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Recommended Citation

Stefano, C. J., & Barr, W. B. (2018). Lucius Lee Hubbard, one of the Copper Country's greatest mineral collectors (1849–1933). *Rocks & Minerals*, 93(5), 414-431. <http://dx.doi.org/10.1080/00357529.2018.1477008>

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Lucius Lee Hubbard:
One of the Copper Country's Greatest Mineral Collectors
(1849-1933)

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A true "Renaissance man" Lucius L. Hubbard had numerous and varied careers, starting as a lawyer before becoming Michigan's sixth state geologist, and then working as an exploration geologist and mine manager at various mines in Michigan's Keweenaw Peninsula. A lover of the outdoors, Hubbard had the ideal temperament for a geologist during this time. He also discovered the last major native copper deposit to be found in Michigan, which became the Champion mine. His academic interests ranged across the disciplines of diplomacy, policy, business, geology, mineralogy, conservation,

and literature. He published on many of these subjects. Hubbard was educated at Harvard College, the University of Bonn (Germany), and Boston University Law School; he finally completed a PhD in geology at Bonn. He was an engaged citizen, often in contact with government over a variety of policy issues; he served on the Board of Control at the Michigan Mining School (now Michigan Technological University) and on the Board of Regents of the University of Michigan, among other public service roles.

Above all, Hubbard was a collector. No matter what else he was doing at any point of his life, he was always collecting something. Like many people of the time, he started out collecting stamps and coins; he then moved to minerals and later, he began to focus more on antiquarian books. It is clear that he put his full mind and passion into all of these collections (not to mention a great deal of his money!). Despite being partially color blind, Hubbard built one of the most important collections of minerals from Michigan's Keweenaw Peninsula ever assembled. He was also very generous, and the bulk of his collections were donated to Michigan Tech, the University of Michigan, and other institutions. His mineral collection is the oldest of the trinity of superb Keweenaw collections (L. L. Hubbard, J. T. Reeder, and D. C. Gabriel) that constitute the core of the collection of the A. E. Seaman Mineral Museum at Michigan Tech.

Why Lucius Hubbard?

The legacy of Lucius Hubbard was first encountered when Christopher Stefano was researching the history of the University of Michigan mineral collection (Stefano Erwin, and Ewing 2013). Hubbard remained a person of interest when Stefano moved to Michigan Tech and saw the full extent of the Hubbard collection. A chance meeting between Stefano and Karen Brennan, Hubbard's great-granddaughter, brought to his attention the family's collection of Hubbard's personal correspondence. The Hubbard family collection, as we have termed it here, contains hundreds of personal letters, photos, and other memorabilia that were consulted and quoted in this article. Further research led to the

discovery of the Lucius L. Hubbard Papers at the University of Michigan's Bentley Historical Library. It contains many hundreds of pages of Hubbard's professional correspondence and other documents that were also consulted in the preparation of this article. The combined archives are a treasure trove, allowing for a very detailed portrait of Hubbard and his personality to be created, despite the fact that no one who knew him well remains alive.

The interpretation of mineral specimens and collections through a historical lens has interested Stefano since the sale of specimens from the collection of the Philadelphia Academy of Natural Sciences a decade ago first brought this aspect to his attention. The specimens in a given collection, curated with care by their owner, reflect the personality, interests, and circumstances of the collector. Therefore, additional insight into a historical collection can often be gained by learning about the person who constructed the collection (and vice versa).

The Hubbard Collection

The Hubbard collection consists of suites of worldwide minerals with a particular focus on continental Europe, the east coast of the United States, and a large and spectacular suite of Keweenaw minerals. The specimens are generally of excellent quality, indicating that Hubbard had attained a level of connoisseurship well above the average, even for a modern collector. Although the overall collection is excellent, it is the Keweenaw suite that makes the Hubbard collection exceptional. Like most Keweenaw collections, it is rightly dominated by outstanding copper specimens, but it also contains many excellent specimens of accessory minerals. The bulk of the Hubbard mineral collection was donated to Michigan Tech. Additionally, several significant specimens from Michigan's Keweenaw Peninsula were donated to the University of Michigan (Stefano Erwin, and Ewing 2013). The Hubbard Keweenaw suite is only exceeded in its breadth, depth, and quality by the contemporary collection of John T. Reeder, which is also housed at the A. E. Seaman Mineral Museum (Rosemeyer and Dyl 2000).

Thanks to the recent creation of the Michigan Mineral Alliance (Bornhorst and Poulsen 2015), the best of the Hubbard collection is now housed under one roof at the A. E. Seaman Mineral Museum. The specimens illustrated here are mostly part of the mineral collection of the A. E. Seaman Mineral Museum and are not marked. Specimens from the University of Michigan collection are all noted as Michigan Mineral Alliance specimens. One piece was retained by the University of Michigan and is marked as such.

Early Life (1849-1872)

Lucius Lee Hubbard was born 7, August 1849 in Cincinnati, Ohio. The family was from New England. His father, Lucius Virgilius, who died before his son's birth, graduated from Harvard in 1824. His mother was Annie Elizabeth (Lee) (Lane 1934). She remarried to James Wesley Kirk (1814-1897), a banker and, notably, a survivor of the *G. P. Griffith* shipwreck on Lake Erie in 1850 (Julie Asselin, pers. comm. 2017). The young Hubbard went to school in Cincinnati at Woodward High School and then attended the Phillips Exeter Academy in New Hampshire before going to college at Harvard, graduating in 1872. Lucius was extremely meticulous from an early age. A ledger from 1871 tracks his day-to-day expenses while at Harvard, noting expenditures for everything from clothing and books to ale (Lucius L. Hubbard Papers). Before starting at Harvard, sixteen-year-old Lucius took a trip across the Great Lakes funded by his parents; eventually finding his way to Houghton, he toured one of the Keweenaw copper mines. He makes an account of his journey in the following letter to his mother (Hubbard Family collection, transcription courtesy of Julie Asselin) dated 22 July 1866:

