bottom, there is another block of text: "will reduce your roofing bills by half—50¢ on the dollar. It is made of thick flexible wool-fibre, felt covered with heavy compressed Mica. It will practically last a lifetime—we guarantee every roll five years and we put \$25,000 behind our guarantee to protect you. Just send us your name and we will mail you samples of Mica-Noid cut fresh from the roll, valuable roofing book and big special money-saving offer—ALL FREE. If you want to save money and get the best roofing made in the world—write today." At the very bottom, it says "MICA-NOID MANUFACTURING CO. 103 Mica-Noid Bldg., St. Louis, Mo."

Figure B.7.
Mica roofing advertisement,
Atkinson (1908a:107).

Appendix B: How is Mica Used?

Cosmetics:

- body lotion (2011); see Figure B.8)
- cosmetics (2013) <http://www.micabeauty.com>)
 - examples: Mineral Lipstick, Lip Gloss and Ultra Shine Lip Gloss all contain mica in the listed ingredients
- glitter for clothing & costumes (Mangin 1875)
- glitter for hair (Mangin and Adams 1875; Colles 1905c)
- glitter for Morocco leather, toys (Mangin and Adams 1875)



Figure B.8.
Body lotion with mica. Photo by the author, 2011.

Decorative applications (see also Art):

- artificial snow for Christmas tree (Marshall 1918)
- camouflage paint (Schaller 1921)
- cloth treatment (with starch) to add sheen (Schaller 1921)
- decorative (Ingalls 1906; Schaller 1921)
- decorative purposes, festivals in India (Simmonds 1861; Balfour 1873; Thorpe 1912)
- inlay work (Schaller 1921)
- lampshades (modern 2013):
 - <http://www.micalampshade.com>)
- ornamental tiles (Schaller 1921)
- plaster (mixed with lime, in India) (Balfour 1873)

Appendix B: How is Mica Used?

prehistoric use (Harper & Bros. 1873; Kerr 1875; Clingman 1877; Smith 1877; Kerr 1880; Ziegler and Grosscup 1883; Phillips 1888a, -b; Thorpe 1912; Arthur 1914; Marshall 1918; Holmes 1919; SOPS 1909; Sterrett 1910, 1923; Sheppard 1935; Rapp 2009)

tassels, banners, toys, flowers (Schaller 1921)

wall paper (Simmonds 1861; Walker 1880; Smith 1891; Colles 1905c; Ingalls 1906; SOPS 1909; Sterrett 1910, 1914, 1916; Thorpe 1912; Arthur 1914; Lewis 1915, 1916; Emmons 1918; Marshall 1918; Schaller 1921); modern use {2013}:
<http://www.wallliner.com/micastone.html>

Electrical insulation:

annealed mica “Zilberglimmer” for motors & dynamos (Lewis 1915, 1916)

dynamo / magneto (Thorpe 1912; Emmons 1918; Schaller 1921)

flexible cloth and tape, electrical applications (Schaller 1921)

formed mica insulators “micanite” (Colles 1905c; Sterrett 1910, 1914; Thorpe 1912; Lewis 1915, 1916; Emmons 1918; Marshall 1918; Schaller 1921)

formed mica press (Patent 1,503,829: Heald 1924)

fuse block insulator (Colles 1905c; Schaller 1921)

fuse insulator (Marshall 1918)

fuse window (Marshall 1918)

guard on rheostat (Schaller 1921)

heating assemblies, electrical (Schaller 1921)

insulators (Colles 1905c; Smith 1909; Sterrett 1910, 1914, 1916; Arthur 1914; Pulsifer

Appendix B: How is Mica Used?

1914; Lewis 1915, 1916; Emmons 1918;
Marshall 1918; Schaller 1921)
lamp socket insulator (Colles 1905c; Schaller
1921)
lightning arrester (Electrical Engineer 1891d;
Marshall 1918)
mica washer (Colles 1905c)
motor commutator insulation (Ingalls 1906;
Thorpe 1912)
spark plug (Marshall 1918; Schaller 1921; see
Figure B.9)

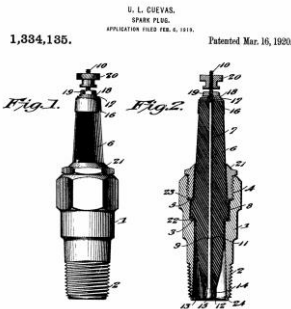


Figure B.9.

Spark plug with mica
insulator (item 6),
excerpt from 1920
Patent 1,334,135.

trolley wire insulator (Patent 411,749:
McCarthy 1889; Patent 428,979: Watson
1890; Patent 442,446: Luscomb 1890 - see
Figures B.10, 2.21; Patent 467,942: Lee
1892; Patent 483,646: Dyer 1892)

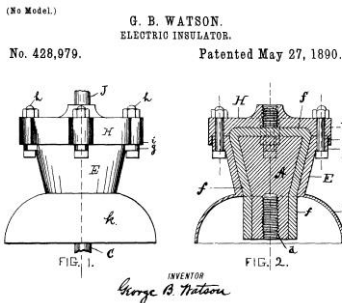


Figure B.10.

Trolley wire
insulator, excerpt
from Watson
(1890) Patent
428,979.

Appendix B: How is Mica Used?

Electronics:

capacitor (Patent 464,667: Tesla 1891; Schaller 1921; Patent 3,829,738: Makihara 1974; Patent 4,025,829: Makihara 1977; See Figure B.11.)

Geiger-Müller tube window (1908 reference by Bertram B. Boltwood to the experiments of Hans Geiger in: Badash 1969:196-197; {2011}, see Figure B.12.)

power semiconductor mounting insulator ({2011}, see Figure B.13.)

vacuum tube ({1920-2011} See Figure B.14.)

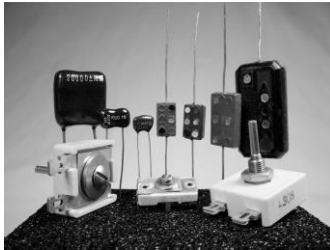


Figure B.11.

Assorted styles of mica capacitors, examples shown ca. 1930s – 1970s. Photo by the author, 2011.



Figure B.12.

LND 7232 mica end-window Geiger-Müller tube, this example ca. 2008. Photo by the author, 2011.

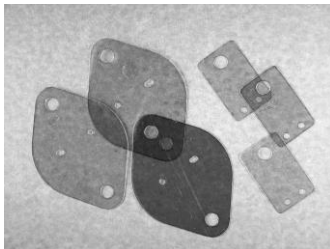


Figure B.13.

Mica insulators for mounting power semiconductors to a heatsink. Photo by the author, 2011.

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Figure B.14.

Mica support structures inside electronic vacuum tubes, examples shown ca. 1960 – 1980. Photo by the author, 2011.

Glass substitute:

glass substitute (especially on warships; resists cannon's concussion) (Belknap 1792, 1812, 1813; Willich 1803; Kidd 1809; Encyclopædia Britannica 1810; Tilloch 1816; Brande 1829; Shaw 1832; Jackson 1841; Bell 1856; Ripley and Dana 1858; Waterson and Simmonds 1863; Mangin and Adams 1875; Barnard and Guyot 1877; Hanks 1882; Thorpe 1912; Pulsifer 1914; Sterrett 1916; Schaller 1921)

conning tower, submarine (Schaller 1921)

diver's helmet (Schaller 1921)

fare-box, window (Patent 158,982: Robinson 1875)

gauge front (Schaller 1921)

glazing for paintings – glass substitute (Belknap 1792, 1812, 1813; Encyclopædia Britannica 1810)

goggles (Shaw 1832; Schaller 1921)

greenhouse windows in Roman times (Encyclopædia Britannica 1810)

Lanterns & lamps:

fire truck lantern (Jackson 1841)

lamp chimney (Patent 29,172: Humphrey 1860; Patent 34,917: Van Order 1862; Balfour 1873; Barnard and Guyot 1877; Hanks

Appendix B: How is Mica Used?

1882; Sterrett 1910, 1914; Schaller 1921;
see Figure B.15)
lamp shade (Patent 23,875: Wilhelm 1859;
Schaller 1921.)

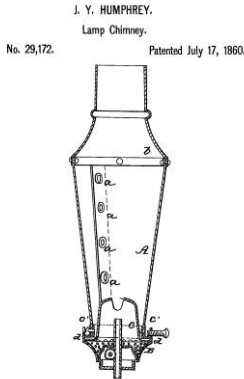


Figure B.15.
Mica lamp chimney,
excerpt from
Humphrey (1860)
Patent 29,172.

lanterns: signal, battle, engine, common and
other lanterns (Stimpson 1836b)
lantern shades (Stimpson 1836b; Willich 1803;
Kidd 1809; Belknap 1792, 1812, 1813;
Encyclopædia Britannica 1810; Tilloch
1816; Merrill and Merrill 1817; Brande
1829; Shaw 1832; Jackson 1841; Patent
5,516: Grimes; Patent 5,806: Evans 1848;
Adams 1848, 1849, 1850, 1851, 1856a,
1857a; Adams and Sampson 1858b, 1861,
1862a, -b; Patent 9,566: Parker 1853; Patent
148,842: Nutting 1874; Mangin and Adams
1875; Hanks 1882; Colles 1905c; Ingalls
1906; Thorpe 1912; Arthur 1914; Lewis
1915, 1916; Emmons 1918; Schaller 1921;
Robins 1939; see Figure B.16.)
lighthouse window (Tilloch 1816)
magazine lantern (Willich 1803)
magic lantern, projector (Patent 139,865: Buzby
1873)

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H. EVANS.
Lantern.
No 5,806. Patented Sept. 26, 1848.