Houghton L.S. Michigan
Sunday July 22nd 1866

My dearest Mother

I have so much to tell you that I will begin at the very beginning, and tell you at the end where I am, and excuse myself for being here. On Tuesday morning last I left Niagara at half past six o'clock and arrived at Detroit in the afternoon at half past five. I thought the boat did not start until the next day, so that I would have a day in which I could see Detroit. When I reached the hotel, I found upon inquiring that the boat was then lying at the dock and would probably start that night. I then walked down to the wharf and went on board the boat and they told me that there was no line of boats from Detroit, which touched at Mackinaw, except occasionally one of the Chicago line, and that the nearest place they stopped at was Sault Ste. Marie. I then bought a ticket to Sault and provided myself with some fishing hooks and line etcetera, went to the hotel, ate my supper, and drove down to the boat. It did not start until about six o'clock the next morning. The weather was so warm, and my berth so uncomfortable, that I did not get to sleep until five o'clock. You may well imagine how bright I was next day. We arrived at Port Huron about five o'clock P.M. and as the wind was blowing pretty briskly, we had to wait there two or three hours to see whether it was going to be more severe. Finally we started out upon Lake Huron and as the water was by no means calm, I began to feel a little weak in the knees. I thought I would eat but very little supper, as I knew that a large one would not make me feel very much better. Accordingly I took a slice and a half of bread and a few stewed cherries. Supper over, I went on deck, feeling very much better and laughing at a man who looked too sick to stand up and stayed there for about five minutes. I then went to my stateroom and I had not been there more than two minutes when my stomach relieved itself of its small burden, and I went to bed. In the morning I arose finding the lake very calm. The water, with the exception of the one afternoon I spoke about, was very calm. On the evening of the second day we reached Sault, passing in our way, Church's Island, the place where they make so much raspberry wine and jam. By the way, I have ascertained that jam is sold there for two dollars and fifty cents a quart. If you wish any, I can have it ordered for you. I had by this time made up my mind, that as I was as far as Sault, and as I might never get that far again, and as I had a \$50.00 check in reserve, that I would go to Ontonagon, the farthest place the boat went to. I now bought another ticket, and went to bed well satisfied. The next morning we passed the Pictured Rocks, a place where perpendicular rocks rose up out of the water to the height of 300 feet. One can imagine all sorts of figures in these rocks. There are a ship, a monument, a cave, a castle, a church and a great many figures I did not see, formed from and on these rocks. They are well worth seeing. During this day I had some conversation with the clerk of the boat and upon finding that there was not much to see on the other side of Portage Lake, I concluded to have the ticket altered and to stop there. About two o'clock we reached Marquette, a small town back of which there is an iron mountain, which I intend to see when I return. A railroad connects Marquette with Green Bay. We left this town in two or three hours and arrived at Portage Lake between three and four, next morning. On the boat (The Iron City) we had excellent fare, almost as good as at Niagara. The only difference is that they do not get up their dishes with so much care, although they have a very great variety. We had Charlotte Russe, wine jelly, Plum Pudding, ice cream, Raisins and Almonds, Cakes of all kinds and all sorts of tender meats and fresh vegetables. The officers of the boat were

very nice men; the Captain is a gentleman. The passengers were rather mixed. I made the acquaintance of a young man about twenty five years old, who seemed to be well educated, spoke French and German, and seemed to be of a pretty good family. He has been in the army five years, and has not seen any of his family since he enlisted. He was on his way home. Unlike most privates who have been in the army, he did not mutter a word of improper language. We exchanged addresses, and he has promised to send me some specimens. As I said before, I arrived yesterday morning at four o'clock, and retiring, I arose at seven. After breakfast, I went up to the Pewabic Copper Mines, looked about the country until noon, when I went down into the mines. There were three of us and a guide. We each donned a miner's suit. It consists of a pair of pants made of canvas, a thick shirt and coat of wool, and a hat made of some very hard substances to protect the head from small pieces of falling rock. We each were provided with candles around which was some soft clay so that we might stick it on our hats. We descended through the first 875 feet by means of a man engine. This engine consists of two beams 875' long which are about a foot apart and are made to move alternately up and down by some machine. On these beams at distances of about twenty feet are constructed small platforms capable of holding two persons. When the engine is running a person wishing to descend waits until the lightest platform of either beam reaches his level of the floor (where it stops about two seconds) gets on it and proceeds twenty feet where he steps on the opposite platform of the other beam which has been coming up as the first one was going down. Now the second one (the one on which the person stands) goes down while the first goes up and that person steps over on beam number one at a distance of forty feet below his first position on that beam. Thus we kept going down twenty feet at a time until we reached what they call the 13th level, one level being equal to about 70 feet. From this place two passages were constructed or rather mined away as far as the Company's grounds extended. After going through these passages or drifts as they are called, we climbed, on ladders down to the next level, and here as above we explored the drifts and then went down to the lowest part of the mine, which is 1300 feet below the surface of the ground. Sometimes we would have to stoop down or crawl on our hands and knees. There is nothing but solid rock in which the copper is found in these mines. Sometimes huge masses of pure copper are discovered. Our guide, a very nice Englishman, told us that not long ago a piece of copper weighing eight tons was taken from the rock, and the mass was so large that it had to be cut into four pieces before they could get it up. The temperature of the air in the mines is about 42 deg. all the time. The copper is hoisted into large cars, shaped thus: They have a small engine away down in the mines by which they hoist the copper up to the cars. When the masses of rock containing the copper reach the surface, they are broken up into small pieces, and then conveyed to the stamping mills where the rock is crushed and separated from the copper. I expect to visit these stamping mills tomorrow and also the smelting furnace. There have been discovered lately around here old mines which are supposed to have been worked by the ancients. For the shafts have been found filled with dirt and trees of a large size growing in this dirt. I expect to see them tomorrow also. I think of remaining here about two days more, and then I shall start for Mackinaw, staying one day at Marquette. At Portage Lake there are two small towns, one on each side of the

lake. One is called Houghton the other Hancock. I am staying at the former of these places. The towns are both on side hills, which are very steep. The inhabitants are almost all Irish. What Americans there are, are very nice people, live in handsome houses and dress fashionably. There are crowds of visitors here every summer. I would not have missed coming up this far for two hundred dollars. I shall have to spend my check but I think I got my money's worth of sightseeing. As for eating we have fresh raspberries and we have corn, tomatoes, and spring chicken, but the trouble with them is that they were not raised this year. Dear Mamma I shall always feel grateful to you and my Father for this trip. It will be a great benefit to me you may be assured. I do not suppose that I shall arrive home for two weeks at least. How are all the children, the neighbors, my friends and my chickens? I have not yet seen anything to get for Lee, but I suppose I shall when I get to Chicago. Give my love to all the family, and remember me to all who inquire for me.

*As ever I remain your
true and loving son*

Lucius

This letter shows young Lucius to be a bit of an adventurer; it also shows that he already had an interest in mining and possibly mineral collecting, as he mentions the possibility of getting “specimens” from a man he met on the boat during his journey. The letter also gives a wonderful portrait of travel on the Great Lakes and life and work in the Keweenaw during this time.