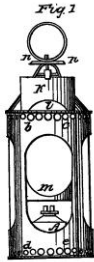


Figure B.16.
Lantern with mica windows, excerpt from Evans (1848) Patent 5,806.



Figure B.17.
Folding lantern with mica windows used by medical field units during WWI. From the Fred D' Ambrose collection; photo by the author, 2010.

military lantern (Schaller 1921)
miner's lantern (Patent 10,419: Brewer 1854;
Patent 148,525: Tappan 1874; see Figure
B.17.)
pocket lantern (Patent 147,204: Walton and
Walton 1874)
railway caboose and headlight chimneys
(Magraw 1910)
safety lantern (Adams 1849, 1850, 1851, 1856a,
1857a; Adams and Sampson 1858b, 1861,
1862a, -b)
signal lantern (Patent 149,826: Belknap 1874)

Appendix B: How is Mica Used?

street lamp (Patent 153,581: Lochman 1874)
vapor lantern (Patent 22,253: Johnson and
Bailey 1858)

Lubrication:

axle grease (Atkinson 1908a:96,-b:170,-c:213,-
d:279; Sterrett 1910, 1914; Lewis 1915,
1916; Emmons 1918; Marshall 1918;
Schaller 1921; See Figure B.18.)



Figure B.18. Mica axle grease ads, Atkinson (1908a:96, 1908c:213). Antique can of mica axle grease as shown in the advertisements. From the Fred D’Ambrose collection; photo by the author, 2011.

bearing packing material for trains (Schaller 1921)
heavy bearings, road vehicle axles (Smith 1891;
Colles 1905c)
railway lubricants (Smith 1891; Colles 1905c)
wooden bearing grease (Schaller 1921)

Appendix B: How is Mica Used?

Maritime applications:

compass cards (Stimpson 1836b; Jackson 1841, 1844; Adams 1848, 1849, 1850, 1851, 1856a, 1857a; Patent 15,017: Peverly 1856; Adams and Sampson 1858b, 1861, 1862a, - b; Patent 55,827: Custer 1866; Patent 163,840: Baker 1874; Thorpe 1912; Schaller 1921; See Figure B.19.)



Figure B.19.

Mica compass card, late 19th century, made by E. S. Ritchie and Sons, Boston, Massachusetts. Ritchie began making compasses for the U.S. Navy just after the start of the Civil War.

lighthouse window (Tilloch 1816)

magazine lantern (Willich 1803)

protective layer against worms on ship's hull
{ limited use – copper is better } (Jackson 1841)

ship's lanterns (Willich 1803; Tilloch 1816;
Merrill and Merrill 1817; See Figure B.20)

ship / battleship windows (Willich 1803; Kidd 1809; Belknap 1792, 1812, 1813; Tilloch 1816; Brande 1829; Shaw 1832; Jackson 1841; Mangin and Adams 1875; Hanks 1882; Thorpe 1912; Pulsifer 1914; Sterrett 1916; Schaller 1921)

Appendix B: How is Mica Used?

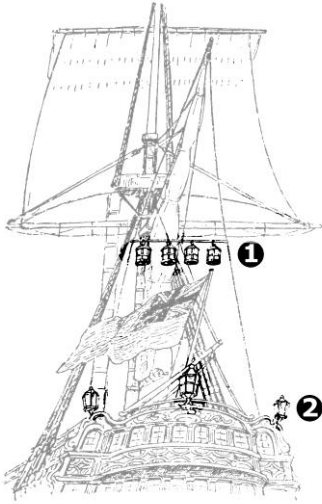


Figure B.20.

Examples of ship lanterns: 4 night signal lanterns: ①, and 3 poop-deck lanterns: ②. Adapted from Leslie (1890).

Miscellaneous:

- annealing steel (Schaller 1921)
- artificial aventurine (Hanks 1882)
- book cover (Mangin and Adams 1875)
- component in telephone case (Patent 293,136: Benjamin 1884)
- covering for wounds (Schaller 1921)
- fan branch (Mangin and Adams 1875)
- finishing pigment to preserve rubber (Schaller 1921)
- gastric medicines in India (Machlachlan 1805; Colles 1905c; Schaller 1921)
- letters for sign boards (Mangin and Adams 1875)
- medicinal – China: (Balfour 1873); India: (GNBK 1808b)
- nitroglycerine-soaked mica powder {“mica powder” meaning a type of dynamite} (Colles 1905c; Thorpe 1912; Schaller 1921; Sheppard 1935)
- sandblasting (Schaller 1921)
- scarecrow (Mangin and Adams 1875)

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sheet music page turner (Patent 160,449:
Maedel 1875; See Figure B.21.)

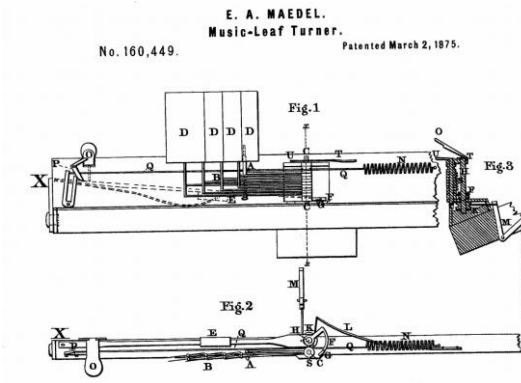


Figure B.21.
Music page
turner, excerpt
from Maedel
(1875) Patent
160,449.

tires (solid & pneumatic, ingredient for heat resistance) (Schaller 1921)
tires (pneumatic, powder between tire & inner tube to prevent sticking) (Sheppard 1935)
toys (Balfour 1873)
vulcanized rubber (Patent 137,509: Torrey 1873; Schaller 1921)
writing sand (Simmonds 1861; Mangin and Adams 1875)

Scientific applications:

balance pan protective covers (Hanks 1882)
chemical purposes (Adams and Sampson 1858b, 1861, 1862a, -b; Hanks 1882)
slides and cover slips for microscope slides (Belknap 1792, 1812, 1813; Encyclopædia Britannica 1810; Brande 1829; Hanks 1882; Collins 1899)
mounting soft natural-history objects (Schaller 1921)
scientific instrumentation (Mangin 1875; Schaller 1921)

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Stove & furnace windows:

base burning stove (Patent 158,847: La Rue 1875; Marshall 1918)

close stove window (Potter 1852)

coffee roaster window (Patent 1,919: Stillman 1840)

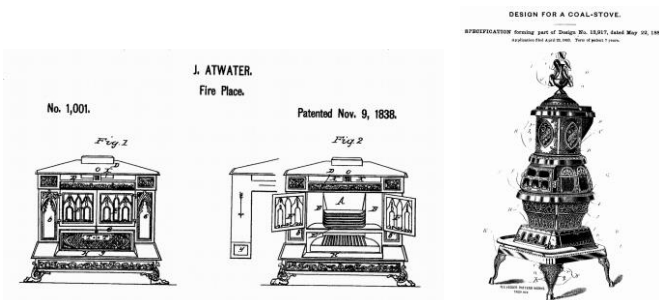
kerosene stove (Patent 157,740: Dethmann and Claussen 1874)

solar heater (Patent 260,657: Calver 1882)

stove / furnace window (Stimpson 1836b; Adams 1848, 1849, 1850, 1851, 1856, 1857; Patent 1,001: Atwater 1838; Jackson 1841; Waterson and Simmonds 1863; Barnard and Guyot 1877; Hanks 1882; Patent D13,917: Bascomb et al. 1883; Patent 16,372: Bement et al. 1885; Patent D18,179: Heisel 1888; Rothwell 1897; Williams 1902; Colles 1905c; Atkinson 1908e:398,-f:486; Sterrett 1910, 1914, 1916; Thorpe 1912; Arthur 1914; Lewis 1915, 1916; Emmons 1918; Marshall 1918; Schaller 1921; Sheppard 1935; See Figures B.22, B.23 and B.24)

stove window (ad) (Atkinson 1908e)

related article: cleaning mica stove windows (Atkinson 1908f)



Figures B.22 and B.23. Stoves with mica windows in doors. Excerpts from: left, Atwater (1838) Patent 1,001; right Bascomb et al. (1883) Patent D13,917.

Appendix B: How is Mica Used?



Figure B.24. Left: Universal Model 165; inset: interior detail of isinglass window in the door. Courtesy Prospect Hill Antiques, Georges Mills, New Hampshire (not far from an abandoned mica mine); photo by the author, 2011. Right: Wehrle Model 100 adapted from advertisement in October 1908 *Farm Journal* (Atkinson 1908e:398).

Thermal insulation:

- asbestos replacement (Thorpe 1912)
- thermal insulation on metal handles (Colles 1905c)
- boiler & pipe heat insulation (Colles 1905c; Ingalls 1906; Arthur 1914; Schaller 1921)

Appendix C

The Curious Case of Dr. Foote

The 2 March 1885 edition of the *Salt Lake Evening Democrat*⁸⁹, Salt Lake City, Utah, ran a full column-length advertisement on page 3 by “Dr. Foot, Jr.,” that includes his portrait (Figure C.1). It begins:

Dr. FOOT, Jr.
The renowned and Energetic
SPECIALIST,
of Salt Lake City, removed February 1st, from
Union Block into his new and elegant
Medical and Surgical
INSTITUTE.

He touts a five year lease and “... several consulting physicians and surgeons at his command, (under large salary and heavy expenses)...” who are ready to answer calls day or night to “...give the most skillful treatment

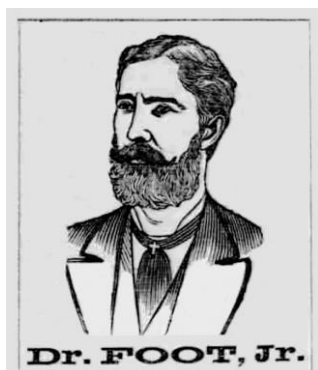


Figure C.1.
The fraudulent “Dr. Foot, Jr.” complete with a crucifix pin on his cravat, from the advertisement in the 2 March 1885 edition of the *Salt Lake Evening Democrat*.

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known to the world for all diseases and deformities known to men, women and children.” Of special note, the advertisement states:

DR. FOOT, JR., and assistants will tell you as near the truth as possible, and he is determined that his Institute shall be above reproach in all respects, and become the Most Renowned in America for its skill and reliability.

Sound pretty good? It doesn't stop there; the ad continues: “Letters answered in all languages. Medicines sent everywhere. **Consultation Free.**” Then the testimonials begin and fill the remainder of the column on the page. Another full-column ad like this one appeared in the 13 March 1885 edition of the *Salt Lake Evening Democrat*.

Who is this miracle worker? In “Foote Family” by Abram W. Foote⁹⁰ (1907, Rutland, Vermont: Marble City Press – The Tuttle Company), a genealogy of the Foote family, it states that Edward Bliss Foote was born 20 February 1829 in Watertown, Massachusetts. He studied medicine in Brooklyn, New York, finally graduating from Penn Medical University in Philadelphia in 1860. He eventually settled in Manhattan at 120 Lexington Avenue, where he practiced for 30 years. He was well known, respected, and widely published. He advertised his publications extensively – books, booklets, pamphlets and newsletters - in newspapers around the country. For example, his advertisements appeared in:

1870 April 20: *Sumter Watchman*, Sumter, South Carolina; p. 4, col. 2

1870 March 7: *Charleston Daily News*, Charleston, South Carolina; p. 3. col. 3

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1876 June 21: *Harford Herald*, Hartford, Kentucky; p. 2, col. 5

1879 April 10: *Nebraska Advertiser*, Brownville, Nebraska; p. 2, col. 3

1879 May 2: *Holt County Sentinel*, Oregon, Missouri; p. 2, col. 8

1883 January 5: *Weekly Graphic*, Kirksville, Missouri; p. 4, col. 4

1883 October 25: *McCook Weekly*, McCook, Nebraska; p. 8, col. 5

1884 April 5: *The Bee*, Washington, D.C.; p. 4, col. 7

E. B. Foote married in 1853, and their first child Edward Bond Foote, Jr., was born in 1854. He followed his father's footsteps in medicine and graduated from the College of Physicians and Surgeons in New York City. Dr. E. B. Foote, Jr., set up practice in his father's Lexington Avenue office (Figure C.2).



E. B. Foote Jr.

Figure C.2.

The *real* Dr. E. B. Foote, Jr., adapted from the 1907 family genealogical history by Abram W. Foote.

Appendix C: Curious Case of Dr. Foote

With an office and successful practice in Manhattan, why would Dr. E. B. Foote, Jr., move to Utah to establish an Institute in Salt Lake City?

About two months after the first Salt Lake City ad appeared in March 1885, an article appeared on page 2 of the 25 May 1885 *Salt Lake Evening Democrat*. This rather long article bared all in the extended title:

FAREWELL TO “FOOT”
Collapse of His Noted “Medical and Surgical Institute.”
America’s Greatest Author, Specialist
- and Humbug – Winds Up His
Salt Lake Career

For Smiles That Were Bland, and
Tricks That Paid Well,
This Auburn-Haired Fraud
Was Peculiar

What follows is a scathing one-and-a-half column condemnation of a fraud. The “testimonials” in this article are neither complimentary nor ringing endorsements. As it turns out, this was not the first community to discover Dr. Foot, Jr., and his scam. Another article appeared not in Utah but Montana on the front page of the 30 May 1885 *Daily Yellowstone Journal* from Miles City. Under the heading “Montana Mentions” in paragraph 5, this news brief is found:

That veritable humbug, “Dr. Foot, Jr.,” who
infested Helena and Butte for a time, and has
since been in Salt Lake, has skipped the saintly
city between two days.

The news even made it back to Boston and New York City, where the following brief note (which spares no

Appendix C: Curious Case of Dr. Foote

shortage of ad hominem and vitriol for the real Drs. Foote) appeared in June of 1885 “The Medical Record: A Weekly Journal of Medicine and Surgery” (Shrady and Stedman 1885:658):

QUACKS FALLING OUT.—A great misfortune has fallen upon a family of quacks, father and son, who appeal daily to erring and exhausted, but noble, readers of the public press. Another quack has taken the name of the son, and is doing a fine business in Salt Lake City. The parent of Dr. Quack, Jr., has had to go West and assure the people that he is the father of the real and only curer of all andrological diseases (we thank the *Boston Medical and Surgical Journal* for the word).

Drs. E. B. Foote, Jr. and Sr., appear to be legitimate doctors. Why would they be involved in such fraudulent behavior and scams? And where does men’s sexual health (andrology) enter the story?

Dr. Foote, Sr. included frank discussions of human sexuality in some of his publications. This raised the ire of some and led to charges in court of distributing pornography in 1876 (*New York Times*, 15 January 1876)⁹¹. Anthony Comstock, once a New York postmaster, established the New York Society for the Suppression of Vice to enforce his concept of morality. Under the Comstock Act of 1873, his morality (that banned, among many things, dissemination of information and devices concerned with contraception) was imposed on the nation. In 1880, Comstock published the book titled “Fraud Exposed: or, how the people are deceived and robbed, and the youth corrupted” (New York: J. Howard Brown). Not surprisingly, he went after Dr. E. B. Foote, Jr., in Chapter 24, “Obscene Publications.” Dr. Foote, Jr., was met with a

Appendix C: Curious Case of Dr. Foote

bit of a row on similar topics at a public speaking event in 1877 (*New York Times*, 11 November 1877). So andrology *does* have a connection to Drs. Foote Jr. and Sr. But is there any connection between Drs. Foote and the “Institute” in Salt Lake City?

A fraudulent “Dr. Foot” was on the loose in the Western United States. For the *real* Drs. Foote, the consequences of this identity theft could have been devastating. Hoping to finally resolve the situation in person (their mail campaigns ran into trouble, as outlined below), Dr. Edward Bliss Foote, Sr., left New York City and set off for Utah in mid-April 1885. A two-column notice was published in the 18 April 1885 *Salt Lake Evening Democrat* on page 4. The article begins:

Before the ink is fairly dry on this paper, Dr. E. B. Foote, Sr., of 120 Lexington Ave., New York, will reach Salt Lake City. The main object of his visit is to ascertain the real status of one who has for some time been advertising himself as Dr. Foot, Jr. [...] [Referring to an announcement of Dr. Foot in the newspaper *The Leader*, Bismark, Dakota Territory:] Drs. Foote, Sr. and Junior, of New York, at once took pains to acquaint the editor that a mistake had been made. Soon after this the so-called Dr. Foot, Jr., made his announcements in the papers at Helena, Montana, to which place he seemed to have gone from Dakota. At once a special edition of *The Health Monthly* [the newsletter published by the *real* Drs. Foote] was prepared and sent to the addresses of all our Helena friends and correspondents, informing them tha[t] the self-styled “Dr. Foot, Jr.,” had no connection with ourselves. After this expose, we were soon informed that “Dr.

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Foot, Jr.” had opened an office in Salt Lake City and styled his place “Dr. Foot’s Medical and Surgical Institute, No. 2.” Now, where is Dr. Foote’s Institute No. 1?

If there is any noted place which can bear this name except our own, at 120 Lexington Ave., New York, we have never heard of it.

[...] we sought to obtain a Utah Directory for the purpose of notifying the people of Utah that the “Dr. Foot, Jr.” announced in their papers was not in any way connected in kin or business with Dr. E. B. Foote, Sr., of New York.