Hubbard began taking summer vacations camping, fishing, and hunting in northern Maine while at Harvard. His love of the Maine woods would influence his career path significantly later in life.

Germany (1872-1873)

After Lucius graduated from Harvard, he spent the rest of 1872 and 1873 studying abroad at the University of Bonn in Germany, returning to the United States in 1874. Hubbard studied the German language and international law while in Germany, initially with the aim of going into the diplomatic service (Lane 1934). While in Europe, he took advantage of every opportunity to travel around the

continent. It was during one of these trips, to Paris in 1872, that he met Frances (Fannie) J. Lambard of Augusta, Maine, who would later become his wife (Julie Asselin, pers. comm. 2017). By November 1872 Lucius and Fannie had begun corresponding regularly, and the letters begin to show more than a friendly interest in one another very quickly. Because her aunt Julia Johnson lived in Paris, Fannie spent significant time there and Lucius was able to visit her in Paris a number of times. The courtship continued and Lucius contacted Fannie's father, C. A. Lambard, for permission to propose. It is clear from the letters that Lambard was not pleased with Hubbard's interest in diplomacy; the letters from Lucius to Fannie from this period indicate that he was also considering other professions. In August 1873 Hubbard sent a letter to Mr. Lambard indicating that he was dropping the diplomatic path for "some more paying profession," which according to a letter he sent to Fannie seems to have been a requirement for permission to continue courting her (Hubbard Family collection). By October 1873, Lucius and Fannie were engaged. Lucius was clearly not sure about his career path, now that he had dropped diplomacy, and discusses business, mining, and the legal profession as potential options. This pressure to pick a different career path in order to get permission to marry Fannie likely played a key role in Hubbard finding his career as a geologist later.

Throughout his time in Europe Hubbard continued to make outdoor excursions and often described them in his letters to Fannie, sometimes in a very poetic way, as in this description of a trip to the Austrian Alps during August 1873:

"An idea of the grandeur—nay, almost sublimity of the view as we approached that gigantic mass of work, Ortter, you can scarcely conceive. This peak is nearly 4000 meters high (about 12000 feet) and was separated from the mountain, up whose steep side our road crept, by a broad and precipitous ravine. A mantle of snow dazzling in its purity, lay over the several members of the group before us, and here and there were to be seen tremendous glaciers, from the feet of which gushed forth streams of water, roaring in their infant might, leaping in their course over rocks, through shady groves, going ever

on and on to perform each its modest part in our busy life, and finally to be lost in the all-engulfing deep.” (Hubbard Family collection)

The Legal Profession (1874-1883)

Hubbard returned to Boston in January 1874 and began seeking commercial employment. Opportunities were apparently limited, even for someone with his education; by March he stated that if he can't get a "good commercial opening by next winter, I shall probably decide to become a lawyer" (Hubbard Family collection). Before the year was out, Hubbard had taken a position with the law offices of C. T. & T. H. Russell & H. W. Suter and began law school at Boston University (Lane 1934). By May of 1875 Hubbard had been admitted to the Bar. Hubbard also sold his first collection (of stamps) during 1875, telling Fannie (in a letter dated 18 July) that he no longer had the time to put into it. During this time Fannie stayed in Maine. They corresponded regularly until their wedding on 29 September 1875, at which time Fannie moved to Boston (Hubbard Family collection).

Hubbard continued to work for the law firm until December 1879. He then took a temporary position as vice president in charge of the Boston office of the New York, New England and Western Investment Company (Harvard 1898). Among other things, the company had investments in various mining interests, including in Utah and Leadville, Colorado, to which Hubbard made a trip in September 1880 (letter to Fannie 8 September 1880, Hubbard Family collection). This experience may have contributed to his growing interest in geology. During this time, his first two children were born, Charlotte A. (13 December 1876) and Lucius L. (4 August 1879). It was also an important period because Hubbard's first book, *Summer Vacations at Moosehead Lake and Vicinity*, was published in 1877 (Hubbard 1877). This book, a sort of field guide and collection of stories about the summer trips that he had been making to Maine every year, is a testament to Hubbard's love of the outdoors. It would be re-released in several additional editions under the names *Woods and Lakes of Maine* and *Hubbard's Guide*

to *Moosehead Lake and Northern Maine* (Hubbard 1879, 1880, 1882, 1884, 1888, 1893). It was also during this period that Hubbard seems to have gotten involved in the U.S. conservation movement. In 1882 he wrote an article for a sportsman's journal advocating for game protections in Maine (letter dated 1 May 1882, Lucius L. Hubbard Papers). The conservation movement in the United States was still in its infancy, with the first national park (Yellowstone) having been created only ten years earlier.

Hubbard Reinvents Himself (1883-1891)

After nearly nine years working as a lawyer and administrator, all the time pining for the outdoors, for rocks and minerals, Hubbard returned to Bonn in 1883 with his family. He studied mineralogy, geology and chemistry under Arnold von Lasaulx (Lane 1934). Throughout his time in Europe, he continued to expand his mineral collection and other collections. Julia Hubbard Adams, his youngest daughter, muses that her father "turned a hobby into a profession" in a short memoir she wrote late in her life. She further relates of this time that "Mother said that in Germany he would come home happily bearing beautiful Sevres soup plates when, too often the money for soup to put in them was lacking" (Adams undated).

During this time Hubbard's second daughter, Frances J., was born (5 December 1883), and his six-year-old son Lucius died (3 September 1885). Despite it being a tumultuous time for Hubbard, he completed his A.M. and Ph.D. degrees in 1886, and published his thesis, entitled "Britrage zur Kenntnisse der Nosean-Fuhrenden Auswurflinge des Laacher Sees" in Tschermak's *Mineralogisch-petrographisches Mitteilungen*, V.8, p. 5. The thesis dealt with the odd nosean/hauyne-rich basalts of the Eifel district in western Germany. A letter to Fannie after his thesis defense describes a rather comical scene in which he enters the hall in a procession with three students with whom he is to argue, two high level university staff (he uses the old English term "beadle") and two professors, before proceeding with the defense, which apparently looked a little different from a modern PhD defense: "...

I boldly entered the aula on Fri. at 12 PM, at the head of a procession of seven- my 3 opp's, the 2 beadles, and 2 profs. .... All went well, except that Felix forgot his rejoinder, and took back (withdrew) his opposition, before I had said all I was going to. Burz forgot his principal argument, and I was obliged to supply it myself. What a farce these theses are!" (25 November 1886, Hubbard Family collection).