Not many weeks after, we received from Kane Co., Utah, from a postmaster who is a subscriber to *The Health Monthly*, the following missive, which he wrote came to him by mail:

Salt Lake City, Utah

“Mr. P. M., Dear Sir: Please inform me if any Dr. Foote of New York City has written for a town or city directory or list of inhabitanance. [...] Please don’t let him have any as he will flood your P.O. with blackmailing circulars that are written in a manner to evade the libel law. I will pay as much as he offers and you will be doing a just act.

Keep his letters. Please let me hear from you soon and greatly oblige,

Dr. Foot.
Clerk No. 2”

It appears that “Dr. Foot” learned of Dr. Foote’s attempt to warn his readers, and “Dr. Foot” tried to block that move in order to continue reaping the rewards of his

Appendix C: Curious Case of Dr. Foote

scam. It didn't work, so "Dr. Foot, Jr.," had to move on to new, fertile territory, like Utah, having now abandoned the Dakota Territory and Montana.

Dr. Foote, Sr., published affidavits from John F. Trow⁹², Frank Fuller⁹³ and Abram Wakeman⁹⁴. Having established himself as a real doctor known to many, he asks the obvious question that if there is a Dr. Foot, Jr., "Who is the Dr. Foot, Sr., without an 'E'? [...] What are his initials? Where is he located? We only ask for fair play."

Dr. Foote, Sr., then began seeing patients while he was in Salt Lake City, and publishing notices in the local papers for several months such as the following (taken from the 20 October 1885 *Salt Lake Democrat*, page 3; emphasis as published):

Medical

Dr. FOOTE, Senior,

Of 120 Lexington Avenue, New York

Hereby cautions the public NOT to Employ or Communicate with a man styling himself "Dr. Foot, Jr.," without making due inquiry.

This man came to Salt Lake City representing himself as the son of Dr. E. B. Foote of New York, the well known specialist, as abundantly proved by affidavit. As rumors came into Salt Lake City from Dakota and Montana from an expose made there, he changed his base and represented himself as the son of a more noted specialist in New York City than Dr. E. B. FOOTE, the well known author. Mr. John F. Trow, of the well known Trow's Directory, in New York City (forty years in the directory business), Ex-Governor

Appendix C: Curious Case of Dr. Foote

Frank Fuller, of Utah, and the Hon. Abram Wakeman, for many years Postmaster in New York City, also Surveyor of the Port, gave their affidavits that there are no other doctors in New York by the name of FOOT or FOOTE, excepting Dr. E. B. FOOTE, the author of "Medical Common Sense," etc., and his two sons, Dr. E. B. FOOTE, Jr., and Dr. HUBERT T. FOOTE. The genuine Dr. FOOTE, Jr., will hereafter always employ the initials 'E. B.', in designating his name. Heretofore he has been known not only at home but wherever his publications have been circulated, by the name of Dr. FOOTE, Jr. Greater care will be taken hereafter, in view of the fact that an unprincipled person has assumed to profit by his and his father's reputation.

Those desiring further and more detailed information in respect to this matter, will receive it by addressing Box 414, Salt Lake City, Utah.

Persons having information of advantage to plaintiffs will kindly communicate with same to J. W. Ivey, with Sutherland & McBride, Salt Lake City.

Those desiring to consult Dr. FOOTE professionally or to order remedies should address either

Dr. E. B. FOOTE, Sr., or Dr. E. B. FOOTE, Jr.,

120 Lexington Ave., New York.

Consultation Free, in person or by letter.

It should not be surprising, then, to learn that this debacle was followed by a cry for better regulation of the medical profession in Utah. The 9 February 1886 edition of

Appendix C: Curious Case of Dr. Foote

the *Salt Lake Democrat* carried an article titled: “Sit Down on the Quacks.” It offers criticism and suggestions for strengthening a bill then pending in the Utah Legislature to crack down on fraudulent medical practices.

One wonders whether the scam artist thought he was being clever and skirting indictment by changing his alias to “Foot” instead of the real doctors’ name, Foote?

Acknowledgments

I am deeply indebted to the contributions and efforts of *many* others. In particular, I thank Dan Williams whose guidance and assistance brought my manuscript to the printed page. I cannot begin thank him enough for his generous help.

Life would have been difficult, indeed, without help from the staff at the Grafton County Register of Deeds (North Haverhill, NH), the Macon County Register of Deeds (Franklin, NC), and the Jackson County Register of Deeds (Sylva, NC). No request was either too big or too difficult, and with nary a complaint (well, maybe *after* I left...).

Likewise, kind access and assistance is gratefully acknowledged at the Historical Collections at Baker Library (Harvard Business School, Boston, MA), Lincoln Town Archives (Lincoln, MA), Silsby Library (Acworth, NH) , and the Yale University Libraries: Manuscripts and Archives, Geology Library, Sterling Chemistry Library and Sterling Memorial Library (Yale University, New Haven, CT).. The brave souls at the Miller Memorial Central Library (Hamden, CT) were forever bombarded with Interlibrary Loan requests but always delivered.

Particular mention is given to Bill Copeley at the New Hampshire Historical Society (Concord, NH), Nanci A. Young at the Smith College Archives (Northampton, MA), Kristina Lynn Moe at the Macon County Public Library

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On this project, my wife Dianne was my research assistant, proofreader and unwavering supporter. I truly appreciate her infinite patience with my 10⁺-year obsession.

Last but certainly not least, I thank my late father Fred E. Davis Jr. (1919 – 2013) for (among many things too numerous to mention) his razor-sharp memory, the wonderful tales of my mineral-collecting great-grandfather Leander Davis, recollections about the 1930s moonshine still hidden in an old mica mine in Haywood County, North Carolina, and the clever way the owners ran the business without getting caught.

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1851 June 27. Catherine S. Gould. W. Roxbury.

1857 May 26. Charles Ruggles Jr. Boston.

1868a September 17. Charles Ruggles Tainter. Medford.

1868b December 27. Henry (Harry) Randall. Swampscott.

1870 April 19. Mabel Anna Randall. Boston.

1871 February 11. Elisha Edwin Tainter. Medford.

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1896a March 29. Abigail [Prentice (Prentiss)]
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1896b September 13. Charles L. Randall.
Boston.
1898 May 23. Sarah Ella [Harris] Leonard.
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1901 March 10. John Merrill. Worcester.
1902a March 11. Lucinda [Bowers] Oliver.
Pepperell.
1902b August 9. Rebecca [De Lavana] Randall.
Boston.
1903 October 27. Joseph D. Gould, Jr. Billerica.
1904 October 7. Catherine S. Gould. Boston.
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- 1842 November 24. Abigail Prentice, Francis Adams Fogg. Salem.
- 1864 September 15. Amelia P. Fitch, Henry Randall. [town not specified]
- 1873 July 4. Mary E. Butterfield, George H Randall. Boston.

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- 1862 July 4. Mary E. Edwards, Henry M. Butterfield. Boston.
- 1865 November 13. Amanda McClellan, Samuel H. Randall. [town not specified]
- 1866 March 28. Joseph D. Gould, Jr., Elvira Rogers. Billerica.
- 1867a July 9. Lucius C. Edwards, Bertina Shirley. Boston.
- 1867b October 2. Elisha E. Tainter, Julia E. Ruggles. Medford.
- 1873 July 4. Mary E. [Edwards] Butterfield, George H. Randall. Boston.
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- 1855b. Edwin Tainter: Medford, Middlesex County, Massachusetts.
- 1855c. Henry J. Oliver: Brookline, Norfolk County, Massachusetts.
- 1855d. Joseph D. Gould: West Roxbury, Norfolk County, Massachusetts.
- 1855e. John Merrill: West Roxbury Ward 3, Norfolk County, Massachusetts.
- 1855f. Francis A. Fogg: Boston, Suffolk County, Massachusetts.
- 1855g. Henry Randall: Boston Ward 3, Suffolk County, Massachusetts.
- 1855h. Charles Ruggles: Boston Ward 5, Suffolk County, Massachusetts.
- 1855i. James A. Wood: Winchendon, Worcester County, Massachusetts.
- 1865a. William H. Ruggles: Lincoln, Middlesex County, Massachusetts.
- 1865b. Charles Ruggles: Medford, Middlesex County, Massachusetts.
- 1865c. John Merrill: West Roxbury, Norfolk County, Massachusetts.
- 1865d. Henry Randall: Boston Ward 3, Suffolk County, Massachusetts.
- 1865e. Sophronia Carpenter: Boston Ward 8, Suffolk County, Massachusetts.

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 - 1818 September 4. Parmelia [*sic*] Bowers.
Acworth.
 - 1820 May 31. Maria Bowers. Acworth.
 - 1822 January 16. Lucinda Bowers. Acworth.
 - 1824 February 9. James L. Bowers. Acworth.
 - 1825 November 3. Joseph S. Bowers. Acworth.
 - 1827 December 13. Shepherd L. Bowers.
Acworth.
 - 1829 October 28. Elizabeth Hannah Bowers.
Acworth.
 - 1831 September 19. James Wheeler Kilton.
Grafton.
 - 1832 May 24. James Amasa Wood. Alstead.
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(unnamed). [town not specified]
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1866 October 5. Martin Davis. Grafton.
1869 September 2. Parmelia [*sic*] Bowers.
Newport.
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Wood. Acworth.
1890 June 21. Susan [Cofran] Bowen [*sic*;
Bowers]. Newport.
1892 February 16. Nancy S. [Bowers] Proctor.
Marlborough.
1894 October 14. Shepard [*sic*] L. Bowers.
Newport.
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1908 September 27. Frances A. [Carpenter]
Mitchell. Alstead.
1910 September 17. Edmund J. Proctor.
Marlboro.
1915 September 27. Sylvester Almond Mitchell.
Alstead.
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Portsmouth.

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Symonds Bowers. [town not specified]
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Frances A. Carpenter. [town not
specified]
1859 October 6. Shepherd L. Bowers, Thankful
M. Newell. Newport.
1869 September 1. Charles L. Bowers, Phoebe
Ellen Gray. Bristol.
1870 December 8. Shepard [*sic*] L. Bowers,
Susan E. Cofrin [*sic*]. Newport.
1874 October 12. Byron Martin, Emma L.
Ruggles. Orange.
1876 September 20. James A. Linsley, Mary
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1909 December 3. George B. Watson, departing Liverpool, England, arriving New York, New York, aboard SS Lusitania.

1910 November 4. George B. and Elbridge Watson, departing Liverpool, England, arriving New York, New York, aboard SS Mauretania.

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———, pub. 1871a. The Boston directory. Boston:
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———, pub. 1871b. The Boston almanac and business
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———, pub. 1872a. The Boston directory. Boston:
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Sampson, Davenport, and Company.

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Boston: Sampson, Davenport, and Company.

———, pub. 1874a. The Boston almanac and business
directory. Boston: Sampson, Davenport, and
Company.

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- , pub. 1875a. The Boston almanac and business directory. Boston: Sampson, Davenport, and Company.
- , pub. 1875b. The Boston directory. Boston: Sampson, Davenport, and Company.
- , pub. 1876a. The Boston almanac and business directory. Boston: Sampson, Davenport, and Company.
- , pub. 1876b. The Boston directory. Boston: Sampson, Davenport, and Company.
- , pub. 1877a. The Boston almanac and business directory for 1877. Boston: Sampson, Davenport, and Company.
- , pub. 1877b. The Boston directory. Boston: Sampson, Davenport, and Company.
- , pub. 1878. The Boston directory. Boston: Sampson, Davenport, and Company.
- , pub. 1880a. The Boston almanac and business directory for 1880. Boston: Sampson, Davenport, and Company.
- , pub. 1880b. The Boston directory. Boston: Sampson, Davenport, and Company.
- , pub. 1880c. The Massachusetts register and Boston directory. Boston: Sampson, Davenport, and Company.

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- , pub. 1884a. The Boston almanac and business directory for 1885. Boston: Sampson, Davenport, and Company.
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Sampson, Murdock, and Company. (continued)

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Sampson, Murdock, and Company.

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Sampson, Murdock, and Company.

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Sampson, Murdock, and Company.

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Sampson, Murdock, and Company.

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Sampson, Murdock, and Company. (continued)

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Sampson, Murdock, and Company.

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Sampson, Murdock, and Company.

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- 1810a. Samuel Ruggles: Boston, Suffolk County, Massachusetts.
- 1810b. Nathan Prentiss: Petersham, Worcester County, Massachusetts.
- 1810c. James Bowers: Hancock, Hillsborough County, New Hampshire.
- 1820a. Samuel Ruggles: Boston, Suffolk County, Massachusetts.
- 1820b. Thomas Mitchell: Hancock, Hillsborough County, New Hampshire.
- 1830a. James R. Faulkner: Billerica, Middlesex County, Massachusetts.
- 1830b. Samuel S. Lawrence: Tyngsborough, Middlesex County, Massachusetts.
- 1830c. Samuel Ruggles: Boston, Suffolk County, Massachusetts.
- 1830d. James Bowers: Acworth, Sullivan County, New Hampshire.
- 1840a. James R. Faulkner: Billerica, Middlesex County, Massachusetts.
- 1840b. Samuel Ruggles: Boston, Suffolk County, Massachusetts.

Reference List

[USFC] (continued)

- 1840c. James M. Kilton: Grafton, Grafton County, New Hampshire.
- 1840d. James Bowers: Acworth, Sullivan County, New Hampshire.
- 1840e. Ebenezer Selleck: Lewisboro, Westchester County, New York.
- 1850a. Francis A. Fogg: Salem, Essex County, Massachusetts.
- 1850b. James R. Faulkner: Billerica, Middlesex County, Massachusetts.
- 1850c. Edwin Tainter: Medford, Middlesex County, Massachusetts.
- 1850d. William H. Ruggles: Stow, Middlesex County, Massachusetts.
- 1850e. Samuel S. Lawrence: Tyngsborough, Middlesex County, Massachusetts.
- 1850f. Joseph D. Gould: Roxbury, Norfolk County, Massachusetts.
- 1850g. Henry J. Oliver: Plymouth, Plymouth County, Massachusetts.
- 1850h. Henry Randall: Boston, Suffolk County, Massachusetts.
- 1850i. Jacob Proctor: Lunenburg, Worcester County, Massachusetts.
- 1850j. James A. Wood: Alstead, Cheshire County, New Hampshire.
- 1850k. Sylvester Mitchell: Gilsum, Cheshire County, New Hampshire.
- 1850l. Calvin Carpenter: Walpole, Cheshire County, New Hampshire.
- 1850m. James M. Kilton: Grafton, Grafton County, New Hampshire.
- 1850n. Robert Martin: Grafton, Grafton County, New Hampshire.

Reference List

[USFC] (continued)

- 1850o. George H. Ruggles: Grafton, Grafton County, New Hampshire.
- 1850p. John Watson: Exeter, Rockingham County, New Hampshire.
- 1850q. William McKean: Rollinsford, Strafford County, New Hampshire.
- 1850r. James Bowers: Acworth, Sullivan County, New Hampshire.
- 1850s. Ransom Munsell: Brooklyn, Kings County, New York.
- 1850t. Ebenezer Selleck: Lewisboro, Westchester County, New York.
- 1850u. Samuel Gray: Newark, Caledonia, Vermont.
- 1860a. James R. Faulkner: Billerica, Middlesex County, Massachusetts.
- 1860b. Thomas Talbot: Billerica, Middlesex County, Massachusetts.
- 1860c. William H. Ruggles: Lincoln, Middlesex County, Massachusetts.
- 1860d. Charles Ruggles: Medford, Middlesex County, Massachusetts.
- 1860e. Edwin Tainter: Medford, Middlesex County, Massachusetts.
- 1860f. Joseph D. Gould: Roxbury, Norfolk County, Massachusetts.
- 1860g. Benjamin T. Church: Boston, Suffolk County, Massachusetts.
- 1860h. Francis A. Fogg: Boston, Suffolk County, Massachusetts.
- 1860i. Henry J. Oliver: Boston, Suffolk County, Massachusetts.
- 1860j. Henry Randall: Boston, Suffolk County, Massachusetts.

Reference List

[USFC] (continued)

- 1860k. George H. Ruggles: Boston, Suffolk County, Massachusetts.
- 1860l. Samuel S. Lawrence: Worcester, Worcester County, Massachusetts.
- 1860m. George H. Randall: Worcester, Worcester County, Massachusetts.
- 1860n. Jacob Proctor: Nelson, Cheshire County, New Hampshire.
- 1860o. Calvin Carpenter: Walpole, Cheshire County, New Hampshire.
- 1860p. Martin Davis: Grafton, Grafton County, New Hampshire.
- 1860q. James W. Kilton: Grafton, Grafton County, New Hampshire.
- 1860r. John Watson: Exeter, Rockingham County, New Hampshire.
- 1860s. Joseph S. Bowers: Acworth, Sullivan County, New Hampshire.
- 1860t. Nancy D. Bowers: Acworth, Sullivan County, New Hampshire.
- 1860u. Shepherd L. Bowers: Newport, Sullivan County, New Hampshire.
- 1860v. John W. Brooks: Brooklyn, Kings County, New York.
- 1860w. Lewis E. Persons: Middlebury, Addison County, Vermont.
- 1860x. Sylvester A. Mitchell: Wyocena, Columbia County, Wisconsin.
- 1870a. Samuel T. Kelsey: Centropolis, Franklin County, Kansas.
- 1870b. James R. Faulkner: Billerica, Middlesex County, Massachusetts.
- 1870c. William H. Ruggles: Lincoln, Middlesex County, Massachusetts.