Later in 1886 he went to Heidelberg and worked with Karl Rosenbusch (rosenbuschite) for a time (Lane 1934). After leaving Rosenbusch, the Hubbard family spent the rest of 1887 traveling in Switzerland and Italy. Hubbard met many other geologists while working in Bonn and Heidelberg, as Germany was the hub of "hard rock geology" (igneous and metamorphic geology) in those days. Two acquaintances would prove particularly important for Hubbard's future career: Alfred C. Lane and Marshman E. Wadsworth of the Michigan Geological Survey, based at the Michigan Mining School, which would eventually be renamed Michigan Technological University (letters from both dated 1890, Lucius L. Hubbard Papers).

The Michigan Geological Survey (1891-1899)

Lucius and family returned to the United States and spent 1888-1890 in Boston during the winter and in Maine during the summer. In March of 1890 Hubbard received a letter from M. E. Wadsworth inviting him to join the Michigan Geological Survey (MGS), of which Wadsworth was the leader. At that time the MGS was housed at and run by the Michigan Mining School, and Wadsworth was also on the staff at the school. An illness prevented Hubbard from joining the survey during 1890, but Wadsworth stayed in contact, asking him to start in January of 1891. Hubbard accepted the invitation, starting his new career at the age of forty-one.

Moving from Boston to Houghton would prove to be a bit of a shock for Hubbard, even having visited the area previously. A sense of what he was getting himself into is given in a letter from Alfred

Lane, another geologist on the MGS staff, dated 26 November 1890: *"Board and lodging is the great difficulty here. As may be imagined in a thinning western town, the supply of widows is not great, and the accommodations not generally first class. Neither of the hotels is good."* (Lucius L. Hubbard Papers).

Lane also listed a long litany of clothing necessary for the long and cold winters in the Keweenaw.

Another letter from Lucius to Fannie, dated 31 January 1891, gives Hubbard's less than glowing first impression of his new home, calling it *"a godforsaken hamlet"* and went on to say *"in the neighborhood of the school there are a few modern houses. These have been built since my visit here 27 or 28 years ago, and with one other building are about the only new edifices I can find"*. Hubbard also mentions in the same letter that he has enrolled as the 57th student at the mining school in order to get access to the chemistry lab. Another letter from 12 April 1891 notes that Hubbard is *"wild to get out into the open air, but of course we can't go until the snow does"*. Within about a year of his arrival in Houghton, Hubbard led a group of MGS and mining school staff in the establishment of the Keweenaw Club, a cooperative house where staff of the two organizations could live with its own cook, etc. Fannie and the children stayed in Boston during this time so that the children could stay in school, visiting during the summer months. While difficult for the family, the regular correspondence between the two leaves a detailed record of the goings-on in Hubbard's time with the MGS (Hubbard Family collection).

Almost immediately upon his arrival in Houghton, Hubbard began building a collection of local minerals. He was an avid and skilled player of the card game Whist and frequently attended games that afforded him many opportunities to meet other geologists, mine captains, and mineral collectors in the area - essential contacts both for his career and for building his mineral collection. One early Whist partner was Jacob Houghton, brother of Douglass Houghton, who as Michigan's first state geologist was credited with drawing attention to the potential of the Keweenaw Peninsula as a copper-mining region. Letters to Fannie regularly mention viewing collections and acquiring specimens. In a letter dated 9 July 1891 he gives some of his philosophy of collecting minerals: *"I firmly believe a coll[ection] of minerals*

takes as much time as a coll[ection] of stamps, although it is more profitable from a scientific standpoint." Another letter dated January 20th 1892 says further: *"The main object of collecting, with me, is to familiarize myself with all the different varieties, and gather together specimens that are good for instruction purposes."* In the same letter, he commented: *"My Lake Superior minerals are probably as good as those of any collector hereabouts, and of these I mean to make a specialty, and some day write a paper on them."* He had only been in Houghton for one year, and had already built a local collection that he felt was outstanding! (Hubbard Family collection)

Working on the MGS was not easy under Wadsworth, who apparently often disagreed with the board of the Survey on various subjects, sometimes vehemently. Early in 1892 a letter to Fannie indicates that Wadsworth has sent his resignation to the governor over one such disagreement. The resignation was rescinded when the board backed off (letter dated 14 January 1892). Incidents of this sort left Hubbard in some doubt whether or not there was a future for him on the MGS. As a result, he sought other opportunities, at one point hatching a plan to form a consortium to explore for iron ore in the Vermilion Range in Minnesota in 1893 (letter dated 15 December 1892). Hubbard's uncertainty with work and the separation from his family created some strain with Fannie. She apparently had a significant income from her family's wealth and seems at this point to have suggested that Lucius give up his position and return to Boston. He refused in a letter dated 26 February 1893: *"It is unnecessary for me to say how much I realize what my separation from wife and children costs me, nor is it necessary for me to state to the world the reasons for that continual separation. I am face to face with a moral necessity, and while I have the strength and opportunity to earn a livelihood, I deem it my duty to do so, even at a great sacrifice ... and your generous suggestion that your income is enough for us all in no respect alters the case morally"* (Hubbard Family collection).

Wadsworth finally resigned from the MGS permanently when it was separated from the College of Mines during the summer of 1893. Hubbard was made State Geologist on August 3^d of that year

(letter dated 14 November 1893, Lucius L. Hubbard Papers). He immediately began work on a new building to house the Survey in Houghton. Unfortunately the Survey's meager budget did not allow for the construction of a building without additional fundraising. Hubbard approached several of the mining companies, including Calumet & Hecla, for support, without much luck. A letter to Fannie at this time complained: *"All this worry and annoyance is merely for the lack of a paltry thousand dollars. I wish I had the money myself! I believe I would contribute it, just to put to the blush this rich and prosperous community"* (Hubbard Family collection). He eventually did obtain the funds necessary for the building and construction began in 1894. Julia, Hubbard's youngest daughter, remembered this time in her undated memoir: "I remember the little house on the hill behind east Houghton acquired for the project and a sunny room in it filled with maps, charts and blue prints and an air of great cheerfulness, for my father was never so happy as when his work took him into the woods" (Adams undated).

Throughout this time, Hubbard's mineral collection continued to grow. He also began to make gifts from his collection to museums. He sent specimens to Harvard, Yale, and the Smithsonian, all of which still hold some of these pieces. Most of his gifts at this time were of reference-grade material, such as samples of lava from the Eifel district of Germany where he had done his PhD. Notably, Hubbard also loaned a suite of fine Keweenaw calcite crystals from his collection to Charles Palache of Harvard for study. Palache combined drawings of Hubbard's crystals with those from other collections to write an article about the crystal forms of calcites from the Keweenaw, which was published by the MGS (Palache 1898). At least one of these specimens is easily identifiable from the drawing and remains in the holdings of the A. E. Seaman Mineral Museum at Michigan Tech (fig. 19).