Reference List

[USFC] (continued)

- 1870d. Mary J. C. Ruggles: Medford, Middlesex County, Massachusetts.
- 1870e. Henry J. Oliver: Pepperell, Middlesex County, Massachusetts.
- 1870f. Joseph D. Gould: West Roxbury, Norfolk County, Massachusetts.
- 1870g. Benjamin T. Church: Boston, Suffolk County, Massachusetts.
- 1870h. Francis A. Fogg: Boston, Suffolk County, Massachusetts.
- 1870i. George H. Randall: Boston, Suffolk County, Massachusetts.
- 1870j. Henry Randall: Boston, Suffolk County, Massachusetts.
- 1870k. Joel Watson: Boston, Suffolk County, Massachusetts.
- 1870l. Charles C. Porter: Chelsea, Suffolk County, Massachusetts.
- 1870m. Charles W. Linsley: Alstead, Cheshire County, New Hampshire.
- 1870n. Sylvester A. Mitchell: Alstead, Cheshire County, New Hampshire.
- 1870o. Jacob Proctor: Marlborough, Cheshire County, New Hampshire.
- 1870p. Joseph S. Bowers: Acworth, Sullivan County, New Hampshire.
- 1870q. James A. Wood: Acworth, Sullivan County, New Hampshire.
- 1870r. Shepherd L. Bowers: Newport, Sullivan County, New Hampshire.
- 1870s. John W. Brooks: Elizabeth, Union County, New Jersey.
- 1870t. George Delevante: Brooklyn, Kings County, New York.

Reference List

[USFC] (continued)

- 1870u. Ebenezer Selleck: Lewisboro,
Westchester County, New York.
- 1870v. Rebecca J. Selleck: Mount Pleasant,
Westchester County, New York.
- 1870w. Elisha B. Clapp: Snow Creek, Mitchell
County, North Carolina.
- 1870x. John G. Heap: Snow Creek, Mitchell
County, North Carolina.
- 1870y. Mary (May) E. Harris: Mill Creek,
Hamilton County, Ohio.
- 1870z. Michael Barnett: Swanville, Jackson
County, Tennessee.
- 1870za. Lewis E. Persons: Richmond, Henrico
County, Virginia.
- 1880a. James M. Brooks: Auburn, Placer
County, California.
- 1880b. Addison Witham: Gloucester, Essex
County, Massachusetts.
- 1880c. Joseph D. Gould Jr: Billerica, Middlesex
County, Massachusetts.
- 1880d. Elisha Tainter: Medford, Middlesex
County, Massachusetts.
- 1880e Benjamin T. Church: Winchester,
Middlesex County, Massachusetts.
- 1880f. Francis A. Fogg: Boston, Suffolk
County, Massachusetts.
- 1880g. Sarah P. Gould: Boston, Suffolk County,
Massachusetts.
- 1880h. Henry J. Oliver: Boston, Suffolk County,
Massachusetts.
- 1880i. Charles L. Randall: Boston, Suffolk
County, Massachusetts.
- 1880j. Henry Randall: Boston, Suffolk County,
Massachusetts.

Reference List

[USFC] (continued)

- 1880k. Frederick H. Fogg: Worcester, Worcester County, Massachusetts.
- 1880l. Mary (May) E. Harris: Worcester, Worcester County, Massachusetts.
- 1880m. William Paley: District 125, York County, Nebraska.
- 1880n. Sylvester A. Mitchell: Alstead, Cheshire County, New Hampshire.
- 1880o. Byron Martin: Canaan, Grafton County, New Hampshire.
- 1880p. Jacob Proctor: Marlborough, Cheshire County, New Hampshire.
- 1880q. George H. Randall: Grafton, Grafton County, New Hampshire.
- 1880r. James A. Wood: Acworth, Sullivan County, New Hampshire.
- 1880s. Shepherd L. Bowers: Newport, Sullivan County, New Hampshire.
- 1880t. Samuel H. Randall: Brooklyn, Kings County, New York.
- 1880u. Francis A. Fogg: New York, New York County, New York.
- 1880v. George B. Watson: New York, New York County, New York.
- 1880w. Jennie Persons: Waynesville, Haywood County, North Carolina.
- 1880x. Charles D. Bowers: Burningtown, Macon County, North Carolina.
- 1880y. R. L. Porter: Franklin, Macon County, North Carolina.
- 1880z. Stephen Porter: Franklin, Macon County, North Carolina.
- 1880za. Samuel Truman Kelsey: Highlands, Macon County, North Carolina.

Reference List

[USFC] (continued)

- 1880zb. Ebenezer Selleck: Highlands, Macon County, North Carolina.
- 1880zc. William R. Barnett: Newport, Cocke County, Tennessee.
- 1880zd. Mary L. Mitchell Bowers: Rockingham, Windham County, Vermont.
- 1880ze. C. C. McPhail: Richmond, Richmond County, Virginia.
- 1900a. Abby L. Faulkner: Los Angeles, Los Angeles County, California.
- 1900b. Mary E. Faulkner Gould: Los Angeles, Los Angeles County, California.
- 1900c. William P. Gould: Montecito, Santa Barbara County, California.
- 1900d. Sarah Ann Randall Guzman: Danvers, Essex County, Massachusetts.
- 1900e. Joseph D. Gould Jr: Billerica, Middlesex County, Massachusetts.
- 1900f. Julia E. Tainter: Medford, Middlesex County, Massachusetts.
- 1900g. Frederick W. Webster: Newton, Middlesex County, Massachusetts.
- 1900h. Henry J. Oliver: Pepperell, Middlesex County, Massachusetts.
- 1900i. Ellen E. Fitch: Walden, Middlesex County, Massachusetts.
- 1900j. George H. Gould: Brockton, Plymouth County, Massachusetts.
- 1900k. Ellen P. Randall: Boston, Suffolk County, Massachusetts.
- 1900l. George B. Watson: Boston, Suffolk County, Massachusetts.
- 1900m. John Merrill: Worcester, Worcester County, Massachusetts.

Reference List

[USFC] (continued)

- 1900n. William Paley: Sherman, Frontier County, Nebraska.
- 1900o. Sylvester A. Mitchell: Alstead, Cheshire County, New Hampshire.
- 1900p. Albert J. Hoskins: Gilsum, Cheshire County, New Hampshire.
- 1900q. Byron Martin: Alexandria, Grafton County, New Hampshire.
- 1900r. Elisha E. Tainter: Grafton, Grafton County, New Hampshire.
- 1900s. James A. Wood: Acworth, Sullivan County, New Hampshire.
- 1900t. Franklin Brooks: Elizabeth, Union County, New Jersey.
- 1900u. Francis A. Fogg: New York, New York County, New York.
- 1900v. Samuel H. Randall: New York, New York County, New York.
- 1900w. Rebecca J. Selleck: Mount Pleasant, Westchester County, New York.
- 1900x. James A. Porter: Franklin, Macon County, North Carolina.
- 1900y. Pvt. Harry N. Bowers: Aibonito, Aibonito County, Puerto Rico.
- 1900z. William R. Barnett: Knoxville, Knox County, Tennessee.
- 1900za. Mary L. Bowers: Rockingham, Windham County, Vermont.
- 1900zb. Samuel T. Kelsey: Seattle, King County, Washington.
- 1910a. Samuel T. Kelsey: Los Angeles, Los Angeles County, California.
- 1910b. Byron Martin: Pajaro, Monterey County, California.

Reference List

[USFC] (continued)

- 1910c. Mary E. Faulkner Gould: Santa Barbara, Santa Barbara County, California.
- 1910d. Harry N. Bowers: Des Moines, Polk County, Iowa.
- 1910e. Sarah Ann Randall Guzman: Middleton, Essex County, Massachusetts.
- 1910f. Elisha E. Tainter: Medford, Middlesex County, Massachusetts.
- 1910g. Frederick W. Webster: Newton, Middlesex County, Massachusetts.
- 1910h. Benjamin T. Church: Winchester, Middlesex County, Massachusetts.
- 1910i. Arthur Watson: Boston, Suffolk County, Massachusetts.
- 1910j. George B. Watson: Boston, Suffolk County, Massachusetts.
- 1910k. Sylvester A. Mitchell: Alstead, Cheshire County, New Hampshire.
- 1910l. Anna E. Proctor Robinson: Marlborough, Cheshire County, New Hampshire.
- 1910m. Franklin D. Knowler: New York, New York County, New York.
- 1910n. Samuel H. Randall: New York, New York County, New York.
- 1910o. George H. Randall: New York, New York County, New York.
- 1910p. Frank Randall: Burke, Caledonia County, Vermont.
- 1910q. Mary L. Mitchell Bowers: Rockingham, Windham County, Vermont.
- 1920a. Mary E. Faulkner Gould: Santa Barbara, Santa Barbara County, California.
- 1920b. Charles R. Tainter: Guilford, New Haven County, Connecticut.

Reference List

[USFC] (continued)

- 1920c. Annie J. Watson: Lynn, Essex County, Massachusetts.
- 1920e. Elisha E. Tainter: Medford, Middlesex County, Massachusetts.
- 1920f. Frederick W. Webster: Newton, Middlesex County, Massachusetts.
- 1920g. Benjamin T. Church: Brookline, Norfolk County, Massachusetts.
- 1920h. Charles E. Watson: Boston, Suffolk County, Massachusetts.
- 1920i. Elbridge Watson: Boston, Suffolk County, Massachusetts.
- 1920j. James A. Linsley: Alstead, Cheshire County, New Hampshire.
- 1920k. Edward A. Mitchell: Alstead, Cheshire County, New Hampshire.
- 1920l. George A. Wood: Portsmouth, Rockingham County, New Hampshire.
- 1920m. Alwine H. Fogg: Manhattan, New York County, New York.
- 1920n. Charles Ruggles Jr: New York, New York County, New York.
- 1920o. Jennie Persons Richardson: Waynesville, Haywood County, North Carolina.
- 1920p. Frank Randall: Lyndon, Caledonia County, Vermont.
- 1930a. Mary E. Faulkner Gould: Santa Barbara, Santa Barbara County, California.
- 1930b. Charles R. Tainter: Guilford, New Haven County, Connecticut.
- 1930c. Frederick W. Webster: Saint Petersburg, Pinellas County, Florida.

Reference List

[USFC] (continued)

- 1930d. Charles E. Watson: Framingham, Middlesex County, Massachusetts.
- 1930e. Elisha E. Tainter: Medford, Middlesex County, Massachusetts.
- 1930f. Benjamin T. Church: Brookline, Norfolk County, Massachusetts.
- 1930g. Benjamin T. Church: Boston, Suffolk County, Massachusetts.
- 1930h. Charles C. Randall: Boston, Suffolk County, Massachusetts.
- 1930i. Frederick L. Watson: Boston, Suffolk County, Massachusetts.
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Preface:

- ¹ For an abbreviated genealogy chart overview of the mica-related Ruggles family members, refer to Figure 1.24.
- ² The game is also known as: gossip, grapevine, whisper down the line, chinese whispers, secret message, etc.

Chapter 1: Ruggles Family History

- ³ Four members of the Ruggles family discussed in Chapter 1 are named ‘Samuel’, so to avoid confusion they will be identified chronologically with subscripts as Sam_A, Sam_B, etc. Thus, the mica merchant and owner of Ruggles mine is Sam_D.
- ⁴ The split year given as 1629/1630 is the difference between the Julian calendar introduced by Julius Caesar in 56 BC, and the Gregorian calendar introduced by Pope Gregory in 1582. Since England had split from the Roman Catholic Church, two calendars were in use concurrently for 170 years. The Gregorian calendar was not accepted by Britain and the British Empire until 1752. Leap years don’t look quite so bad in comparison to two calendars.
- ⁵ Paige (1883:480) states “25th May 1667,” yet the text indicates the 3rd month, March.
- ⁶ 18th and 19th century printers used many abbreviations in order to conserve time, space and paper (which was relatively expensive). One of the most common – and misinterpreted – is their use of the symbol “y” to replace “th”. When read aloud, it is pronounced as “th,” so “y^e” or “y̅” is the same as “the.” Printers used y to replace the Old English character Þ (thorn, hence “th”).

Other abbreviations are: wth = with, frō = from, w^rin = wherein, Cap^t = Captain, Dec^d = deceased, etc.

- ⁷ A cooper makes wooden barrels, tubs and casks; set-work is an early 18th century term indicating that it was part-time or temporary work performed as piece work.
- ⁸ Margaret Street is called “Margaretts Lane” in the 1798 tax records (BRC 1890, 1910).
- ⁹ The author was able to identify the year as 1893 from the Barnum & Bailey Circus poster in the store’s window that gives the location (Boston), the date (June 12) and the recent acquisition of the “giant of the jungle,” later named Chiko, who died in 1894.
- ¹⁰ The house number obviously changed from 28 to 83 before 1883, the date of the map in Figure 1.3. As of this writing, the building at 83 Prince Street is still there, has a wooden façade but is now 4-stories tall and appears to be brick above the first floor. The location is confirmed by the location of Sam_D Ruggles’ neighbor to the north, Benjamin Goldthwait, whose location is given as facing Margaret Street with Ruggles to his south (BRC 1890, 1910).
- ¹¹ Circumstantial evidence in census data suggests the home on Blossom Street was not far from Cambridge Street. The 1810 Census (USFC 1810a) lists Ephraim Whitney’s name adjacent to Sam_D Ruggles. The map in Figure 1.5 shows “E. Whitney heirs” on the eastern corner of Blossom and Cambridge Streets. The 1840 Census (USFC 1840b) lists J. Federhen and Sam Ruggles only one name apart. The map in Figure 1.5 shows “John Federhen” on Cambridge Street one house west of the corner at Blossom Street.

- ¹² Prentice was also spelled Prentiss. Consistent spelling seemed to be a convenience or possibly an annoyance, not a requirement, in the early 19th century.
- ¹³ In approximate current value, the cost was \$972,410, and repairs \$232,540.
- ¹⁴ Winston Churchill's great-great-great-great-great-great-grandfather.
- ¹⁵ The first Ruggles mica advertisement in GNBK (1825) also gives the address "corner of Cambridge and Blossom Streets;" perhaps George had an apartment adjoining or over their office? In 2011, the corner of Cambridge and Blossom has a gas station and 14-story hotel. The former buildings were most likely sacrificed when Cambridge Street was widened in 1926.
- ¹⁶ Cutter is incorrectly spelled "Cutler" in Hazen (1883).
- ¹⁷ Born Eila Haggin, she married a French Count and sailed the Pacific Ocean on the schooner *Tolna* for seven years. Newspapers reported tales of harrowing ordeals with cannibals (they were eaten at least once), mutiny, and deaths (they died several times).
- ¹⁸ Gimlet: a small hand tool for boring holes in wood.
- ¹⁹ Other observed spellings include Rebeccah, Rebekah, Delevante and De La Vante. Rebecca De Lavana was used on her death certificate, and will be used in this work.
- ²⁰ The reported year for Mabel's birth was not consistent. Tallying up the reported years for Mabel's birth, we have 1868 (1), 1870 (2), and 1872 (1), with a clear average of 1870 which coincidentally matches the Boston birth records (MSB 1870).
- ²¹ He was born Samuel Henry, but his middle name changed before 1900 (MSBC 1874; USFC 1900k).

- ²² Dye-wood, or dyewood, refers to a dye used for textiles that is made from the bark of specific trees.
- ²³ Mary Elizabeth has no apparent family connection to the author William C. Faulkner.
- ²⁴ Approximately \$642,530 current value.
- ²⁵ Approximately \$1,927,570 current value.
- ²⁶ The census data contradict Redmon (2008) who states that William and Mary lived together until William's death in 1909, and that Mary remained in the home until her death in 1932.
- ²⁷ The village of Wing, Mitchell County, North Carolina, is named in Professor Wing's honor.
- ²⁸ Also spelled Taintor in some references.

Chapter 2: Ruggles Mining History

- ²⁹ In 1792, mineralogy was not yet a science so the vocabulary describing it was limited. This is why minerals were sometimes referred to as "fossils" and "concrete," and mica as "talc."
- ³⁰ Fossil is derived from the Latin *fossilis* meaning dug out, dug up.
- ³¹ Robins (1939) discusses lanterns used by Romans and northern Europeans employing a thin layer of animal horn as the lantern window. Robins (1939:129) considers the spelling 'lanthorn' to be "... a rustic corruption [of 'lantern'] arising from an association of ideas."
- ³² Snow fell in Albany, New York, on 6 June 1816; lake and river ice were observed as far south as Pennsylvania.

- ³³ In other words, the author's understanding and supportive wife.
- ³⁴ There may be a family connection between John Haskell and Sam Ruggles' wife Elizabeth Haskell Ruggles which would offer yet another means for Sam to be aware of Isinglass Mountain. However, records to support that have not yet been found.
- ³⁵ Approximately \$34,890 current equivalent.
- ³⁶ "Esquire" was a title for someone who possessed wealth and land.
- ³⁷ This information has been available for 150 years as of this writing, but has never been previously published.
- ³⁸ Sam Randall obviously had a different relationship with his children by charging only \$1 for all of the mica properties (GRCNH 1872), compared to Sam Ruggles who charged his son George \$2,500 (GRCNH 1834).
- ³⁹ Approximately \$49,840 current equivalent.
- ⁴⁰ This book is still available as a reissue by BiblioLife (2009, ISBN 111724136X).
- ⁴¹ Approximately \$144,340 current equivalent.
- ⁴² Approximately \$3,100,420 current equivalent.
- ⁴³ A yeoman is a minor landholder.
- ⁴⁴ The Martha Washington Hotel opened 2 March 1903 as the first hotel exclusively for women, and was seen in the movie *Valley of the Dolls* [Wikipedia; accessed 2 September 2011].