The role of state geologist could be politically fraught, and Hubbard's earlier diplomatic training seems to have served him well. He had to deal with complaints that the Survey did not spend enough time in the Lower Peninsula (letter from W. Webber, 27 September 1895, Lucius L. Hubbard Papers) and other similar criticisms from the public. He also had to work with various mining companies, many of

which were engaged in fierce competition. At one point he presented a synthesis of data from the Calumet & Hecla (C&H) and the Tamarack mines, and noted some inconsistencies between the data from the two mines. Alexander Agassiz, son of the great naturalist Louis and head of C & H, seems to have taken great offense to this, apparently thinking it was a condemnation of his geologists' skills. He wrote a very angry letter to Hubbard and sent a copy to the governor: *"....hereafter I give no information of any kind to the state geological survey of Michigan as long as the present incumbent remains..."* (1 May 1895, Lucius L. Hubbard Papers). Hubbard responded to Agassiz with an apology: *"....I trust you will credit me with sincerity in the statements made herein, and accept my renewed expression of regret that any act of omission or of commission on my part should have led you to entertain so ill an opinion of me"* (17 May 1895, Lucius L. Hubbard Papers).

Frustrations due to politics both within and outside of the state government continued to mount and letters to Fannie often mention this. By the end of 1898 Hubbard tells Fannie: *"Mr. Goodell dropped in and said that the matters in which he is interested are going on well and that there will be at least three new companies in the spring that I could be serviceable to if I left the survey. The prospect pleases me, for exploratory work is just what I should like and I think I could make a success of it, in this district, at least."* (11 December 1898, Hubbard Family collection). Shortly thereafter, Hubbard resigned from the MGS, and was replaced by his friend on the survey, Alfred Lane. Lane and Hubbard would remain friends and continue to correspond until Hubbard's death. Lane wrote Hubbard's memorial for the American Mineralogist (Lane 1934). Hubbard was well thought of in the mining districts of northern Michigan, so his resignation created a stir. The *Marquette Mining Journal* covered the resignation as follows: *"Rumored Resignation. It is rumored that Dr. L. L. Hubbard has resigned his position as state geologist, mainly because of disgust with the procrastinating methods of the state officials from whom financial supplies must be secured and to whom accounts must be rendered of all monies expended. The unaccountable delay in the publishing of his valuable reports is probably a factor, also, in causing this*

step, if it has been taken, which is generally believed. It seems almost impossible to get it into the head of the average lower-peninsula state official that geological work and technical education in mining science are anything more than expensive fads which should be discouraged in every way possible. Dr. Hubbard has proven himself a most valuable and conscientious director of the Michigan geological survey, and whatever may be the opinion entertained by dense officials who are incapable of appreciating or even of vaguely comprehending the scope of such work, he has the satisfaction of knowing that among mining men and scientists his work is appreciated at its full value” (Marquette Mining Journal 21 January 1899, Lucius L. Hubbard Papers).

The Copper Range and Other Mining Companies (1899-1913)

By February 1899, Hubbard had begun working for the Copper Range Company, which controlled many copper mines south of Houghton. Hubbard started working at the Wyandotte and Atlantic mines, but as the snow melted, he began field exploration on Copper Range lands south of these mines, where nothing of value had yet been found. Hubbard almost immediately discovered what would turn out to be the southern continuation of the Baltic Lode. One can almost hear the excitement in his voice in his letter to Fannie: *“Copper Range is King! I have found copper in what appears to be paying quantity. You may have noticed a spurt in the stock today. I am keeping very quiet about it, but I fear that the men will spread the news over the town before the day is over. Have telegraphed Mr. Paine and told Meg. Seager and Rice. It seems too good to realize and I can hardly believe it yet. Geology has triumphed. Let the ‘practical’ mining men say what they please. I found this bed last week when alone in the woods, examining our lands with a view to determine where I should begin to explore”* (16 May 1899, Hubbard Family collection). The Mr. Paine named in the letter was William Alfred Paine, of the Paine Webber company in Boston. Paine Webber owned the Copper Range Company. Letters

throughout the summer of 1899 report on developments at the site as further exploration work looked more and more promising. By the end of 1899, the site had been named the Champion Mine, and Hubbard was made the general manager. The location was named Painesdale in honor of Paine.

Fannie and the children finally moved to the Keweenaw full time after the discovery of Champion. Hubbard told Fannie in a letter that the bunk area at the mine could accommodate the family if they arrived in Painesdale before “*our ‘mansion’ is done*” (letter 5 November 1899, Hubbard Family collection). Fannie and the children made the move to Painesdale in November 1900 (letter dated 19 November 1900, Hubbard Family collection). It was while in Painesdale that the Hubbards first brushed with future fame. A young man named Robert Flaherty was hired to do odd jobs at the Champion mine. He had dropped out of the mining school and needed an income. Flaherty would later become famous as an early documentary filmmaker with works such as *Nanook of the North* (1922). Flaherty and Hubbard’s daughter Frances were both violin players, and a romance quickly developed between the two. It is not completely clear, but Lucius may not have been very happy about this relationship. At any rate, Flaherty left Painesdale and was not heard from again for a while. A few years later, on a family camping trip in Canada, Flaherty turned up as one of their guides. The romance was rekindled, and Frances eventually married him (Adams undated). Frances was later nominated for an Oscar for Best Writing, Motion Picture Story for *Louisiana Story* (1948).

Even after taking charge of the Champion, Hubbard continued to be involved in other activities with the Copper Range Company, both in Michigan and elsewhere. Hubbard was even involved with some mining claims in Bisbee, Arizona (19 June 1903, Lucius L. Hubbard Papers). He also continued to advise the Michigan Geological Survey, and in 1905 he was appointed to the Board of Control of the Michigan College of Mines (now Michigan Technological University) (Lane 1934).

Despite his quick success with the Copper Range Company, Hubbard still worried about how his bosses saw him: *"I fear delay on the part of the directors who may fancy that my figures are exaggerated and may want confirmation from other sources. If that is to be the case it will be better for me to ask them to put someone in my place in whose judgement they can have the fullest confidence. If a Gen. Manager is to be hampered by having to refer matters to men who are not in a position to know as much about them as he does himself, it makes his work rather burdensome, and makes him responsible for delays that are not caused by him."* He goes on to say, *"of course, I have no reason to fear any immediate move of this kind, but I sometimes feel that Mr. Paine's attitude is that of a man who is afraid I shall make some great mistake."* He then notes, *"I have included in my estimates \$3500 for our house, and shall insist that I be treated as well as the managers of other mines that are beyond the experimental stage."* As a perk of being the manager of the mine, Hubbard and his family were to be provided a house at Painesdale. Later Hubbard also commented: *"Mr. Paine Still appears to me a sort of enigma. I think he is a man without much soul, when hardness means the saving of a few dollars."* (25 February 1900, Hubbard Family collection).

In the end, his tenure with the Champion mine proved short; Paine removed Hubbard as general manager of the mine in July 1905. Julia recalled this time: *".... my father who was a geologist by profession was replaced by a younger man who was a mining engineer. I do not think he was unduly upset by this because he must have realized his own limitations. But the miners were! He had tried to get better pay and working conditions for them and they appreciated this. They gathered in the hall of the big house and threatened to strike if he left. I can still hear him reasoning quietly with them trying to convince them that nothing would be gained by this. They left, grumbling. Two days later while school was in session, the men marched up the hill to the schoolhouse carrying a dummy. They hung it to a nearby tree—the new general manager in effigy!"* (Adams undated).

After leaving Champion, Hubbard was offered a position with the Winona and King Philip mines, which he initially turned down, saying that he did not wish to live on a mine location again after Painesdale (17 March 1906, Lucius L. Hubbard Papers). He eventually took the position and managed the mines from Houghton. Later, Hubbard also became manager of the Ojibway mine. He actively worked as a mine manager until retiring in 1913, amid the great labor strike. He would continue to consult for companies long after retirement.

Later Life: Books, Philanthropy and Public Service (1913-1933)

Hubbard began to donate portions of his large mineral collection to the College of Mines in 1906 (Lucius L. Hubbard Papers). In 1908, Charles Palache finally returned the calcite specimens that Hubbard had loaned to Harvard more than ten years previously, which were sent directly to the College of Mines (letter dated 16 December 1908, Lucius L. Hubbard Papers). The Hubbard collection at Michigan Tech contains both his worldwide minerals and many excellent Keweenaw specimens, including the calcite specimens that had been on loan to Harvard and some of which were drawn by Palache. Hubbard retained a suite of Keweenaw minerals and also continued to collect. In a letter to Palache dated 18 May 1909, he mentioned a copper crystal that had recently been found at the Ojibway mine, describing it as looking like a pentagonal dodecahedron (pyritohedron) but that the faces were heavily striated and that it must be twinned (Lucius L. Hubbard Papers). A specimen fitting this description is among Hubbard's specimens that were donated to the University of Michigan in 1917. The piece (Fig. 24) had no surviving label, so this letter is the only surviving provenance for the specimen.

Hubbard had been a member of the Board of Control of the Michigan College of Mines since 1905 and had also actively served as a science advisor for the Michigan Geological Survey since leaving in 1899. In 1910, he was appointed to the Board of Regents at the University of Michigan and was

subsequently elected in 1911. He became an industrious Regent, regularly visiting Ann Arbor to attend meetings. His activities in this sphere are beyond the scope of this article, but his correspondence makes it clear that this was an eventful period for the university, with issues including World War I and the Great Depression, and his thoughtful manner played a role in the university's navigation of those years.

From a mineralogical point of view, one of his more important contributions as Regent was to support a \$2,500 appropriation to the University of Michigan mineralogy department in 1915, which was used to purchase specimens for the collection. Interestingly, Edward Kraus (chair of the mineralogy department and founder of the *American Mineralogist*, Mineralogical Society of America and Gemological Institute of America) mentions to Hubbard in February 1915 that one of the collections he was looking at buying with that appropriation was the J. T. Reeder collection, one of the most important collections of Copper Country minerals ever assembled up to that time (3 February 1915, Lucius L. Hubbard Papers). Kraus never got the Reeder collection, and it eventually went to Michigan Tech, where it still resides today.

Shortly after joining the Board of Regents, Hubbard began giving specimens to the University of Michigan. By 1912 he was discussing the crystallography of Michigan copper specimens with Edward Kraus there, and Kraus had used images of some Hubbard copper specimens in publications (such as *Descriptive Mineralogy* [1911]). Hubbard's donations to the University of Michigan included some of his best copper specimens; in fact, most of the good-quality copper specimens in the Michigan collection are Hubbard pieces. In 1923, Hubbard also acquired a large piece of float copper (Fig. 25) for them (2 August 1923, Lucius L. Hubbard Papers). The float copper is still on display at the University of Michigan in the department of Earth and Environmental Sciences.

He also continued to be an active member of the conservation movement, often contacting congressmen to support the movement, and even serving as one of Michigan's representatives to the

Conservation Congress of 1913 (23 October 1913, Lucius L. Hubbard Papers). Hubbard may have had a more progressive attitude toward conservation than many of his contemporaries. In a letter dated July 1912, he suggested to Prof. Filibert Roth at the University of Michigan that he thought beavers served a natural purpose and were not simply pests that destroy valuable timber, and therefore they should not be exterminated (Lucius L. Hubbard Papers). He also became involved in an effort to open a tuberculosis sanitarium in Houghton County around this time (letter dated 16 April 1910, Lucius L. Hubbard Papers).

Not only did Hubbard give many mineral specimens to the University of Michigan, but he also began to donate books to the university. Along with building his mineral collection, Hubbard had been actively acquiring rare books, particularly focusing on early editions of *Robinson Crusoe* and *Gulliver's Travels*, a subject on which Hubbard had become quite an authority. After retiring, he felt he could no longer afford to maintain the collection. Not only was he no longer earning money, but it appears from a number of letters that some investments in mining companies had worked out poorly and he had lost a good deal of his savings. He estimated that he had spent about \$35,000 on books by 1913 (letter dated 9 August 1913, Lucius L. Hubbard Papers). He began to sell some of the books, as well as giving some of the more important ones to the university. By 1924, Hubbard had given almost eight hundred of his *Crusoes* and *Gullivers* to the University of Michigan (8 October 1924, Lucius L. Hubbard Papers)! Letters indicate that Hubbard insisted that his philanthropy remain unreported to his fellow regents, showing significant humility on his part. He used his retirement well and began to publish scholarly works discussing details of these early editions, including an article titled "Is Tobago Robinson Crusoe's Island?" (Hubbard 1927).

Hubbard finally resigned from the Board of Regents at the University of Michigan in January of 1933, citing health issues (2 January 1933, Lucius L. Hubbard Papers); he was eighty-three years old. Hubbard died shortly after, on 3 August at the family home near Eagle Harbor, Michigan. Fannie had

passed in 1927. Both are buried in Augusta, Maine, Fannie's hometown (Julie Asselin, pers. comm., 2017).