Chapter 3: Early Mining in North Carolina

- ⁴⁵ The name “Hopewell” comes from the owner of the farm, Mordecai Cloud Hopewell, where excavations took place 1891 – 1892 (National Park Service, nps.gov).
- ⁴⁶ Established by radiocarbon dating (Margolin 2000).
- ⁴⁷ Circumvallations: raised sections around the perimeter, as in a rampart.
- ⁴⁸ Tumulus, mound; plural: tumuli, mounds.
- ⁴⁹ Bandana is an unincorporated populated place located in the Snow Creek Township of Mitchell County, North Carolina.
- ⁵⁰ Smith preferred the initials “C. D.” and had a Doctor of Divinity degree. On his letterhead, he identified his occupation as “Geologist and Mineralogist” (from a handwritten note in the scanned version of “A Brief History of Macon County” by C. D. Smith, Franklin Press, 1891; available online at <http://www.archive.org/details/briefhistoryofma00smit>).
- ⁵¹ U.S. National Museum numbers: A287491, A287493, A287494, A287495, A287496, A287498, A287502, A287508, A287509, A287510, A287511, A287512, A287513. They are held at the Smithsonian Institution’s Museum Support Center in Suitland, Maryland.
- ⁵² It appears Kerr (1880) got his centuries confused. It should read instead “18th century”. See dates given by Burton (1906), Olson et al. (1946) and Lesure (1968).
- ⁵³ A segment of the Smoky Mountains between North Carolina and Tennessee is still called Unaka Mountains.
- ⁵⁴ Silvers was misprinted “Slivers” in Clingman (1877).
- ⁵⁵ Colles (1906:46) mistakenly attributes the mine name Silvers to the precious metal (for which Clingman was

prospecting – which would be silver, not ‘silvers’), instead of the property owner, William J. Silvers.

⁵⁶ A drover is one who drives cattle, etc., to market, especially distant markets (OED 2011). Schabillion (2009) changes the term to “driver.”

⁵⁷ Also spelled Elisah in some references.

⁵⁸ Presnell (2005) gives a nicely detailed account of Heap and Clapp.

⁵⁹ In summary, Jackson County Register of Deeds [Book:Page]: 3:48, 3:64, 3:75, 3:136, 3:139, 3:140, 3:199, 7:20, 7:21, 3:338, 3:339, 3:352, 6:100.

⁶⁰ In summary, Macon County Register of Deeds [Book:Page]: J:565, J:566, J:567

⁶¹ The author is related to the Smathers through his maternal great-great-grandmother Nancy Elmina Smathers (1835 – 1878), wife of Elisha Wilson Morgan (1828 – 1864).

⁶² Erroneously reported by Sterrett (1923:167) as Columbia, North Carolina.

⁶³ The name Burningtown originates from events during the Revolutionary War. The British encouraged the Cherokee to strike out against the settlers and they did. General Griffith Rutherford was determined to eliminate the Cherokee as a British ally by marching his troops through the mountains striking back at the Cherokee. In the process, many villages were destroyed. In this case, the Cherokee fled to the surrounding hills where they watched as their town burned, hence the name “Burningtown.”

Chapter 4: Bowers Family History

- ⁶⁴ At the time of Hall's visit in August 1838, the Bowers' ages were: James (50), Nancy (43), Nancy S. (21), Pamela (19), Maria (18), Lucinda (16), James L. (14), Joseph S. (12), Shepherd L. (10), Mary E. (2), Sarah J. (11 months).
- ⁶⁵ Rereleased in 2007 by Applewood Books, Carlisle, Massachusetts, ISBN 1429002158.
- ⁶⁶ Eliphalet Nott (1773-1866) invented a stove for burning anthracite coal which bears his name; president of Union College, Schenectady, New York, 1804-1866).
- ⁶⁷ Professor Parker Cleveland (1780 – 1858) was chemist, geologist and mineralogist at Bowdoin College, Brunswick, Maine.
- ⁶⁸ Thomas Thomson (1773-1852), Scottish chemist and mineralogist; contributed articles on chemistry and mineralogy to the Encyclopædia Britannica in 1796.
- ⁶⁹ "Ackworth" is a common misspelling of Acworth in old texts. The town is named after Sir Jacob Acworth (1689 - 1749) of the British Admiralty (Frink 1989).
- ⁷⁰ Also spelled Procter in some references.
- ⁷¹ Edmund is also referred to as Edward in some references.
- ⁷² Also spelled Permelia and Parmelia elsewhere. Pamela appears on her headstone and is used in this text.
- ⁷³ Bon Ami® is a registered trademark of The Faultless Starch / Bon Ami Company.
- ⁷⁴ Also spelled Sellick in some references.
- ⁷⁵ The great Saxby gale of 1869 is one of the worst storms on record for the northeast U.S., the Bay of Fundy and New Brunswick, Canada. It extended from New Brunswick to the Carolinas, and the Atlantic to the

Mississippi. No one knows the number of lives lost. The 8 October 1869 *Lowell Daily Citizen & News* (Massachusetts) reported Eastport, Maine, as almost totally destroyed, and large quantities of lumber swept downstream along the Penobscot River. In New Brunswick, Canada, thousands of tons of hay were destroyed, and thousands of cattle and sheep were drowned. Eight to ten miles of railroad track were torn up and telegraph lines destroyed. In St. John, New Brunswick, wharves were ruined; ships, horses, barns and cattle were swept away (GNBK 1869a). The *Canton Reporter* (Ohio) reported dykes on marshes gone and bridges throughout New Brunswick were gone (GNBK 1869b).

⁷⁶ The spelling “Elbran” appears almost everywhere, including his headstone. Two other observed spellings are: “Elbron” appears in Metcalf (1913) which contains other errors, Frink (1989), and Optical Character Recognition interpretations of census forms; “Elbren” is used in *The Daily Inter Ocean* (GNBK 1896b). His true age (Charles had just turned 34 on 7 September 1896) and the spelling of his name are frequent problems in newspapers.

⁷⁷ This is another interesting case of spelling. “Shepherd” appears on three census forms collected at ten year intervals and two books by historians (Wheeler 1879; Hayward 1889). Early documents such as Merrill (1869) list his name as Luke Shepherd Bowers. Curiously, there are two transcripts of his birth record about a week apart; the first shows “Luke Bowers” and the second “Shepherd Bowers.” The alternate “Shepard” appears in a magazine (Metcalf 1896) and half a dozen legal and law related documents (for example, Wait 1896).

⁷⁸ Also spelled Coffran, Cofren and Cofrin in some references.

Chapter 5: Bowers Mining History

⁷⁹ No relation to the author.

⁸⁰ Frondel (1958) identified uraninite, uranophane and rutherfordine from this locality. The author personally field collected several uranium minerals as well as zircon (variety cyrtolite) from Beryl Mountain.

⁸¹ This specimen was purchased by the Vienna Natural History Museum in 1831 from Baron von Lederer (V. Hammer, *Naturhistorisches Museum Wien*, pers. comm., 2012). The Baron, Austrian diplomat to the U.S., was an avid collector of North American minerals in the early 19th century (King 2012). Many of those specimens are now in the Yale Peabody Museum collection in New Haven, Connecticut.

⁸² C. D. Smith originally owned some of the properties acquired by C. C. McPhail who then sold shares of that property to J. S. Bowers and J. W. Brooks (MACNC 1873a).

⁸³ Possibly the Black Hills near Harteville, Wyoming (Smith 1891).

⁸⁴ Two small mica specimens are still in the collection: NCSM-3195 and NCSM-3242, both from Bowers Mica mine (C. Tacker, pers. comm. 2009). NCSM-3195 is not mentioned in the old 1897 catalog. NCSM-3242 is in the old catalog; however, it is identified as chalcopyrite with malachite from a different locality. The old catalog does list 3590 as quartz from a mica vein at the Bowers' mine.

Afterward

- ⁸⁵ A heat treatment, usually below the melting point.
- ⁸⁶ Six rupees in 1808 was worth approximately \$0.01 then (about \$0.15 now); that was 84 pounds of the best quality mica for 1 cent.

Appendix B: How is Mica Used?

- ⁸⁷ Formica[®] is a registered trademark of the Diller Corporation.
- ⁸⁸ There is no apparent association with the Tainter/Taintor family discussed in the Ruggles' history section.

Appendix C: Curious Case of Dr. Foote

- ⁸⁹ All newspapers mentioned in this appendix can be accessed through the Library of Congress at: <http://chroniclingamerica.loc.gov/>.
- ⁹⁰ All books mentioned in this appendix can be accessed through Google Books at: <http://books.google.com/>.
- ⁹¹ All *New York Times* references in this appendix are available from: <http://www.nytimes.com/>.
- ⁹² John Fowler Trow was a captain of city directories; several are referenced in this work. His obituary appears in the 14 August 1912 *New York Times*.
- ⁹³ Fuller, a former governor of Utah, knew Samuel Langhorne Clemens (Mark Twain). One such encounter with Twain was retold in Fuller's obituary in the 20 February 1915 *New York Times*.
- ⁹⁴ Wakeman was a good friend of Abraham Lincoln, among many other honors. His obituary appears in the 30 June 1889 *New York Times*.



About the author:

Fred E. Davis is a retired electronics engineer who, about 21 years ago, rediscovered his childhood love of mineral collecting that began in the mountains of Western North Carolina. He volunteers in the Mineralogy and Meteoritics Division of the Yale Peabody Museum of Natural History in New Haven, Connecticut that is home to a most remarkable historic collection. Specimens at the Peabody were the inspiration for the research that led to this book. With their two adult children living in the Northeast and Northwest, Fred and Dianne live in Hamden, Connecticut with his minerals and antique oscilloscopes, and her lovely gardens.