Hubbard remained a collector to the last. Even after resigning from the Board of Regents, letters indicate that Hubbard was still acquiring books and shells. He donated quite a few shell specimens to the Smithsonian Institution just a couple of months before his death. A short memorial in the *American Philatelist* noted his prowess as a stamp collector; he had built one of the most important collections of Colombian stamps up to that time (6 December 1933, Lucius L. Hubbard Papers).

Conclusion

Lucius Hubbard apparently never thought of himself as exceptional, but he was just that – exceptional. He was an accomplished outdoorsman who published maps and a guidebook to northern Maine on which others relied for decades. After reinventing himself in his thirties, he became an extraordinary geologist, first with the Michigan Geological Survey, and then with several mining companies. He was responsible for the discovery of the last major native copper deposit found in the Keweenaw. During this whole time he published many papers dealing with geology in the Copper Country and late in life also published scholarly works dealing with *Robinson Crusoe* and *Gulliver's Travels*. But above all, Hubbard was an exceptional collector, building significant collections of stamps, minerals, and antiquarian books among others. He recognized the value of his collections and made significant gifts of his remarkable mineral specimens and books to the University of Michigan and to Michigan Tech's A. E. Seaman Mineral Museum. Hubbard has left a strong legacy that will not be forgotten.

Acknowledgments

We thank those who assisted us with this article. Karen Brennan and Julie Asselin, both surviving descendants of Hubbard's, provided access to the family's collection of Hubbard's personal correspondence and family photos, which have greatly enriched the text. Cara Stefano, Karen Brennan, Julie Asselin, John Jaszczak, Bob Barron, Ted Bornhorst, Carl Francis, and George and Susan Robinson read the manuscript and provided valuable criticism, which has improved the text considerably. A wholehearted thank you also goes out to the donors to the A. E. Seaman Mineral Museum, without whose generosity none of this work would be possible.

References

- Hubbard, L. L. 1866-1933. Letters. Hubbard Family collection, Eagle Harbor, MI
- Hubbard, L. L. 1871-1935. Letters, etc. Lucius L. Hubbard Papers: 1871-1935, Bentley Historical Library, University of Michigan, Ann Arbor, Michigan.
- Hubbard, L. L. 1927. "Is Tobago Robinson Crusoe's Island? Some inferences from the dog episode in *Robinson Crusoe*." Trinidad and Tobago: Trinidad Publishing Co. Ltd.
- Hubbard, L. L. 1877, 1879, 1880. *Summer vacations at Moosehead Lake and vicinity*. Boston, MA: A. Williams and Co.
- Hubbard, L. L. 1882, 1893. *Hubbard's guide to Moosehead Lake and Northern Maine*. Boston, MA: A. Williams and Co.
- Hubbard, L. L. 1884, 1888. *Woods and Lakes of Maine*. Boston, MA: J. R. Osgood and Co.
- Lane, A. C. 1934. Memorial of Lucius Lee Hubbard. *American Mineralogist* 19 (3): 118-21.

Adams, J. H. undated. *Memories of a Copper Country Childhood*. 26 pages.

Stefano, C. J., Erwin, K., and Ewing, R. C. 2013. The University of Michigan Mineral Collection
Ann Arbor. *Rocks & Minerals* 88 (4): 328-38.

Bornhorst, T. J., and Poulsen, C. J. 2015. The Michigan Mineral Alliance. *Rocks & Minerals* 90 (5):
450-53.

Secretary of the class of 1872, Harvard College 1898, Boston, MA: Wright & Potter Printing Co.
47-48.

Palache, C. 1898. *The crystallization of the calcite from the copper mines of Lake Superior*.
Geological Survey of Michigan, 6 (2) 161-184.

Kraus, E. H. 1911. *Descriptive Mineralogy*, Ann Arbor, MI: George Wahr.

Rosemeyer, T. and Dyl, S. J. 2000. John Thorley Reeder: Gentleman Collector of the Michigan
Copper Country. *Matrix* 8: 159-170.

Figure 1. Copper, 23 cm tall, Keweenaw Peninsula, Michigan. A dramatic, tall, narrow specimen with complex crystals of a variety of forms with cuprite (red) and tenorite (black) patina perched on a tiny piece of altered basalt matrix. Michigan Mineral Alliance specimen (UM 1674)

Figure 2. Calcite, copper, 8 cm tall, Quincy mine, Houghton County, Michigan. A rare twinned copper-included calcite. A. E. Seaman Mineral Museum specimen (LLH 192)

Figure 3. A portrait of young Lucius taken in 1866, the same year as his early journey to the Lake Superior copper district. The back of the photo indicates it was taken by Hoag and Quick in Cincinnati, Ohio. Hubbard Family collection.

Figure 4. A photo of Lucius taken ca. 1870 while at Harvard. This must be a copy that he sent to Fannie while they were courting- on the back is written "Yours Truly as a gay young Freshman, with a vegetating moustache." Taken by Whipple in Boston. Hubbard Family collection.

Figure 5. Hauyne, 8 cm wide, from Eifel, Rhineland-Palatinate, Germany. An unusually large hauyne crystal in vesicular basalt matrix. Hubbard studied the rocks around Laacher See in the Eifel area for his PhD. He probably collected this specimen himself while doing that work. A. E. Seaman Mineral Museum specimen (DM 8137)

Figure 6. Partial pseudomorphs of malachite after azurite, 14 cm across, from Chessy-les-Mines, Auvergne-Rhône-Alpes, France. Surely one of the better European specimens from the Hubbard collection. A. E. Seaman Mineral Museum specimen (DM 468)

Figure 7. A beautiful specimen of lustrous, golden fluorite crystals with calcite and a little pyrite 6 cm wide from Gersdorf, Saxony, Germany. The piece was likely acquired during Hubbard's time in Germany in the 1880s. A. E. Seaman Mineral Museum specimen (DM 10817)

Figure 8. A classic example of galena after pyromorphite, 9 cm wide, from the Kautenbach Mine, Rhineland-Palatinate, Germany. A. E. Seaman Mineral Museum specimen (DM 85)

Figure 9. Pseudomalachite, Virneberg mine, Rhineland-Palatinate, Germany. 7.5 cm wide. An excellent specimen of this rare copper phosphate. This piece is a superb illustration of why this mineral deserves its name - the resemblance to banded malachite is striking. A. E. Seaman Mineral Museum specimen (DM 12076)

Figure 10. Grossular, 14 cm wide, Warren, Grafton County, New Hampshire. Garnets from this locality are rarely seen, but the Hubbard collection contains several excellent examples. A. E. Seaman Mineral Museum specimen (DM 8195)

Figure 11. Quartz var. amethyst, 17 cm long, Doorn mine (attributed), Cripple Creek, Teller County, Colorado. A rare and beautiful example of amethyst from one of Colorado's great gold districts. A. E. Seaman Mineral Museum specimen (DM 352)

Figure 12. A rare early matrix specimen of small wulfenite crystals, 9 cm tall, from the Red Cloud mine, La Paz County, Arizona. A. E. Seaman Mineral Museum specimen (DM 13064)

Figure 13. Coiled wire silver 5 cm wide from the short-lived bonanza at Silver Islet mine, Lake Superior, Ontario. Hubbard clearly loved to seek out historically important rarities of this type; his collection is full of them. A. E. Seaman Mineral Museum specimen (LLH 1010)

Figure 14. Acanthite, 5 cm tall from the Old Thunder Bay Mine, Thunder Bay, Ontario, Canada. A rarely seen, superb crystal group from the silver veins on the north shore of Lake Superior. A. E. Seaman Mineral Museum specimen (DM 2223)

Figure 15. A portrait of Lucius Hubbard taken ca. 1890s, after his arrival in Houghton to work on the Michigan Geologic Survey. He would have been in his forties at the time. Taken by A. L. Wortley,

Houghton, Michigan. Image from the Lucius L. Hubbard Papers, Bentley Historical Library, University of Michigan, Ann Arbor, Michigan.

Figure 16. An exceptional group of complexly twinned copper crystals with a lovely reddish patina, 13 cm long, from the Phoenix mine, Keweenaw County, Michigan. Arguably one of the finest copper specimens extant, this piece was featured on the 2017 Tucson Gem and Mineral Show poster. A. E. Seaman Mineral Museum specimen (LLH 440) John Jaszczak and Chris Stefano photo.

Figure 17. Copper in calcite, 14 cm tall, Quincy mine, Houghton County, Michigan. This twin is one of Hubbard's most important specimens. Only a few good twins of copper-included calcite exist and this one is the largest by a significant margin. A. E. Seaman Mineral Museum specimen (LLH 184) John Jaszczak and Chris Stefano photo.

Figure 18. A small copper-included calcite crystal perched atop a matrix of crystallized copper, 4.5 cm tall from the Phoenix Mine, Keweenaw County, Michigan. This is a rare example of copper-included calcite from the Phoenix (most are from the Quincy or nearby mines). A. E. Seaman Mineral Museum specimen (LLH 262)

Figure 19. Calcite, apophyllite, 10 cm tall from the Phoenix mine, Keweenaw County, Michigan. An unusual calcite crystal showing a "girdle" created by twinning. The second image shows a crystal drawing of this specimen done by Charles Palache and published in 1898. A. E. Seaman Mineral Museum specimen (LLH 293)

Figure 20. Copper, Phoenix mine, Keweenaw County, Michigan. 7 cm tall. This impressive specimen is dominated by two large, complex copper crystals that came within millimeters of becoming intergrown. It is one of several extremely good copper specimens that Hubbard originally donated to the University of Michigan. Michigan Mineral Alliance specimen (UM 1609)

Figure 21. A perfect jewel of a calcite crystal on a matrix of native copper, 10 cm wide from the Copper Falls mine, Keweenaw County, Michigan. This is the best Copper Falls calcite in the museum. A. E. Seaman Mineral Museum specimen (LLH 41)

Figure 22. An outstanding copper crystal group with mottled red (cuprite) and black (tenorite) patina, 15 cm tall from the Keweenaw Peninsula, Michigan. Although the exact locality is unknown, this piece stands out as one of the best specimens of its kind. A. E. Seaman Mineral Museum specimen (LLH 580) John Jaszczak and Chris Stefano photo.

Figure 23. Large, “bonneted” analcime crystals on very fragile copper crystals, 7.5 cm long from the Phoenix mine, Keweenaw County, Michigan. This specimen is the finest Michigan analcime at the A. E. Seaman Mineral Museum. A. E. Seaman Mineral Museum specimen (LLH 267) John Jaszczak and Chris Stefano photo.

Figure 24. Large, distorted copper crystals, reminiscent of the pyritohedron (pentagonal dodecahedron), Ojibway mine, 14.5 cm wide from the Ojibway Mine, Keweenaw County, Michigan. It had previously been published without a locality attribution. This specimen is discussed with Charles Palache of Harvard University in a letter dated 18 May 1909 from the Lucius Lee Hubbard papers, and this letter is the source of the locality attribution reported for the specimen here. Michigan Mineral Alliance specimen. (UM 4457)

Figure 25. A contemporary photo of the piece of float copper which Hubbard acquired for the University of Michigan. It weighs 483 pounds and stands 103 cm tall. The specimen has been slightly modified by human hands, and much was made at the time of the specimen’s resemblance to a Native American with headdress. The specimen is still on exhibit in the Department of Earth and Environmental sciences at the University of Michigan. University of Michigan specimen. Image from the Lucius L. Hubbard Papers, Bentley Historical Library, University of Michigan, Ann Arbor, Michigan.

Figure 26. This is one of the best silver specimens in the collection of the A. E. Seaman Mineral Museum, 10 cm tall, from the Cliff mine, Keweenaw County, Michigan. It is also a very unusual piece, being one of only a handful of documented silver specimens from the Cliff Mine, the Keweenaw's earliest successful mine. A. E. Seaman Mineral Museum specimen (LLH 508) John Jaszczak and Chris Stefano photo.

Figure 27. An unusual specimen of thin sheets of silver, 11 cm long from the Cliff mine, Keweenaw County, Michigan. Copper sheets are common in the Keweenaw, but this is the only sheet silver specimen in the holdings of the A. E. Seaman Mineral Museum. (LLH 952)

Figure 28. A thin plate of manganite crystals with white rosettes of barite, 27 cm tall from the Lucy mine, Negaunee, Marquette County, Michigan. 27 cm tall. Very few of these have survived, this specimen being the finest. A. E. Seaman Mineral Museum specimen (LLH 984)

Figure 29. Hubbard's bookplates. These were custom book labels made for the three books most associated with Hubbard. These would have been glued inside the covers of his books to indicate ownership (*Ex Libris* means "from the library of"). From left to right they represent Robinson Crusoe, Woods and Lakes of Maine, and Gulliver's Travels. (Hubbard Family collection)

Figure 30. A portrait of Hubbard later in life. Unfortunately the image is not dated, but was likely taken in the 1920's. Image courtesy of the Michigan Tech Archives.